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# Public Finance in China

*Reform and Growth  
for a Harmonious  
Society*

Edited by

Jiwei Lou

Shuilin Wang



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IN CHINA



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# Foreword

Since initiating reform and opening up its economy in 1978, China has been the world's most successful developing country, growing at about 10 percent a year. This sustained growth has resulted in the largest poverty reduction in history. Before reform more than 60 percent of China's people lived below the World Bank's \$1 a day (purchasing power parity) poverty line. By 2004 the poverty rate had declined to 10 percent, and it is no doubt even lower today.

With this impressive success have come new challenges. Growth at this pace inevitably puts stress on water supplies, energy sources, land, and clean air. Growth has also been accompanied by an increase in inequality. While everyone in China has benefited from reform, urban populations have gained more than rural ones. As a result, about 200 million people have migrated to cities, doubling the urban share of the population, from 20 percent at the beginning of reform to more than 40 percent today.

China's 11th Five-Year Plan (2006–10) recognizes that success has brought new challenges. The government's intention today is to create a "harmonious society"—one that continues to produce the sustained growth needed to create jobs and reduce poverty while also addressing environmental concerns and social imbalances.

This volume examines how public finance needs to change in order to meet these objectives. It covers not only the traditional instruments of tax and spending policy but also institutional issues, such as the intergovernmental fiscal system; accountability mechanisms; measures that affect the pace of rural-urban migration; design of the public health, education, and pension systems; and environmental policies and enforcement. Just enumerating these areas reveals the breadth of the agenda.

This collection of studies represents what is best about World Bank-sponsored analytical work. It is not a collection of World Bank studies that give advice to China but a compendium of analyses and ideas from different sources, each with a different perspective and advantage. The contributors include some of China's most important economic reformers—people who actually designed policy during China's successful emergence. They also include leading Chinese researchers,

prominent global experts on public finance, and World Bank experts with vast experience working in China.

I admire the way China encourages this kind of active policy debate and follows it up with practical experimentation on the ground. The World Bank will support some of the innovations described in this volume by financing projects and working with Chinese counterparts to evaluate them so that the successful ones can be scaled up. “Seeking truth from facts” and engaging in experience-based policy making is a useful method that other developing countries would do well to study.

James W. Adams  
*Vice President, East Asia and Pacific Region*  
*Washington, D.C.*

# Preface

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The immediate origin of this book was a roundtable held by the World Bank and the Chinese Ministry of Finance in Beijing in June 2006. Some of the world's foremost exponents of public finance and development economics—including most of the leading lights of China's economic reform—offered their views on how to promote social harmony through further reform of public finance while maintaining high growth. Debates and discussions helped sharpen the understanding of a host of issues that must be addressed going forward.

Many outside experts described the roundtable as an outstanding exchange of insights and ideas that would help shape China's future public finances in its support of a harmonious society. Chinese authorities saw it as a “milestone” strengthening the knowledge collaboration between China and the World Bank and the world development community as a whole. Change is an incremental process in China, but this roundtable discussion helped push along some critical public finance reforms in education, health, social protection, rural development, and the environment.

Following the roundtable, the World Bank's Development Research Group and Department of China and Mongolia and China's Ministry of Finance decided to support the production of this book in order to share the discussions of critical issues more broadly and to seek additional input and debate. The book contains selected contributions by leading international experts in public finance and development and senior Chinese policy makers and practitioners. It tackles several facets of China's public finances. The first half of the book deals with three large functional issues: the role of the state and public finance in promoting growth and social harmony, tax reform and expenditure assignments, and intergovernmental relations and fiscal transfers. The second half of the book examines financing the provision of basic public services and reform directions in education, innovation, health care, and social security. The volume ends with a chapter on inequality and fiscal reform in China. Although all of the chapters deal with public finance, they are not based on a single analytical



framework or data set. Examining issues from different perspectives, they do not produce a single view.

The book is neither a full summary of the roundtable nor a final statement on the issues. Instead, it highlights some key concerns, summarizes some discussions, and identifies alternative approaches. It also seeks to stimulate more thoughtful debate and intellectual exploration of the complex and interdependent issues of fiscal reform and the role of the state in the context of China's rapid growth and structural change.

# Acknowledgments

Many people helped to create this volume. The editors are particularly grateful to Yong Li, vice minister, and Guangyao Zhu, assistant minister, Chinese Ministry of Finance, and François Bourguignon, senior vice president and chief economist of the World Bank, for making this book possible. They are also indebted to Sir Nicholas Stern, then head of the U.K. Government Economic Service and second permanent secretary of the U.K. Treasury; Martin Feldstein, president of the National Bureau of Economic Research; Teresa Ter-Minassian, director of fiscal affairs at the International Monetary Fund; and Jiange Li, vice minister of the Development Research Center under the State Council in China, for their guidance, encouragement, and intellectual contribution throughout the roundtable and the preparation of this volume.

In the course of preparing the book, the editors received unfailing support from their own institutions and many individuals. They thank Jiayi Zou, Shaoling Yang, Yingming Yang, and Tingting Mu of the Chinese Ministry of Finance. They also thank the World Bank: the Office of the Executive Director for China for its institutional support and coordination; James W. Adams, vice president of the East Asia and Pacific Region, for his enthusiasm and support; and the management team of the Development Research Group and the Department of China and Mongolia of the East Asia and Pacific Region for allocating the funding to publish this volume.

The editors thank the contributors for their chapters, their involvement in revising them, and their patience during the editing process. They also extend their thanks to the many speakers and commentators for the enlightened discussions and intellectual inspiration they brought to the roundtable. They include Roy Bahl, Peiyong Gao, Qiang Gao, Shiji Gao, Ian Hawkesworth, Kang Jia, Jat Kadjatmiko, Homi Kharas, Yifu Lin, Hao Liu, He Liu, Yanhua Liu, Weifang Min, Alan Morris, Yunhe Pan, Xiaowu Song, Min Tang, Rong Wang, Shang-Jin Wei, Christine Wong, Jinglian Wu, Fuzhan Xie, Shanda Xu, Lan Xue, Shaochun Zhang, Tao Zhang, and Qingping Zhao.

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# Abbreviations

\$	All dollar amounts are in U.S. dollars unless otherwise specified.
CHCS	cooperative health care system
C-VAT	consumption-based value added tax
ECA	Europe and Central Asia
EIT	enterprise income tax
EPI	Expanded Program on Immunization
FDC	funded defined contribution
FDI	foreign direct investment
GDP	gross domestic product
IMF	International Monetary Fund
IPO	initial public offering
LAC	Latin America and the Caribbean
MLSA	Minimum Living Standard Assistance
NBS	National Bureau of Statistics
NCMS	New Cooperative Medical Scheme
NDC	notional defined contribution
NHS	National Health Survey
OECD	Organisation for Economic Co-operation and Development
PAYG	pay-as-you-go
PBGC	Pension Benefit Guaranty Corporation
R&D	research and development
RCC	rural credit cooperative
RES	representative expenditure system
RTS	representative tax system
SME	small and medium-size enterprise
SOE	state-owned enterprise
THC	township health center
TSA	treasury single account
TVE	town and village enterprise

UHS	Urban Household Survey
UHSS	Urban Household Short Survey
USPTO	U.S. Patent and Trademark Office
VAT	value added tax
WHO	World Health Organization
WTO	World Trade Organization

# Overview

# 1

SHUILIN WANG

China has moved toward the market and integrated more deeply with the world economy over the past 25 years. Having grown at more than 9 percent a year during that period, it is now the world's fourth-largest economy and third-largest exporter; and it is poised to continue growing at a rapid pace. Structural reform and economic growth have brought about an unprecedented rise in average living standards and a dramatic reduction in rural poverty. The changes have lifted 400 million Chinese out of poverty since 1980. Once rural, closed, and command driven, China's economy is now open, market oriented, and based on manufacturing and services.

But China's growth model faces tough challenges. The changes that brought prosperity have also eroded inherited social and institutional arrangements and structures and created new issues. These include urban poverty, open unemployment, out-migration from rural areas, and sharp income inequalities between rich and poor, urban and rural, and coastal and inland. Access to such basic public services as education and health care remains uneven. Addressing these issues requires further restructuring and rebalancing of the state and rethinking government priorities for financing and spending.

Guided by the concept of scientific development, in 2003 the government of China put forward the goal of building a harmonious society, shifting from an overriding priority on the pursuit of growth to more balanced development. The aim is to balance economic and social development—to devote more attention to the composition and nature of growth, to environmental sustainability, and to a more equal distribution of the benefits of growth. The 11th Five-Year Plan (2006–10) addresses this balance, with special emphasis on harmony with society and the environment. It also emphasizes maintaining growth. For this rapid and balanced growth, reforming and strengthening public finance is crucial.

## The Role of the State and Public Finances

Profound structural changes in China during the last quarter of the 20th century transformed the economy, society, and state. China's public finance, among the main forces driving change, has also been reshaped (see chapter 2, by Hussain and Stern).

## *Government Spending*

Changes in government spending reflect the structural transformation of the Chinese economy and society over the reform period, particularly the transition from plan to market (see chapter 3, by Dollar and Hofman). Before the reform period, it made little difference to public finances whether an expenditure item was financed by enterprises or directly by the government. After China embarked on reform, particularly after the separation of enterprise budgets from government budgets, the division of financing between enterprises and government assumed major importance, because expenditure liabilities carry with them the responsibilities for financing them.

As structural reform deepened, government investment in industrial and other economic activities fell sharply. The share of capital construction financed by the government budget shrank, from more than 40 percent in 1978 to 12 percent in 2004, and the share of expenditure devoted to culture, education, and health rose steadily. This change was in line with the shift in responsibility for providing social goods from enterprises and other units to the governments. The process has been far from smooth. In 2004 spending on pensions, social welfare, subsidies on consumer goods, and off-budget expenditures for social insurance represented 13 percent of gross domestic product (GDP).

China's public spending of 3.1 percent of GDP on education and 1.8 percent on health (in 2005) is lower than the 5.9 percent and 6.7 percent for high-income countries and the 4.6 percent and 3.8 percent for upper-middle-income countries (Dahlman, Zeng, and Wang 2007). These low levels explain the slow improvement in China's health and social services in the past quarter century. Similar discrepancies exist in social insurance, which by design targets urban residents in regular employment and the state sector. The urban labor force in small business and services, including rural migrants, and the large rural population are not covered by formal social insurance.

General government revenues rose from less than 10 percent of GDP in the mid-1990s to 18 percent in 2005. The overall fiscal envelop may have reached 25 percent of GDP in 2006, if extrabudgetary revenues of 3 percent, social security contributions of 2–2.5 percent, and a deficit of 2–3 percent of GDP are included. But China still confronts significant contingent liabilities, and further spending pressures are likely to arise from the pension system, especially as the population ages, and from government programs to address regional disparities, including spending for health, education, and environmental protection (see chapter 4, by Ter-Minassian and Fedelino).

## **Fiscal Reform and Revenue Assignments**

In chapter 5, Martinez-Vazquez, Qiao, Wang, and Zou maintain that expenditure reform should focus on education, health, and social security, particularly in rural areas, to boost participation in growth and domestic consumption. Primary and

secondary education should be free, with higher education financed by fees and loans, and medical insurance and social security should be universal.

China's current tax system is the outcome of successive fiscal reforms starting in the early 1980s. A consistent feature of these reforms has been the emphasis on improving revenue assignments and transfers. One major success was the tax-sharing reform, introduced in 1994, to increase the share of government spending in GDP and the share of central budgetary revenues in total budgetary revenues. The reform introduced clear and stable assignments of tax revenues between the central and provincial governments. It also created separate tax administrations at both levels of government. And it introduced the value added tax (VAT) as the major source of government revenue. Several subsequent policy changes—such as the rural tax-for-fee reform and the abolition of agricultural taxes, reducing the tax burden on farmers—have supplemented the tax-sharing system.

The current tax system requires further reforms to enhance revenue elasticity and address gaps and distortions (see chapter 6, by Ahmad). Sound principles of tax design—broadening the tax base, moving to taxes with the potential for revenue growth, seeking the smallest possible distortion, promoting fairness, and simplifying and keeping down the costs of administration and compliance—will have to be respected (Feldstein 2006).

Tax reform could take a variety of directions:

- Increase personal income taxes, now only about 7 percent of revenue and 1 percent of GDP, by increasing the base of the personal income tax to include all forms of cash income and payment for housing and by increasing the payroll tax, to collect more revenue with lower tax rates.
- Increase consumption or excise taxes on goods with negative externalities, particularly alcohol and tobacco.
- Raise taxes on energy use that damages the environment, particularly coal and gasoline.
- Shift the base of the VAT from production to consumption and extend it to services, to align it with international practices, and rationalize its administration and refund system.
- Unify the enterprise income tax regime for domestic and foreign firms to streamline tax incentives.
- Rationalize tax attribution mechanisms with tax sources to avoid unequal distributions of interregional revenues and to minimize harmful interregional tax competition.
- Review revenue-sharing formulas to ensure adequate vertical and horizontal balances among and within different levels of government.

## **Intergovernmental Relations and Fiscal Transfers**

China is more decentralized than member countries of the Organisation for Economic Co-operation and Development (OECD) and other large middle-income



countries, particularly on the spending side. The country's sheer size explains some decentralization, but the structure of government and some unusual expenditure assignments also give rise to this spending pattern. In most countries, social security, education, public health, and justice are centralized. In China they are largely decentralized. Among subnational governments, subprovincial governments account for more than half of government expenditures. Such decentralization can improve the public sector's efficiency by using the information advantage of local governments to match the needs and preferences of local residents. But the mismatch between expenditure and revenue assignments has opened vertical financing gaps in lower tiers of government, increased regional disparities, and left basic public and social goods underprovided.

Intergovernmental fiscal transfers to correct vertical and horizontal imbalances produce interjurisdictional spillovers and promote national objectives. Equalization grants and special-purpose transfers can reduce vertical imbalances and the mismatch between expenditure responsibilities and own revenues for subnational governments. The fiscal transfer system transfers large sums of money objectively to the four tiers of subnational governments, enabling provincial and local governments to deliver public goods and services better than most developing and emerging market economies. Yet the system has limitations.

With more modern taxes, particularly the VAT, and with a more integrated and mobile economy, the reform of the tax-sharing system in the mid-1990s reversed the downward trend in government revenues and the central government's share. But local tiers kept many expenditure responsibilities, despite falling shares of local revenue. This produced large disparities in the distribution of local public services and social security across regions and between urban and rural areas. The current system of transfers does not sufficiently reduce the disparities between rich and poor areas. Special-purpose programs emphasize input controls, with few incentives for service delivery or accountability for results (see chapter 7, by Shah and Shen).

China's approach to reforming the system of transfers is evolutionary. It focuses on redistributing incremental revenues above a "hold harmless" transfer equivalent to all transfers before the reform in order to avoid major disruptions and ensure buy-in from local governments. This approach appears to have worked well (see chapter 8, by Lou). Reform of tax-sharing below the provincial level could bring further change to almost all aspects of the intergovernmental fiscal system.

Intergovernmental fiscal relations will require reform if public finance is to support the 11th plan's objectives for growth and harmony. Local governments require the resources to match their responsibilities. They also require discretion to adapt to local conditions and be accountable to their communities. This would imply reforms in the following areas:

- Pass more revenue downward—that is, reform the system of transfers from higher to lower levels of government to increase the resources available to lower tiers, particularly the poor and rural areas.

- Pass some financing responsibilities upward—that is, reallocate some responsibilities for financing basic services from lower to higher government tiers.
- Within the limits implied by tax coordination between government tiers, extend the powers of lower government to levy taxes—including “piggy backing” on top of central taxes and poverty taxation—and to set own tax rates within a defined band.
- Establish a framework for fiscal transparency, responsibility, and accountability.
- Rationalize and simplify the fiscal equalization programs.
- Institute national minimum standards grants for such merit goods as education, health, and infrastructure.

One loophole that loosens the budget constraint on subnational governments requires early attention. The 1994 budget law forbids subnational governments from borrowing on capital markets. However, through local enterprises (public utility companies, special purpose vehicles, and urban development corporations that provide public services) they can still borrow indirectly from banks and on the capital market to finance infrastructure and much other subnational spending. This creates contingent liabilities for subnational governments, and it may compromise the central budget, possibly jeopardizing macroeconomic and financial stability. And given the lack of transparency, it is less easily controlled than explicit government borrowing. The ban on subnational borrowing has not worked, and cross-country experience shows that allowing subnational governments to borrow can confer benefits only under an effective framework to discipline borrowing (see chapter 9, by Liu).

Instead of implicit off-budget borrowing, China could move to an effective regulatory framework with well spelled-out rules to govern borrowing (purpose, information disclosure, insolvency mechanisms). Such a framework would enable subnational governments to borrow while mitigating the risks. Subnational borrowing can expand the fiscal space for infrastructure investment to support China’s rapid urbanization while facilitating efficient and equitable financing. The rationalization of subnational borrowing would also enhance transparency and increase the role of markets in fiscal surveillance.

## Provision and Delivery of Public Services

Subnational expenditure responsibilities in education, health, and social security are the legacy of the industrial restructuring process, as traditional responsibilities in education, health care, and pensions were shifted from state-owned enterprises to local governments. China’s performance in delivering these services compares favorably with other developing and transition economies, but many areas still need to be improved.

### *Public Education*

China has expanded access to education at all levels, improved adult literacy, and provided training and retraining to rural migrants and urban workers laid off by

state-owned enterprises. Primary enrollment is now virtually universal. The gross enrollment rate is 94 percent at the junior-secondary level, 47 percent at the senior-secondary level, and 21 percent at the tertiary level. In 2005 China produced 3.4 million graduates, including 151,000 with postgraduate degrees (National Bureau of Statistics 2005). This prodigious growth in graduates presages a significant increase in China's share of world skills and its competitive advantage in producing skill-intensive products (Winters and Yusuf 2006).

But educational attainment is still low by OECD standards. This constrains China's ability to absorb the new knowledge necessary to maintain and increase competitiveness and to redeploy workers from low-productivity jobs and sectors to higher-productivity ones. And educational disparities are widening among and within provinces, and between rural and urban areas. Unbalanced regional development and differences in the fiscal strength and revenue capacity of subnational governments are part of the reason. Another part is the way education and training are financed (Dahlman, Zeng, and Wang 2007).

At 3.2 percent of GDP in 2001–03 and 2.8 percent in 2004, government spending on education, though growing, is still much less than in developed and other comparator countries. Public spending per student improved significantly during the past decade, especially in the tertiary sector, but it remains low compared with developed countries, and it failed to reach the government's objective of 4 percent of GDP for 2005. Counties and townships together account for 70 percent of budgetary expenditures on education, and many of these lower tier governments end up with expenditure responsibilities far in excess of the revenue at their disposal. The limited public funding has shifted financing responsibilities to families (see chapter 10, by Dahlman, Zeng, and Wang).

In 2006 China took steps to improve compulsory education in rural areas in the poor western regions. It abolished tuition fees and increased appropriations of budgetary rural funds for education in accordance with the student per capita standards stipulated by each province or municipality. It also shifted the management of primary and middle schools from townships to counties. China is considering further financial measures to fully implement nine-year compulsory education and expand vocational education for young farmers and migrant workers.

These are positive developments. But turning the ostensible burden of a large population into a strategic advantage is a daunting challenge. Financing the expansion and improvement of China's education, training, and retraining system entails about 6–9 percent of GDP, far beyond the scope of government finance. Current education spending is about 4.9 percent of GDP, with the government share at about 3 percent, less than half of what is required. The government should focus on the public good aspects of education and training—compulsory education and some aspects of higher education and training. It should build broad partnerships and multiple pathways to tap different financial sources. It should also move from being the controller and sole provider to being the architect, coordinator, facilitator, integrator, monitor, innovator, and quality assurer.

## *Innovation for Growth*

Relying heavily on vast inputs of capital and labor, China's investment rate is close to 46 percent of GDP, more than 20 percentage points higher than the global average and higher than any other country. The allocative efficiency and the quality of investment are still relatively low. An analysis of the sources of growth indicates that 60–75 percent is from factor inputs, mainly capital, and 25–40 percent from total factor productivity. This resource-intensive growth pattern cannot be sustained. Water and air pollution and land degradation and desertification are severe. Moreover, the share of high-value-added products produced by new and high-tech industries is low. In 2005 processing accounted for 57 percent of the country's total foreign trade, and few exported goods were proprietary products: 80 percent of the garments exported by China carry foreign brand names.

In the medium and long runs, China's growth and the competitiveness of its firms will be linked to innovation and technological capability. How this capability evolves will depend on investments in research and development (R&D), science and technology workers, information technology, and complementary institutions—investments in a national innovation system (Sigurdson 2005). Tax credits and depreciation allowances affect the readiness to conduct research and commercialize findings, so fiscal policy can shape the innovation system (Yusuf, Nabeshima, and Wang 2007).

China could considerably improve the allocation and efficiency of its rapidly growing investments in R&D and to strengthen the mechanisms to speed the transfer of research results into effective economic application. This requires better allocation and monitoring of direct public R&D and commercialization. It also requires effective mechanisms to support private R&D and commercialization. In this China has much to learn from the United States, Europe, and Japan, which have longer track records of financing and creating new knowledge and turning it into economic and social advances (Dahlman 2007).

Research at universities will be encouraged both by the availability of funding and by the strengthening of institutions that assign and safeguard intellectual property. The allocation of funds needs to be competitive, with multiple providers, public and private. The protection of property rights should not stifle innovation or unleash a wave of litigation. For companies, tax credits and depreciation allowances are proven inducements. In some cases, government procurement might ease the risk of embarking on costly research.

While large companies will be the major investors in research, smaller ones are more likely to come up with creative ideas that can change the direction of or even transform an industry or market. These firms benefit from intermediaries that can help them bridge information gaps and link them to researchers in universities. They also need venture capitalists to screen research offerings and help commercialize the most promising ones. Policies that establish such intermediaries

and encourage private venture capitalists have a vital role in building a dynamic innovation system (see chapter 11, by Yusuf and Nabeshima).

### *Public Health and Health Care*

The decline of public spending on health over the past decade sharply increased out-of-pocket spending and reduced health insurance coverage. China's health care system, once a beacon for developing economies, now suffers from inequality and other new challenges. Why is health care so unaffordable? What happened to health insurance and to public health programs?

Designing and operating the health system and medical insurance represent big challenges. Spending rose in response to the outbreak of SARS (severe acute respiratory syndrome) in 2003, but it still leaves a large shortfall. Rapidly growing private expenditures now make up nearly 60 percent of total health expenditures—worrisome for both equity and efficiency.

The government recently embarked on a new rural health insurance scheme, a new medical expense safety net for rural residents, and a network of centers for disease control to improve access and to reduce the risk of a financial catastrophe. These policy actions and institutional arrangements have been accompanied by an increase in government spending on public health, both capital and recurrent (Gao 2006).

A universal basic medical care system that covers all citizens is essential to safeguard health and reduce health risks—and to build a harmonious society. That will require additional and better-targeted resources for public health and for new cooperative medical schemes in rural areas (see chapter 12, by Evans and Xu). Reducing inefficiency in service delivery and aligning care with medical needs and the resources available in poor rural areas are other key challenges (see chapter 13, by Wagstaff and Lindelow).

### *Pension Reform*

Addressing the needs of older people requires a well-designed social security system and proper handling of the system's transition and legacy costs. Industrial restructuring and market reform initiated in the late 1970s dismantled formal and informal social security, requiring the creation of a new system. The reform effort started only in the early 1990s. In the late 1990s, a two-tiered partially funded pension system combined social pooling with individual accounts. Social pooling is done through a mandatory pay-as-you-go defined benefit system. The individual account is a funded defined contribution. Inspired by reforms in other countries, China adopted the basic framework in line with the requirements of a market economy and consistent with the global trends in the development of pension systems (see chapter 14, by Li, Dorfman, and Wang). Some foreign researchers see the new system as attractive because it combines basic social pooling and personal accounts. But the reform is far from complete. As some Chinese experts recognize, the system is characterized by regional segregation and narrow

coverage, and it has trouble paying benefits. The implicit pension debt is very large, and there is no clear strategy for financing that debt. The deficit in the general pension pool thus has to be offset with funds contributed to individual accounts, leaving them empty.

Some basic principles should govern the social security system. Programs should be based not on poverty but on age, ill health, and unemployment, while fiscal policies should aim to reduce poverty but not inequality. Complex programs of social security should be tailored to local economic conditions and stages of development. Comprehensive programs financed by the government through high taxes could weaken economic growth and employment and so must be avoided.

Legacy costs and implicit pension debts are so large that dealing with them will affect the choice of the social security model. Legacy costs in China represent nearly all current expenditures—that is, payments to former employees of state-owned enterprises. One option would be to separate the legacy costs, treat them as a part of the national debt, and finance them at a low current cost (see chapter 15, by Feldstein and Liebman). Because the benefits of the transition of the social security would be shared by future generations, the costs of transition and the legacy costs should be shared over many generations, too. China may not need to finance this debt as obligations come due. It has alternative revenue sources to reduce the debt, such as selling state assets, including state-owned enterprises and land, and drawing on foreign reserves.

Retirement age is another issue that needs to be addressed. China's life expectancy is similar to that in developed countries, but its employees retire earlier—at 55 for women and 60 for men. One concern of Chinese policy makers is the impact on the labor market of increasing the retirement age. Would it reduce job creation? In theory, the number of jobs would respond to the availability of labor, and a flexible wage mechanism would allow the labor market to reach equilibrium in the medium and long runs.

The government is now striving to establish a sustainable social security system commensurate with its economic development. Its efforts are restoring the integrity of individual accounts without affecting the payment of current pensioners; lifting fund pooling to the provincial level to balance income and expenditure in the pension system; and developing and extending the coverage of social security to rural areas, particularly for landless farmers and migrant workers.

### *Maintaining Growth and Addressing Inequality*

With the economy growing at more than 9 percent a year, China has witnessed an almost continuous increase in income inequality. The Gini coefficient rose from 0.30 in the early 1980s to 0.47 in 2006 (0.42 if corrected for different price levels across regions). Urban-rural, intra-rural, intra-urban, and coastal-inland inequalities have all been on the rise since the 1990s. In many aspects China's experience is similar to that of the Western developed nations in their initial growth stage. The increase in inequality during the first stage of growth—during which individuals

move from lower-productivity and -income activities to higher-productivity and -income activities—is fully consistent with Kuznets’ theory of growth.

Whether inequality eventually declines on its own during the next stage of growth or some kind of redistribution policy needs to be put into place remains an open question. A policy challenge is to avoid the worst exclusions while maintaining the incentives to accumulate income and take risks. China could combat the increase in inequality and inequity with instruments similar to those used in the Nordic countries while exploring innovative policies appropriate to its circumstances.

The *Di Bao* program is an urban minimum living standard guarantee program that helps move people out of poverty. It is a good starting point from which to create a full social insurance system that preserves market incentives (see chapter 16, by Ravallion, Chen, and Wang). Redistribution should be only part of the overall strategy. China should try to increase equity by guaranteeing equal access—to education, health care, credit, and decision making about public goods—to all citizens, so that they can fully realize their economic potential. Other policy actions may include easing restrictions on migration, supporting rural development, increasing the progressivity of the tax system, and reallocating spending. By ensuring equal opportunity, China will continue to enjoy rapid growth, with inequality stabilizing and even declining over time (see chapter 17, by Bourguignon).

## References

- Dahlman, Carl J. 2007. “China and India: Emerging Technological Power.” *Issues in Science and Technology* 23 (3): 45–53.
- Dahlman, Carl J., Douglas Zhihua Zeng, and Shuilin Wang. 2007. *Enhancing China’s Competitiveness through Lifelong Learning*. Washington, DC: World Bank Institute.
- Feldstein, Martin. 2006. “Public Finance Reform in China: Medium and Long-Term Fiscal Issues.” Paper presented at the Roundtable on Public Finance for a Harmonious Society, Beijing, June 27–28.
- Gao, Qiang. 2006. “Reform and Development of Health Care System in China.” Speech delivered at the Roundtable on Public Finance for a Harmonious Society, Beijing, June 27–28.
- National Bureau of Statistics. 2005. *China Statistical Abstracts*. Beijing.
- Sigurdson, Jon, with Jiang Jiang and Xinxin Kong. 2005. *Technology Superpower China*. Cheltenham, United Kingdom: Edward Elgar.
- Winters, L. Alan, and Shahid Yusuf. 2006. *Dancing with Giants: India and China*. Washington, DC: World Bank.
- Yusuf, Shahid, Kaoru Nabeshima, and Shuilin Wang. 2007. *Fiscal Policy for Innovation*. Washington, DC: World Bank.

Part I

Role of the State and  
Public Finances





# Public Finances, the Role of the State, and Economic Transformation, 1978–2020

## 2

ATHAR HUSSAIN AND NICHOLAS STERN

Public finances lie at the heart of the role of the state in a market economy. They define how and how much revenue is raised from the population, thereby encouraging or discouraging certain activities, distributing the burden of taxation, and structuring the relation between tiers of government. Public expenditure also determines the physical and social environment in which people of all kinds participate in the economy and society. It shapes both the environment for growth and the inclusion or exclusion of sectors of the population. The changing structure of the economy in turn affects tax bases, possibilities for taxation, and demands for expenditure. Thus, as the role of the state changes, so must public finances.

This chapter charts the interaction between the structure of the economy and public finances, paying particular attention to the profile of aggregate off-budget revenues and the relations between tiers of government. It argues that the reform of public finances has fallen behind that of the economy as a whole. This has been reflected in difficulties providing basic services and an increase in inequality, in particular rural/urban disparities. The analysis points to directions and priorities for reform, in particular in the fiscal relations between different tiers of government.

### Structural Change and Public Finance

China has seen remarkable economic and social transformation in the past 25 years. Public finances have been central among the forces driving change. They have also been reshaped in the process. As the role of the state changes, so must its public finances. Reform of China's public finances has lagged other reforms.

China continues to have an ambitious program for growth and development, as embodied in the 11th Five-Year Plan. The plan, in particular its emphasis on a “harmonious society,” will mean that the close and changing relation between public finances, the role of the state, and the economy and society will continue to be at the heart of economic policy.

During the reform period, China has undergone a complex and interlocking set of changes, moving from a command to a market economy, from a rural to an urban society, from agriculture to manufacturing and services, from informal to formal economic activities, from a fragmented set of fairly self-sufficient provincial economies to a more integrated economy, and from an economy that was fairly shut off from the world to the powerhouse of international trade. Most of these processes have a long way to run. Growth has been very rapid, and patterns of consumption have changed dramatically. So, too, have the source and nature of many services, which have moved away from provision by state-owned enterprises and the state.

During the reform period, there has been an evolving relation between different levels of government (the central government, provincial governments, and local governments).<sup>1</sup> Political and social objectives have also been changing. Given its rapid pace, huge scale, and profound nature, reform in China in the past quarter century represents the most extraordinary economic and social transformation the world has seen—and it has all been reflected in and influenced by the country’s public finances.

The analysis presented in this chapter is primarily structural and medium term. It therefore does not emphasize short-term issues, such as procyclical, anticyclical, or neutral fiscal stances; monetary policy; exchange rate policy; or the management of capital flows.<sup>2</sup>

The chapter is organized as follows. The next section charts the changing relations between aggregate revenue and total GDP. The second section examines the relation between budget and off-budget finances. The third section looks at the changing pattern of central-provincial-local finances. The fourth section turns to the expenditure side, relating changes in spending to changing patterns in the responsibilities of the citizen and the state. The fifth and sixth sections link the past and the future, focusing on social security, inequality, and the harmonious society.<sup>3</sup> The last section looks forward, by examining the implications of the structural approach—in combination with the evolving economic, social, and political priorities—for public finances if China is both to maintain rapid growth and to promote a harmonious society.

## **The Fall and Rise of Government Revenue and Expenditure in Relation to National Income**

In the three decades since reforms began, in 1978, the relation between national income and budgetary revenue has undergone a dramatic change, first declining

precipitously, then recovering dramatically: During the first 17 years, the budgetary revenue ratio dropped by almost 21 percentage points, from 31.2 percent in 1978 to 10.7 percent in 1995 (table 2.1). The next nine years saw the ratio increase, to 19.3 percent in 2005. The magnitudes of both the rise and the fall are huge by international standards and have gone together with the fundamental transformation of the Chinese economy.

**Table 2.1 Government Revenue and Expenditure as a Percentage of GDP, 1978–2004**

<i>Year</i>	<i>Revenue as percentage of GDP</i>	<i>Expenditure as percentage of GDP</i>	<i>Surplus as percentage of GDP</i>
1978	31.2	30.9	0.3
1979	28.4	31.8	-3.4
1980	25.7	27.2	-1.5
1981	24.2	23.4	0.8
1982	22.9	23.2	-0.3
1983	23.0	23.7	-0.7
1984	22.9	23.7	-0.8
1985	22.4	22.4	0.0
1986	20.8	21.6	-0.8
1987	18.4	18.9	-0.5
1988	15.8	16.7	-0.9
1989	15.8	16.7	-0.9
1990	15.8	16.6	-0.8
1991	14.6	15.7	-1.1
1992	13.1	14.1	-1.0
1993	12.6	13.4	-0.8
1994	11.2	12.4	-1.2
1995	10.7	11.7	-1.0
1996	10.9	11.7	-0.8
1997	11.6	12.4	-0.8
1998	12.6	13.8	-1.2
1999	13.9	16.0	-2.1
2000	15.0	17.8	-2.8
2001	16.8	19.4	-2.6
2002	18.0	21.0	-3.0
2003	18.5	21.0	-2.5
2004	19.3	20.8	-1.5

Source: <http://www.stats.gov.cn>.

A useful starting point for analyzing the relation between public finances and economic structure is the tax base. China's 1978 tax system—which collected almost a third of GDP in taxes—was remarkably simple and heavily reliant on one tax handle: state-owned enterprises (SOEs). SOEs had limited discretion over their production decisions, and jobs, wages, pensions, and public services were tightly controlled. Thus, the usual considerations in designing taxes to raise revenue—efficiency and equity—did not strongly affect tax decisions.<sup>4</sup>

At first sight, the declines in the budgetary revenue and expenditure ratios until 1995 are in keeping with a transition to a market economy: letting economic agents keep a substantial percentage of their income and shifting the financing of various items from the government to others. China started the reform period with a revenue ratio similar to those in upper-middle-income or developed economies. By 1995 the ratio (10.7) started to look similar to those in low-income economies, the category in which the World Bank then placed China (Burgess and Stern 1991). However, while cross-country comparisons provide a useful benchmark for indicating the scale of government activities, they have to be treated with caution, especially in the case of transition economies, where the boundaries between the government and nongovernment sectors are neither well defined nor stable.

Despite the sharp decline in the budgetary revenue ratio up to 1995, the budgetary expenditure ratio closely tracked it, diverging significantly only between 1998 and 2003, as the result of a broadly successful, expansionary fiscal policy aimed at counteracting the deflationary impact of the Asian financial crisis. Government budget deficits have been a recurrent feature of public finances since 1979 (see table 2.1), although their small size is striking, given the huge decline in the budgetary revenue ratio. In 13 out of 17 years between 1978 and 1995, the deficit was less than 1 percent of GDP. Even at 3 percent of GDP, the deficit was modest relative to the high growth rate of the economy. However, the very large decline in the budgetary revenue ratio came together with a deterioration in the financial position of the state sector. This in turn implied a steep increase in (often informal) subsidies to loss-making enterprises. As a result, total expenditure (inclusive of off-budget expenditure) was substantially higher than that formally measured in the public accounts.

The remarkable upturn in the budgetary revenue ratio since 1995 is the result of the tax reform introduced at the end of 1994 and the “tax-for-fee” reform, which began in 2001. Under that reform, taxes replaced fees. The guiding aim of the 1994 reform was to increase both the share of budgetary revenues in GDP and the central government's share of total government revenues.

## **Off-Budget Activities**

Although the deficit ratio was modest, the government was under severe fiscal stress. All government tiers were relying on two extrabudgetary channels for expenditure and revenue: directed lending through the state banking system to particular institutions or for particular purposes and extrabudgetary or off-budget revenue.

Directed lending by state-owned commercial banks, which was off budget, made it possible for the government to short-circuit government borrowing on its own account to finance loss-making enterprises. This mechanism can be thought of as disguised public borrowing to finance implicit deficits. The process was highlighted by several rounds of capital injection into state-owned commercial banks.

Off-budget revenue sources have always existed, but they grew in importance over the reform period. In the 1950s, these sources consisted largely of the supplementary levy on agricultural produce and informal revenue demands from local enterprises used to finance local government expenditure.

Over the reform period, off-budget sources have proliferated, in response to the fiscal stress arising out of the combination of a falling ratio of budgetary revenue to GDP and rising demand for expenditure. The fiscal decentralization over the period facilitated their proliferation by giving subnational governments the discretion to charge fees and introduce levies. In addition, the development of a market economy created ample opportunities for profitable activities.

Extrabudgetary revenue sources have included user charges for public utilities; fees in return for service; surcharges on taxes; earmarked levies for specific purposes or funds, such as education; and revenue from commercial or business undertakings by government agencies or enterprises set up for this purpose. In recent years, proceeds from the sale of land leases and land-use rights have grown rapidly, emerging as the largest off-budget revenue sources in many localities.

The driving force prompting lower tiers of government to explore off-budget revenue sources was the gap between their expenditure responsibilities and their on-budget revenue. By the early 1990s, fees (or off-budget revenue more generally) had become a regular and significant revenue source for all government tiers, particularly lower tiers. For many rural local governments, these sources financed half or more of their expenditures, including spending on basic services.

Two aspects of an off-budgetary revenue source are relevant for its evaluation: its governance aspect and its characteristics as a tax. A key adverse feature of off-budgetary sources is that they may escape the assessment and scrutiny that are appropriate for budgetary items. One of the basic requirements of a well-functioning market economy is transparent and accountable government processes and actions that can provide the clarity on which private decision making depends. This clarity can be undermined by off-budgetary processes, which are more likely to be discretionary, arbitrary, and unpredictable than budgetary processes—and therefore more prone to corruption. A crucial feature of good fiscal processes is that they provide clear and open information on where money comes from and how it is spent. Building these processes is a central part of building a functioning, efficient, and fair market economy.

Nonbudgetary revenue sources cover a wide range. Some rank well on the basic economic criteria for a tax: incentives, efficiency, and distribution. Others do less well. Nonbudgetary revenue sources also vary in their administrative costs and costs of compliance, although, given their local and straightforward nature, some of these costs may be lower than the costs of formal taxation.

Depending on the design of land-lease and land-use rights, their sale can fare well in terms of efficiency and equity. Difficulties, however, can lie in the details and implementation of such measures. In rural areas, these revenue sources can be particularly sensitive to the distribution in the size of holding and on the specifics of property rights.

Charges for services and earmarked levies often apply to services, such as basic education, that many would argue are fundamental rights and should therefore be free. Poorer households or those in backward areas have fewer alternatives than richer households and thus are particularly badly hit, raising equity issues.

By their very nature, off-budget levies and charges fall on the residents of a particular jurisdiction; reliance on this type of instrument thus limits distribution of the cost of public services across jurisdictions. Lower government tiers—for which off-budget revenue sources are of crucial importance—vary widely in per capita income. In general, the lower the government tier, the greater the variation in their taxable capacities, whether on or off budget. As a result, reliance on off-budget revenue to finance essential public services leads to wide variations in the standards of provision, which in many localities falls well short of what might be considered a basic minimum.

Dependence on off-budget revenue sources also affects the expenditure pattern, biasing government activities in favor of those that yield revenue, such as setting up enterprises, and away from those that do not, such as providing basic services. The result is that poor people from poor localities have great difficulty acquiring the human capital needed to escape poverty. This system can thus exacerbate social exclusion and erect a severe obstacle to building a harmonious society.

Like off-budget revenue, directed bank lending can lead to corruption. It undermines the crucial information base that is necessary for a functioning market economy. It also hinders development of the banking system. Directed lending absolves banks from assessing the risk of loans and making provision for the risk of default, because, by directing lending and bailing out banks, the government effectively assumes the risk and the responsibility for the decision. Historically, the operations, procedures, and organizational structures of state-owned commercial banks were adapted to the disbursement of directed credit. They did not assess the creditworthiness of borrowers, and they were not particularly concerned about ensuring that loans were serviced. As a result, Chinese banks have had portfolios of nonperforming loans that far exceed the initial subsidy in the directed lending. They have hindered the response to the microeconomic and macroeconomic problems of improving the low overall efficiency of capital in China. The presence of directed lending has prevented the Chinese economy from using capital more efficiently.

There have been two major changes in the classification of off-budget revenues and expenditures, both of which resulted in a sharp decline in their shares of revenues and expenditures (table 2.2). One was implemented in 1992, when the revenues and expenditures of state enterprises were excluded from the off-budget account. The second took place in 1997, when all intergovernmental transfers were taken off the off-budget account.

**Table 2.2 Off-Budget Revenues and Expenditures as a Percentage of Total Budget Revenues and Expenditures, 1989–2003**

Year	Off-budget/budget revenue		Off-budget/budget expenditure	
	Central government	Subnational government	Central government	Subnational government
1989	130.4	86.1	109.8	78.9
1990	108.1	84.1	103.3	80.3
1991	147.2	84.2	115.8	79.7
1992	174.3	85.8	136.1	80.0
1993	25.7	35.0	15.2	33.5
1994	9.7	68.3	12.8	36.8
1995	9.8	70.0	17.6	41.0
1996	25.9	78.6	48.1	48.4
1997	3.4	60.6	5.7	37.9
1998	3.4	58.6	4.5	36.2
1999	3.9	56.4	4.0	32.9
2000	3.5	55.9	3.8	32.0
2001	4.0	50.7	4.5	27.3
2002	4.2	47.4	3.8	23.4
2003	3.2	42.5	4.4	22.2

Source: <http://www.stats.gov.cn>.

Note: State enterprise budgets were removed from the list of off-budget items in 1993. Other intergovernmental transfers were removed from the list in 1997.

Since 1997, off-budget revenues and expenditures have been small relative to their on-budget counterparts in the central government account but substantial relative to those of subnational governments. In the case of subnational governments, relative to their on-budget budgets, both off-budget revenues and expenditures have fallen steadily since 1997, in large part as a result of the policy of replacing off-budget fees with on-budget taxes. The share of total revenues represented by off-budget revenues (42.5 percent) has also been substantially higher than the share of off-budget to total expenditures (22.2 percent). The explanation is that off-budget revenue is not used exclusively to finance off-budget expenditure; a substantial percentage goes to finance on-budget expenditure items, including basic public services. The implication is that any significant reduction in off-budget revenue has to be accompanied by a compensating rise in on-budget revenue in order to maintain these services.

The anomalies created by resorting to off-budget revenue sources for financing can be addressed in three broadly complementary ways:

- Reform the system of transfers from higher to lower government in order to ensure that each government tier has sufficient revenue to finance basic services of appropriate quality.



- Reallocate the responsibilities for financing basic services from lower to higher government tiers.
- Within the limits implied by tax coordination across government tiers, extend the powers of lower government to levy (on-budget) taxes.

China has adopted the first two options (as well as the third to a very limited degree). It transfers revenue from higher tiers of government, especially the central government, to lower tiers. Recently, the central government has moved the level of financing of basic education in rural areas from townships to the next tier up, counties. China has 2,861 counties, the average population of which is about 330,000—15 times that of townships. Moving financing from townships to counties implies a pooling of resources and should reduce differences in resources available for financing basic education. It may also reduce the degree of local accountability of teachers and administrators, although there are a number of ways of making schools more responsible to local communities (see, for example, World Bank 2004). As for the third option, by international standards, lower tiers of government in China have very restricted powers of levying taxes, which forces them to resort to off-budgetary sources of revenue.

## **Intergovernmental Fiscal Relations**

Intergovernmental fiscal relations in China are complicated by the country's huge size and diversity and its many tiers of subnational governments. Over the period 1978–93, the central government's share of total revenue was less than its share of total expenditure, although the gap narrowed over time, especially after 1985. On the eve of the reform period, although subnational governments collected 86 percent of taxes, the central government was responsible for 47 percent of expenditures. That is, there was a substantial upward transfer of resources from subnational governments to the central government.

Since 1994 this pattern has been reversed (table 2.3). On average, the central government has raised 52 percent of tax revenue and has been responsible for only 30 percent of total expenditure, implying a substantial transfer downward from the central government to subnational governments. This pattern of public financing is often proposed by international financial institutions, which recommend that the revenue share of higher government tiers exceed their expenditure share, because central governments have access to larger and more systematic bases and forms of taxation, such as value added tax (VAT) and income tax. Their administrative costs may thus be lower, and there may be less geographical distortion in the allocation of resources. Local authorities, however, are closer to the needs of those benefiting from services. Furthermore, in dealing with regional inequalities, central governments can redistribute resources from richer to poorer regions. Developing a local tax base is also important because it gives local authorities some discretion to adapt to local conditions and because links between taxation and expenditure are important for accountability.

**Table 2.3 Central Government Share of Budgetary Revenue and Expenditure, 1978–2004**  
(percent)

<i>Year</i>	<i>Revenue share</i>	<i>Expenditure share</i>
1978	15.5	47.4
1979	20.2	51.1
1980	24.5	54.3
1981	26.5	55.0
1982	28.6	53.0
1983	35.8	53.9
1984	40.5	52.5
1985	38.4	39.7
1986	36.7	37.9
1987	33.7	37.4
1988	32.9	33.9
1989	30.9	31.5
1990	33.8	32.6
1991	29.8	32.2
1992	28.1	31.3
1993	22.0	28.3
1994	55.7	30.3
1995	52.2	29.2
1996	49.4	27.1
1997	48.9	27.4
1998	49.5	28.9
1999	51.1	31.5
2000	52.2	34.7
2001	52.4	30.5
2002	55.0	30.7
2003	54.6	30.1
2004	54.9	27.7

*Source:* <http://www.stats.gov.cn>.

*Note:* Tax reform began in 1994.

China is unusual in assigning responsibilities for providing the bulk of social security, basic education, health care, and public safety to lower government tiers while providing fairly limited transfers to finance these services. Cities, at the third and fourth tiers, account for all expenditures for social security (pensions, unemployment insurance, and other income support and welfare schemes). Counties and townships (fourth and fifth tiers) are responsible for providing basic education and public health for the rural population: the two tiers account for 70 percent of budgetary expenditures on education and 55–60 percent of expenditures on health.

The relations between government tiers are both hierarchical and rivalrous. Within limits, each tier jealously guards its domain. When faced with financial constraints, each tier tries to shift expenditure responsibility to the next tier down while retaining as much revenue as possible.

The division of costs among government tiers is determined largely by their relative power. As a result, lower government tiers tend to end up with expenditure responsibilities in excess of the revenue at their disposal. According to a survey conducted in 2004, as much as 78 percent of the cost of basic schooling in rural areas was borne by the lowest government tier, the townships. The remaining 22 percent was split between the next four government tiers, with 9 percent paid by counties, 11 percent by provinces, and 2 percent by the center (Caijing 2004). The cost covered by the townships is raised through local taxes, levies of various kinds, and profit from local enterprises. The system thus effectively forces governments to finance through off-budget revenues. The building of a modern tax base requires moving toward national taxes, such as the personal income tax or VAT. A key priority is the design of central-to-local transfers that can ensure that all tiers have enough revenue to finance their responsibilities and provide an acceptable level of basic services.

## **Government Expenditure in Transition**

The changing pattern of government expenditure reflects the structural transformation of the Chinese economy and society over the reform period, in particular the transition from a planned to a market economy. From the point of view of public finances, a transition to a market economy is essentially a complex redistribution of claims to income and of responsibilities for expenditure by the state, enterprises, and households.

Under central planning, enterprises and other units performed many functions that in other economies are the responsibility of government agencies or civil associations, including households. The government determined prices, output levels, and investment, issues that are left to enterprises and households in a market economy.

In the prereform period, it made little substantive difference to public finances whether an expenditure item was financed by enterprises or directly by the government. Following the separation of enterprise budgets from government budgets, the division of financing between enterprises and government assumed major importance to outcomes across a wide range of the economy, as expenditure liabilities carry responsibilities for financing them.

The reassignment of responsibilities for expenditure items during the transition period has been far from smooth. It has been deeply affected by the inability of many state enterprises to function without government subsidies. The current expenditure pattern and many of its difficulties indicate that the process of transition has a long way to run (table 2.4).

Budgetary expenditure is only one of three components of government expenditure over the reform period, albeit the largest. The other two are off-budget expenditure, financed mainly from off-budget revenue, and the subsidies

**Table 2.4** Composition of Government Budgetary Expenditure, 1978–2004  
(percentage of government budget)

Year	Capital construction	Enterprise capital	Culture, education, and health	Pensions, social welfare, and relief	Administration	Subsidies
1978	40.3 (12.5)	5.9 (1.8)	10.0 (3.1)	1.7 (0.5)	4.4 (1.4)	1.0 (0.3)
1979	34.6 (11.0)	4.1 (1.3)	10.3 (3.3)	1.7 (0.5)	4.5 (1.4)	6.2 (2.0)
1980	28.2 (7.7)	3.0 (0.8)	12.7 (3.5)	1.7 (0.4)	5.4 (1.5)	9.6 (2.6)
1981	22.6 (5.3)	2.0 (0.5)	15.1 (3.5)	1.9 (0.4)	6.2 (1.5)	14.0 (3.3)
1982	21.9 (5.1)	1.9 (0.4)	16.0 (3.7)	1.7 (0.4)	6.6 (1.5)	14.0 (3.3)
1983	24.5 (5.8)	0.9 (0.2)	15.9 (3.8)	1.7 (0.4)	7.3 (1.7)	14.0 (3.3)
1984	26.7 (6.3)	0.6 (0.1)	15.5 (3.7)	1.5 (0.4)	7.4 (1.7)	12.8 (3.0)
1985	27.7 (6.2)	0.7 (0.2)	15.8 (3.5)	1.6 (0.3)	6.5 (1.5)	13.1 (2.9)
1986	27.0 (5.8)	0.5 (0.1)	17.2 (3.7)	1.6 (0.3)	7.6 (1.6)	11.7 (2.5)
1987	23.1 (4.4)	0.5 (0.1)	17.8 (3.4)	1.7 (0.3)	7.9 (1.5)	13.0 (2.5)
1988	19.9 (3.3)	0.4 (0.1)	19.5 (3.3)	1.7 (0.3)	8.9 (1.5)	12.7 (2.1)
1989	17.1 (2.8)	0.4 (0.1)	19.6 (3.3)	1.8 (0.3)	9.3 (1.5)	13.2 (2.2)
1990	17.8 (3.0)	0.4 (0.1)	20.0 (3.3)	1.8 (0.3)	9.8 (1.6)	12.3 (2.1)
1991	16.5 (2.6)	0.4 (0.1)	20.9 (3.3)	2.0 (0.3)	10.1 (1.6)	11.0 (1.7)
1992	14.9 (2.1)	0.3 (0.0)	21.2 (3.0)	1.8 (0.2)	11.3 (1.6)	8.6 (1.2)
1993	12.8 (1.7)	0.4 (0.1)	20.6 (2.8)	1.6 (0.2)	11.5 (1.5)	6.4 (0.9)
1994	11.0 (1.4)	0.3 (0.1)	22.1 (2.7)	1.6 (0.2)	12.6 (1.6)	5.4 (0.7)

(continued)

**Table 2.4 (continued)**

Year	Capital construction	Enterprise capital	Culture, education, and health	Pensions, social welfare, and relief	Administration	Subsidies
1995	11.6 (1.3)	0.5 (0.1)	21.5 (2.5)	1.7 (0.2)	12.8 (1.5)	5.3 (0.6)
1996	11.4 (1.3)	0.5 (0.1)	21.5 (2.5)	1.6 (0.2)	13.1 (1.5)	5.7 (0.7)
1997	11.0 (1.4)	0.6 (0.1)	20.6 (2.6)	1.5 (0.2)	12.3 (1.5)	6.0 (0.7)
1998	12.9 (1.8)	0.4 (0.1)	20.0 (2.7)	1.6 (0.2)	12.3 (1.7)	6.6 (0.9)
1999	16.0 (2.6)	0.4 (0.1)	18.3 (2.9)	1.4 (0.2)	11.6 (1.9)	5.3 (0.9)
2000	13.2 (2.3)	0.4 (0.1)	17.2 (3.1)	1.3 (0.2)	11.3 (2.0)	6.6 (1.2)
2001	13.3 (2.6)	0.1 (0.1)	17.8 (3.5)	1.4 (0.3)	11.6 (2.3)	3.9 (0.8)
2002	14.3 (3.0)	0.1 (0.0)	18.0 (3.8)	1.7 (0.4)	13.5 (2.8)	2.9 (0.6)
2003	13.9 (2.9)	0.0	18.3 (3.8)	2.0 (0.4)	13.9 (2.9)	2.5 (0.5)
2004	12.1 (2.5)	0.0	18.1 (3.8)	2.0 (0.4)	14.3 (3.0)	2.8 (0.6)

Source: <http://www.stats.gov.cn>.

Note: Figures cover 49–66 percent of government budgetary expenditure over the reform period.

Figures in parentheses show percentage of GDP.

associated with nonperforming loans of the state-owned commercial banks refinanced by the government. The composition of these two types of expenditures has been different from that of budgetary expenditure. The implication is that the pattern of expenditure has depended crucially on how it was financed.

Several noteworthy features are evident from table 2.4:

- The share of capital construction fell, from more than 40 percent in 1978 to 12 percent in 2004 (from 12.5 percent to 2.5 percent of GDP). A similar trend holds for the budgetary contribution to enterprise circulating capital. At least some of the apparent decrease reflects a shift in financing from the budget to bank loans or the off-budget account. However, part of the decrease is real and reflects the transfer of economic decision making from the government to enterprises.
- The share of culture, education, and health expenditures rose steadily between 1978 and 1994, before decreasing over the next five years. Spending as a percentage

- of GDP has risen since 1995, a change that is in line with the shift in responsibility for providing social goods from enterprises and other units to the government.
- The share of expenditure accounted for by administration rose sharply, partly as a result of the method of valuation of the cost of administration. Wages and salaries account for much of this cost. A general phenomenon in transition economies is a shift in the share of national income going to salaries and wages. This begins in the nongovernment sector, with the phasing out of centralized wage determination, a process that began in China in the mid-1980s.<sup>5</sup> The widening wedge between government and nongovernment wages and salaries forced the government to follow suit. The increase in the cost of government administration also reflects an increase in the number of employees warranted by the increased complexity of government tasks in a market economy.
  - The share of expenditure going to subsidies, mostly on goods, rose sharply in the 1980s, as the government attempted to compensate for some of the price effects of the liberalization of agricultural and other markets. The increase was followed in the 1990s by an almost equally sharp decline.
  - The share of expenditure on pensions, social welfare, and relief was remarkably small, partly because social insurance, which covers about 20 percent of the labor force and cost the government 4.2 percent of GDP in 2004, is off budget. Including this spending, total expenditure on pensions, social welfare, and relief came to 4.6 percent of GDP, a much smaller percentage than in developed market economies.

The expenditure side of the budget generally has more powerful consequences in combating poverty and reducing inequality than the revenue side. The impact of government expenditure on inequality depends in particular on the magnitude of expenditure on items with a direct impact on personal income or expenditure, including how they are distributed, as well as on spending on services such as health and education, which affect individuals' ability to participate in the economy and society. Spending categories that directly affect poverty include pensions, social welfare, subsidies on consumer goods, and off-budget expenditure on social insurance. In 2004 expenditure on these items represented 13.0 percent of GDP, which is substantial though well short of the levels in developed market economies.

There are problems with both the composition of government expenditure by functional categories and its distribution across the population. Spending on education and health reveals the problems (table 2.5). These figures may be underestimates, because they do not include off-budget spending on education and health, which is of particular importance in rural areas. Furthermore, the series stops at 2003 and thus misses the substantial increase in expenditure on education and health in rural areas over the past three years. Even after taking these problems into account, public expenditure on education has been low, falling well short of the national target of 4 percent of GDP. Moreover, rural/urban discrepancies are large.

**Table 2.5 Government Expenditure on Education and Health as a Percentage of Total Expenditure, 2000–03**

<i>Year</i>	<i>Education</i>	<i>Health</i>
2000	10.6 (2.0)	3.0 (0.5)
2001	11.3 (2.3)	2.9 (0.6)
2002	11.7 (2.5)	2.8 (0.6)
2003	11.5 (2.5)	3.0 (0.7)

*Source:* <http://www.mof.gov.cn>.

*Note:* Figures in parentheses represent percentage of GDP.

Far more striking is the very low budgetary expenditure on health, which accounts for just 2.8–3.0 percent of expenditure (0.5–0.7 percent of GDP). This level of spending is exceptionally low by international standards. The problem of low expenditure on health is compounded by its highly skewed distribution. According to the Ministry of Health, about 80 percent of medical facilities are in urban areas, where 40 percent of China's population lives. Rural areas, where 60 percent of China's population lives, have just 20 percent of medical facilities (Peoples Daily Online, January 11, 2005).

Similar discrepancies exist in social insurance, which by design targets urban residents in regular employment and relatively well-paid jobs. A growing percentage of the urban labor force is employed in small establishments in the services sector, generally without any labor contract or social insurance cover.

To deal with these problems, the government needs to take several steps:

- Reduce out-of-pocket expenses on medical care, by extending urban medical insurance and rural cooperative medical insurance and providing direct government subsidies.
- Raise expenditure on education, especially in rural areas and on the schooling of children from migrant households in urban areas.
- Reduce the glaring discrepancy between social security coverage in urban and rural areas. High on the list of priorities should be the institution of comprehensive social assistance for the rural population, similar to Minimum Living Standard Assistance (MLSA) for the urban population.

## Social Security

China's record of improvement in social welfare indicators over the reform period has been a combination of advances and reverses. Economic reforms since 1979 have brought about an unprecedented rise in average living standards and a

dramatic reduction in rural poverty, but they have undermined the inherited social security schemes and created new issues for social security, including a sharp increase in the number of retirees, the emergence of urban poverty and open unemployment, and the appearance of a large numbers of migrants.

Until the mid-1990s, social security reforms were aimed at propping up the existing schemes, particularly the old-age pension scheme. Reforms since then have been concerned with establishing a new social security regime, beginning with schemes for urban residents. The development of social security schemes for people in rural areas, previously neglected, has risen higher on the government agenda in recent years.

China has been undergoing three major changes over the past 20 or so years: a demographic transition to a constant or shrinking population; economic development that has transformed an agrarian economy into an urbanized one dominated by industry and services; and the transition from a planned to a socialist market economy. The demographic transition has been accompanied by a rising share of elderly (65 and older) people in the population and a falling percentage of children, in particular school-age children (ages 5–14).

The rising share of the elderly implies an increasing share of GDP devoted to their support. How this increased cost is distributed across the economy depends on the sources of support of the elderly. These are, first and foremost, the family, followed by social security schemes (including old-age pension and social assistance to the indigent elderly) and personal savings.

Most of the cost arising out of the rising ratio of the elderly will continue to fall on families, which also bear much of the cost of children. The heavy reliance on the family to meet the needs of the elderly fits poorly with demographic trends and socioeconomic changes in China. With rising life expectancy, especially at old age, each succeeding cohort of the elderly will need support for a longer period. Added to this, because of China's one-child policy, future cohorts of the elderly will have fewer offspring on whom to depend. A medium-term goal should be the establishment of a pension scheme covering the entire population. The pension scheme under social insurance, which excludes the rural labor force, currently covers less than half of the urban labor force.

As elsewhere, economic development in China has involved a shift of labor out of farming in tandem with population migration to urban areas. Internal migration creates a particular problem in China, because "migrants" continue to be excluded from social insurance and means-tested social assistance until they are formally accepted as residents of the locality in which they have been living and working.<sup>6</sup> In 2000 the number of migrants totaled more than 134 million—11 percent of the population (National Bureau of Statistics 2002).

Like other transition economies, China has also witnessed a sharp rise in income inequality and unemployment. In just 11 years (1994–2005), the state and urban collective sector, which previously employed almost all of the urban labor force, lost 71.8 million jobs (50.3 percent of the 1994 total) (National Bureau of Statistics 2006). Open unemployment, previously regarded as a temporary aberration, has come to be accepted as an endemic feature. The shift of employment



to the nonstate sector raises important issues for social protection, because, in general, jobs in the sector tend to be less secure than those in the state sector and often do not provide social insurance cover.

### *China's Social Security Schemes*

The Chinese social security schemes divide into the familiar categories of contributory "social insurance" and means-tested "social assistance" (social safety net). Each is characterized by two salient features: segmentation and highly decentralized financing and management.

The population is divided along two dimensions: rural/urban and permanent residents/immigrants in urban areas. These divisions are fading in some provinces and cities because of local initiatives to extend schemes generally restricted to the urban population to immigrants and the rural population at large.

In principle, urban residents who are not immigrants benefit from comprehensive social insurance, comprising old-age pensions, work injury compensation, maternity benefits, health care, and unemployment insurance. These schemes are contributory and, by design, exclude those outside the labor force. In addition to social insurance, the urban population has since 1997 also benefited from MLSA.

In stark contrast, social security provision in rural areas is sparse. With the exception of two limited contributory schemes, all rural schemes are social assistance schemes aimed at relieving severe poverty only. Social insurance does not apply to the rural labor force, not even to wage employees of town and village enterprises (TVEs), who number 143 million (more than twice the 65 million employees in the state sector).

People in rural areas can participate in two contributory programs, the rural cooperative health care and the rural pension scheme. Both consist of a large number of independent local schemes covering only a small percentage of the rural population and providing limited protection.

The highly restricted social security cover has been justified on the grounds that each rural household has a plot of agricultural land, which serves as a floor to household income. Protection provided by land plots is highly variable, however, and is no substitute for that provided by a social security scheme.

To date, there is no clear policy toward developing rural pension schemes. Following the outbreak of SARS (severe acute respiratory syndrome) in 2003, however, policy makers have sought to raise the percentage of the rural population with access to basic health care by vigorously promoting rural cooperative health schemes.

An urban bias in social security provision is common in developing economies. The bias is to a degree unavoidable, given problems in designing contributory social security (social insurance) schemes for the self-employed or the informally employed even in developed economies. A particular problem in China lies with the anachronistic administrative distinction between the urban and rural populations, which implicitly regards the rural labor force as self-employed and engaged

in farming. This distinction has been rendered obsolete with the rapid growth of wage employment in TVEs and the massive influx of rural migrants in urban areas.

Urban and particularly rural social security systems are highly decentralized. For both social insurance and MLSA, the budgetary units are 269 cities (excluding county-level cities and towns);<sup>7</sup> cities are generally expected to cover any deficit from their own budgets. Decentralization in rural areas runs deeper than in urban areas. Apart from a few schemes run by national and provincial governments, most of the social security schemes are organized at the grassroots level of villages. Such schemes include assistance to poor households, rural pensions, and cooperative medical insurance. The initiation, operation, and financing of rural schemes rest largely with lower-tier governments; higher-tier governments (provinces and the center) confine themselves to supervising and setting up pilot schemes.

The central and provincial governments transfer funds to lower government tiers to ensure that they meet their social security obligations. An overhaul of the system of intergovernmental finances has been high on the reform agenda for a number of years but still remains to be realized. A pooling of social insurance contributions and expenditures at the provincial level is the policy aim. This could take a number of forms, ranging from full integration to compensatory transfers within a decentralized system. A national pooling of social security contributions and expenditures, as recommended by the China Economic Research and Advisory Programme 1, does not seem to be immediately feasible (Asher and others 2004). A stepwise approach with provincial pooling as an interim stage may be more practical.

### *Social Security Reform*

Given the urban/rural segmentation in social security provision, the immediate priorities are different in rural and urban areas. Over the past two decades, urban schemes have been the primary concern of most reform measures. This has begun to change, with the promotion of rural cooperative medical insurance. A combined social security system for urban and rural areas, although desirable, is infeasible in the immediate future for financial and administrative reasons. The tax system that such a system would require will take some time to develop. The current official position—that urban and the rural systems have to be reformed separately—is therefore realistic.

#### THE URBAN SYSTEM

Thanks to a series of reforms, a new urban social security system has replaced the inherited system. The combination of social insurance and social assistance provides fairly comprehensive coverage. The five schemes that make up social insurance (old-age pensions, occupational injury compensation, unemployment benefits, medical insurance, and maternity benefits) follow well-tested principles and do not appear to suffer from major design faults. Some fine-tuning could improve these schemes, however.

Specifically, the age of retirement (50–60, depending on occupation and gender) is too low given rising life expectancy. A medium-term plan that raises the retirement age over time is needed. The scheme as it stands is still not financially sustainable. The budgeting for old-age pensions needs to be moved up to the provincial level in order to reduce the risk of insolvency. In addition, pension liabilities left behind by the old system, which lacked any forward financial planning, need to be resolved. The problem has been partly transformed into the problem of empty individual accounts by using contributions to individual accounts to pay current pensions. Payroll contributions are insufficient to both meet current pension liabilities and contribute to individual accounts, as initially planned. (For a discussion of this problem, see chapter 14 of this volume.)

Any solution to this problem must meet two requirements. First, sources of funding other than payroll contributions must be found. Second, reserves must be accumulated to at least partially meet future pension liabilities. The crucial issue concerns the extent of funding, which depends on whether individual accounts are treated as nominal or substantive. As suggested by the China Economic Research and Advisory Programme 1, there are strong arguments in favor of treating individual accounts as nominal but backed by a credible guarantee to meet all future pension liability.

## THE RURAL SYSTEM

The immediate priorities in rural areas are to develop a means-tested social assistance scheme that covers the whole country and is underpinned by a national framework, modeled on the urban MLSA, and to create a system that finances and delivers medical care in order to widen access to basic health care. Development of a rural MLSA would help eliminate the gaps created by existing schemes. Such a scheme would eventually allow China to establish a single social assistance scheme that covers both rural and urban areas. A unified scheme would not only be equitable, it would also avoid the anomalies created by the migration of labor under the current social security regime.

## Economic Inequality

Over the reform period, the poverty rate has fallen sharply, but economic inequalities in several dimensions—the rural/urban gap in per capita income, interpersonal inequality in rural and urban areas, and interregional inequality—have widened (Ravallion and Chen 2004).

Urban/rural inequality has always been substantial. It was particularly high in 1978, when 33–40 percent of the rural population was living below the poverty line, a figure that was considered low by international standards (Lipton and Zhang 2006).

The initial phase of reform saw a dramatic drop in the numbers of the rural poor as well as a narrowing of the rural/urban income gap (figure 2.1). During the

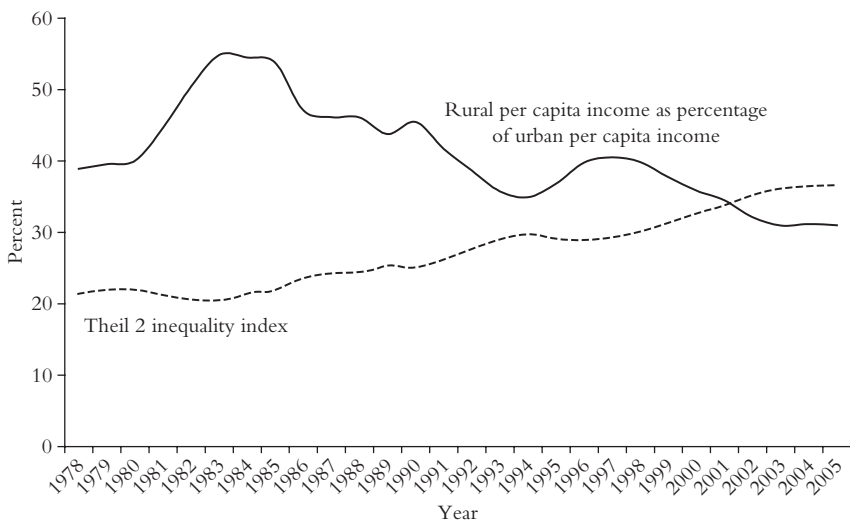
first six years of reform, per capita rural income expressed as a percentage of per capita urban income rose by 16 percentage points, from 38.9 percent in 1978 to 54.9 percent in 1983. This corresponded to the dramatic rise in agricultural output arising from the movement out of the commune system into the household responsibility system as part of the first steps in the liberalization of the economy.

In all but a few years since then, per capita rural income has grown more slowly than per capita urban income. As a result, in 2005 per capita rural income was a mere 31 percent of per capita urban income. The dashed line in figure 2.1 represents the Theil 2 index of rural/urban inequality, a weighted average of rural and urban incomes expressed as a ratio of national average per capita income. The index—a mirror image of the percentage ratio of rural to urban per capita income—corroborates the steady rise in rural/urban inequality since 1983, coinciding with the shift of emphasis from rural to urban reform. The persistence of the trend suggests that the explanation lies in the structural features of the economy rather than in short-term policy responses.

Central to the problems of rural/urban inequality is the very low productivity per worker in agriculture relative to that in industry and services in China. Although the GDP share of the primary sector (almost all farming) was a mere 12.5 percent in 2005, similar to that in middle-income economies, the percentage of the labor force engaged in farming was almost four times higher (44.7 percent), similar to that in low-income economies. This implies that output per capita in farming is less than a third of the average (28 percent) and a mere 18 percent of that in the nonfarming sector.<sup>8</sup>

A GDP share of farming that is a small fraction (say, less than half) of its labor force share is a common feature of developing economies and a key factor

**Figure 2.1 Rural/Urban Income Inequality, 1978–2005**



Source: <http://www.stats.gov.cn>.

explaining the wide gap between urban and rural per capita incomes in these economies. But even by the standards of developing economies, the gap in China is large (Stern 1996).<sup>9</sup> As development takes place, nonfarm income in rural areas becomes increasingly important, and the share of the population in urban areas rises. Nevertheless, farm income will remain a vital factor for rural people, particularly the poorest people, in China for a long time.

Two factors usually explain low labor productivity in farming: low land productivity and a high labor to land ratio. The first factor does not have much explanatory power in the Chinese context. As in other East Asian economies, farming in China is intensive, and productivity per hectare is high by international standards. Although there is scope for raising land productivity (by adopting better agricultural techniques while keeping the labor to land ratio constant), the main reason why labor productivity in farming is low is that transferring out of farming into nonfarming activities is difficult. The household registration system impedes migration to urban areas, and the land tenure system, under which rural households receive no or little compensation for giving up user rights on the land allocated to them, is tantamount to a tax on leaving farming.

A substantial reduction in the rural/urban income gap will require facilitating the movement of labor out of farming. In particular, it will require reinforcement of policy initiatives in three areas: reforming the household registration system and removing discriminatory treatment against migrants and their children; ensuring fair compensation to rural residents divested of their land holdings; and increasing assistance to education in rural areas.

The last point is of particular importance in facilitating the absorption of rural migrants in the nonfarm sector. Assuming a working life of 40–50 years, most of the current cohort of school-age children in rural areas will either not be employed in farming or switch to a job in industry or services fairly early during their working lives. To do so, rural children need education that will prepare them to take on jobs in industry or services. Comparatively low educational attainment among children in backward rural areas will act as an impediment to their out-migration and chances of obtaining or holding jobs when they migrate. Dealing with this problem will require reducing the cost of basic education to families relative to average income in rural communities.

After 25 years of reform, both intrarural and intraurban inequality in per capita household income and consumption are high by international standards. According to estimates from the Institute of Economics of the Chinese Academy of Social Sciences (UNDP 2003), income inequality in urban areas began widening in the mid-1980s, coinciding with the loosening of the administrative control of wages and salaries. The trend accelerated in the 1990s. As compiled from various rounds of household surveys, the Gini coefficient for personal income rose in urban areas by as much as 10 points between 1988 and 1995, to 0.33.

The acceleration in income inequality was caused by a variety of factors. First, the compressed wage and salary differentials inherited from the planning period

widened. Second, the employment share of the state sector fell steadily, including through massive layoffs, beginning in the mid-1990s. Third, since the mid-1990s, urban unemployment has been both open and substantial. At the same time, poverty, once regarded as an almost exclusively rural phenomenon, emerged as a salient feature of the urban landscape.

Chinese leaders have recently become highly concerned with the widening economic inequalities. To address the problem, they will need to adopt some of the following policy measures:

- Reform intergovernmental finances to counteract regional inequality by means of transfers and central government expenditures in favor of poorer localities. To a degree, this is already being done, through regional development initiatives, such as the initiative for the 12 western provinces. However, the extent of redistribution from richer to poorer localities in China is low by international standards, with most of the revenue collected from richer regions returning to those regions.
- Increase subsidization of the cost of essential services for low-income households. The costs of education and health care have risen sharply over the reform period, forcing low-income households to cut back on both. Recognizing the problem, the government has exempted poor localities from school fees and introduced substantial subsidies for participating in the rural cooperative health insurance scheme.
- Introduce income maintenance schemes to prevent deprivation. The urban population already benefits from a two-tiered social safety net, consisting of unemployment insurance and MLSA. In contrast, the social safety net in rural areas is grossly inadequate. An MLSA scheme for the rural population, similar to the one for the urban population, should be a major element in the fight against poverty.

## **Looking Forward: Public Finances in the Medium Term**

The overarching goal of the Chinese leadership is to build a harmonious society while maintaining rapid growth. The change of emphasis away from a single focus on growth recognizes that the dramatic improvement in living standards since the late 1970s has been accompanied by the appearance of stresses and strains.<sup>10</sup>

Seven reforms will be key:

1. Raising government expenditure on education to 4 percent of GDP, and ensuring that all children actually receive nine years of basic education.
2. Improving and widening access to medical care, especially for the rural population. The target is to extend the cooperative medical scheme to 80 percent of the rural population from the current coverage rate of just over 20 percent.
3. Extending coverage of the pension scheme, and improving the operation of urban social assistance. The target is to increase the number of participants in the pension scheme from 165 million in 2005 to 223 million by 2010.

4. Promoting job creation and a training program for rural inhabitants to facilitate their transfer from farming to jobs in services or industry, and raising the urbanization rate from just over 40 percent to 47 percent by the end of the plan.
5. Broadening the scope of regional development priorities from the western region to include the central region and the northeast.
6. Reforming the framework of intergovernmental finances, including by reassigning expenditure responsibilities of government tiers and ensuring that each tier has sufficient disposable revenue to meet its obligations.
7. Raising the efficiency of resource use, and arrest further deterioration of the environment, eventually reversing environmental degradation. Concrete targets include a 10 percent cut in the emissions of major pollutants and a 20 percent reduction in energy consumption per unit of GDP by the end of the plan.

The first five reforms require a substantial increase in budgetary expenditure. Raising education expenditure to 4 percent of GDP will require allocating an additional 1.5 percent of GDP to education. Improving and widening access to health care will require a very large increase in expenditures, given that government expenditure currently stands at just 1.5 percent of GDP and health care usually requires a higher fraction of GDP than education. Thus, achieving the expenditure targets on education and health would require additional government expenditure of 5.3 percent of GDP. Assuming that meeting the third, fourth, and fifth reforms would cost an additional 2 percent of GDP, implementing all of these reforms would require additional government expenditure of about 7–9 percent.

### *Increasing Tax Revenue*

What are the feasible options for raising additional tax revenue of this magnitude? Sound principles of tax design are to broaden the tax base; shift toward taxes with growth potential; seek the smallest possible distortions; promote greater fairness (the expenditure side of the budget is often more effective than the revenue side with respect to this objective); and simplify and hold down the costs of administration and compliance. The principal candidates for additional tax revenue are personal taxes, which account for 6.8 percent of total tax revenue (1.2 of GDP); VAT, which yields 34.7 percent of the total tax revenue (5.9 percent of GDP); and consumption or excise taxes, which provides 5.3 percent of tax revenue (0.9 percent of GDP).

The yield from personal tax has risen sharply since the tax reform of 1995, but it is still very small compared with that in developed economies. With 47 percent of the labor force in farming and more than half of the population classified as rural, the percentage of the adult population that is captured by the personal tax net is limited in China. Given the rapid rate of urbanization, however, there would seem to be ample scope for raising the share of the personal tax, which should be a rapidly growing source of revenue.

Two other reforms of personal taxation are also needed. The first is using a comprehensive measure of income (including, in particular, in-kind benefits) and treating different types of income equally. The current practice of taxing different types of income differently goes against the grain of established principles of taxation. The second is using the same definition of income for personal tax and for payroll tax for social insurance. Currently, these definitions differ.

The introduction of VAT and the speed with which it has become by far the largest tax source is a major success story. However, there is scope for raising the yield from VAT. The main rate of 18 percent is comparable to that in many European economies, but the range of goods and services covered by VAT is narrower. Extrapolating from international experience, raising the ratio of VAT yield to GDP from the current figure of 5.9 percent to 9–10 percent would seem to be feasible.

In addition to extending the VAT net, there are strong arguments for switching from a production-based to a consumption-based tax. This switch-over is planned, and a pilot experiment is under way in the three northeastern provinces. (For a more detailed discussion of VAT and other tax issues, see chapter 6.)

At 0.9 percent, the yield from consumption taxes beyond VAT is remarkably small compared with those in developed economies. Excise taxes on fuel, tobacco, and alcohol are revenue sources in developed economies and have much to commend themselves because of the externalities they cause. A tax on oil aimed at encouraging greater efficiency should be coupled with an appropriate oil pricing policy. Although 57 percent of current oil consumption is met from domestic production, there are strong arguments for pricing oil as if all of it were imported and setting the domestic price with reference to the cost of imported oil. There may be an argument for smoothing short-term fluctuations in oil prices but not for insulating the domestic price from the international price.

In terms of carbon emissions and global warming, coal is more polluting than oil or gas. This should be embodied in the price through taxation or other means. For all energy sources, greater efficiency is very important for energy security, cost saving, and the environment, within China and globally.

China is the largest consumer of tobacco, accounting for 32 percent of the world's total. Sixty percent of men over 15 smoke. Yet China's tobacco tax rate is only half the world's average. The case for a substantial increase is very powerful.

There is ample scope for using land as a tax base. This source of revenue has been neglected in many countries and is difficult to resurrect once neglected. Starting from a situation of collective or state ownership of land, China potentially faces less resistance to the use of this tax base than other countries. Land is already used as a tax handle, and land lease is a major revenue source in municipalities. What is needed is a national framework for land taxes and the leasing of publicly owned land, particularly in urban areas, where migration and rapid economic growth are creating very large capital gains.

Raising tax revenue to cover the planned expenditures on education, health, and job training appears to be feasible. The potential for growth from enlarging the tax base on personal income tax, VAT, excise taxes, and taxes on urban land



is strong. Moreover, with appropriate design, these taxes can be less distorting and more equitable than other taxes (Ahmad 2006).

### *Improving Intergovernmental Fiscal Relations*

The growth of off-budget revenue sources and the heavy reliance of lower government tiers on such revenue are symptoms of problems of intergovernmental fiscal relations. Resolution of these problems is essential for reducing inequality, especially between rural and urban areas.

Three (complementary) options could be adopted to deal with these problems:

- Reform the system of transfers from higher to lower government in order to ensure that each government tier has sufficient revenue to finance basic services of appropriate quality.
- Reallocate responsibilities for financing basic services from lower to higher government tiers.
- Within the limits implied by tax coordination across various tiers of government, extend the powers of lower government to levy taxes. Currently, lower government tiers have very limited powers of taxation, which forces them to resort to off-budget charges and levies. The land tax would seem to be a good candidate as a major revenue source for lower tiers in urban government.

### *Protecting the Environment and Natural Resources*

There is broad scope for using taxes and charges to prevent further deterioration of the environment and to begin to reverse the damage. Environmental problems facing China include pollution and depletion of natural resources. In urban and urbanized rural counties, ambient concentrations of hazardous particles and gases are many times higher than the safe limits. Contamination of surface water and groundwater is widespread, and the northern half of the country is critically short of water. Land degradation from the discharge of solid wastes and hazardous matter is common.

In one form or another, a large and growing percentage of the population suffers the adverse impact of environmental pollution, especially of water. Damage to health and economic activity caused by pollutants has become a source of popular discontent, which occasionally takes a violent form.

China is also a profligate user of natural resources. Its consumption of primary energy sources (in particular coal and oil), cement, and steel accounts for a much higher percentage of world supplies than its percentage share of world GDP. Its energy consumption per unit of GDP is 7 times that of Japan, 6 times that of the United States, and 2.8 times that of India. This discrepancy is caused largely by the inefficient use of material and fuel. China cannot maintain its current pattern of consumption of resources for long without triggering further increases in prices and hitting up against the constraint of world supply.

China has all the components of an effective system of pollution control. There is a comprehensive corpus of environmental laws and regulations, and administrative organizations in charge of protecting the environment are in place at each tier of government. Principal among these is the State Environment Protection Agency and its counterparts at the subcentral levels. The implementation of laws and regulations and the prevention and abatement of pollution have been less impressive. One significant positive development is the strengthening of the requirement to conduct an environmental impact assessment for investment projects, which has been in place since 1975 but poorly implemented.

Achievement of the 11th Plan depends crucially on encouraging the adoption of resource-saving technologies. Measures include raising environmental taxes, imposing taxes on energy, and pricing energy appropriately. The 11th Plan marks a crucial step in dealing with the problem of water shortage by proposing to charge for all extraction of water from natural sources.

## Notes

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1. China has four tiers of subnational government: provinces, prefectures, rural counties and urban districts, and rural townships and urban neighborhoods. There has been a move in some areas to reduce the number of tiers to three by abolishing prefectures.
2. Such issues are, of course, of great importance; China's fiscal policy has played a critical role in maintaining rapid growth in a volatile world into which it is ever more strongly integrated.
3. The term *social security* is used here in the broad European sense, not in the narrow sense of old-age pensions.
4. In a command economy, the government controls the use of resources, so that, in principle at least, it can make its decisions without worrying about efficiency and equity, allocating resources as it wishes and leaving any "residual" to households. In a market economy, a government has to raise resources from households and firms, which can modify their actions to try to avoid taxes.
5. There was also a reduction in in-kind emoluments.
6. In Chinese statistics, a migrant is defined as a person living for six months or more in a locality different from his or her registered place of residence.
7. Chinese cities are divided into a four-level hierarchy based on the subnational government tiers. There are 662 cities and towns. The figure of 269 excludes 393 county-level cities.
8. If the share of farming in GDP is  $\alpha$  and its share of employment is  $\beta$ , then labor productivity in farming relative to the average (which by definition is 1) is given by  $(\beta/\alpha)$ . Similarly, the ratio of labor productivity in farming with respect to productivity in nonfarming activities is  $(\beta/\alpha) * \{(1 - \alpha)/(1 - \beta)\}$ .
9. If one assumes that nonfarm activities are confined to urban areas and farming is confined to rural areas, these figures imply that urban per capita GDP is more than

5.5 times rural per capita GDP. Because nonfarm activities are not confined to urban areas in China, urban per capita GDP is probably less than 4.5 times greater than rural GDP.

10. The 11th Five-Year Plan, which runs from the beginning of 2006 to the end of 2010, seeks to maintain a growth rate of 7–8 percent—lower than the growth rate of more than 9 percent since 1978 but still very high by international standards. As has frequently been the case over the reform period, the actual growth rate may turn out to be considerably higher than the planned rate.

## References

- Ahmad, Ehtisham. 2006. "Taxation Reforms and Sequencing of Intergovernmental Reforms in China: Preconditions for a Xioakang Society." Paper presented at the Roundtable on Public Finance for a Harmonious Society, Beijing, June 27–28.
- Asher, Mukul, Nicholas Barr, Peter Diamond, Edwin Lim, James Mirlees, Stanley Fischer, Nicholas Stern, and Salvador Valdes-Prieto. 2004. "Social Security Reform in China: Issues and Options." Policy Study of the China Economic Research and Advisory Programme (CERAP), London.
- Burgess, Robin, and Nicholas Stern. 1991. "Social Security in Developing Countries: What, Why, Who and How?" In *Social Security in Developing Countries*, ed. E. Ahmad, J. Dréze, A. K. Sen, and J. Hills. Oxford: Oxford University Press.
- Caijing. 2004. *Caijing*. October 18. [In Chinese.] Beijing.
- Chen, Shaohua, and Martin Ravallion. 2006. "Di Bao: A Guaranteed Minimum Income in China's Cities?" World Bank Policy Research Working Paper 3805, Washington, DC.
- Lipton, Michael, and Qi Zhang. 2006. "Reducing Inequality and Poverty during Liberalisation in China: Rural and Agricultural Experiences and Policy Options." PRUS Working Paper 37, University of Sussex, United Kingdom.
- National Bureau of Statistics. 2002. *Population Yearbook of China 2002*. Beijing: National Bureau of Statistics.
- . 2006. *China Statistical Yearbook*. Beijing: China Statistics Press.
- Ravallion, Martin, and Shaohua Chen. 2004. "China's (Uneven) Progress against Poverty." World Bank Policy Research Working Paper 3408, Washington, DC.
- Stern, Nicholas. 1996. "Growth Theories, Old and New, and the Role of Agriculture in Economic Development." Economic and Social Development Paper 136, United Nations Food and Agriculture Organization, Rome.
- UNDP (United Nations Development Programme). 2003. *China's Development Goals, China's Progress*. Beijing: UNDP.
- World Bank. 2004. *World Development Report 2005: A Better Investment Climate for Everyone*. Washington, DC: World Bank.

# Intergovernmental Fiscal Reforms, Expenditure Assignment, and Governance

## 3

DAVID DOLLAR AND BERT HOFMAN

The tax-sharing system reform of 1994 brought China's intergovernmental fiscal system much closer to international practice. It also moved China out of the precarious fiscal situation of the mid-1990s and increased general government revenues as a share of GDP as well as the center's share of revenues. At the same time, the fiscal disparities in the system that prevailed when the tax-sharing system was introduced, which were supposed to have been gradually reduced by expanding the equalizing "transitory systems transfer," persist.

This chapter argues that the unequal distribution of resources is a major impediment to achieving China's goal of a harmonious society. However, a more equal distribution of resources alone is not enough; it should go hand in hand with better specification of expenditure responsibilities of various levels of government and stronger mechanisms for holding local governments accountable for those responsibilities.

### China's Fiscal System

China's fiscal situation has improved markedly over the past decade, and signs are that revenues will continue to increase, provided that tax administration keeps pace with the changing economy. General government revenues rose from less than 10 percent of GDP in the mid-1990s to almost 18 percent of GDP in 2005. Some 2.0–2.5 percent of GDP social security contributions, which are included in government revenues in other countries, could be added to this figure, as could extrabudgetary revenues of some 3 percent officially and considerably more unofficially. Together with a sustainable deficit of some 2–3 percent of GDP, this would provide China with a fiscal envelope of some 25 percent of GDP, comparable to the lower-income countries in the Organisation for Economic Co-operation and Development (OECD) and higher than most East Asian countries, including the East Asian newly industrialized countries. Indeed, excluding redistributive functions

through social security and noncontributory transfers, which take up more than half of government spending in advanced OECD countries, the size of China's government is already comparable to the advanced OECD countries in terms of share in GDP.<sup>1</sup>

China is much more decentralized than are OECD and middle-income countries, particularly on the spending side (table 3.1). In part, the sheer size of the country explains this degree of decentralization, but the structure of government and some unusual expenditure assignments also give rise to this pattern of spending. Functions such as social security, justice, and even the production of national statistics are largely decentralized in China, whereas they are central functions in most other countries. Among subnational governments, subprovincial governments account for more than half of total government expenditures (table 3.2).

Fiscal disparities among subnational governments are larger in China than in most OECD countries. These disparities have emerged alongside a growing disparity in economic strength across provinces. Between 1990 and 2003, the ratio between the per capita GDP of the richest and the poorest province rose from 7.3 to 13.0; by 2003 China's richest province had more than eight times the per capita spending of the poorest province. In contrast, in the United States, the poorest state has about 65 percent of the revenues of the average state; in Germany any state falling below 95 percent of the average level is subsidized through the *Finanzausgleich* (and any state receiving more than 110 percent is taxed); and in Brazil the richest state has 2.3 times the per capita revenues of the poorest state (World Bank 2002).

Some countries for which data exist have higher fiscal disparities than China. In the late 1990s, the richest of the Russian Federation's 89 regions had per capita revenues that were some 40 times higher than the poorest (Martinez-Vazquez and Boex 1998). After transfers, the richest province in the Philippines had 28 times more per capita than the poorest province. This figure was 10 in Indonesia and 22 in Vietnam.<sup>2</sup>

**Table 3.1 Subnational Government Share of Total Government Revenue and Expenditure, in China and Groups of Other Countries**  
(percent)

<i>Item</i>	<i>Developing countries</i>	<i>OECD countries</i>	<i>Transition economies</i>	<i>China</i>
Subnational share of government tax revenue	9	19	17	40
Subnational share of government expenditure	14	32	26	73

*Source:* World Bank forthcoming.

*Note:* Data for China are for 2003. Data for other countries are for various years.

**Table 3.2 Revenues and Expenditures, by Level of Government in China, 1993–2003**  
(percentage of total government spending)

Item	1993	1999	2003	1993	1999	2003
<i>Revenues</i>						
Central government	22	51	55	}	35	61
Provinces	13	10	12			
Prefectures and municipalities	34	17	16	}	66	39
Counties and townships	32	21	17			
<i>Expenditures</i>						
Central government	28	31	30	}	45	51
Provinces	17	19	19			
Prefectures and municipalities	23	21	21	}	54	49
Counties and townships	31	28	30			

Source: World Bank forthcoming.

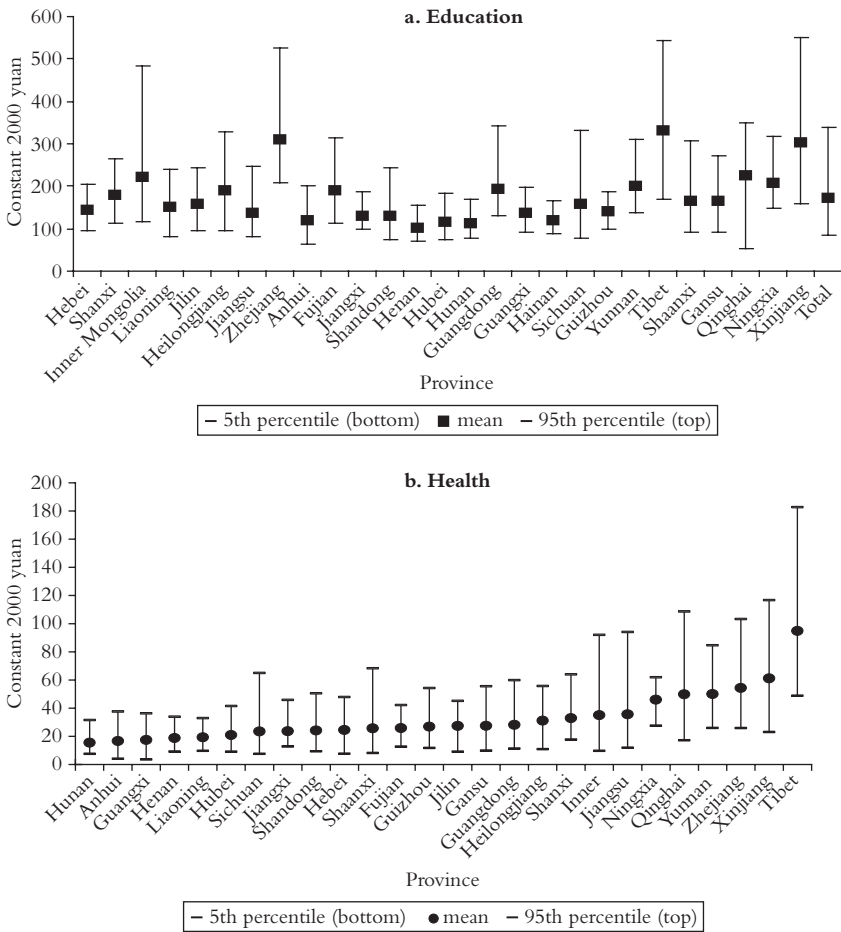
Inequalities in spending are much larger at the subprovincial level. The richest county (the level of government in China that is most important for service delivery) has about 48 times the level of per capita spending than the poorest county (World Bank 2006). In contrast, in Indonesia the richest district government has 30 times the per capita expenditure of the poorest one (Hofman and Cordeiro Guerra 2005). These disparities in aggregate spending levels also show up in functional categories, such as health and education, where variation across counties and provinces is large (figure 3.1). These large vertical and horizontal fiscal imbalances put great demands on the transfer system, which should not only provide adequate resources to the various levels of government but should also reduce the large disparities.

The current transfer system is dominated by tax rebates, which can best be understood as a form of revenue sharing, and numerous earmarked grants, which together make up more than 60 percent of total grants. The general equalization grant (the “transitional systems transfer”) has been growing in recent years, but it still makes up only 10 percent of all transfers to the regions.

Vertical imbalances in China are large, but by itself this does not imply that on aggregate, insufficient resources are transferred to subnational levels. Indeed, without a better specification of the role and functions of various levels of government, it is hard to determine whether subnational governments receive sufficient resources for their functions.

Other signs suggest that the budgetary resources available to local governments are insufficient to cover their perceived functions. For one, subnational government indebtedness is growing. Even though local governments are formally allowed to borrow only with State Council approval, this rule can be—and is—easily circumvented,

**Figure 3.1 Within-Province Disparities in per Capita Expenditure across Counties, 2003**



Source: World Bank forthcoming.

and many local governments are thought to be in arrears on their debt. On aggregate, local government debt is estimated to be as high as 14 percent of GDP.<sup>3</sup> This debt is one sign that the allocated budgetary resources are not sufficient to allow local governments to discharge their responsibilities.

Another indication of inadequate budget resources at the subnational level is the size of extrabudgetary resources, which have become critical to the finances of public service units. Although consolidation has taken place since the mid-1990s, when extrabudgetary funds peaked, budgetary units throughout the government system still generate considerable nontax revenues, which are by and large used for service provision.<sup>4</sup>

The disparities in per capita expenditure cited above suggest that the transfer system has a limited impact on horizontal imbalances. Indeed, the transfer system as a whole is not equalizing, in the sense that per capita transfers to the provinces continue to show a positive correlation with per capita income (World Bank 2006). Even if tax return transfers are taken out, the remaining discretionary transfers show a positive correlation with per capita income (Persson and Erikson 2006), which suggests that considerations other than equalization dominate the transfer system.

## **Intergovernmental Fiscal Reforms for a Harmonious Society**

The Chinese intergovernmental fiscal system is clearly evolving. The tax-sharing system reform of 1994 has been very successful in reversing the downward trend in government revenues and the central government's share of government revenues. As a result, the size of the public sector has grown, but so has the fiscal imbalance among the central, provincial, and local governments. Expenditure assignments to subprovincial governments are inappropriate in some cases, and expenditure responsibility is unclear. Disparities between rich and poor areas are large, and the current system of transfers does not sufficiently equalize these disparities.

Ongoing reforms—such as completion of the tax-sharing system reform below the provincial level, rural tax reform, changes in expenditure assignment, the “three rewards and one subsidy” program, budget management, and treasury reform—are introducing fundamental changes that affect virtually all features of the intergovernmental fiscal system. However, because these reforms have been implemented piecemeal, they often introduce complications that have had unintended effects. For example, policy calls for addressing the fiscal problems of the county and township levels. But reform measures such as the rural fee reform and the abolition of the agricultural tax reduce revenues, and policies such as teacher salary increases push up cost burdens to those levels of local government. Compensatory transfers from the central government only partially cover the lost revenue or increased costs. Other levels of government are meant to contribute to this compensation as well, but implementation is often only partial.

A rebalancing of the fiscal system is essential. This can be accomplished through some combination of expenditure reassignments, productivity improvements, new independent sources of revenue for local governments, the restructuring of intergovernmental transfers, and the establishment of a framework for responsible borrowing. Correcting the dysfunctions in the existing intergovernmental fiscal system will likely also have a positive effect on the financing and delivery of local education and health services.

The key challenge for China's fiscal system in supporting the harmonious society remains the high level of fiscal inequality. This inequality is a problem for China as a whole, not just for poor regions. The fiscal system should provide a minimum standard of public goods for all Chinese, but the highly unequal distribution of

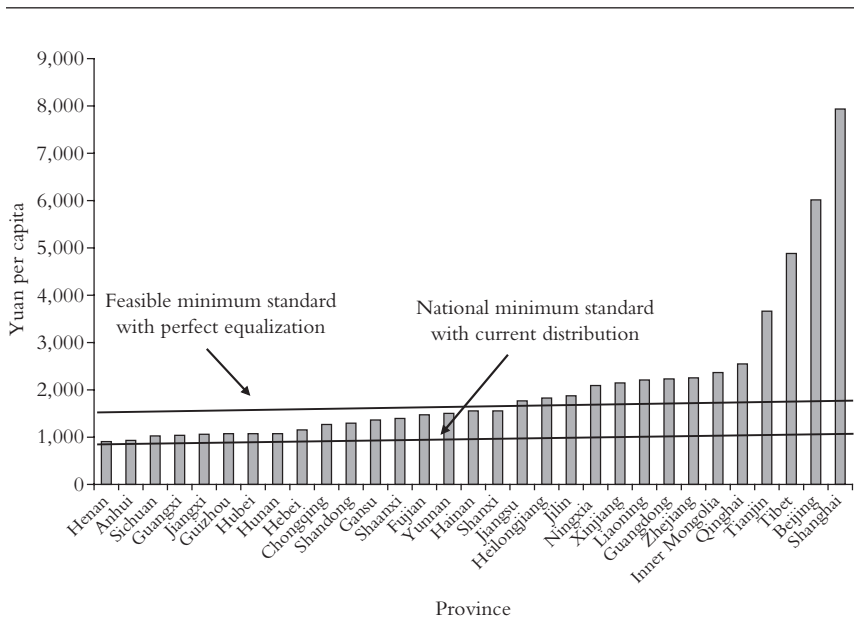


resources means that China as a whole can afford only very low standards, which are increasingly out of line with the country’s status on the international scene. Rich regions arguably have excess revenues, which they are free to spend on pet projects, such as the Olympics and world exhibitions. But such spending means that Gansu Province is not able to provide children with nine years of basic compulsory education.

To illustrate, under current policies, the poorest province on a per capita basis (Henan) spent only Y900 per capita on consolidated provincial government in 2004. The richest province (Shanghai) spent Y8,000. If China establishes minimum standards of public service for the country as a whole, the cost can be set only as high as the poorest region can afford (figure 3.2). If more equalization were to take place, those minimum standards could be raised. With perfect equalization on a per capita basis (that is, if all provincial resources were pooled and then allocated to the provinces on a per capita basis), average per capita spending would reach almost Y1,600, allowing the national minimum standard to almost double.<sup>5</sup>

Thus, achieving a harmonious society for all will require a major reallocation of fiscal resources. This is politically very difficult, as well as technically challenging, but in the end it will be necessary.

**Figure 3.2 Per Capita Expenditures by Province, and Minimum National Standards under Current and Perfect Equalization, 2003**



Source: National Bureau of Statistics 2005 and authors’ estimates.

Several options could be considered. First, China should devote an increasing amount of resources to equalizing grants, in exchange for higher performance standards by receiving regions. Doing so would require a better definition of fiscal needs in the regions, including a much more detailed assignment of obligatory functions across all levels of government and establishment, over time, of affordable minimum standards. In addition, a better definition of revenue capacity, including extrabudgetary funds, is needed to better define the grants system.

Second, China could consider options for devolving more revenue sources that benefit poor regions. An excellent way to do this is through taxes on natural resources, which China assigns to regional governments.<sup>6</sup> Many of China's scarce resources (water, energy, land) are located in poor regions, whereas most consumers of the resources are located in rich regions. Increasing taxes on these scarce resources would therefore not only encourage more efficient use of those resources, it would also help reduce some of the current fiscal disparities.

Third, China could consider cutting transfers to rich regions in tandem with increasing the tax base for subnational governments. Doing so would increase accountability and free up fiscal resources for more transfers to poorer regions. A well-designed property tax to replace the existing real estate and land taxes (and the many extrabudgetary fees and charges put on land transactions) would be an excellent source of revenue for urban areas—one that could also promote more efficient land use. Other options for local tax bases include motor vehicle taxes and a surcharge on personal income tax.

Fourth, the central government should get involved in the subprovincial distribution of resources. Subprovincial inequalities are even larger than interprovincial inequalities; at a minimum, the center could set limits on disparities across subprovincial governments. It could go further by considering defining revenue assignments for each level of government and expanding the central treasury system so that the transfer system targets the county level directly, thereby making equalization a truly central task.

## **Expenditure Assignment and Accountability**

Since 1980, when reforms of the intergovernmental fiscal system started, the emphasis has been on the revenue side and the transfer system. Indeed, the budget law, which is the basis for the current intergovernmental fiscal arrangements, sketches only a broad division of labor between the central government and local governments; it does not touch on subprovincial responsibilities, which are left to provincial governments.

Considerable variation exists. Sector laws often pay only token attention to the issue of functional assignment and its fiscal consequences. Other decentralized countries define responsibilities in much more detail—in their constitutions (Germany, South Africa), in special laws on local government (Indonesia, the Philippines), or in sectoral laws.

The absence of a clear assignment of responsibility is problematic in a number of ways:

- It could lead to overlapping responsibilities, to unfunded mandates on local government, or to the underprovision of essential public services.
- It leaves expenditure needs of the various levels of governments undefined. Without clear definition, it is hard to create an effective intergovernmental fiscal system, because the level of spending a local government is to undertake to implement national policies is unclear.
- It undermines the accountability of local governments, because neither constituents nor the supervising governments are clear as to what to expect from the local government in terms of service delivery.

The literature emphasizes that clarity of function is more important than which level does what (Shah 1999). It prescribes that every function should be assigned to that level of government that best matches the benefits and costs of that function. In contrast, the “subsidiarity principle” would lead to assignment of a function to the lowest possible level. These considerations still leave much scope for interpretation, and in practice there is considerable variety in the assignment of functions across countries.

For some functions, China’s assignment is out of line with what theory would prescribe and with what other countries practice. Thus, China could consider centralizing some of the responsibilities for government services, or at least centralizing the financing of those services, for equity reasons as well as efficiency. In particular, responsibility for income maintenance (pensions, disability, and unemployment insurance) would seem an inappropriate assignment for subprovincial governments. In most countries, this is a central government responsibility. In a large country like China, it may be reasonable to assign this function to the provinces, but prefectural and county responsibility for this function, as is currently the case, is not likely to be viable in the long run. Reassignment of these functions should be accompanied by a reassignment of revenues.

For most functions, it is more important to clarify rather than to reassign. In that context, the first order of business for China is to establish more clearly the nature of local government. While China is a unitary country, and local governments are in principle an agent of the central government, *de facto* there is a high degree of autonomy for subnational governments. This may well be desirable in a large country such as China, but from a fiscal perspective, determining the boundaries of autonomy would be desirable. In particular, the continued role of many subnational governments in the production of private, tradable goods remains an issue. In many unitary countries, the central government determines by law what types of activities local governments can be engaged in through a positive list of functions (an *ultra vires* definition of local governments). But even if local government is granted a wide range of autonomy (so-called general competence), the central government could consider specifying at least

those functions that a local government must perform, lest fiscal resources be used for tasks that are not considered national priorities.

Detailed empirical evaluation of the fiscal implications of expenditure assignment and reassignment is needed. In conducting this analysis, it will be necessary to work out the fiscal implications (and necessary remedial policies) for the next 5–10 years if no restructuring takes place. This is a bigger issue than just expenditure assignment. The financing of this shift in responsibility would likely include the reassignment of some revenue sources and the reallocation of transfers as well.

The gradual expansion of the experiment to establish three levels of (budgetary) government rather than the current five offers an important opportunity to clarify expenditure responsibility. Functions will need to be reassigned from either the township or the prefectural level to the county/municipal or provincial level. This is a massive task, fraught with considerable risk to service delivery as well as budget discipline if not undertaken together with a careful mapping of responsibilities and expenditure needs.

## **Enforcing Accountability**

Even if responsibility over functions is clarified, China still faces numerous challenges in enforcing accountability. This is of considerable concern, because without accountability there are limits to what the intergovernmental fiscal system can achieve in efficiency and redistribution. If there is limited accountability for results, more equalization of spending to poorer provinces could well lead to greater waste of resources rather than better service delivery for the poorer segments of the population, leaving the goals of the harmonious society only partially met.

Given the high degree of decentralization in China, a key issue is accountability of local governments to the central government. Until recently, evaluation criteria for local officials focused on achieving investment and growth. These criteria are not difficult to measure, and the accountability system has evidently worked reasonably well. But the shift in focus to a harmonious society reflects the fact that China has reached a stage of development in which the people and the central government are putting more weight on nongrowth outcomes, such as the health status of the population, educational attainment, energy efficiency, and the quality of the environment. It is inevitably going to be harder for the central government to know if the local government is doing a good job meeting these multiple objectives and to use that information to make staffing and financing decisions.

China can try to improve accountability of local officials to the center in a variety of complementary ways. First, many transfers are earmarked to specific issues, such as rural education. In many countries, some or all of these transfers are conditional on meeting certain performance criteria. The criteria could be as simple as the number of students who complete the school year, or they could be more

sophisticated measures of what the government really wants to support, such as the percentage of exiting students passing a standardized exam.

In a number of areas, performance-based grants can be an effective tool of redistribution and accountability. A system of broad categorical equalizing block grants for the main functions in which the center takes an interest (health, education, rural infrastructure) could also be a good intermediate step. Such grants, which would be conditional on performance, would be an improvement over the multitude of ad hoc earmarked grants with conflicting objectives in place today. They would fall short of a single unconditional equalizing grant, which requires a better-specified system of expenditure responsibilities.

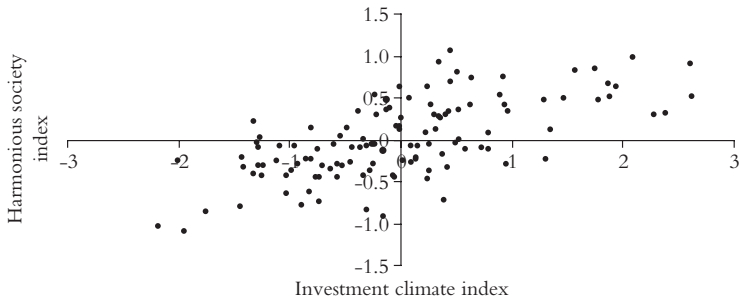
A second and complementary approach is a more general benchmarking of the quality of government in different locations. The World Bank is currently involved in an interesting application of this approach. It is working with China's National Statistical Bureau to carry out an investment climate survey covering 12,400 firms in 120 Chinese cities. Many of the survey questions get at the issue of local governance and how it affects the climate for investment (for example, how much time firms have to spend dealing with the government bureaucracy, whether they have to pay bribes to get loans from state-owned banks, how long it takes to clear goods through customs). Cities in China vary enormously in these areas, with cities with better local government generally enjoying more foreign investment, more local private investment, and higher growth (World Bank 2006).

An innovation in this round of surveys is the collection of data at the city level on social issues, such as the unemployment rate, per capita education expenditure, and medical insurance coverage, as well as on environmental issues, such as the percentage of clean air days per year, the percentage of water treated, and the percentage of green space per capita. The results indicate a very clear pattern, in which cities with better investment climates also tend to have better social and environmental conditions (figure 3.3).

To some extent, these measures provide a scorecard on local governance. There is no unique, scientific way to create such a scorecard, but measuring and publicizing the quality of governance in different cities stimulate a healthy debate and put competitive pressure on cities to improve services. Such benchmarks are also likely to influence investors in their choice of location, which in turn may stimulate cities to improve their investment climate. Looking at these kinds of benchmarks can help the central government identify locations where governance is poor and specific reform measures are needed before any large increase in transfers is likely to bear fruit.

A similar benchmarking exercise is under way in China for public services. The World Bank, together with the Development Research Center of the State Council and Tsinghua University, is sponsoring a pilot household survey in five cities to determine people's perception of public services in their city. This survey is a variation of the "citizen scorecards" that gained popularity in countries such as India, Indonesia, and the Philippines. Although people are less mobile than capital in China and perception-based surveys need to be interpreted carefully, the central government could

**Figure 3.3** Relation between Investment Climate and Social and Environmental Conditions in China, 2005



Source: World Bank 2006.

Note: The harmonious society indicator is the average of normalized values of nine indicators: the percentage of days a city has good or excellent air quality; the percentage of females in total student enrollment; the share of permanent workers with health insurance; the percentage of industrial waste disposal that meets environmental standards; per capita green space; per capita spending on education; infant mortality; the rate of unemployment; and the annual average wage.

consider these and similar indications of household satisfaction with public services in making decisions about resource allocations or the promotion of local officials.

A third option for increasing accountability is involving citizens in decision making on budgets. China is already conducting several experiments with citizens' budgets and community-driven development. The China Development Foundation is experimenting with participation in budget processes in several local governments. The Leading Group for Poverty Reduction, under the State Council, has started an experiment in community-driven development in 60 villages across China in which villagers rather than the government decide how to use village grants funded from the county and central budget.

Finally, more fiscal transparency at all levels of government would improve accountability over service delivery. More information as to how the budget is spent would allow People's Congresses at all levels to better discharge their oversight function. More information in the public domain would facilitate better policy analysis and evaluation by China's many research institutes and universities. In this respect, the upcoming revision of the budget law represents an opportunity to anchor more transparency in fiscal and intergovernmental fiscal matters in law.

## Conclusion

China has sufficient fiscal resources to afford the level and type of spending that would be commensurate with a harmonious society. But achieving this spending requires a major redistribution of resources, not just among provinces but also below

the province level. This reallocation of resources can be done only gradually. It must go hand in hand with a better specification of roles and functions of the various levels of government and stronger mechanisms for accountability, to ensure that poorer local governments use the resources given to them well.

## Notes

This chapter is based in part on the forthcoming World Bank report *Reforming Subnational Finance: Lessons from Northeast China*, written by Dana Weist, Roy Bahl, Ines Kudo, Magnus Lindelow, Mei Wang, and Christine Wong.

1. China's flow of fund accounts for 1996–2002 shows that taxes net of noncontributory transfers—the amount available for government consumption and investment—represented some 18 percent of GDP in 2002. This is comparable to Germany (18.6), France (18.3), the United States (17.9), and Japan (17.5). The authors thank François Bourguignon for the OECD data, which were taken from the OECD national accounts for 1994.
2. These countries' regions are much smaller than the average province in China, and indications are that the smaller the subnational entity in a country, the larger the measured inequality.
3. Half of this amount is owed to the center. Not all of the 14 percent should therefore be viewed as additional general government debt.
4. It is largely because of the extrabudgetary funds that the government sector in the national accounts is some 5 percentage points larger than in the fiscal accounts.
5. This extent of equalization may not be desirable from the perspective of incentives for revenue mobilization; an equal per capita amount may not necessarily equalize expenditure needs.
6. This by itself could be problematic, although many countries have similar arrangements (see Hofman and Manuelyan 1995 for a comparison between practices in China and other countries).

## References

- Hofman, Bert, and Susana Cordeiro Guerra. 2005. "Fiscal Disparities in East Asia: How Large and Do They Matter?" In *East Asia Decentralizes: Making Local Government Work in East Asia*. Washington, DC: World Bank.
- Hofman, Bert, and Tamar Manuelyan. 1995. "Issues in Natural Resource Taxation." In *Reforming China's Public Finances*, ed. E. Ahmad. Washington, DC: International Monetary Fund.
- Martinez-Vazquez, Jorge, and Jameson Boex. 1998. "Fiscal Federation in the Russian Federation: Main Trends and Issues." Paper prepared for Economic Development Institute/World Bank, Washington, DC.
- National Bureau of Statistics. 2005. *China Statistical Yearbook*. Beijing: China Statistics Press.

- Persson, Petra, and Anna Erikson. 2006. "From Blind Pursuit of Growth to Balanced Development?" Department of Economics, Stockholm School of Economics.
- Shah, Anwar. 1999. *Expenditure Assignment*. Decentralization Briefing Notes, World Bank, Washington, DC.
- World Bank. 2002. *China: National Development and Sub-National Finance: A Review of Provincial Expenditures*. Report 22953-CHA, Washington, DC.
- . 2006. "Governance, Investment Climate, and Harmonious Society: Competitiveness Enhancement for 120 Cities in China." Report 37759-CN, Washington, DC.
- . Forthcoming. *Reforming Subnational Finance: Lessons from Northeast China*. Washington, DC: World Bank.





# Fiscal Policy and Reforms: Toward Realizing a Harmonious Society

## 4

TERESA TER-MINASSIAN AND ANNALISA FEDELINO

China's macroeconomic achievements over the past two decades have been impressive. Since the late 1970s, when reform began, China has been the world's fastest-growing economy, with real annual GDP growth averaging more than 9 percent. As a result, 400 million people have been lifted out of poverty, and China is now the fifth-largest economy in the world, accounting for 8 percent of world trade, up from less than 1 percent in 1979 (Prasad 2004). China's success has been the result of a carefully crafted growth paradigm that has advanced the transformation of a state-planned system into a dynamic, private sector-led economy that is integrated into a globalized world.

Notwithstanding these achievements, challenges remain. Income disparities, across provinces and between urban and rural areas, have been widening; considerable horizontal and vertical fiscal imbalances have emerged across levels of government; and the provision of social services, once assigned to and delivered by the state-owned enterprise (SOE) sector, has lagged, as this sector has been undergoing restructuring as part of the transition to a market economy. More generally, China's growth model—based largely on export-oriented sectors and investment and centered, at least initially, in the coastal regions—has led to imbalances and exposed vulnerabilities that need to be addressed if China is to sustain its achievements.

Aware that China's potential can be fully realized only if these challenges are tackled, the Chinese government is moving toward implementing reforms that aim to attain sustainable and equitable growth. Toward that end, the 11th Five-Year Plan, approved in March 2006, sets out a strategy to secure economic development that is "comprehensive, harmonious, and sustainable." Policy priorities include "accelerating the transformation of the economic growth pattern" toward growth that is less energy, resource, and capital intensive; more knowledge and innovation driven; and more equally shared, in particular by ensuring the creation of a new "socialist countryside" through the improvement of services and infrastructure in rural areas. The government also intends to move away from excessive reliance on export-led growth toward self-sustaining domestic demand, which would require

household consumption to make a much larger contribution to growth. Within this new policy framework, fiscal reforms have an important role to play to rebalance growth and strengthen the provision of social services.

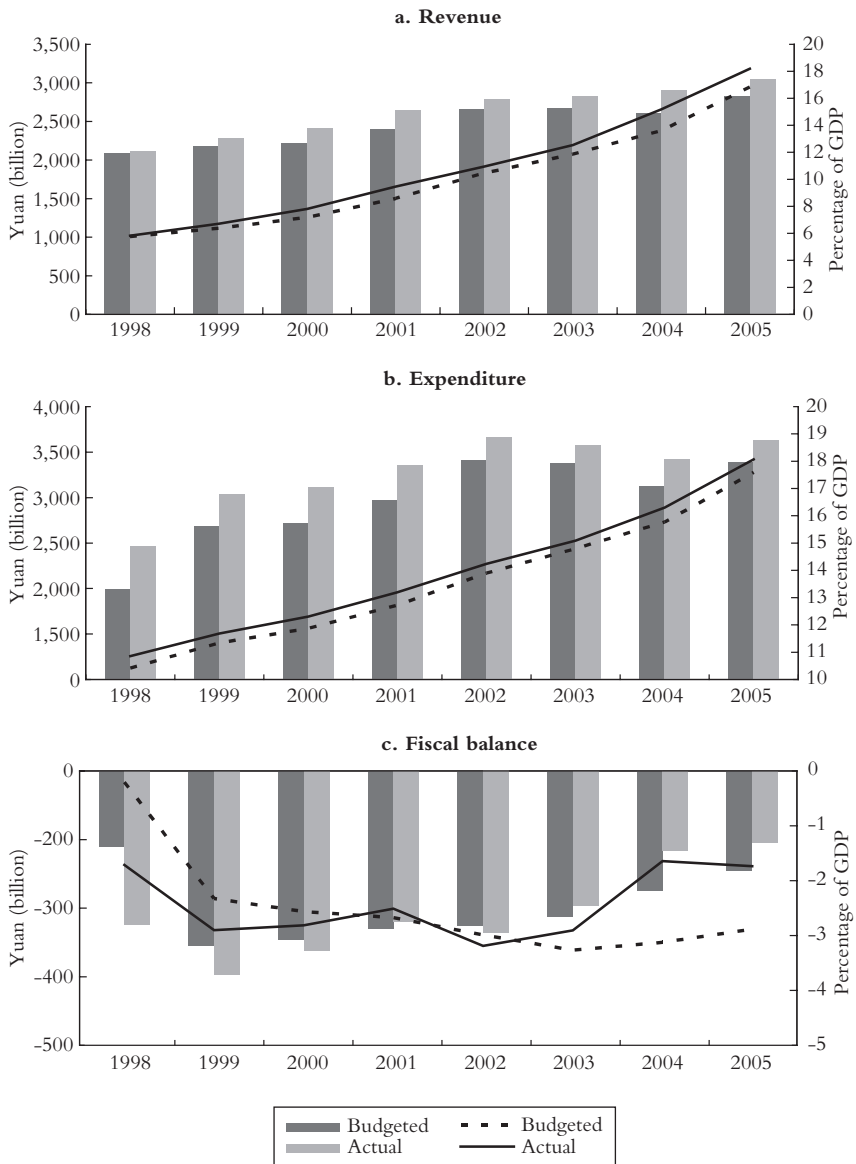
This chapter examines reform options and their implementation in the context of the current fiscal framework. It is organized as follows. The first section provides a general overview of recent fiscal policy, with a view to highlighting the main vulnerabilities and challenges ahead. The second section discusses the main tax policy issues, prospective reforms, and their implications. Major expenditure policy options are reviewed in the third section, including the planned strengthening of the provision of social services (health care and education) and social security. Reforming and introducing new spending programs will need to be supported by sound institutional arrangements, including appropriate budgeting and reporting mechanisms and the imposition of hard budget constraints at all levels of government; these and other public financial management reforms are covered in the fourth section. The last section concludes that the time is ripe for more decisive and coordinated action across the fiscal spectrum, building on progress achieved in specific reform areas.

## **The Role of Fiscal Policy in Promoting a Harmonious Society**

China currently enjoys an enviable fiscal position (figure 4.1).<sup>1</sup> Its gradual fiscal consolidation over the past few years has reduced the central government's overall budget deficit as a share of GDP to levels that compare well with those in most emerging market countries (at the end of 2005, the deficit was 1.3 percent of GDP, lower than budgeted). Some fiscal expansion in the late 1990s, in response to the Asian crisis and the authorities' "proactive" fiscal policy, was replaced in recent years by a "prudent" fiscal policy when revenue in excess of budgetary targets was not fully spent.<sup>2</sup> Accordingly, government debt declined to less than 18 percent of GDP by the end of 2005.<sup>3</sup> In the context of continuing small budget deficits, debt dynamics remain favorable, as the relation between strong economic growth and low domestic interest rates remains positive.

A sound fiscal position not only bolsters macroeconomic stability, it also helps governments face significant fiscal risks and future demands on public funds without jeopardizing sustainability. China confronts significant contingent liabilities and likely additional spending pressures over the medium term. The government may have to shoulder costs related to the recapitalization of state-owned banks, which remain burdened by a large stock of nonperforming loans, as well as continuing to support the ongoing restructuring of SOEs.<sup>4</sup> Spending pressures are also likely to arise from the pension system as a larger share of the population ages and from government programs to address increasing regional disparities, including more spending for health and education. Finally, local governments represent a significant source of fiscal risks. While not allowed to borrow directly, they have indirect access to borrowing through onlending from the central government and public enterprises, especially to fund infrastructure projects. This indirect financing (for

**Figure 4.1** Central Government Fiscal Revenues, Expenditures, and Balances, 1998–2005



Source: Authors' calculations, based on data from the Ministry of Finance.

Note: Bars show budgeted and actual figures in billions of yuan. Lines show budgeted and actual figures as percentage of GDP.

which estimates are not available) carries fiscal risks for local governments and, ultimately, the central government. The government is aware of these risks, although a coordinated strategy to address them has yet to appear (Development Research Center 2003).

In this context, China's commitment to maintaining fiscal discipline is both welcome and warranted. With some tax reforms in the pipeline expected to reduce revenues in the absence of offsetting measures, rationalizing existing expenditure programs will be key to maintaining a sound fiscal position while creating fiscal space for new spending pressures. In addition, there is a need to recalibrate expenditure mandates across levels of government and to reform tax assignments, in order to bridge widening regional disparities and ensure that each level of government has adequate resources to carry out government functions.<sup>5</sup>

## Options for Creating a More Efficient and Transparent Tax System

Revenue growth in China has been impressive: by the end of 2005, revenue represented 17.5 percent of GDP, up from about 10 percent of GDP in 1994. Nevertheless, a number of reforms need to be implemented to streamline and rationalize the tax system and to increase its efficiency and transparency. In doing so, a number of sound principles for tax design will have to be respected: tax bases should be broadened; there should be a move toward taxes with revenue growth potential; and distortions, including administrative and compliance costs, should be minimized (Hussain and Stern 2006). This chapter focuses primarily on China's three main taxes: the value added tax (VAT), the enterprise income tax, and the personal income tax. It outlines policy options on how these principles can be applied for each of these taxes.

### *Value Added Tax*

The VAT has proved an effective tax revenue handle. Since its introduction in 1994, it has quickly grown to about 7 percent of GDP, or more than 40 percent of total tax revenue.<sup>6</sup>

China's VAT is unique in two distinct ways. First, it is a production-type VAT—that is, credits are not given for VAT on capital goods. Second, it excludes most services, which are taxed under a separate turnover tax (the business tax, which is collected and retained by local governments). These two features represent a major design limitation of China's VAT. The first feature directly imposes a burden on investment and indirectly entails a significant degree of cascading. The second feature introduces significant distortions between goods and services, and it exacerbates cascading. Both features also distinguish China's VAT regime from that of major comparator OECD and emerging market countries (table 4.1).<sup>7</sup>

Overcoming these limitations would bring the design of China's VAT in line with best international practice. The shift from a production-based to a consumption-based

**Table 4.1 Value Added Tax Rates in Selected Countries**

<i>Country</i>	<i>Tax rate (percent)<sup>a</sup></i>
<i>OECD</i>	
Australia	10
Japan	5
Korea, Rep. of	10
New Zealand	12.5
<i>Non-OECD</i>	
Brazil	20.5, 12.4, 9.9
China <sup>b</sup>	17, 13
Indonesia	10
Philippines	10
Russian Federation	20, 10
Singapore	3
Thailand	10

*Source:* Authors, based on information from various authorities' Web sites and International Monetary Fund country files.

*Note:* Data are latest available information as of June 2006. In all countries in the table, VAT is imposed at the retail stage. In all countries except China, VAT is on consumption and imposed on both goods and services. China's VAT is a production tax on goods only.

a. When multiple figures appear, the first figure represents the standard (most applied) rate.

b. Includes a very small number of services.

VAT is currently being piloted in the northeast. While the pilot results have been positive, nationwide extension has been put on hold because of concerns about encouraging further investment activities.<sup>8</sup>

In addition, the administration of VAT refunds is complex, for three main reasons. First, different refund rates apply to different categories of exports, partly to promote or hold back certain types of exports and to clamp down on what the authorities consider abusive claims of refunds.<sup>9</sup> Second, VAT refunds are only partially granted to exporters, depending on what share of a company's production is exported.<sup>10</sup> Third, refunds are paid out of fixed budgetary allocations, which in the past did not keep pace with rapid export growth, leading to accumulation of arrears.<sup>11</sup> Best international practice would call for fully zero-rating all categories of exports; relaxing the requirements for claiming refunds; centralizing responsibility for the payment of VAT refunds, which are shared between the central and provincial governments; and not binding refunds to fixed budgetary allocations. Guaranteeing that sufficient funds are centrally budgeted would facilitate VAT refunds and ensure that taxpayers are not denied legitimate VAT refunds because of budget constraints.

Modernizing the VAT system by shifting from a production-based to a consumption-based VAT and including services under it (thereby replacing the

business tax) would have significant policy and administrative implications. It would produce large revenue losses (as more capital goods would become creditable). It would also have implications for the treatment of small taxpayers and for VAT refunds in general (apart from those related to exports).<sup>12</sup>

Given these complexities, the proposed tax changes should be counterbalanced by additional measures. The revenue impact could be alleviated by a combination of the careful phasing in of the VAT credits on capital goods; raising the rate of consumption taxes (excises), which remain low by international standards; or both. Additional compensatory revenue measures may be necessary for extending the VAT to services (because more capital goods would then become creditable). The conversion to a consumption-based VAT could be implemented first, followed by the extension of the VAT to services when the tax administration is in a position to handle an enlarged base of taxpayers, most notably after the completion of the ongoing modernization projects to improve audit and enforcement.

Finally, important transitional issues regarding tax-sharing arrangements or the entire system of tax assignments will emerge. Currently, VAT revenues are shared by the central government and provincial governments, revenues from the consumption tax are kept by the central government, and revenues from the business tax are kept by provincial governments. This implies that both the conversion to a consumption-based VAT and the extension of the VAT to services would have significant consequences not only for the division of revenue between the central and provincial governments but also for the distribution of revenue among provincial governments (Ahmad 2006).

### *Enterprise Income Tax*

The enterprise income tax is an increasingly important source of revenue in China, as shown by its rapid growth in recent years, from just above 1 percent of GDP in 1998 to about 3 percent of GDP at the end of 2005. However, compared with performance in selected comparator countries, the enterprise income tax still has a limited yield (table 4.2). In particular, its productivity—that is, the revenue yield, as a percentage of GDP, from each percentage point of the standard corporate income tax rate—is low. A low level of productivity reflects both the lack of efficiency of a country's tax administration and the extent to which tax incentives reduce the effective tax burden, through base erosion, a nominal rate reduction, or both. In China the large tax incentives provided to foreign-invested enterprises are likely to be the main cause of the low productivity of the enterprise income tax (see below), the rate of which appears to be in line with international standards.

Domestic and foreign-invested enterprises are subject to different tax-base definitions, rate structures, and systems of investment tax incentives (table 4.3). In order to promote a level playing field for businesses, the government intends to unify these regimes; a proposal has been debated for some time, but so far this reform has been stalled. The current laws are based on the residence principle—that is, profits earned by resident enterprises are taxed on a worldwide basis, but

**Table 4.2 Corporate Income Tax Rates, Yields, and Productivity in Selected Economies, 2002**

<i>Economy</i>	<i>Top rate (percent)</i>	<i>Yield (percentage of GDP)</i>	<i>Productivity<sup>a</sup> (percentage of GDP)</i>
<i>OECD</i>			
Australia	30	5.3	0.18
Japan	30	3.1	0.10
Korea, Rep. of	27	3.1	0.12
New Zealand	33	4.2	0.13
<i>Non-OECD</i>			
Brazil	15	2.5	0.17
China	30	2.6	0.09
Hong Kong (China)	16	3.1	0.19
India <sup>b</sup>	35	1.8	0.05
Indonesia <sup>b</sup>	30	1.9	0.06
Philippines <sup>c</sup>	32	2.5	0.08
Russian Federation	24	1.6	0.07
Singapore <sup>b</sup>	24.5	—	—
Thailand	30	3.2	0.11

*Source:* Authors' compilation based on data from IMF *Government Finance Statistics 2006*; *International Financial Statistics 2006*; *World Economic Outlook 2006*; IMF country documents; OECD Revenue statistics database; and the World Tax Database of the University of Michigan, available at [www.bus.umich.edu/OTPR/otpr](http://www.bus.umich.edu/OTPR/otpr).

— Not available.

*Note:* Figures are for general government, unless otherwise specified.

a. Revenue yield for each percentage point of standard corporate income tax rate.

b. Central government.

c. Budgetary central government.

profits earned by permanent establishments of nonresident enterprises are taxed on a territorial basis. It would be appropriate to continue to adhere to this approach once the enterprise income tax law is unified.

To strike a balance between meeting budgetary revenue needs and ensuring that the tax is adequately attractive for investment, the government could set the unified rate at 20–25 percent. Unification should lead to the elimination of multiple enterprise income tax rates. This is a particularly severe problem when multiple rates are location and activity based as part of a tax incentive system, such as those applied to foreign-invested enterprises. Under these circumstances, enterprises facing high tax rates may find it advantageous to transfer their profits to lower-taxed enterprises through a variety of transfer-pricing mechanisms. Even if the multiple rates are progressive based on profit levels—as rates on domestic enterprises are in China—problems may arise if such rates are not properly structured. The three enterprise income tax rates on domestic enterprises are average rates that vary with



**Table 4.3 Main Differences between Enterprise Income Tax Laws on Domestic and Foreign-Invested Enterprises**

<i>Item</i>	<i>Domestic enterprises</i>	<i>Foreign-invested enterprises</i>
Taxation principle	Worldwide	Worldwide if head office is in China, territorial if head office is not located in China
Tax rates <sup>a</sup>	<Y30,000: 18% Y30,000–Y100,000: 27% >Y100,000: 33%	10%, 15%, 24%, 30% + 3% (provincial)
Deductions for wages and welfare payments	Subject to ceilings	Actual expense
Deductions for donations to charity	Subject to ceilings	Actual expense
<i>Depreciation rates<sup>b</sup></i>		
Houses and buildings	1.8%–12%	5%
Machinery and equipment	2.9%–20%	10%
Cars, computers, and tools	2.9%–20%	20%

*Source:* “Provisional Regulations of China on Enterprise Income Tax” and its detailed rules of implementation; “Income Tax Law of China on Enterprises with Foreign Investment and Foreign Enterprises” and its detailed rules of implementation.

a. Excludes tax rates that are time bound.

b. Depreciation rates are on a straight-line basis. For domestic enterprises, rates are industry specific.

the level of taxable profits.<sup>13</sup> One possible solution would be to replace these average progressive rates with marginal progressive rates, so that higher tax rates are applied only on additional, not total, profits.<sup>14</sup>

The imposition of a ceiling on allowable wage deductions for domestic enterprises—currently set at Y960 per month per employee—is largely the legacy of a time when the economy was centrally controlled and dominated by SOEs. A basic purpose of the ceiling was to limit the extent to which SOEs were able to transfer profits to workers as wage payments, as wages in excess of the ceiling would be subject to taxation at the applicable enterprise income tax rate.

While still found in some transition economies, such a practice is out of place in China’s economy today. It artificially raises the labor cost of a domestic enterprise requiring a skilled workforce, putting it at a significant disadvantage relative to a foreign-invested enterprise in the same line of business that is not subject to the ceiling. In the prospective unified enterprise income tax law, the wage deduction ceiling should be removed.

The current depreciation system applicable to foreign-invested enterprises consists of only three asset groups, with reasonable depreciation rates. For domestic

enterprises, however, there are six groups of depreciable assets, and applicable depreciation rates depend on the estimated physical life spans of the assets, differentiated by 13 industries. Such a system is not only administratively complex, it also penalizes domestic enterprises relative to foreign-invested enterprises. In the prospective unified enterprise income tax law, the current depreciation system for foreign-invested enterprises should be adopted for all enterprises.

Finally, incentives are still provided predominantly in the form of enterprise income tax holidays and reduced enterprise income tax rates, concentrated largely in the eastern coastal regions and heavily targeting foreign-invested enterprises.<sup>15</sup> Tax incentives should be rationalized by replacing enterprise income tax holidays (at the margin) with accelerated depreciation and a longer loss carry-forward period. In order to promote the transparency of China's tax incentive system and enhance its cost-effectiveness, the tax expenditures entailed by such incentives should be estimated and either formally integrated into the budget process as expenditure items or at least explicitly reported as part of the budget documents.<sup>16</sup>

Unification of the enterprise income tax regimes would need to be carefully phased in, to avoid perpetuating some of the distortions and regressivity of the current system of tax sharing. The current system favors richer provinces: local tax revenues derive mainly from the VAT, the enterprise income tax, and business taxes, whose bases typically cover manufacturing and service sectors.<sup>17</sup> Provinces in which the shares of the secondary and tertiary sectors in GDP are relatively high fare above average in terms of revenue collections. In contrast, the central and western provinces, which are predominantly agriculture based, fare poorly. Absent reforms to tax assignments and the transfer system, the inequities of the current system may be exacerbated.

### *Personal Income Tax*

The personal income tax has a complex structure, mainly reflecting the fact that this tax is an amalgamation of three different personal income taxes (applied separately to residents, nonresidents, and the self-employed) introduced in the 1980s. Its yield, while rising in recent years, amounted to only 1.1 percent of GDP (7 percent of total tax revenue) at the end of 2005, quite low by international standards (table 4.4). The relatively low average monthly wage still prevailing in China is likely the main reason why the yield from the personal income tax is low; as incomes rise, the personal income tax therefore holds important revenue potential.

The major shortcoming of the current personal income tax system is that different rate schedules—some with a relatively high degree of marginal progressivity—are applied on different income categories. There is a need to consolidate the 11 separate categories of taxable income into fewer categories, in a manner that is both conceptually sound and administratively feasible. One possible solution would include consolidating the 11 categories of taxable income into two categories, labor income and capital income. Labor income (including income from self-employment) would be taxed under one unified progressive rate schedule, while capital income

**Table 4.4 Personal Income Tax Rates, Yields, and Productivity in Selected Economies, 2002**

<i>Economy</i>	<i>Top rate (percent)</i>	<i>Yield (percentage of GDP)</i>	<i>Productivity<sup>a</sup> (percentage of GDP)</i>
<i>OECD</i>			
Australia	47	12.1	0.26
Japan	37	4.7	0.13
Korea, Rep. of	36	3.1	0.09
New Zealand	39	14.8	0.38
<i>Non-OECD</i>			
Brazil	27.5	3.9	0.14
China	45	1.1	0.02
Hong Kong (China)	17	2.6	0.16
India <sup>b</sup>	30	1.5	0.05
Indonesia <sup>b</sup>	35	1.5	0.04
Philippines <sup>c</sup>	32	2.2	0.07
Russian Federation	35	0.0	0.00
Singapore <sup>b</sup>	22	...	...
Thailand	37	1.9	0.05

*Source:* Authors' compilation based on data from IMF *Government Finance Statistics* 2006; *International Financial Statistics* 2006; *World Economic Outlook* 2006; IMF country documents; OECD Revenue statistics database; and the World Tax Database of the University of Michigan, available at [www.bus.umich.edu/OTPR/otpr](http://www.bus.umich.edu/OTPR/otpr).

*Note:* Figures are for general government unless otherwise specified.

- a. Revenue yield for each percentage point of standard personal income tax rate.
- b. Central government. Data for Singapore are not available.
- c. Budgetary central government.

would continue to be taxed through final withholding at a flat rate. This consolidation is in line with practice in many developing and developed countries, and its implementation is well within the capacity of China's tax administration.

At the same time, the number of rate schedules should be reduced, and the number and progressivity of rates within a schedule should be streamlined (the system currently has nine different rates, reaching as high as 45 percent). Two considerations should drive the choice of rates. First, the top marginal personal income tax rate should be closely aligned with the enterprise income tax rate, in order to reduce taxpayers' incentives to artificially organize themselves as enterprises for tax advantage. Second, the basic allowance should be chosen to impart a proper degree of progressivity to the rate schedule, even if the schedule includes only a few rates. On this basis, the number of positive marginal rates should be limited to two or three. In line with these principles, the government doubled the personal income tax monthly allowance, from Y800 to Y1,600, effective January 1, 2006.

This is a welcome measure, as it helps protect the incomes of the lower-income segments of the population. Consideration might be given to adjusting it in line with inflation in order to prevent its erosion in real terms over time.

Finally, reform of the personal income tax could have important intergovernmental implications, not so much because it is a shared tax (as its yield currently remains limited) but because limited tax policy powers on personal income tax could be devolved to the provinces.<sup>18</sup> In particular, provinces could be allowed to provide a supplemental basic monthly allowance tied to certain objectives and transparent provincial economic indicators; they could also impose provincial personal income taxes that piggyback on the national rate structure. The central government could prescribe limits on either measure. As provinces would be expected to bear the revenue consequences of their own discretionary policy actions, these changes should carry no implications for the way in which the revenue from personal income is divided between the central government and provincial governments.

### *Other Taxes*

There is scope for introducing new taxes and rationalizing existing ones. As China's economy grows, environmental considerations should be built into the design of its tax system. China's current level of excise taxes on vehicles and petroleum products, which are low by international standards, should be reassessed.<sup>19</sup> Real estate taxes should also be rationalized, on the basis of a unified conceptual and valuation framework; along with the possible piggybacking on the personal income tax mentioned above, these taxes could prove valuable tax handles for local governments (Ahmad 2006). More generally, the appropriate design of local taxes, including bounded local control over rates, should be high on the reform agenda.

These reforms would help make the tax system more transparent and efficient. They would also contribute to ensuring an appropriate level of resources for the government to fulfill its development and redistribution objectives. In this connection, it has also been increasingly advocated that SOEs, which currently do not pay dividends to the government, start doing so.<sup>20</sup> In addition to reducing the procyclicality of investment financed by retained earnings, dividends paid to the budget could help fund a stronger social safety net, particularly for rural households. Such a measure could reduce the incentive for households to save, thereby boosting consumption—objectives that are in line with the government's new growth strategy. More generally, it would contribute to offsetting possible revenue losses associated with some of the reform options identified above.

## **Some Issues Affecting Expenditure Policy Reform Options**

Because strengthening the provision of social services is at the core of the government's strategy, reforms in expenditure policy are key to ensuring that the government can implement the strategy successfully. This section offers a

macroeconomic perspective on expenditure policy reforms and puts forward some general considerations to help frame the debate on these issues. It does not cover specific sectoral issues.

Insufficient provision of social services is among the factors driving households' sizable precautionary savings in China. The limited coverage of the pension system, as well as the high cost of health and education, has led households to build up savings to "insure" against expenses related to these services (Prasad and Rajan 2006). Strengthening the provision of social services would address both equity and macroeconomic concerns.

In terms of expenditure mandates, China is one of the most decentralized countries in the world. Subnational spending in China represented more than 70 percent of total government spending during the 1990s, a much higher percentage than the 32 percent in OECD countries, 26 percent in transition economies, and 14 percent in developing countries (Wong 2005). China stands out for relying almost entirely on local governments to provide health care and education, areas in which local governments account for 90 percent of government expenditure (table 4.5).

### *Health Care and Education*

China's subnational expenditure mandates in the social sectors are the legacy of the industrial restructuring process, in which responsibilities for education, health care, and pensions were shifted from SOEs to local governments. However, local authorities were not provided with adequate resources to fulfill their new responsibilities. The most glaring result of these actions is that the provision of public services is uneven and suffers from significant shortfalls in rural and inland areas. Partly because of local governments' financing constraints, China's government sector today spends much less on health and education than comparator countries (table 4.6).<sup>21</sup> Public spending on education remains below the government's objective of 4 percent of GDP, which according to the 10th Five-Year Plan (2001–05), was to be achieved by the end of 2005. Moreover, a comparatively large share of such spending is channeled to tertiary education (OECD 2006).

Public spending on health has declined over the past decade, mainly as a result of the 1996 reform aimed at establishing a market-based system. The drop has not only resulted in a sharp increase in out-of-pocket spending, it has also led to a decline in health insurance coverage.<sup>22</sup> Privately provided services have proved expensive. As a result, the share of out-of-pocket spending reached almost 60 percent of total spending on health care by the end of 2003, up from 20 percent in 1978 (see chapter 12 of this volume). At the same time, total spending on health care increased from 3 percent of GDP in 1978 to about 5.5 percent in 2003 (Ministry of Health 2006).

In rural areas, efforts have been made to provide health insurance through the rural cooperative system. This system, created in 2002, largely replaced an older scheme funded by farmers' contributions, which had become unsustainable.

**Table 4.5** Shares of Central and Local Government Spending, by Expenditure Category, 2004

<i>Expenditure category</i>	<i>Spending assignment</i>		<i>Expenditure</i>	
	<i>Central government (percentage of central and local government spending)</i>	<i>Local governments (percentage of central and local government spending)</i>	<i>Percentage of GDP</i>	<i>Percentage of total spending</i>
	Education	6.1	93.9	2.3
Health	2.6	97.4	0.5	3.0
Agriculture	8.5	91.5	1.0	5.9
Social relief	1.4	98.6	0.3	2.0
Social security	12.6	87.4	1.0	5.4
Pensions	9.4	90.6	0.6	3.6
Tax administration	9.5	90.5	0.7	3.9
Administration	17.4	82.6	1.5	8.6
Technical transformation and science	22.3	77.7	0.8	4.3
Interest payments	100.0	0.0	0.5	2.6
National defense	98.7	1.3	1.4	7.7
Capital spending	39.5	60.5	2.1	12.0
Urban maintenance and construction	0.0	100.0	0.7	3.7
Other	14.4	85.6	1.3	7.2
Subtotal	25.7	74.3	14.7	82.6
Total expenditure	27.8	72.2	17.8	100.0

*Source:* Authors' calculations, based on data from National Bureau of Statistics 2005.

*Note:* Figures are based on classifications by the Chinese authorities. No economic classification is available.

Under the new system, rural cooperatives are supported by government transfers as well as private voluntary contributions. By the end of 2005, nearly 24 percent of counties were covered, including 236 million farmers (179 million of which participated in the scheme). About Y11.5 billion had been raised and nearly Y9 billion of benefits paid out. The central government and local governments doubled their per capita contributions beginning in 2006, to Y20 each, while the contribution paid by farmers has remained unchanged at Y10 per capita.<sup>23</sup> However, these contributions—of about \$5 per capita per year—have not proved sufficient to cover services so far.

Public spending on education, although growing, remains inadequate. Limited public funding has led to a shift of financing responsibilities to families. It is

**Table 4.6 Spending on Education and Health in Selected Economies, 2004**  
(percentage of GDP)

<i>Economy</i>	<i>Education</i>	<i>Health</i>
<i>OECD</i>		
Australia	4.8	6.4
Japan	3.7	6.4
Korea, Rep. of	4.6	2.8
New Zealand	6.9	6.3
<i>Non-OECD</i>		
Brazil	4.1	3.4
China	2.3	0.5
Hong Kong (China)	4.7	n.a.
India	3.3	1.2
Indonesia	0.9	1.1
Philippines	3.2	1.4
Russian Federation	3.7	3.3
Singapore	n.a.	1.6
Thailand	4.2	2.0

Source: UNESCO Institute for Statistics 2006; WHO 2006.

n.a. Not applicable.

reported that 20–25 percent of operational expenses are shouldered by schools directly, based on contributions from families; these contributions reportedly increased from 0.5 percent of GDP in 1993 to 1.75 percent of GDP in 2001. While central transfers to western regions and poor areas have been significantly increased since the late 1990s, inadequate funding remains a major obstacle to achieving universal compulsory education.

The Chinese government has recently launched new programs to ensure free compulsory education and strengthen the provision of health insurance in rural areas. These programs are being implemented by a number of local governments and are slated to be scaled up nationwide over the next few years. Preliminary results are encouraging. However, there is a need to adopt a comprehensive strategy that goes beyond the programs' limited sectoral scope toward broad-based reforms that would replace the current piecemeal approach to social programs. The government's own estimates indicate that these programs are quite affordable. For example, providing free compulsory education in rural areas nationwide has been estimated to cost some Y220 billion over the 2006–10 period, equivalent to 1 percent of 2006 GDP.

In addition to limited funding, capacity constraints may hinder implementation of these programs. Some local governments are experiencing a lack of qualified staff to manage and carry them out. While financial support from the central government is necessary for program success, it is nonetheless not sufficient, unless accompanied by measures to ensure that funds are properly spent, including strengthening budget execution and reporting and introducing performance indicators.

## *The Pension System*

China's current state pension system, which reflects reforms started in the mid-1990s, is based on three pillars: a mandatory defined benefit base pension, a largely mandatory funded individual account, and a funded voluntary supplementary pension. The first two components make up the so-called basic pension system, which is intended to cover all urban workers and is managed by government agencies rather than individual enterprises.

In contrast to international practice, the provision of social security (in particular pensions and unemployment insurance) is assigned to lower levels of government in China. Both efficiency and risk-pooling considerations would call for these programs to be undertaken by the central government. Pension pooling in China (as well as the establishment of unemployment insurance funds) takes place at relatively low levels of government, such as cities and counties.<sup>24</sup> These arrangements do not ensure appropriate coverage, and they have put significant strain on local governments' finances. In addition, the highly decentralized and fragmented nature of the pension system impedes labor mobility, allows discretionary policies to proliferate, hinders resource sharing, and creates perverse incentives for false reporting to maximize subsidies from higher government levels.

The underfunded transition from the old to the new pension system has given rise to a number of problems. Contributions rates are high, because liabilities under the old system are paid by contributions under the new system. As a result, some employers have found these rates unaffordable, leading to low compliance. In addition, the individual accounts have been notional, as funds accumulated in these accounts have been used largely to fund liabilities under the old system. Finally, the insufficient level of pooling has resulted in uneven contribution and benefit levels across the country.

In an attempt to address these shortcomings, a pilot pension reform was implemented in the northeast provinces in late 2000. The pilot introduced a number of changes. First, the base pension fund and individual accounts were separated, changing the individual accounts from "notional" to actually funded accounts. Employers' contributions are channeled into the base pension, while employees' contributions fund only the individual accounts, which are portable. Base pension and individual accounts are managed separately, with individual accounts managed at the provincial level and their investment restricted to Treasury bonds. Second, incentives have been introduced to induce workers to postpone retirement by increasing benefits gradually for each extra year of paid contributions, up to a cap. Third, the coverage of the pension system has been widened to include rural contractual workers, the self-employed, and employees of private firms (civil servants remain under the old system). The measures relating to the individual accounts were extended to an additional eight provinces in 2006, and new formulas for the base pension were implemented.

Despite these recent reforms, pension coverage remains limited. At the end of 2004, the pension system covered about 123 million urban workers, or 46 percent of the urban workforce. In contrast, only about 54 million rural workers, or 11 percent of the total rural workforce, participated in the pension schemes set up for rural areas.



For the country as a whole, about 750 million, or 23 percent of the working population, had pension coverage (Deutsche Bank Research 2006).

The sustainability of the pension system over time is far from ensured, largely because of China's rising dependency ratio, which is projected to increase from 34 percent in 2005 to more than 50 percent by 2015 and 100 percent by 2035; increasing early retirement (workers are often induced to retire early to create job opportunities for new job entrants); the fragmentation of the risk-pooling system; and the poor financial returns on the accumulated pension funds (Sin 2005). In addition, under the current system, individual accounts would be depleted about 10 years after retirement, as fixed annuities are equivalent to 120th of the accumulated funds. The World Bank estimates the government's implicit pension debt at about 140 percent of 2001 GDP, with a financing gap of about 95 percent of 2001 GDP (Dorfman and Sin 2001; Sin 2005).<sup>25</sup> While China's implicit debt may be lower than in many OECD countries, this largely reflects the fact that China's pension system covers only about 20 percent of the workforce while pension systems in OECD countries cover about 90 percent.

A number of parametric changes could significantly reduce the financing gap. These include gradually increasing the retirement age to 65, paying out individual accounts using annuities calculated based on life expectancy at retirement, and indexing base and individual account pensions to consumer prices instead of wages. Any remaining financing gap could be filled by sources other than payroll contributions, such as privatization proceeds.

The lack of effective pooling at the provincial level means that even if the basic pension funds are in overall balance (or even in surplus) at the provincial level, each province would have to finance the pension funds in deficit at lower levels (municipal or county). Currently, some of the burden on provinces is met by transfers from the central government. At a minimum, provincial-level pooling should be implemented. Ultimately, national pooling would offer additional benefits, because the provincial funds in surplus could be used to cross-subsidize the funds in deficit, thereby reducing the fiscal burden on the deficit provinces and eventually on the national government.<sup>26</sup> China's rapidly aging population means that some provinces will move sharply into deficit in the next few decades. For this reason, over the longer term, national-level pooling is desirable.

## **Public Financial Management: Ensuring that Public Resources Are Properly Used**

Important budget and treasury reforms under implementation are significantly strengthening fiscal policy formulation and implementation in China. In the budget area, coverage is being expanded to include extrabudgetary revenue and spending; the budget preparation cycle has been brought forward and extended; and departmental budgets are being implemented. On the treasury side, Treasury single accounts (TSA) have been broadly established at the central and provincial levels and are being rolled out to lower levels of government. Given the size of

China's public sector, the success of the TSA reform so far has been remarkable, with strong benefits for the monitoring and control of budget execution.<sup>27</sup> Some progress has also been made on macroeconomic and fiscal policy coordination.

While achievements have been significant, a substantial reform agenda is still pending. Its implementation will be essential to address the remaining weaknesses in public financial management, and facilitate prioritization of competing spending priorities and the efficient use of budgetary resources. In particular, budget formulation and execution are not completely aligned, and the late approval of the budget hinders the efficient execution of spending plans.<sup>28</sup> This implies that a significant part of expenditure is executed in the last few months of the year, especially at lower levels of government. Consideration might be given to moving the budget calendar to better reflect the schedule of the National People's Congress.

In addition, the current and capital budgets remain segmented, and an articulated medium-term budget framework is lacking. Accounting and cash management functions need to be further improved, in order to enhance control over budget execution by expanding the coverage of the TSA and improve coordination with monetary policy.

Finally, the coverage of fiscal operations in the budget should be further expanded, by including extrabudgetary funds, which have been reduced over the years, as well as quasi-fiscal activities (such as activities tied to bank recapitalization costs). Budget documents should include the transparent disclosure of contingent liabilities. The intention to introduce a new budget classification and chart of accounts with the 2007 budget is welcome; it should be carried out decisively, if possible gradually extending it to all levels of government.

Given the reportedly significant level of indirect borrowing by local governments, monitoring and reporting of these fiscal risks should be introduced. At a minimum, the central government should set up a registry of subnational debt, including debt of locally owned enterprises. More broadly, there may be scope to revisit the current ban on direct borrowing (other than from the Treasury) for all local governments, which, by not taking into account their ability to prudently manage and service their debt, may be too restrictive. Especially as the own-revenue generation capacity of local governments is strengthened and their finances are made more transparent through improvements in accounting and reporting, it may be appropriate to allow provinces and larger cities limited authority to borrow from markets under firmly enforced prudential requirements (relating, for example, to the acquisition of a minimum credit rating, financial disclosure, appropriate indicators of debt-servicing capacity, and so forth).

## Conclusions

China has achieved impressive successes over the past three decades, but the road ahead is still paved with important challenges. Promoting a harmonious society and scientific advances are high on the reform agenda; they need to be bolstered by a coordinated reform strategy, in which fiscal policy has an important role to play.

The reforms suggested in this chapter can be summarized as follows:

- In the tax policy area, VAT should be shifted from a production base to a consumption base, and it should be extended to services, to align it with international practice; the refund system and its administration should be rationalized; the enterprise income tax regime for domestic and foreign-invested enterprises should be unified and tax incentives streamlined; the personal income tax structure should be simplified; the appropriate design of local taxes, including bounded local control over rates, should be examined; and SOEs should start paying dividends to the government.
- In the expenditure policy area, best international practice and efficiency considerations call for a more centralized pooling of social security. In addition, parametric changes to the pension system should be introduced, to make it sustainable in view of aging pressures, and health care and education programs should be cast in a medium-term expenditure framework to ensure their sustainability and effectiveness.
- In the public financial management area, Treasury and budget reforms should be deepened; the coverage of fiscal operations should be broadened to include extrabudgetary accounts and quasi-fiscal activities; and a registry of local governments' indirect borrowing should be set up as a prerequisite for relaxing, under well-specified requirements, the ban on their direct borrowing.

The interconnections among different fiscal reforms will need to be carefully assessed. In particular, the intergovernmental fiscal relations dimension of the various reforms should be examined. For example, strengthening the provision of health care and education services will put strain on local governments' finances, unless the transfer system is made more equitable and transparent, the tax autonomy of local governments is increased, or both.

China has traditionally used a piecemeal approach to reforms, by taking incremental steps or by first experimenting with reforms through geographically circumscribed pilots. However, as China's economy evolves and becomes more integrated in the globalized world, a step-by-step approach to reforms may be counterproductive, because limited reforms may induce distortions and create incentives for mobile factors to take advantage of them through arbitrage opportunities (Prasad and Rajan 2006). Hence, the time is ripe for a comprehensive reform effort. The system of intergovernmental relations, which has remained broadly unchanged since 1994, is a prime candidate for a wide-ranging reform. Inaction is not a risk-free option. Maintaining the status quo may exacerbate imbalances, impose potentially large welfare costs, and require policy distortions that may create instability down the road.

While fiscal reforms are important, other reforms, particularly in the banking sector and the exchange rate regime, also have roles to play (Blanchard and Giavazzi 2005; Prasad and Rajan 2006). It would be misleading to suggest that fiscal policy alone can dominate the reform agenda and secure its success.

Reforms must be launched at a propitious time if they are to be successful. China's sustained macroeconomic achievements and its progress on the reform path undertaken so far suggest that now is such a time. Reforms are best undertaken from a position of strength. Strong growth, low inflation, and low levels of explicit government deficit and debt provide China with the room to design and move ahead with its implementation of needed reforms.

## Notes

The analysis and policy recommendations presented in this chapter draw extensively on previous work by a number of colleagues in the IMF's Fiscal Affairs Department. In particular, the authors gratefully acknowledge contributions from Ehtisham Ahmad, Holger van Eden, and Howell Zee.

1. Data are based on information available as of May 2006. For this reason, data used in this chapter may differ somewhat from data used in other chapters in this book.
2. *Proactive* and *prudent* are the terms used by the Chinese authorities to characterize their fiscal policy formulation and implementation.
3. China's external debt is less than 0.5 percent of GDP. This figure compares very favorably to the average for emerging countries (about 36 percent of GDP) (Prasad 2004). These data need to be interpreted with caution, however, as the coverage and definition of debt statistics vary widely across countries. In China government debt includes the securitized liabilities of the general government. Data on the debt of state-owned enterprises are not available.
4. Based on authorities' data, the stock of nonperforming loans is estimated at about 25 percent of GDP at the end of 2005 (including the stock of nonperforming loans originally transferred to asset management companies, equivalent to some 8 percent of 2005 GDP).
5. A restructuring of revenue raising and spending responsibilities across levels of government should also be accompanied by a review of the system of intergovernmental transfers and of revenue-sharing formulas, to ensure adequate vertical and horizontal balances among and within different levels of government, a topic not covered in this chapter.
6. In 1994 the government was faced with steadily declining tax ratios (total revenue had declined to less than 12 percent of GDP in 1994, from more than 29 percent of GDP in 1980) and shrinking shares of central revenue in total revenues. To stem these trends, a major reform was implemented in 1994. This reform introduced a new tax-sharing system, shifting revenue collection and distribution away from a negotiated basis to a mix of tax assignments and tax sharing; enacted a new VAT; and made the State Administration of Taxation responsible for collecting central and shared taxes, while leaving the collection of local taxes in the hands of local government agencies.
7. India and the United States do not have a central VAT (both are federal states).
8. The incremental method used for VAT deductions has allowed investment pressures associated with the shift from a production-based to a consumption-based VAT to be

- contained. Under this method, VAT credits are allowed only for the “incremental base” from 2003, that is, up to the change in the VAT debit position relative to 2003.
9. Refund rates have changed frequently. They were last significantly modified on January 1, 2004, when rates were reduced to 17, 13, 11, 8, and 5 percent. The refund system did not change for sectors then promoted by the government, such as electronics and automobiles. For ordinary consumer goods, tax refunds were cut significantly. The most-affected sectors were those exporting “natural resource” goods (pulp, oil, and lumber), for which VAT refunds were cancelled altogether.
  10. Currently, only traders wholly engaged in exports (with no production destined for the domestic market) may claim VAT refunds each month for credits accumulated the previous month. Exporters engaged in both domestic and export sales are subject to a double regime. Exporters for whom exports represent more than 50 percent of total sales may claim refunds of VAT credits remaining after these have been carried forward for three months; exporters for whom exports represent less than 50 percent of total sales are not permitted refunds and must offset credits against domestic VAT liabilities.
  11. Arrears topped 2 percent of GDP at the end of 2003. They have now been fully settled. Meanwhile, budgetary allocations for VAT refunds have been significantly increased.
  12. It is difficult to predict such losses. Based on input–output table data, in 2001 IMF staff estimated that revenue losses could amount to about 40 percent of VAT collections in 2000, or about 2 percent of GDP.
  13. An average progressive rate structure has undesirable properties. For example, a domestic enterprise with taxable profits of Y30,000 would incur a tax liability of Y5,400 ( $Y30,000 \times 0.18$ ); if its taxable profits rise by Y1,000, its tax liability would jump to Y8,370 ( $31,000 \times 0.27$ ). Hence, the additional taxable profits of Y1,000 would result in an increase in the tax liability of Y2,970, equivalent to taxing those additional profits at a rate of 297 percent. Such high implicit marginal tax rates at the borders of the rate brackets are not only grossly unfair, they can also seriously distort the behavior of enterprises that have profit levels close to such borders.
  14. There would be little economic justification for having a progressive rate structure, whether average or marginal, under the enterprise income tax if the taxpayer in the prospective unified enterprise income tax law would be based, as expected, on the concept of the legal person rather than the concept of “independent accounting unit,” as currently applied to domestic enterprises. With such a shift in the definition of the taxpayer, small unincorporated enterprises would simply be taxed under the progressive rates of the personal income tax.
  15. Since the early 1980s, the Chinese authorities have used tax incentives, provided primarily to foreign-invested enterprises in specially designated development zones, to attract foreign direct investment. The structure of enterprise income tax incentives is extensive and complex, and it is subject to frequent ad hoc changes. Moreover, some incentives are applied on top of other incentives, approval of incentives involves different government agencies and sometimes different levels of government, and the incentives differ for foreign-invested and domestic enterprises.

16. About 75 percent of OECD countries currently practice some form of tax expenditure reporting; a small but increasing number of developing countries also do so.
17. These sources of revenue together account for about 70 percent of local governments' total revenue.
18. Currently, tax policy powers reside exclusively in the hands of the central government with respect to all but a few minor taxes in China. Until 2001, revenue from the personal income tax accrued to provincial governments. Since 2002, personal income tax revenue above the 2001 level has been shared between the central and provincial governments in fixed proportions (50/50 in 2002 and 60/40 as of 2003).
19. The rates of consumption taxes were modified as of April 1, 2006; new excises are now applied to some oil products, including naphtha, solvent naphtha, lubricating oil, fuel oil, and aircraft turbine fuel.
20. SOEs do pay dividends to other (nongovernment) shareholders. Profits of central SOEs rose 30 percent in 2005 to Y628 billion (3.4 percent of GDP, representing about 80 percent of all SOE profits). Central SOEs include many of China's best-known corporations, such as oil and steel companies. Including the 1,000 less profitable SOEs controlled by provincial governments, total SOE profits amounted to 4.3 percent of GDP in 2005.
21. Data on spending should be interpreted with caution; the current budget classification, which is being upgraded, does not provide an accurate description of expenditure by economic and functional types. Hence, it is difficult to explain the size of and trends in expenditure programs.
22. According to a survey of the Ministry of Health, less than 50 percent of the urban population and less than 20 percent of the rural population were covered by health insurance in 2003 (OECD 2006).
23. This scheme, called 20-20-10, apparently applies to more needy western regions; in richer eastern regions, contributions are different from those reported here.
24. A pilot in the three northeast provinces has so far not succeeded in shifting pooling to the provincial level.
25. Implicit pension debt is a measure of the present value of accrued benefits under the pension system if the system were terminated at a particular date (including benefits to be paid to current pensioners and pension rights that current workers have earned up to the termination date). The financing gap measures the sum of the net present value of the balance (revenue less expenditures) over the projection period (75 years).
26. This presupposes national legislation on social security applying the same standards nationwide.
27. Initiated by the Ministry of Finance in 2001, the TSA reform has been introduced in all 160 departments of the central government and all 36 provinces, autonomous regions, and municipalities (the second of five levels of government); it is being pursued in some 500 prefectures and larger cities (the third and part of the fourth level of government).
28. The fiscal year starts in January. The National People's Congress traditionally convenes in March; within 30 days, detailed budget authority is provided to ministries, which are required to advise their subsidiary units within 15 days. The budget is not "activated" at the central level before mid-May. Provincial budgets cannot be approved until the

central government budget is approved; the budgets of prefectures cannot be approved until provincial budgets are approved, and so on for counties and townships. Hence, local budgets are approved much later than mid-May; in some townships, budgets are approved in the last two months of the fiscal year.

## References

- Ahmad, Ehtisham. 2006. "Taxation Reforms and Sequencing of Intergovernmental Reforms in China: Preconditions for a *Xiaokang* Society." Paper presented at the "Roundtable on Public Finance for a Harmonious Society," Beijing, June 27–28.
- Blanchard, Olivier, and Francesco Giavazzi. 2005. "Rebalancing Growth in China: A Three-Handed Approach." MIT Working Paper 05-32, Department of Economics, Massachusetts Institute of Technology, Cambridge, MA.
- Deutsche Bank Research. 2006. "China's Pension System: Caught between Mounting Legacies and Unfavorable Demographics." *Current Issues*, February 17, Frankfurt.
- Development Research Center. 2003. "Report on Local Government Debt and Solution." Paper presented at a meeting between Chinese and Japanese officials, Dalian, China, September.
- Dorfman, Mark, and Yvonne Sin. 2001. "China: Social Security Reform: Strategic Options." World Bank, Washington, DC.
- Hussain, Athar, and Nicholas Stern. 2006. "Public Finances, the Role of the State and Economic Transformation in China: 1978–2020." Paper presented at the "Roundtable on Public Finance for a Harmonious Society," Beijing, June 27–28.
- IMF (International Monetary Fund). Various years. *Government Finance Statistics*. Washington, DC: IMF.
- . Various years. *International Financial Statistics*. Washington, DC: IMF.
- . Various years. *World Economic Outlook*. Washington, DC: IMF.
- Ministry of Health. 2006. *China National Health Accounts Report 2005*. Beijing.
- National Bureau of Statistics. 2005. *China Statistical Yearbook*. Beijing: China Statistics Press.
- OECD (Organisation for Economic Co-operation and Development). 2006. *Challenges for China's Public Spending: Toward Greater Effectiveness and Equity*. Paris.
- Prasad, Eswar, ed. 2004. "China's Growth and Integration in the World Economy." Occasional Paper 232, International Monetary Fund, Washington, DC.
- Prasad, Eswar, and Raghuram Rajan. 2006. "Modernizing China's Growth Paradigm." IMF Policy Discussion Paper 06/03, International Monetary Fund, Washington, DC.
- Sin, Yvonne. 2005. "China: Pension Liabilities and Reform Options for Old Age Insurance." World Bank Working Paper 2005-1, Washington, DC.
- UNESCO Institute for Statistics. 2006. Online database of education indicators.
- WHO (World Health Organization). 2006. *World Health Report*. <http://www.who.int/whr/en>.
- Wong, Christine. 2005. "Can China Change Development Paradigm for the 21st Century? Fiscal Policy Options for Hu Jintao and Wen Jiabao after Two Decades of Muddling through." Working Paper FG7, 2005/03, Stiftung Wissenschaft und Politik, German Institute for International and Security Affairs, Berlin.

Part II

Fiscal Reform and Revenue  
Assignments





# Expenditure Assignments in China: Challenges and Policy Options

## 5

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The decentralization of public services provision, a key component of fiscal federalism, is widely viewed as the means of improving the efficiency of the public sector by using the potential information advantage of local government to better match the needs and preferences of local residents (Hayek 1945; Oates 1972). In addition, the decentralization of public services can be seen as a necessary component of “market-preserving federalism,” whereby the role of subnational governments is aligned with the goals of local economic development and local welfare (Qian and Weingast 1997). For these efficiency gains to be realized, subnational governments need to be responsive to their constituencies. The existence of accountability mechanisms, such as the election of local officials, is widely acknowledged as a necessary condition for effective fiscal decentralization (see, for example, Seabright 1996).

China’s most successful experiences of fiscal reform may result from expenditure decentralization. With some important exceptions, especially in expenditure assignments (addressed below), China’s current system of decentralized finance is generally consistent with the conventional wisdom regarding the desirable features of fiscal decentralization. The basic economic argument for fiscal decentralization is greater economic efficiency in the allocation of resources in the public sector. This suggests that policies governing the provision of public services that are sensitive to regional and local conditions are likely to be more effective in encouraging growth than centrally determined policies that ignore these geographical differences (see Oates 1993; Martinez-Vazquez and McNab 2003).

Although quantitative studies of the impact of fiscal decentralization on economic growth in China yield conflicting results (because of differences in the measurement of fiscal decentralization), most of this research finds that decentralization has contributed to overall economic growth.<sup>1</sup> However, not all aspects of decentralization policy are positive or desirable, as international experience shows. Poorly designed decentralized systems, for example, that lack hard budget constraints for subnational governments can lead to waste and macroeconomic instability.<sup>2</sup> Basic institutional failure in issues such as accountability or the presence of bureaucratic corruption

can lead to the capture of government by local elites, with perverse outcomes.<sup>3</sup> Subnational governments may also lack adequate technical and administrative capacity to realize the potential gains from decentralization (Bahl and Linn 1992).

On the expenditure side of the budget, China is one of the most decentralized countries of the world. This high level of decentralization offers many advantages, but it also presents some clear disadvantages. Aspects of the current system that require policy attention include the mismatch between expenditure responsibilities and revenue sources at the lowest levels of governments (counties and townships), where many important social services are concentrated; the murkiness created by the lack of formal assignment of expenditure responsibilities, especially those government units below the province level; several inappropriately assigned responsibilities at the lowest level, such as pensions and unemployment insurance; and the lack of horizontal accountability mechanisms in the system, which can have important undesirable consequences, particularly the underprovision of basic public services.<sup>4</sup>

The chapter is organized as follows. The first section examines current expenditure assignments in China. The second section discusses the main issues affecting expenditure assignments at different levels of government. The last section explores policy options for their reform.

## Current Expenditure Assignments

China's Budget Law gives substantial autonomy to each level of subnational government and quite broad expenditure responsibilities. However, expenditure assignments are far from transparent or clear, largely because of the lack of formal assignments and the presence of extensive concurrent expenditure responsibilities by different levels of government. The presence of concurrent responsibilities can be traced back to the planned economy era, when it was not considered necessary to separate the responsibilities of different spheres of government as providers of public services or to separate the expenditure responsibilities of governments from those of state-owned enterprises (SOEs).<sup>5</sup>

The market-oriented economic reforms that started in China in the late 1970s contributed to separating SOEs from the government sector. During the process of transition from the planned economy to a market economy, the government increasingly relied on market mechanisms and gave up direct intervention in the private sector. In the 1990s, the government started to build a framework of public finance that tried to narrow the responsibilities of government to what are more conventionally understood as public services.

Despite these reforms, the government's expenditure responsibilities remain very wide. A significant number of enterprises are still owned by (or belong to) governments at different levels, and governments can directly or indirectly encroach into private sector activities through their SOEs.

The low level of development of laws regulating and restricting the behavior of governments and government officials still allows for high levels of administrative

discretion. In particular, as governments at all levels have formal responsibility for providing economic development and macroeconomic management, they may feel entitled to encroach into private sectors at will. China is thus still in the process of clearly differentiating between private and public sector activities and aligning the responsibilities of the government sector to fit the development of a market economy.

Fiscal decentralization reforms provided local governments with significant local autonomy on various aspects, such as the determination of their own spending priorities and policies on relevant aspects of local budgets. However, reforms effected no apparent change, in policy or in practice, in expenditure assignment between the central government and local governments or among subprovincial governments: the 1994 tax-sharing system reform restated the prereform expenditure assignment and provided basic guidelines to define expenditure responsibilities between the central government and local governments.

The expenditure assignment for subprovincial governments is at the discretion of the provincial government. To improve expenditures at the subprovincial level, in December 2002 the Ministry of Finance issued "Suggestions on Improving Subprovincial Fiscal Relations."

Most expenditure responsibilities are shared by several levels of government (table 5.1). The central government is largely responsible for national defense,

**Table 5.1 Shares of Total Expenditure by Governments at Different Levels, by Expenditure Category, 2003 (percent)**

<i>Expenditure category</i>	<i>Central</i>	<i>Provincial</i>	<i>Prefecture</i>	<i>County and lower</i>
Foreign aid	100	0	0	0
National defense	99	1	0	0
Foreign affairs	87	13	0	0
Scientific research	63	23	9	5
Capital investment	44	23	22	11
Government administration	19	11	22	48
Agriculture	12	46	11	30
Social security	11	39	32	18
Education	8	15	18	60
Public security agency, prosecutorial agency, and court of justice	5	25	34	35
Health care	3	22	32	43
Other	29	16	25	31
Total	30	18	22	30

Source: National Bureau of Statistics 2004; Ministry of Finance 2005.

foreign affairs, and most scientific research and capital investment; local governments provide most local public services, such as urban maintenance and construction. The main responsibility for basic education and health care is concentrated at the county and lower levels of governments, while responsibility for social security is concentrated at the provincial and prefecture levels.

### *Specific Expenditure Assignments*

Although there are significant regional disparities in fiscal resources, there are marked similarities in expenditure structure across subnational governments. The main expenditure components for most county-level governments are salaries of civil servants and elementary- and secondary-school teachers. These expenses are difficult to meet for some county governments in the central and western regions. In many township governments, administrative expenses represent a high percentage of total expenditure; expenditures on administrative personnel account for 50–70 percent of total expenditure in some townships, and expenditures on public services are generally low. In both rich and poor townships, a large percentage of spending goes toward administrative expenditures.

For many years, expenditure patterns by subprovincial governments in China have followed a pattern that first meets current spending needs. Currently, the expenditure pattern in some areas (county governments in general and poorer counties in particular) is still regarded as “feeding finance” (*Chi Fan Cai Zheng*) or just meeting government administrative costs.

### EDUCATION

County governments are the most important but not the only players in education. Higher levels of governments also have roles to play, and township governments and village self-governing bodies have some responsibilities in particular areas. The power to make education policy is still centralized and in the hands of the provincial and central governments, but county governments have gained considerable ability to make decisions on the daily operations of educational services.

Responsibility for rural education is based on the policy “County Administrators the System of Compulsory Education” started in 1994. After implementation of the 2001 tax-for-fee reform, township governments, which had lost their major income sources, were unable to finance education services. All major responsibilities were in effect transferred from the townships to the county governments.

Some new initiatives, especially the “Decision to Strengthen Rural Education,” issued by the State Council in September 2003, expanded the expenditure responsibilities of the central government for basic education, which was defined as a shared responsibility. A goal was set to support students from poor families by waiving their textbook, tuition, and miscellaneous fees and by subsidizing housing expenditures for elementary and secondary education students. In 2003 the central government and subnational governments started setting up special funds to support this program. All students falling below the poverty line have enjoyed these benefits since 2006.

## HEALTH CARE

Expenditure responsibilities for public health care are decentralized, with implementation of expenditure responsibilities concentrated at the county and township levels. Assignment of responsibilities for rural health services was significantly clarified by the “Decision to Strengthen Rural Health Care,” issued by the central authorities in October 2002. This decision provides detailed responsibility assignments for the provision of rural health care by different levels of government. The central government has responsibility for designing the overall plan for rural public health, provincial governments are responsible for planning implementation, and county (city) governments have overall responsibility for the actual implementation and delivery of rural public health care.

On the financing side, the central government has responsibility for subsidizing the prevention and control of highly infectious diseases, endemic diseases, and occupational diseases in poorer areas. Provincial governments are also supposed to subsidize county (city) public health projects and to pay for the costs of planned vaccinations. All other rural public health services are paid for by county (city) governments.

The new initiative of building a new rural collaborative health care system began in January 2003. It expanded the responsibilities of both the central government and local governments for health care. It established, among other measures, that beginning in 2003, the central government should pay Y10 a year for each rural resident in the central and western regions who joins the rural collaborative health care system. Subnational governments are required to pay at least Y10 a year for each rural resident who joins the rural collaborative health care system. Provincial governments determine how much each level of subnational governments provides.<sup>6</sup>

## SOCIAL SECURITY

Responsibilities for government expenditures on social security are also highly decentralized. These expenditures are concentrated at the provincial and prefecture levels. Total government social security expenditure at the county and lower levels of government represented only 17.6 percent of total government expenditures on social security in 2003, as a result of the poor financial resources of the lowest levels of governments; the lion’s share of those funds, which were financed by provincial and prefecture budgets, not the central government budget, went to urban residents.

### *Hierarchical Expenditure Managing Model*

Fiscal decentralization reform over the past two decades has contributed significantly to improving local autonomy. Each subnational government has its own budget, which includes its own budget and the consolidated budgets of the governments at the next level down. (For the lowest level of government, the township government, the own budget is equivalent to the consolidated budget.)

The government budget and consolidated budget at each level is approved by its People’s Congress. The approved own budget of a subnational government is

submitted to the level of government above it, up to the Ministry of Finance, which compiles the upper-level government's consolidated budget and eventually the national consolidated budget. The national budgets are the last to be approved.

Local residents' input into the shape and content of local expenditure budgets is limited. Local expenditure management is conducted largely through the bureaucratic hierarchy.

The legal system framing China's fiscal decentralization process gives provincial governments discretion to determine budget management for all subprovincial governments. At the same time, the central government has also increasingly provided guidelines for local expenditure management. The State Council Regulations on the implementation of the tax-sharing system required provincial governments to define the expenditure responsibilities for subprovincial governments. "Suggestions on Improving the Fiscal Management System in Counties and Townships Experimenting with Rural Tax-Fee Reform," issued by the Ministry of Finance in August 2000, required clear definition of expenditure responsibilities between county and township governments; improvement of the structure of township government and strict control of the quota of township employees; and the monitoring of fiscal risks of county and township governments.

The "Notice about Eliminating Fiscal Difficulties of County and Township Government," issued by the Ministry of Finance in 2005, tried to build a monitoring and expenditure performance system. Currently, there are two types of subprovincial fiscal management systems in China. In the first, the "province managing county" (or bifurcated) model, the provincial government directly (and separately) manages cities (prefectures) and counties. There is no fiscal relationship between the city (prefecture) government and the county government. In the second, the "city (prefecture) managing county" (or hierarchical) model, there are direct intergovernmental fiscal relations between the provincial and city (prefecture) government and no direct fiscal relationship between provincial and county governments. The central government appears to favor the "province managing county" model (Qiao and Shah 2006). At lower levels, the central government appears to encourage a "county-managing-township" model in poor jurisdictions. Under this model, county governments manage the fiscal expenditures of townships.

Although decentralization provided them with significant autonomy, subnational government officials still practice "administrative autonomy" to increase their effective autonomy and go beyond the confines and constraints imposed by the local budget and related regulations. In general, funds are managed through a "distributive model," whereby various government agencies and divisions of the finance department make their own expenditure decisions, some of which may not be included in the budget.

#### EXTRABUDGETARY FUNDS

One manifestation of administrative autonomy at the subnational government is the use and prevalence of extrabudgetary funds. A significant portion of subnational

government expenditures do not go through regular budget channels. The largest share of extrabudgetary funds is spent on government administration (at 63 percent for 2002) (table 5.2). Other uses of extrabudgetary funds also overlap considerably with those of ordinary budgetary funds.

Since the central government took measures to transform its extrabudgetary expenditures into budgetary expenditures, extrabudgetary funds at the central government level have decreased dramatically. In contrast, extrabudgetary expenditures still play a very important role at the subnational level, despite the central government's efforts to reduce their use (table 5.3).

#### ILLEGAL FEES

Another manifestation of administrative autonomy has been the use of illegal fees by subnational governments, in particular rural taxes and surcharges. This type of revenue source had been particularly important in townships. These funds lack transparency; there is, for example, no formal definition of or statistics on rural fees. However, the amount can be roughly estimated by the tax and surcharges paid directly by farmers because of the revenue-driven attribute of these expenditures. In 2001 total rural tax and surcharges amounted to more than Y120 billion.<sup>7</sup> Because the sources of funds lack transparency, one can suspect that the uses of funds may be less efficient than in the case of regular budget resources.

**Table 5.2 Extrabudgetary Spending by Subnational Governments, 1998–2002**  
(yuan, billion)

<i>Year</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>
Public	158.8	222.5	250.0	265.5	222.5
administration	(54.4)	(63.1)	(64.9)	(69.3)	(63.2)
Capital	39.4	42.6	35.0	26.0	42.6
construction	(13.5)	(12.1)	(9.1)	(6.79)	(12.1)
Township	33.5	38.7	40.0	26.8	38.7
expenses	(11.5)	(11.0)	(10.4)	(7.0)	(11.0)
Special	42.4	0	0	0	0
expenditures	(14.5)	(0)	(0)	(0)	(0)
City	0	14.6	15.0	16.0	14.6
maintenance	(0)	(4.2)	(3.9)	(4.2)	(4.2)
Other	17.7	34.4	45.0	48.8	34.4
	(6.1)	(9.8)	(11.7)	(12.7)	(9.8)
Total	291.8	313.9	352.9	385	383.1
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

*Source:* National Bureau of Statistics various years.

*Note:* Figures in parentheses represent percentages of the total.



**Table 5.3 Extrabudgetary and Budgetary Expenditure for Consolidated Local Governments, 1985–2002**

<i>Year</i>	<i>Budgetary expenditures (yuan, billion)</i>	<i>Extrabudgetary expenditures (yuan, billion)</i>	<i>Extrabudgetary expenditures as percentage of budgetary expenditures</i>
1985	120.9	81.3	67.2
1990	207.9	166.9	80.3
1991	229.6	182.9	79.7
1992	257.2	205.7	80.0
1993	333.0	111.5	33.5
1994	403.8	148.5	36.8
1995	482.8	198.0	41.0
1996	578.6	280.3	48.5
1997	670.1	254.2	37.9
1998	767.3	277.9	36.2
1999	903.5	297.4	32.9
2000	1,036.7	331.8	32.0
2001	1,313.5	359.2	27.4
2002	1,528.1	357.2	23.4

*Source:* National Bureau of Statistics 2004.

One factor that has facilitated the broad use of administrative discretion in China has been the relatively weak institutions of budget execution and ex post budget audit and control. Although the National People's Congress is authorized to approve the budget, the execution of the budget has not been strictly monitored in China until recently. The State Council issues both the fiscal discipline and the fiscal policy regulations, but fiscal policy issues are typically emphasized more strongly. Currently, the Audit Bureau, a department under the State Council, is authorized to audit government accounts and impose fiscal discipline; all sub-national governments except township governments have their own audit bureaus.

#### SOFT BUDGET CONSTRAINTS

Soft budget constraints remain a problem in China. One manifestation of soft budget constraints is the dealings between the government and SOEs, which are generally less competitive than private firms and rely heavily on the government to survive. In 2003 the government spent 2 percent of total revenues to compensate for SOE losses. Although this support is the cause of important distortions, the government cannot abandon these SOEs in the short term because of the potential social problems associated with the massive unemployment of SOE employees, who make up 27 percent of China's labor force. In the past, the government has increased investment in SOEs to improve their competitiveness. Direct bailouts and soft budget constraints have recently become contentious

issues, however. These problems are likely to continue as long as the government does not change its fundamental strategy on SOEs.

According to China's 1994 Budget Law, subnational governments are forbidden from borrowing on the capital market, except with special approval from the central government.<sup>8</sup> Subnational governments can effectively borrow through SOEs, however. SOEs, which depend on various kinds of government subsidies and are often regarded as de facto government agencies, can and do borrow from banks and on the capital market. In fact, subnational governments sometimes create SOEs in order to finance particular projects.

In recent years, the central government has taken steps to improve expenditure management processes. Some of the main measures include the following:

- Creation of budgeting departments, by which each government agency or public service unit has a single budget, which combines all budgetary and extrabudgetary funds
- Introduction of a Treasury system and the centralization of payment administration, by which all expenditure funds for each government are controlled in a single account of the central bank, with payments going directly to sellers or service providers (and the elimination of all other accounts at commercial banks and of extrabudgetary account)<sup>9</sup>
- Standardization of governmental purchasing, by which all government purchasing of products, projects, and services that exceed a defined amount go through standard tendering procedures.

These measures have restrained the administrative discretion of local governments to some extent. However, fundamental problems, such as the wide use of extrabudgetary funds, remain. Subnational governments are still actively pursuing administrative autonomy within the limited existing legislative autonomy.

## **Main Challenges Facing the Current System of Expenditure Assignments**

Although recent fiscal decentralization reforms in China have helped clarify the revenue assignment between the central government and provincial governments, little has been done to reform and clarify expenditure assignments, especially at the subprovincial level. This section describes the main challenges facing the current system of expenditure assignments.

### *Mismatch between Expenditure Responsibilities and Revenue Sources and the Underprovision of Basic Public Services*

Local governments (especially county and township governments) have very heavy expenditure responsibilities in education, health, and social insurance. While the tax-sharing system reform has recentralized revenue assignments, there has been considerable devolution of expenditure responsibilities to local governments. The

two policy trends have created vertical imbalances that have not been adequately offset by intergovernmental transfers.

This set of circumstances raises the fundamental issue of whether lower levels of government have adequate resources to enable them to finance their expenditure assignments. The underprovision of basic public services at the local level endangers sustainable economic development of many areas, and it causes significant welfare losses for the country.

China's rural health care system, for example, appears to be failing to provide an effective mechanism for delivering health care to rural residents. It has been increasingly acknowledged in official circles and elsewhere that China is now confronting fundamental problems in its system of rural health care delivery, and much of the problem can be attributed to improper expenditure assignments.<sup>10</sup>

The education sector also suffers from inadequate funding and imbalances among major components of expenditure. Underpaid staff, dangerous school facilities, and inadequate funds for operations are readily observable in many rural areas. All of these problems would seem to be caused by inadequate funding for education. The imbalance between expenditures on teaching staffs and operational/construction costs also appears to be having a negative impact on the delivery of education services.

### *Significant Regional Disparities in Fiscal Performance*

The current system of decentralized finance in China yields significant horizontal fiscal disparities. These disparities occur across as well as within provinces, and they are growing (Qiao and Shah 2006). The growing disparities in per capita expenditure and service delivery are likely to hurt national cohesion.

Disparities in expenditure—which fell for several years starting in 1998 after the central government introduced several intergovernmental transfer programs—have grown since 2000. In 2003 public per capita expenditures in the best-off province were 8.5 times those of the worst-off province, and the coefficient of variation across provinces was 0.77 (table 5.4). For many developing countries, it is regarded horizontally equitable if a coefficient of variation across regions is about 0.3–0.4.

These regional disparities in per capita expenditures exist for almost all major expenditure items in subnational budgets. The disparities are particularly pronounced for some items: in 2003, for example, the differences between public health expenditures in the highest and lowest provinces differed by a factor of 13, and the coefficient of variation was 0.8 (table 5.5). In contrast, expenditures on “public administration” in the highest and lowest provinces differed by a factor of just 3, and the coefficient of variation was 0.4.

### *Lack of Horizontal Accountability Mechanisms*

Under China's current system of expenditure assignments, local governments are not prioritizing local budget expenditures based on the needs and preferences of their residents. The low horizontal accountability of local government officials to

**Table 5.4 Per Capita Expenditure Disparities across Provinces, 1990–2003**  
(yuan)

<i>Year</i>	<i>Maximum</i>	<i>Minimum</i>	<i>Average</i>	<i>Coefficient of variation</i>
1990	613	99	251	0.57
1991	664	102	280	0.56
1992	729	112	296	0.56
1993	958	122	372	0.57
1994	1,452	157	444	0.69
1995	1,837	226	538	0.71
1996	2,348	278	632	0.72
1997	2,806	308	698	0.77
1998	3,211	347	811	0.76
1999	3,620	409	943	0.76
2000	3,635	225	1,075	0.70
2001	4,387	532	1,383	0.73
2002	5,307	655	1,620	0.75
2003	6,361	741	1,792	0.77

*Source:* National Bureau of Statistics various years.

their residents has likely exacerbated problems with service delivery. Limited fiscal resources do not prevent local government from expanding into areas with heavy overhead expenditures, because there are no clear delineations for government responsibilities between the public and private sectors or across governments at different levels. The current system presents local governments with a wide array of responsibilities, including economic development and adjustment to macro-economic changes, in addition to responsibility for social affairs and the delivery of public services. This system provides local governments with various channels to encroach into private sector activities while reducing the level and quality of basic public services, because local officials are not restrained by any form of institutionalized local political participation. Far from discouraging this behavior, the current system of incentives in intergovernmental relations encourages it, because local officials are rated and promoted for their performance largely based on economic development rather than service.

### *Lack of Clear Assignment of Responsibilities*

The lack of explicit expenditure assignment at the subprovincial level has led to considerable overlapping of responsibilities. Although in theory there is nothing wrong with concurrent assignments, in practice concurrent responsibilities make it more difficult to identify which level of government should be accountable for

**Table 5.5 Public per Capita Expenditure for Selected Items, by Province, 2003**  
(yuan)

<i>Province</i>	<i>Capital investment</i>	<i>Education</i>	<i>Health</i>	<i>Public administration</i>	<i>Agriculture</i>
Anhui	74.0	131.9	26.7	80.0	50.9
Beijing	494.3	678.5	340.8	268.4	179.8
Chongqing	204.7	137.2	34.6	117.7	54.3
Fujian	107.4	266.5	59.4	105.1	77.8
Gansu	126.7	182.7	45.3	120.3	79.3
Guangdong	302.8	333.5	92.5	220.6	120.7
Guangxi	82.4	162.9	43.3	95.4	61.6
Guizhou	81.8	155.4	44.7	112.0	63.7
Hainan	165.9	182.6	57.3	129.6	86.5
Hebei	61.4	175.9	51.5	99.0	45.2
Heilongjiang	101.6	212.6	60.5	128.3	116.6
Henan	52.0	135.7	31.2	86.0	37.3
Hubei	51.2	148.4	40.4	95.1	47.3
Hunan	77.1	135.2	25.3	88.8	54.3
Inner Mongolia	328.3	228.4	71.8	191.9	149.4
Jiangsu	102.6	241.8	75.0	144.7	89.0
Jiangxi	79.7	151.5	35.4	84.5	55.2
Jilin	117.8	198.6	59.7	115.5	80.5
Liaoning	161.6	233.6	59.8	147.9	104.0
Ningxia	350.8	237.5	77.2	133.3	149.0
Qinghai	553.2	236.6	99.2	208.3	140.2
Shaanxi	125.4	179.8	45.3	127.2	78.8
Shandong	69.8	196.3	43.4	123.1	67.7
Shanghai	1,430.4	767.8	213.0	261.8	138.8
Shanxi	111.2	203.4	61.3	137.1	79.0
Sichuan	86.2	125.2	36.1	108.7	55.8
Tianjin	518.4	470.5	151.4	173.5	79.5
Xinjiang	330.9	274.2	94.2	197.1	120.0
Yunnan	161.1	212.9	74.8	126.7	112.0
Zhejiang	135.3	350.9	97.0	203.5	127.9
Maximum	1,430.4	767.8	340.8	268.4	179.8
Minimum	51.2	125.2	25.3	80.0	37.3
Average	221.5	244.9	74.9	141.0	90.1
Coefficient of variation	1.2	0.6	0.8	0.4	0.4

Source: National Bureau of Statistics 2004.

the delivery of a particular service. Underprovision of services is more likely in the presence of extensive concurrent responsibilities.

While there are some broad divisions, such that only the central government and provincial governments tend to run higher education institutions and professional and technical education is managed by the provinces and some cities, all levels of government run high schools and primary schools. In practice, expenditure responsibilities tend to be divided by “ownership” of assets: a school set up by the county is financed from county funds, while one set up by the township is financed from the township budget.

The lack of explicit assignments has also created considerable murkiness regarding which level is responsible for financing these expenditures or how these financing responsibilities are divided. This has facilitated the convenient offloading of responsibilities down the hierarchical structure of government. In education, for example, despite their inadequate resources, counties have been called on to finance basic education reform; some of these upper-level government measures can be perceived as unfunded government mandates.

### *Lack of Efficient Expenditure Assignments*

Several current expenditure assignments are problematic. The most conspicuously inappropriate assignment is the responsibility assigned to city- or county-level governments for pensions, unemployment, and income support schemes. These assignments are replicated almost nowhere else in the world; in most countries, these programs are central government responsibilities.

Either provincial or national pooling would seem the correct approach to the assignment of these services, as these types of social security schemes require a level of risk pooling and redistribution that cannot be matched at the level of county governments.<sup>11</sup> In terms of redistribution, poor communities with the highest needs are also least financially able to fund these expenditures. The inability of many local governments to finance the social safety net has led in recent years to widespread pension arrears and defaults that have forced the central government to intervene with subsidies.

## **Policy Options**

Because of the interdependencies across issues, addressing the problems with the current system of expenditure assignment in China will require an integrated comprehensive strategy. Reform may be phased in stages, as long as an explicit strategy guides the reforms. Some policy options are presented below.

### *Set Up Formal and Stable Expenditure Assignments to Clarify Responsibilities*

A clear, explicit assignment of expenditure responsibilities at all levels is essential. Such an assignment would facilitate more efficient organization and provision of

basic public services, improve the accountability of public officials to residents, reduce government encroachment in the private sector, and help address vertical and horizontal fiscal disparities.

In the past two decades, China has made very considerable progress in separating government from SOEs and redefining the functions and responsibilities of government in the economy. Significant problems from an expenditure assignment perspective still remain, however. In particular, a stable and transparent expenditure assignment at all levels of government emphasizing exclusive rather than concurrent responsibilities is desirable.<sup>12</sup>

Practice can substitute for explicit legal assignments, but young decentralized countries such as China can avoid these costly transactions through more explicit and clear assignments.<sup>13</sup> When concurrent responsibilities are needed or desirable, these assignments should be clarified by explicitly assigning the array of attributes that go with each concurrently assigned function, including actually producing a good or delivering a service; providing or administering the service; financing the service; and setting standards, regulations, and policies guiding the provision of government services. In addition to clarifying assignments, it is important to enhance coordinating institutions across levels of government to address different interpretations and conflicts arising from concurrent assignments.<sup>14</sup>

### *Reassign Selected Expenditure Responsibilities*

The financing and provision of social security services (pensions, disability and survivor benefits, and unemployment) should be recentralized, at the provincial or central government levels. The recent policy measures assigning more responsibility for social security to the central government represent steps in the right direction.

### *Address Fiscal Disparities and Ensure That All Citizens Have Access to Basic Public Services*

Addressing fiscal disparities will require significantly enhancing the role of equalization grants in the current intergovernmental system. This will require an increase in the pool of funds dedicated to equalization, the consolidation of many small transfers with equalization objectives, and adoption of a distribution formula that takes into account fiscal capacities and expenditure needs. At the subcentral level, clear guidelines for the provinces and counties (if applicable) need to be legislated to introduce sufficient funding for equalization grants for the governments immediately below and distribution formulas that capture, to the extent the data allow, differences in fiscal opportunity and expenditure needs of their subordinate local governments.

A small set of conditional sectoral grants may also be considered in order to guarantee some minimum standards of service throughout China. In this regard, it may be worth considering the use of national minimum standards for basic public services and the use of conditional grants to ensure that all subnational governments

have the means to finance them. These standards could include items such as nine years of compulsory education, access to basic hygiene and medical treatment, basic unemployment compensation, survivor and dependent insurance, and essential communal facilities.

Some countries differentiate in the assignment of expenditure responsibilities to subnational governments between “delegated” and “own” responsibilities. In the case of delegated responsibilities, the central authorities have the right to regulate and monitor the delivery of services at the subnational level but also the obligation to ensure financing and administrative capacity of subnational governments. While the use of national minimum standards for basic public services would help reduce regional disparities and enhance the country’s cohesiveness, they would also reduce the autonomy of subnational governments. If the introduction of national minimum standards is the direction adopted, these measures should be preceded by revamped national sectoral policies in the affected sectors.

### *Improve Accountability and the Quality of Local Expenditure Management*

The accountability of subnational government officials to local residents is weak; the direct appointment of officials tends to make them accountable largely to government authorities at higher levels. The system needs to introduce adequate accountability mechanisms to provide incentives to subnational governments to properly weigh spending on economic development and construction and other public services, especially social services. In addition to local elections, various approaches, such as reforming the system of residential status to improve mobility, could be explored to better empower communities.

## Notes

1. See, for example, Zhang and Zou (1998); Jin, Qian, and Weingast (1999); Lin and Liu (2000); and Qiao, Martinez-Vazquez, and Xu (2005).
2. For similar warnings on the potential failures of decentralization policies, see Prud’homme (1995) and Tanzi (2000).
3. On local elite capture issues, see the discussion in Bardhan and Mookherjee (2000) and Bardhan (2002). On local versus central government corruption, see Tanzi (1995); Prud’homme (1995); Bardhan and Mookherjee (1998, 1999); Besley and Coate (1999); Brueckner (1999); and Treisman (1999a, 1999b, 1999c).
4. This is not a well-researched area in China’s fiscal federalism. For a case study of several local governments that highlights the importance of the lack of accountability at the local level, see Wang (2002).
5. Before the reforms of the mid-1980s, the government determined both the fiscal expenditures and the expenses of SOEs.



6. The contributions of both the central government and subnational governments increased to Y20 in 2006.
7. Press Conference of Premier Zhu Rongji in the Fourth Session of the Ninth National People's Congress, *People's Daily*, March 16, 2001.
8. Borrowing from the central government is significant. Subnational governments' debt with the central government was estimated at \$1.2 billion in 2005, representing 12 percent of total government debt that year.
9. This reform began in 2001, with the "Notice on Issues of Fiscal Treasury Management Reform," issued by the State Council, and "Experimental Methods on Fiscal Treasury Management Reform," issued by the Ministry of Finance and the central bank.
10. For other factors, see World Bank (2005).
11. See, for example, Ahmad (1995) and the references therein.
12. In many decentralized countries, including Australia, Brazil, Canada, the Russian Federation, and the United States, many responsibilities are assigned exclusively to local governments.
13. This is precisely what the Russian Federation attempted to do in the comprehensive Budget Code of 2002, although it fell short of achieving this aim.
14. Australia, Canada, and New Zealand use periodic formal meetings of elected officials and bureaucrats at different levels to discuss mutually important expenditure assignments and other fiscal issues.

## References

- Ahmad, Ehtisham. 1995. "A Comparative Perspective on Expenditure Assignments." In *Reforming China's Public Finances*, ed. Ehtisham Ahmad, Gao Qiang, and Vito Tanzi. Washington, DC: International Monetary Fund.
- Bahl, R., and J. Linn. 1992. *Urban Public Finance in Developing Countries*. Oxford: Oxford University Press.
- Bardhan, Pranab K. 2002. "Globalization and Limits to Poverty Reduction." Department of Economics, University of California, Berkeley.
- Bardhan, Pranab K., and Dilip Mookherjee. 1998. "Expenditure Decentralization and the Delivery of Public Services in Developing Countries." CIDER Working Paper, Center for International and Development Economics Research, University of California, Berkeley.
- . 1999. "Relative Capture of Local and National Governments: An Essay in the Political Economy of Decentralization." Working Paper, Institute for Economic Development, Boston University.
- . 2000. "Capture and Governance at Local and National Levels." *American Economic Review* 90 (2): 135–39.
- Besley, Timothy, and Stephen Coate. 1999. "Centralized versus Decentralized Provision of Local Public Goods: A Political Economy Analysis." NBER Working Paper 7084, National Bureau of Economic Research, Cambridge, MA.
- Brueckner, Jan K. 1999. "Fiscal Federalism and Capital Accumulation." *Journal of Public Economic Theory* 1 (2): 205–24.

- Hayek, F. A. 1945. "The Use of Knowledge in Society." *American Economic Review* 35 (4): 519–30.
- Jin, Hehui, Yingyi Qian, and Barry R. Weingast. 1999. "Regional Decentralization and Fiscal Incentives: Federalism, Chinese Style." Paper presented at the Nobel Symposium on Transition, Stockholm, September.
- Lin, Justin Yifu, and Zhiqiang Liu. 2000. "Fiscal Decentralization and Economic Growth in China." *Economic Development and Cultural Change* 49 (1): 1–22.
- Martinez-Vazquez, Jorge. 1998. "The Assignment of Expenditure Responsibilities." Andrew Young School of Policy Studies, Georgia State University, Atlanta.
- Martinez-Vazquez, Jorge, and R. M. McNab. 2003. "Fiscal Decentralization and Economic Growth." *World Development* 31 (9): 1596–616.
- Ministry of Finance. Various years. *China Fiscal Statistical Yearbook*. Beijing: China Finance and Economic Publishing House.
- National Bureau of Statistics. Various years. *China Statistical Yearbook*. Beijing: China Statistics Press.
- Oates, Wallace E. 1972. *Fiscal Federalism*. New York: Harcourt Brace Jovanovich.
- . 1993. "Polluting Charges as a Source of Public Revenues." In *Economic Progress and Environmental Concerns*, ed. Herbert Giersch, 135–52. Berlin: Springer.
- Prud'homme, Remy. 1995. "The Dangers of Decentralization." *World Bank Research Observer* 10 (2): 201–20.
- Qian, Yingyi, and Barry R. Weingast. 1997. "Federalism as a Commitment to Preserving Market Incentives." *Journal of Economic Perspectives* 11 (4): 83–92.
- Qiao, Baoyun, Jorge Martinez-Vazquez, and Yongsheng Xu. 2005. "Equalization Transfers and the Tradeoff between Growth and Equity in China." Working Paper, Andrew Young School of Policy Studies, Georgia State University, Atlanta.
- Qiao, Baoyun, and Anwar Shah. 2006. "Local Government Organization and Finance in China." In *Local Government Organization and Finance*, ed. Anwar Shah. Washington, DC: World Bank.
- Seabright, Paul. 1996. "Accountability and Decentralization in Government: An Incomplete Contracts Model." *European Economic Review* 40 (1): 61–90.
- Tanzi, Vito. 1995. "Fiscal Federalism and Decentralization: A Review of Some Efficiency and Macroeconomic Aspects." In *Annual World Bank Conference on Development Economics*, ed. Michael Bruno and Boris Pleskovic. Washington, DC: World Bank.
- . 2000. "The Role of the State and the Quality of the Public Sector." IMF Working Paper 00/36, International Monetary Fund, Washington, DC.
- Treisman, Daniel. 1999a. "Corruption and Federalism," Working Paper, Department of Political Science, University of California, Los Angeles.
- . 1999b. "Decentralization and Inflation: Commitment, Collective Action, or Continuity?" *American Political Science Review* 94 (4): 837–57.
- . 1999c. "Political Decentralization and Economic Reform: A Game-Theoretic Analysis." *American Journal of Political Science* 43 (2): 488–517.
- Wang, Rong. 2002. "Political Dimensions of County Government Budgeting in China: A Case Study." Institute of Development Studies, Brighton, Sussex, United Kingdom.

- World Bank. 2005. "Public Expenditure and the Role of Government in the Chinese Health Sector." Briefing Note 5, Rural Health in China Briefing Notes Series, World Bank, Washington, DC.
- Zhang, Tao, and Heng-fu Zou. 1998. "Fiscal Decentralization, Public Spending, and Economic Growth in China." *Journal of Public Economics* 67 (2): 221–40.

# Taxation Reforms and the Sequencing of Intergovernmental Reforms in China: Preconditions for a *Xiaokang* Society

## 6

EHTISHAM AHMAD

The Chinese authorities place great emphasis on the precepts of a *Xiaokang* society (a “well-rounded society with broad prosperity”), to ensure that the benefits of growth and development are shared with the disadvantaged members of society and with poorer regions with limited resources and capabilities. The concern with growth and distribution needs to be linked to the mechanisms to finance the needed spending, principally taxes but also shared revenues, transfers and borrowing. This chapter examines the context and interactions between tax reforms, revenue assignments and transfers, and access to capital markets with a view to establishing key principles and areas of work consistent with the medium-term perspective of the *Xiaokang* society, also enshrined in the government’s goals for 2020.

The intergovernmental reforms of the 1980s have been described as an example of “market-preserving” federalism (Montinola, Qian, and Weingast 1995; Qian and Weingast 1997). The growth response was spectacular, but local governments<sup>1</sup> had incentives to minimize upward transfers to the center, and there was an expansion of off-budget revenues that were not shared. Together with the decline in total budget revenues because of the transition from a system based on profit transfers from state-owned enterprises, there was a precipitous drop in the revenues accruing to the central government (Ahmad, Li, and Richardson 2002; chapter 3 in this volume). This led to severe constraints on the ability of the central government to pursue macroeconomic and redistributive policies. The initial positive aspect of the informal retention of revenues by local governments has become an impediment to deeper enhancements of market-based governance and the achievement of the objectives of the *Xiaokang* society.

The 1994 tax and revenue-sharing reforms laid the foundations of a modern tax system, with the establishment of the State Administration of Taxation, responsible for the collection of central and shared taxes. In addition, there have been continuing efforts by the authorities to make the budget system more transparent, with a rationalization of off-budget resources, and gradual requirement that all funds pass through treasury single accounts (TSAs), ensuring fuller disclosure of all financing. This has fundamentally changed the nature of the intergovernmental system which had been based on upward-revenue-sharing arrangements.

While the reforms nominally took the central government's share of increasing total revenues to around 55 percent (one of the main objectives of the exercise), the center's effective room for redistribution remains severely constrained. There is an unfinished tax reform agenda, aimed at creating production efficiency and a level playing field for the operation of market-led investments. The tax reforms also have to be assessed in terms of their distributional impact subject to administration constraints. The interactions between the tax reforms and transfer design are also critical. Similarly, completion of the agenda of enhanced subnational public financial management—including better-ordered, better-regulated, and transparent access to capital markets—is needed in order for the incentives for improved subnational governance to operate effectively. These are preconditions for the development of a harmonious society.

The creation of a level playing field involves the completion of the reform agenda for the value added tax (VAT) and income tax (both personal and corporate). Continuation of the VAT reforms (moving to a consumption base and expanding coverage of services) and reform of the income tax (addressing coverage as well as authority to set rates) will have an impact on subnational (termed *local* in China) revenue sources. In addition, there is an agenda for local taxation reforms. A critical deficiency of the current tax system, albeit consistent with China's unitary constitution, is that local governments have little discretion over the setting of rates of subnational taxes. This precludes the establishment of hard budget constraints for lower levels of government or creation of incentives to manage their resources or spending efficiently. Thus, there is a weak basis for local government accountability. Despite the efforts to create provincial TSAs, remaining weaknesses in public expenditure management processes and incomplete information and the proliferation of informal effective local financing arrangements (through numerous fees and charges and indirect borrowing, for example) have now become a positive impediment to the creation of a harmonious society.

This chapter examines the sequencing of intergovernmental tax reforms in order to establish key principles and policy recommendations consistent with the medium-term perspective of the *Xiaokang* society, enshrined in the government's goals for 2020. The next section assesses the 1994 reforms and makes the case for further consolidation and reform of the tax system as part of a consolidated effort to deepen fiscal reforms. The second section examines the main central and shared taxes (the VAT, the personal income tax, and the corporate income tax). The third section looks at subnational (local) taxation in China, examining the interlinkages

between these reforms and the system of intergovernmental transfers. The last section summarizes the recommendations for reform.

## **The 1994 Reforms and Their Aftermath**

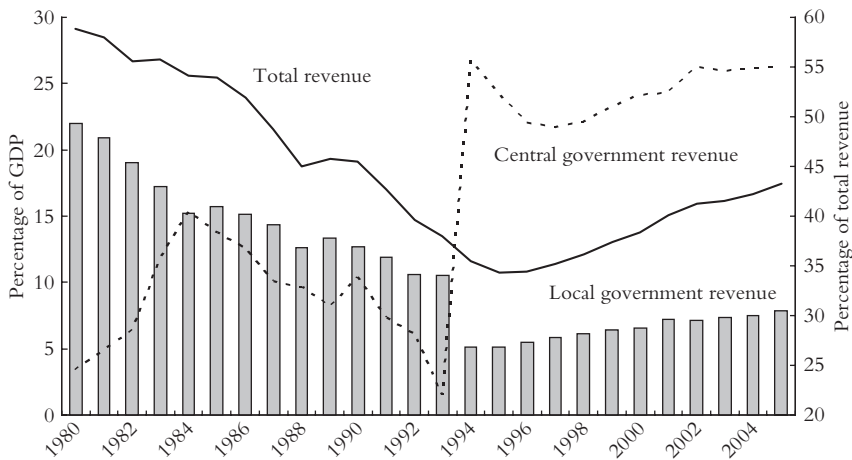
China carried out a far-reaching set of fiscal reforms in 1994, establishing the State Administration of Taxation and fundamentally changing the structure of intergovernmental fiscal relations from upward revenue sharing to a more modern system facilitating an active central government redistributive policy. This was accompanied by successive reforms to the budget and treasury systems to ensure that off-budget financing by subnational governments was fully tracked and accounted for. The reforms assigned some revenues entirely to the central government or local governments and introduced the sharing of revenues from some taxes. For example, 75 percent of VAT revenue was assigned to the central government, with the remaining 25 percent of the VAT, as well as 100 percent of the revenue from the business tax, assigned to local governments (Ahmad, Qiang, and Tanzi 1995). At the same time, the system of transfers from the center to local governments was redesigned to include an equalization component based on the expenditure needs and revenue capacities of each province.

The 1994 reform has been spectacularly successful: tax ratios have increased significantly, and the share of central government in total revenue has risen rapidly toward the intended level of about 60 percent (figure 6.1). Upward revenue sharing has been replaced by a more normal system of an initial vertical fiscal imbalance in the center's favor, and a system of intergovernmental transfers. However, the center's ability to redistribute revenues is constrained by a "political economy" compromise to guarantee 1994 levels of revenues to provinces (a measure that tends to favor the coastal provinces) and to return a share of additional revenues collected to the revenue-producing provinces. Both constraints reinforce the 1994 distribution of resources in favor of the more prosperous provinces, circumscribe the disposable resources at the center available for redistribution, and contribute to growing disparities in China.

The buoyant VAT and personal income taxes are also shared on a derivation basis. This contributes to regional disparities, because the bases tend to be concentrated in relatively prosperous regions (Fedelino and Ter-Minassian 2006). There is thus a tendency for the overall tax-sharing system to be regressive, especially as the resources available for equalization and specific-purpose transfers have been limited.

Revenue assignments are poorly linked to spending responsibilities in China (Ahmad, Li, and Richardson 2002). The issue of spending responsibilities is beyond the scope of this chapter. Suffice it to say that unfunded mandates abound, creating serious difficulties for poorer provinces and regions. The inadequate scope for equalization transfers further constrains the capabilities of poorer regions to ensure adequate levels of education and basic health care (Ministry of Health 2005).

**Figure 6.1 Central, Local, and Total Government Revenues, 1980–2005**



Source: Ministry of Finance various years; chapter 4 of this volume.

Note: Total and local government revenues are measured as percentages of GDP, along the left-hand axis. Central government revenue is measured as a percentage of total revenue, along the right-hand axis. For comparability with older data, the official definition of *revenue* is used.

Attempts by the central government to use specific-purpose transfers to address basic spending responsibilities also blur local responsibilities for such spending. There are also considerable monitoring and implementation difficulties, given the constraints on information flows on subnational operations. Although the budget law prohibits direct borrowing and guarantees by local governments, ambiguity permits agencies or enterprises of local governments to borrow, often on behalf of local governments. Some of the gray elements of the “market-preserving federalism” of the early period, which facilitated the initiation of the growth process, now create uncertainties and risks. Greater clarity over the ground rules is needed to continue to provide incentives for sustainable growth in conjunction with creating the basis for a *Xiaokang* society.

It is useful to examine some of the methodological issues that might be considered in establishing a road map for tax reforms at the central and subnational levels in China. This discussion draws on the literature of optimal taxation and desirable directions of reform, as well as more recent developments in inter-governmental finance. Interactions between central tax reforms and the revenue shares accruing to local governments are stressed. Although personal income taxes are one of the fastest-growing sources of revenue, given the increasing incomes of the Chinese population, collections are still relatively small. The focus is therefore on the VAT. Some options are presented for reforming local

taxation to strengthen local accountability and enhance competition in the short to medium term.

### *Principles Underlying Tax Reforms*

It is useful to examine welfare-improving reforms in tax systems in terms of revenue implications as well as distributional effects, production efficiency, and administrative constraints (Ahmad and Stern 1991). While theory and empirical work suggest that a degree of differentiation in the tax element in the price of goods is likely to be welfare improving, a single-rate VAT is strongly preferred to a complex, multiple-rate VAT, which is difficult to administer (Ebrill and others 2001). However, the insights from Ahmad and Stern continue to apply, and it is useful to examine jointly the complete set of indirect tax instruments, particularly VAT and excise taxes. A judicious combination of a single-rate, consumption-based VAT and excises can move in the right direction.

Much of the contribution of the personal income tax to the desired distributional considerations comes from the initial exemption limit. A relatively small number of bands is needed for distributional purposes. A similar principle can be applied to the taxation of agricultural land and urban property. The exemption limit not only serves the distributional objective, it also simplifies the work of the tax administration, although vigilance is required (by cross-checking information from various sources, for example) to guard against tax evasion or misrepresentation of property values.

It has long been recognized that the corporate income tax (also known as the enterprise income tax [EIT]) does not need to be set at different rates or differentiated by types of ownership (foreign or domestic) or by lower levels of government. The Chinese approach to achieving uniformity of the EIT has been expedient and gradual, driven by the very practical desire not to create major perturbations in the resources accruing to different levels of government.

Many of the principles underlying tax reforms were enunciated as the driving force behind the 1994 tax reforms (Xu and Lin 1995). Implementation has been gradual, however, and complicated by detailed intergovernmental considerations superimposed on each tax. The resulting tax system is overly complex, lacks transparency, and does not meet its full potential of providing incentives to local government. A significant reform agenda thus remains.

### *Subnational Taxation*

Two different approaches underpin the issue of tax assignments to different levels of government (see Ambrosanio and Bordignon 2006 for a comprehensive review). The normative approach follows the tradition of Musgrave (1961) and Oates (1972); the public choice approach builds on Brennan and Buchanan (1980).



The normative approach relates tax assignments to the optimal spending functions of each level of government. As redistribution and macroeconomic stabilization are typically central responsibilities, the theory suggests that progressive income taxes and the corporate income tax should also be assigned to the center. Benefit taxation is generally recommended in relation to the allocation function to be shared by the central and local governments. This approach also recommends that local governments should tax immobile bases or assets to prevent tax competition; tax bases that are evenly distributed, to avoid exacerbating horizontal inequalities; and use taxes that have a stable yield to facilitate expenditure planning. It has been criticized for assuming that governments are benevolent and maximize social welfare and for ignoring political power and bargaining.

The positive approach models political power and incentives. It recommends broad tax bases to minimize tax evasion, with higher rates imposed on less-elastic bases. This approach stresses the benefits of tax competition among local governments as one of the constraints on government size and rapaciousness, thus suggesting that subnational taxes be levied on mobile tax bases. It has been criticized on the grounds that local tax competition can lead to allocative distortions and beggar-thy-neighbor policies.

More-recent political economy models stress the importance of taxation as a source of finance for local governments, in order to generate “yardstick competition” (see Besley and Coate 2003; Lockwood 2006). Such taxation helps focus the attention of citizens on the efficiency of resource use within their jurisdictions. Although China is a unitary state, its size and complexity suggest that the experiences of large federal countries may be relevant (tables 6.1 and 6.2).

**Table 6.1 Sources of Tax Revenues of Local Governments in Selected Federal Countries, 2001**  
(percentage of total revenue)

<i>Country</i>	<i>Income tax and tax on profits</i>	<i>Payroll tax</i>	<i>Property tax</i>	<i>General consumption tax</i>	<i>Taxes on specific goods and services</i>	<i>Taxes on use and so forth</i>	<i>Other taxes</i>
Australia	0	0	100.0	0	0	0	0
Austria	37.7	19.1	10.0	22.7	3.8	1.7	5.0
Belgium	85.8	0	0	1.4	7.9	4.6	0.3
Canada	0	0	91.6	0.2	0	1.6	6.5
Germany	77.1	0	16.6	5.2	0.5	0.4	0.2
Mexico	0	0.1	88.5	0	1.9	0.9	8.6
Switzerland	83.1	0	16.6	0	0.2	0.1	0
United States	6.2	0	71.5	12.4	5.1	4.8	0

Source: Ambrosanio and Bordignon 2006.

**Table 6.2 Sources of Tax Revenues of Local Governments in Selected Unitary Countries, 2001**  
(percentage of total revenue)

Country	Income tax and tax on profits (individuals)	Income tax and tax on profits (corporate)	Property tax	General consumption taxes	Taxes on specific goods and services	Taxes on use and so forth	Other taxes <sup>a</sup>
Denmark	91.1	2.2	6.6	0	0	0	0
Finland	78.6	16.9	4.3	0	0	0	0.2
France	0	0	49.1	0	7.6	3.4	39.8
Greece	0	0	56.2	2.8	23.1	17.9	0
Hungary	0.8	0	22.2	71.1	1.0	4.5	0.4
Iceland	80.4	0	12.4	7.2	0	0	0
Ireland	0	0	0	100.0	0	0	0
Italy	8.8	0	18.0	0	8.7	10.6	53.9
Japan	47.5	27.4	31.1	7.0	8.1	5.4	1.0
Luxembourg	0	92.6	5.8	0	1.0	0.2	0.3
Netherlands	0	0	57.5	0	0	42.5	0
Norway	90.6	0	7.5	0	0	1.8	0
Portugal	22.4	7.9	44.3	17.3	12.3	3.3	0.3
Spain	25.3	21.9	37.4	11.7	9.9	13.7	1.9
Sweden	100.0	0	0	0	0	0	0
United Kingdom	0	0	99.9	0	0	0	0.1

Source: Ambrosiano and Bordignon 2006.

a. Other taxes include taxes on net wealth (Norway); estate taxes (Finland and Portugal); and some residual taxes, mainly on business (France and Italy).

There is consensus that own-taxes are needed at the subnational level. This need is highlighted in a dynamic context, in order to enforce a hard budget constraint at the subnational level. Central governments can create soft budget constraints by providing transfers to meet local budget deficits or bailing out local governments.<sup>2</sup> A hard budget constraint that affects local government behavior is not credible without the presence of own-tax revenues, which force local governments to meet additional spending out of own resources. A corollary is that even with own-source revenues, local governments may not have an incentive to use them if the center designs gap-filling transfers or engages in debt bailouts.

There are degrees of local taxation. At one extreme is revenue sharing as practiced in China, in which local governments have no control over rates or bases. The revenues shared on a derivation base could be approximated by transfers whose magnitude is determined by formula. If the revenues are transferred on a redistributive basis, for example, using equalization criteria, revenue sharing is

indistinguishable from equalization transfers. Shared revenue seldom qualifies as own-revenues in the sense described above, in that local governments cannot raise additional revenues, if needed, using this source, although revenue sharing is important in closing vertical imbalances.

At the other extreme, local governments may have full control over rates and bases. This is the case for property taxation in most countries, although the rates may be subject to upper and lower bounds to prevent a “race to the bottom.”

There is a considerable debate as to whether the share of the VAT should be considered as a subnational own-tax in the sense described above. Much of the discussion relates to ease of administration. In countries where the constitution permits them to do so, governments have chosen to centrally administer the VAT. In Australia VAT revenue is redistributed by the Commonwealth Grants Commission through the equalization system; although it is treated as a state tax, it is thus de facto a central tax that finances an equalization transfer.

An alternative, discussed below, is one in which local surcharges are levied on central government bases, as in the United States. This provides a degree of control over revenues to the local government while minimizing administrative burdens and complexity. The critical issue is that local governments should have control over some tax rates at the margin. This does not have to be very extensive, as shown in the OECD examples in table 6.3.

## Central and Shared Taxes

This section examines the reform agenda for China’s main taxes: the EIT, the VAT and the revenue-returned concept, and the personal income tax. It focuses on the interactions with the intergovernmental system and the political economy of achieving buy-in from the provinces. Intergovernmental concerns are superimposed on each tax, generating considerable complexity. The result is an increasingly opaque system with a somewhat doubtful impact on the government’s overall distributional objectives.

### *Enterprise Income Tax*

The initial reform of the EIT in 1994 was adopted in order to “push enterprises to the market and create a fair competition environment” (Xu and Lin 1995)—in other words to create a level playing field. To do so, the tax rate was standardized to 33 percent. Initially, revenues from locally owned firms were assigned to local governments and revenues from centrally owned firms were assigned to the central government. Implementation by different tax administrations led to different effective rates, depending on exemptions and efficiency.<sup>3</sup> This has also been the case with the EIT on foreign companies. These companies were also subjected to the 33 percent tax rate, but investment incentives reduced the effective tax rates to 15 percent or less (for a description of the rate structures for domestic and foreign enterprises, see chapter 4 of this volume).

**Table 6.3 Taxing Powers of Subnational Governments in Selected OECD Countries, 1995**

Country	Subnational government taxes as percentage of		Discretion to set	Summary indicator of
	Total taxes	GDP	taxes <sup>a</sup>	taxing power <sup>b</sup>
Sweden	32.6	15.5	100.0	15.5
Denmark	31.3	15.5	95.1	14.7
Switzerland	35.8	11.9	92.4	11.0
Finland	21.8	9.8	89.0	8.7
Belgium	27.9	12.4	57.9	7.2
Iceland	20.4	6.4	100.0	6.4
Japan	24.2	6.8	90.3	6.1
Spain	13.3	4.4	66.6	2.9
New Zealand	5.3	2.0	98.0	2.0
Germany	29.0	11.1	12.8	1.4
Poland	7.5	3.0	46.0	1.4
United Kingdom	3.9	1.4	100.0	1.4
Netherlands	2.7	1.1	100.0	1.1
Austria	20.9	8.7	9.5	0.8
Portugal	5.6	1.8	31.5	0.6
Czech Republic	12.9	5.2	10.0	0.5
Hungary	2.6	1.1	30.0	0.3
Norway	19.7	7.9	3.3	0.3
Mexico	3.3	0.6	11.2	0.1

Source: Ambrosiano and Bordignon 2006.

Note: Countries are ranked in descending order, based on the value of the summary indicator of taxing powers.

- a. Figures show percentage of total taxes over which subnational governments hold full discretion over the tax rate, the tax base, or both. A value of 100 designates full discretion.
- b. Indicator is the product of the ratio of subnational governments' taxes to GDP and the degree of discretion to set taxes. It measures subnational government taxes with full discretion as a percentage of GDP.

In recent years, there has been a movement toward sharing the EIT above the 2001 levels, with 60 percent of the additional revenues going to the center. Proposals have also suggested unifying the EIT on domestic and foreign companies. It would also be sensible to consolidate the administration of the EIT and to divide all EIT revenues, not just the incremental elements, between the center and the local government.

Earmarking the incremental elements of the EIT accruing to the central government for transfers to the poorer provinces redistributes revenue, but it

introduces an element of rigidity and complexity into the fiscal system. It might therefore be preferable to overhaul the tax-transfer system.

### *Value Added Tax*

The VAT played a major role in reversing the declining revenue trends since 1994.<sup>4</sup> However, China's VAT has the unusual feature that capital goods are included in the base, so that the VAT is a production-based (P-VAT) rather than a more traditional consumption-based VAT (C-VAT). A second feature of indirect taxation in China is that most services are subject to a turnover tax, known as the business tax, which is not creditable against the VAT. This tax accrues to local governments.

These features lead to several forms of cascading, distorting the choice of inputs for the production of both goods and services and leading to an arbitrary (and unknown) pattern of effective tax rates on different consumption items. On the grounds of economic efficiency, it would be desirable to eliminate these distortions.

#### CONSUMPTION-BASED VAT

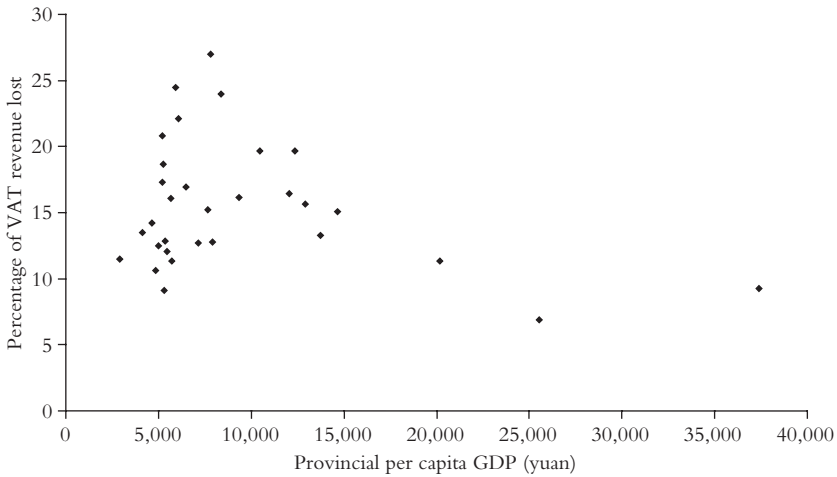
Moving to a C-VAT is a critical reform, but would imply an overall revenue loss, because the exclusion of capital goods reduces the tax base. Extension of the VAT to services would also imply a revenue loss for local governments, which could be offset by the revenue gain at the center. Ahmad, Lockwood, and Singh (2004) show that the magnitude of these revenue losses will vary across provinces. Thus, the reforms will not be easy to implement unless provinces are compensated for the compounded revenue shortfall they will face.

Ahmad, Lockwood, and Singh estimate central government losses from the movement to a C-VAT, adopting various assumptions about collection efficiency. Their calculations are based on the impact of allowing VAT credits on machinery and equipment. As construction is a service subject to the business tax, it is treated as exempt for VAT purposes; the VAT on materials embedded in buildings would therefore not be creditable.

The estimations show that the distribution of C-VAT losses across provinces has an inverted-U shape. Poorer provinces, in which manufacturing is relatively unimportant, and the richest provinces, including Beijing and Shanghai, which rely more heavily on service sectors, tend to have smaller losses than middle-income provinces, where collection efficiency is at 50 percent. Outlying provinces are responsible for the inverted-U shape. If these provinces are excluded, richer provinces lose more than poorer ones (figure 6.2).<sup>5</sup>

The first step is to calculate the increase in the VAT share required to achieve this objective (table 6.4). One way of compensating provinces for their revenue shortfall would be to increase their share of VAT revenue. In the base-case scenario, the share of VAT revenue to the provinces increases from the current level of 25 percent to the point where aggregate provincial VAT revenues rise to their initial level (that is, revenue neutrality is maintained for provinces only).

**Figure 6.2** Provincial Revenue Losses from C-VAT Reform, Base-Case Scenario



Source: Ahmad, Lockwood, and Singh 2004; National Bureau of Statistics 2002.

**Table 6.4** Effect of Revising VAT Revenue-Sharing Rules

<i>Collection efficiency</i>	<i>Revenue-neutral VAT share for provinces (percent)</i>	<i>Revenue loss of central government (yuan, billion)</i>	<i>Revenue loss of central government as percentage of 2001 VAT revenue</i>
Low (50 percent)	29.6	114.2	28.4
High (100 percent)	36.3	142.7	35.5

Source: Ahmad, Lockwood, and Singh 2004.

The increase in the provincial VAT sharing rate needed for overall revenue neutrality depends on the efficiency of VAT collection.<sup>6</sup> However, the difference does not seem to be large. At the lower bound of 50 percent efficiency, the sharing rate would need to rise to 29.6 percent from the current 25 percent, while at the upper bound of 100 percent efficiency, the rate would need to rise to 36.3 percent. However, the budgetary consequences of this option for the central government are quite severe, because it must share a larger proportion of a smaller pool of VAT revenue with provincial governments. For both levels of collection efficiency considered, the central government would lose about one-third of its current VAT revenue if it fully compensated the provinces for the reform.

An alternative would be to compensate provinces by raising the standard rate of VAT from 17 percent to make the reform revenue neutral (that is, to leave

aggregate VAT revenue unchanged). If the rate increase is revenue neutral for the provinces in aggregate, it would also be revenue neutral for the central government. However, large increases in the standard rate would be needed. This could have undesirable macroeconomic and incentive effects on the economy (raising prices, for example). The calculations by Ahmad, Lockwood, and Singh do not take into account any second-round effects.

#### EXTENSION OF VAT TO SERVICES

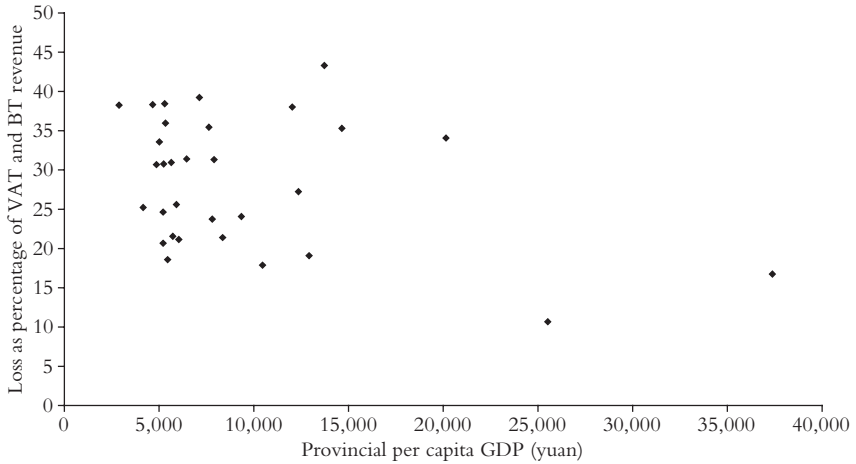
The extension of the VAT to services other than finance and insurance is an important complement to the tax reforms and should largely offset losses associated with the move to a C-VAT.<sup>7</sup> However, since services are already subject to the business tax, the business tax would be replaced as part of the reforms. Transactions in the financial sector are hard to tax under a VAT, because it is difficult to determine the share of value added by the borrower and the lender (Ebrill and others 2001). The difficulty is that the business tax accrues entirely to local governments, whereas the VAT would presumably be shared.

Ahmad, Lockwood, and Singh (2004) estimate the magnitude of the distributional effects of replacing the business tax with the VAT while continuing to apply the current business tax to the finance and insurance sector.<sup>8</sup> The relative size of this sector differs widely across regions. In 2001 it provided about 15 percent of provincial GDP in Beijing but only about 0.9 percent of GDP in Heilongjiang. To calculate how much each province would lose from abolishing the business tax except on this sector, Ahmad, Lockwood, and Singh assume that the province retains a share of its business tax revenue,  $a_i$ , where  $a_i$  is proportional to the share of finance and insurance in regional GDP and the 28 percent of business tax revenue is retained. The amount presumed to be lost is given by  $(1 - a_i)$  times the actual business tax revenue in province  $i$ .<sup>9</sup> The overall gain from this reform is the increase in VAT revenue (calculated at 100 percent or 50 percent efficiency) minus the loss of revenue from the business tax.

Moving to a VAT on services would cause a loss of revenue stemming from the removal of cascading. The pattern of gains and losses across provinces is complex, as several factors are at work. First, other things equal, provinces in which the service sector is large but finance and insurance are relatively unimportant would tend to lose most, because they would lose all their revenue from the business tax on these activities. By the same token, provinces in which finance and insurance are important would tend to lose less or gain, because their business tax revenue from these activities would not be lost.

No clear pattern emerges between provincial gains and losses and provincial per capita GDP (figure 6.3). Ignoring the outliers of Beijing and Shanghai, which do well because the revenue from the business tax on finance and insurance is protected, the reform seems to be mildly equalizing as middle-income provinces do a little worse on average than lower-income ones. However, on its own, this is not a reform that would win much support among provinces.

**Figure 6.3** Provincial Revenue Losses from Extension of VAT to Services



Source: Ahmad, Lockwood, and Singh 2004; National Bureau of Statistics 2002.

Note: Figure assumes 50 percent collection efficiency. BT = business tax.

In order to compensate the provinces for the loss of the business tax revenues, their VAT share would have to increase to 30 percent if 100 percent were collected or to 37 percent if efficiency was 50 percent. It is not clear that the benefits or losses fall predominantly on poorer or richer provinces and an increase in the general sharing rule would not appropriately target the provinces facing a revenue shortfall. With the replacement of the business tax by the VAT, it would be easier to compensate needy provinces through the transfer system than changing the VAT sharing rate.

#### THE REVENUE-RETURNED SYSTEM

The revenue-returned formula returns an additional portion of VAT and consumption tax revenues to provinces. According to this mechanism, 30 percent of the increase in VAT and consumption tax collection over their 1994 base levels is returned to the originating province. Both measures are regressive, as they tend to benefit richer provinces.

Ahmad, Lockwood, and Singh (2004) show that the revenue-returned formula does not operate uniformly across provinces. To see why this is the case, suppose that both province A and province B receive an additional Y1 million in VAT or consumption tax revenue. The amount passed back to province A would generally differ from that passed back to province B based on the revenue-returned formula. This would not be a problem if this feature had been designed into the formula in a rational way, with the clear objective of helping poorer provinces, or those with the



greatest gap between expenditure needs and revenue capacity. However, this is not the case; the differences in treatment of the provinces seem largely arbitrary.

The revenue-returned formula states that

$$RR_{i,t} = RR_{i,t-1} \left[ 1 + 0.3 \left( \frac{VAT_{i,t} - VAT_{i,t-1} + CT_{i,t} - CT_{i,t-1}}{VAT_{i,t-1} + CT_{i,t-1}} \right) \right], \quad (6.1)$$

where  $RR_{i,t}$  = revenue returned to province  $i$  at year  $t$ ;  $VAT_{i,t}$  = VAT revenue collected in province  $i$  at year  $t$ ; and  $CT_{i,t}$  = consumption tax revenue collected in province  $i$  at year  $t$ . That is, this year's revenue returned is equal to last year's return times 0.3 the growth rate of the sum of VAT and consumption tax revenues for that province. This formulation tracks actual revenue returned quite well over the past decade (table 6.5).

From equation (6.1), an increment  $\Delta$  in either VAT or consumption tax revenue in year  $t$  will lead to the following change in revenue-returned to province  $i$  in that year:

$$\Delta RR_{i,t} = 0.3 \frac{RR_{i,t-1}}{VAT_{i,t-1} + CT_{i,t-1}} \Delta. \quad (6.2)$$

From equation (6.2), it is clear that the share of any increase in VAT or consumption tax revenue in the current year,  $t$ , returned to the province by the revenue returned formula is simply

$$0.3 \frac{RR_{i,t-1}}{VAT_{i,t-1} + CT_{i,t-1}}, \quad (6.3)$$

which Ahmad, Lockwood, and Singh (2004) call the incremental tax share.<sup>10</sup>

From equation (6.3), it is clear that this incremental tax share may differ across provinces. In particular, a province's share will be higher the higher the previous year's revenue returned and the lower the previous year's VAT and consumption taxes collected.

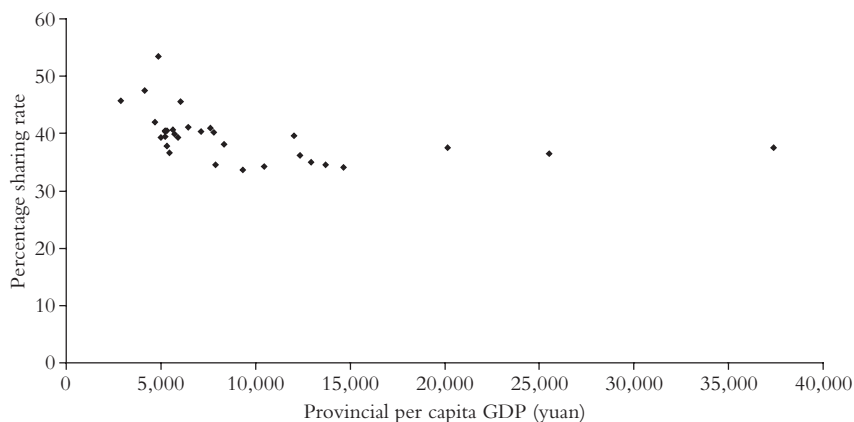
A major disadvantage of the revenue-returned formula relative to simple sharing is that it is not transparent. In particular, differences across regions are driven by history and not necessarily by the current needs or revenue capacities of provinces. In fact, the sharing rates are mildly equalizing, in that some richer regions tend to receive smaller shares, although this tendency is not uniform (figure 6.4).

The revenue-returned formula does have a potentially significant advantage over a sharing rule. Viewed as a transfer, a simple sharing rule is permanently disequalizing, in that richer provinces, which generate more tax revenues, will always receive more revenue returned than poor provinces. In contrast, the revenue-returned formula is only temporarily disequalizing. In the long run, the revenue returned as a proportion of tax revenue will tend to zero. This is clear

**Table 6.5** Collected and Returned Revenue, 1996–2001

Item	1996	1997	1998	1999	2000	2001
<i>Collected revenue (yuan, billion)</i>						
Excise taxes	62.0	67.4	81.5	82.0	85.7	92.9
VAT	296.3	327.9	362.8	387.8	455.3	535.6
Total collection	358.3	395.3	444.3	469.9	541.0	628.6
<i>Returned revenue (yuan, billion)</i>						
Actual	194.9	201.2	208.3	216.73	228.2	234.0
Formula	n.a.	200.9	208.7	211.9	226.6	239.3
Actual as percentage						
of total collection	n.a.	50.9	46.9	46.1	42.2	37.2
Formula as percentage						
of total collection	n.a.	50.8	47.0	45.1	41.9	38.1

Source: Ministry of Finance various years; Ahmad, Lockwood, and Singh 2004.  
n.a. Not applicable.

**Figure 6.4** Incremental VAT Shares, by Province

Source: Ahmad, Lockwood, and Singh 2004.

Note: See equation (6.3). Includes 25 percent VAT share.

from equation (6.1), because revenue returned grows only a third as fast as VAT and consumption tax revenue.

The extent of this advantage depends on how fast tax revenues grow. If all tax revenues grow at 10 percent a year (a not unreasonable assumption for China), it would take more than a decade for revenue returned to become half as important for tax revenue as it was in 2001. More generally, if all taxes are growing at some common rate, the “half-life” of the formula can be calculated (table 6.6). Thus, it

**Table 6.6 “Half-Life” of Revenue-Returned Formula**

<i>Growth rate of tax revenues (percent)</i>	<i>Number of years for revenue returned as a proportion of tax revenue to fall by half</i>
5	20.5
10	10.5
15	7.2

Source: Ahmad, Lockwood, and Singh 2004.

would take decades for returned revenues to fall by half should revenue growth slow. The advantage of the revenue-returned formula as declining over time should therefore not be oversold.

The earlier discussion of the C-VAT ignored the effects of the inclusion of the revenue returned in the C-VAT reform. But Ahmad, Lockwood, and Singh show that with revenue returned, there is a more pronounced inverted-U share between the percentage losses and the per capita income of provinces (figure 6.5). In order to make the full-VAT reform a viable option, the system of transfers will thus need to be simultaneously reformed (Ahmad, Singh, and Fortuna 2004).

### *Personal Income Tax*

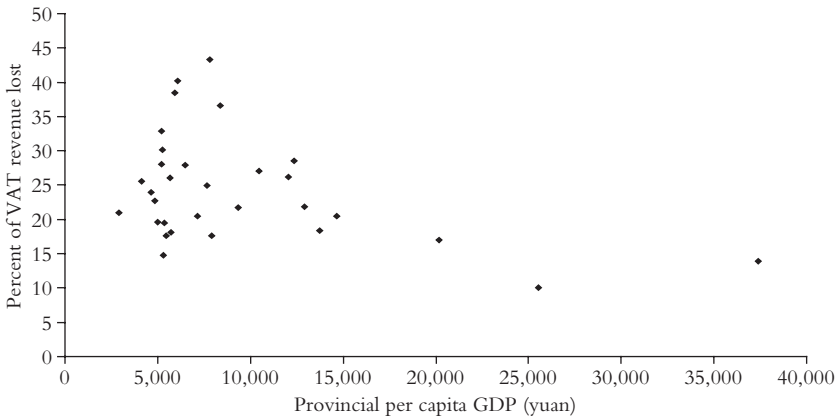
China’s personal income tax, introduced in 1980, has not been a major revenue earner so far, amounting to 1.2 percent of GDP in 2002, or about 7 percent of total tax revenues. It does represent one of the most rapidly growing revenue bases in the country, however. Furthermore, given the perceived inequalities in income, this tax has a major role to play in meeting the distributional objectives of the *Xiaokang* society.

Despite reforms to the personal income tax, as described in Zee and Hameed (2006), the personal income tax remains schedular:

- Wages and salaries are subjected to a multiple-band progressive marginal rate structure that ranges from 5 percent to 45 percent in five incremental brackets.
- Business incomes of individual commercial and business enterprises, income from contracted or leased operations, and income from personal and professional services are subject to separate progressive schedules.
- Remuneration of authors is subject to a flat tax of 15 percent.
- Other sources of income—including royalties, interest, dividends, distributed profits, and rental income—are subject to a flat rate of tax (20 percent; the tax on rents from personal residential properties is 10 percent).

Until recently, the basic monthly allowance for wages and salaries was Y800. Zee and Hameed (2006) contend that eliminating the 5 percent bracket and raising the basic monthly allowance to Y1,300 (bringing the allowance back to its 1987 level in constant terms) would remove almost 60 percent of personal income tax

**Figure 6.5 Provincial Revenue Losses from C-VAT Reform, Allowing for Revenue Returned**



Source: Ahmad, Lockwood, and Singh 2004.

taxpayers from the tax net, considerably simplifying administration and improving the equity of the system. The revenue loss of the reform could be made up with marginal adjustments to higher rates (the authorities increased the basic monthly allowance to ¥1,600, effective January 1, 2006).

In the 1994 reforms, revenues from the personal income tax were assigned to local governments. In 1999 the revenue from deposit interest was assigned to the central government. In 2002 an additional change in the revenue-sharing arrangement stipulated that increases in personal income tax revenues above the 2001 level would be shared equally by the central government and local governments, with the central government's share of this increment increased to 60 percent in 2003. Thus, while personal income tax revenues continue to accrue largely to local governments, the center now receives a growing percentage of a growing revenue base. This is achieved at the cost of considerable complexity and lack of clarity on the incentives for local governments. There is much scope for consolidating the personal income tax, rationalizing the rate structure, and aligning the top marginal rate with the EIT. In addition, there is scope for making the personal income tax a better source for own-source revenues for local governments.

## Control of Tax Revenues by Subnational Governments

The two major means of controlling tax revenues are determining the tax rate and defining the base. Centralization of both these dimensions is striking in China. Subnational governments in China control the rates only of minor taxes, and even for those, they can set tax rates only within a limited range (table 6.7); the maximum value of the urban land-use tax, for example, is low.

**Table 6.7 Local Discretion over Taxes in China, 2001**

<i>Tax</i>	<i>Rate</i>	<i>Base</i>	<i>Local discretion over rate and base</i>
<i>Shared taxes</i>			
Value added tax	Standard 17 percent, reduced 13 percent	Value added	None
Personal income tax	Rates of 5–45 percent	Eleven categories of personal income	None
Enterprise income tax	Standard rate of 33 percent, reduced rates of 15–24 percent	Net taxable income, calculated by deducting costs, expenses, and losses from business profits	Autonomous regions have discretion over reduction/exemption for local enterprises
<i>Local taxes</i>			
Business tax	3–20 percent, varies depending on the goods or services transacted. In most cases, a 5 percent rate is applied.	Turnover	None
City and township land-use tax	Y0.5–Y10/m <sup>2</sup> for large cities, Y0.4–Y8/m <sup>2</sup> for medium cities, Y0.3–Y6/m <sup>2</sup> for small cities, Y0.2–Y4/m <sup>2</sup> for small towns and mining districts	Square meters of property	Can choose rate within range
Real estate tax	Normally 1.2 percent of the building's residual value or 18 percent of the rental value	Residual or rental value	None
Land value appreciation tax	30–50 percent, depending on ratio of profit to cost	“Profit” arising from the transfer of land-use rights	None

*(continued)*

**Table 6.7 (continued)**

<i>Tax</i>	<i>Rate</i>	<i>Base</i>	<i>Local discretion over rate and base</i>
Deed tax	3–5 percent	Transaction value of transfers of land ownership and real property and the market value assessed for transfers of gifts	Can choose rate within range
Stamp tax	0.03–0.1 percent of the transaction price	Businesses and individuals entering contractual arrangements involving the use of legal documents	Can choose rate within range
Farmland occupation tax	n.a.	n.a.	At discretion of region
Agricultural output tax	7 percent, up to an additional 1.4 percent on special products	Depends on products	Can be exempted or reduced in case of disaster, special products rate at discretion of region
Fixed assets investment orientation tax	n.a.	n.a.	Range of rates
Vehicle and vessel use tax	n.a.	n.a.	Range of rates
Vehicle and vessel license plate tax	n.a.	n.a.	Range of rates
Slaughter tax	n.a.	n.a.	At discretion of region
Banquet tax	n.a.	n.a.	At discretion of region

*Source:* Ministry of Finance and IMF staff.

n.a. Not applicable.

### *Costs and Benefits of Local Control*

The benefits of giving local governments discretion over more tax rates seem clear. But there are costs as well. When tax rates differ across provinces, the location of capital, labor, or consumption spending may be determined by taxes rather than underlying economic costs and benefits. If capital, labor, or consumption respond significantly to tax differentials, provincial governments may start cutting the tax rate in order to attract the tax base.

These problems are likely to be minor in China, because the household registration system makes it difficult for people to move legally between provinces. The most important implication of this is that the potential locational distortions and tax competition arising from differing rates of personal income tax are unlikely to be a major problem. Also, unlike in many other countries, the various property taxes assigned to local governments are unlikely to cause locational distortions: the household registration system means that change of house or apartment, even within a province, is partly administratively controlled. There would thus seem to be a role for some local control over the rate of personal income tax, perhaps using a local tax piggybacked on a central system (see below).

Problems with the EIT, the business tax, and the VAT are more severe. If the VAT is to be a tax on consumption in an administrative region, it must be destination based—that is, imports must be subject to tax and exports must be exempted. Two problems arise if provinces can levy VAT at different rates. First, distinguishing between exports from one province to another and goods for local consumption is extremely difficult. Second, in a densely populated country like China, widely different rates may induce significant (illegal) cross-border shopping. There are a number of methods to deal with these issues, but each involves administrative difficulties (see Bird and Gendron 2000; Keen 2000). Given China's unitary constitution and central legislative powers, it may be easier to design a system based on a combination of revenue sharing and appropriately designed transfers, plus some own-taxes to appropriate levels of government.

The problems with provincial control of rates of EIT and the business tax are less severe but nevertheless considerable. A company operating in several provinces either pays all of the tax in the province of its headquarters (using consolidated accounts), or separately in each province (using separate accounts). Tax rates that differ by province would give enterprises incentives to move their headquarters, or at least parts of their operations, to provinces with low taxes. Econometric and survey evidence from other countries indicates that corporate taxes do affect the location decisions of firms, both nationally and internationally (Devereux and Griffiths 1998). Similar problems apply to the business tax.

If the tax revenue accrues entirely to local government, a simple range of values for the tax would be appropriate. This range should be wide enough to give the local government some flexibility and narrow enough to avoid locational distortion and tax competition problems.

If the tax is initially shared, as it is for personal tax, a natural solution is piggybacking. Under this kind of arrangement, the central government defines the tax base and sets a uniform national tax rate on this base (say, 20 percent); the local government sets an additional local tax. The taxpayer pays the sum of the two tax rates (20 percent + 5 percent = 25 percent) times the tax base.

Piggybacking has a number of advantages. It economizes on administrative cost, because the tax base is common to both levels of government and can therefore be collected by a single level of government. It provides flexibility and possibly increases incentives for tax collection effort.

Another issue is the degree of decentralization of tax assignment at lower levels of government, especially levels below the province (prefectures, counties, townships). The main factors determining this decision should be the county's spending needs and administrative capacity and the need to avoid locational distortions and tax competition. In countries with a well-developed commercial and residential property market, property taxes are relatively simple to collect (given a register of valuations or cadastre). As these taxes tend not to be locationally distorting, they can be assigned to the lowest levels of government, as they are in the United Kingdom. In contrast, some control over personal income taxes (such as piggybacking), which may lead to tax-avoiding relocation if assigned to the lowest level of government, is best assigned to intermediate levels (box 6.1).

The two main spending levels of government in China appear to be the provinces and the counties. Thus, it would be appropriate to seek own-source revenues for each of these levels.

### *Piggybacking on the Personal Income Tax*

The consolidation and reform of the personal income tax are important; some of the options were discussed above. However, none of these reforms gives more control to the provinces. A simple reform that would do so would be a provincial piggyback on the personal income tax rate. For efficient revenue raising and simplicity of tax administration, the piggyback should be set at a flat rate. A province should always have the option of setting no additional tax, so the lower limit should be zero. A positive lower limit is effectively the same as a higher national rate.

For the upper limit, Chinese policy makers could consider the ranges set in Canada or the United States, where potential locational distortions are much greater and there are no constraints on tax rates set by state or provincial government, as a guide (table 6.8). These ranges give an indication of what is feasible without inducing too much locational distortion. Perhaps the greatest opportunity for mobility is among higher-rate taxpayers.

Personal income tax revenue is currently shared in China. The choice of piggyback should roughly replicate the existing share of revenue (that is, allow for progressivity at the national level). One way of doing this would be to allow provinces the option of adding 5–10 percentage points to the tax rate and reducing the central tax by the same amount for each income band. Because this would



### Box 6.1 Piggybacking versus Tax Sharing

Consider a local government that can choose tax collection effort  $e$ . The tax base  $b$  depends positively on this tax effort but negatively on the tax rate  $\tau$ . If the local government receives a share  $s$  of the tax revenue, their revenue can be written  $s\tau b(\tau, e)$ . It is natural to suppose that there is some administrative cost  $c(e)$  to higher tax effort, where  $c$  is increasing in  $e$ .

In a tax-sharing arrangement, the local government takes the tax set by the central government,  $\tau$ , and the sharing rule,  $s$ , as given. To keep the argument simple, suppose that the government chooses  $e$  to maximize revenue minus the cost of tax effort. This optimal choice of  $e$  is described by the first-order condition

$$s\tau b_e(\tau, e) = c_e(e), \quad (1)$$

(that is, the benefit in terms of higher revenue is equal to the marginal cost of tax effort).

Now suppose that the tax-sharing arrangement is replaced by piggybacking: that is, the central government sets tax rate  $T$  and the local government rate  $t$  so that the overall tax rate is  $T + t$ . Then, local government revenue is  $tb(T + t, e)$ . Now, the local government takes the tax set by the central government,  $T$ , as given, and chooses  $e$  and  $t$  to maximize revenue minus the cost of tax effort. The optimal choice of  $e$  and  $t$  is described by the first-order conditions

$$\begin{aligned} tb_e(T + t, e) &= c_e(e), \\ b(T + t, e) + tb_t(T + t, e) &= 0. \end{aligned} \quad (2)$$

The first condition is interpreted as before. The second condition says that the government continues to raise the local tax until the incremental revenue gain is zero.

Now suppose that following the switch to piggybacking, the local government chooses a higher tax than its fixed tax share with sharing. Formally, this means that the piggyback tax,  $t$ , is greater than  $s\tau$ . This would arise if the central government were holding the tax share of the local government below the level that was optimal for the local government. It is possible to show that under a relatively weak and plausible condition (that  $b_{te} > 0$ , that is, that tax effort and the tax rate are complements), following the switch to piggybacking, local governments will increase their efforts to collect taxes, because they receive more tax revenue with piggybacking than with sharing.

Source: Author.

**Table 6.8 Marginal Income Tax Rates by Subnational Governments in Canada and the United States, 2002 (percent)**

<i>Country</i>	<i>Top marginal income tax rates</i>	<i>Bottom marginal income tax rates</i>
Canada	10–24	6.05–16
United States	0–9.3	0–6

*Source:* KPMG Canada; U.S. Federation of Tax Administrators.

not be revenue neutral relative to the current tax-sharing arrangement, some adjustment in the sharing of central tax revenue would be required. Converting the complicated income tax-sharing system into a piggybacking arrangement would increase the transparency of the tax system and enhance incentives for improved provincial governance.

### *Property Taxes*

An appropriate tax for the county and municipal level could be a reformed property tax. The Chinese property market is based on a land-use rights system. In such a system, the government continues to own all land but grants leases to developers and users for specified periods of time. These leases can be bought and sold, implying a market in land-use rights (Ding and Knaap 2001).

Several taxes are currently imposed on land-use rights. Three—the land-value appreciation tax, the deed tax, and the stamp tax—are taxes on the transfer of land-use rights. The other two are annual taxes on the physical size of the property over which rights of use are held (the urban land-use tax) or the value of the property (the real estate tax). None of these taxes is quantitatively very important, even for local governments (table 6.9). In interpreting these figures, one should also bear in mind that the second-biggest revenue generator, the contract/deed tax, is levied not only on residential and commercial land-use transactions but also on contracts of all kinds.

To get a clearer picture, it is helpful to compare revenues from property taxes in China and other countries (table 6.10). Two features are clear from this comparison. First, property tax revenue is a less important resource for local government and generally in China than in other countries.<sup>11</sup> Second, recurrent taxes are less important relative to transaction taxes in China than elsewhere.

One reason for these differences may be that China's tax rate on real estate is not out of line with international experience: the tax base is not the market value of the property but the residual value after the value of the mortgage has been deducted. There is no real economic rationale for reducing the tax base in this way: the point of the property tax is that it is a relatively nondistorting form of tax revenue and partly a service tax, as the property owner typically enjoys some of

**Table 6.9 Property Tax Revenues in China, by Type of Tax, 2001**

<i>Type of tax</i>	<i>Revenue (yuan, billion)</i>	<i>Percentage of total tax revenue</i>	<i>Percentage of total subnational tax revenue<sup>a</sup></i>
<i>Taxes on transactions</i>			
Contract/deed tax	15.7	2.3	4.8
Stamp tax	7.1	1.0	2.2
Land value added tax	1.0	0.2	0.3
<i>Recurrent taxes</i>			
Tax on use of urban land	6.6	1.0	2.0
Tax on real estate	22.8	3.3	7.0
Total	53.3	7.7	16.2

Source: National Bureau of Statistics 2002.

a. Local tax revenue was 47.6 percent of total tax revenue in 2001.

**Table 6.10 Importance of Property Taxes in Selected Countries**

<i>Item</i>	<i>China</i>	<i>Australia</i>	<i>Canada</i>	<i>United Kingdom</i>	<i>United States</i>
Property tax revenue as percentage of general tax revenue	7.7	8.9	11.3	14.2	13.2
Subnational tax revenue as percentage of total tax revenue	47.6	16.9	51.1	4.8	39.5
Property tax revenue as percentage of total tax revenue of subnational government	16.2	52.7	22.1	100.0 <sup>a</sup>	33.3
Recurrent taxes on immovable property as percentage of total property taxes	55.2	48.1	81.4	74.6	85.8

Source: Table 6.8, OECD Revenue Statistics, Tables 23, E and various country tables.

Note: All calculations exclude social security contributions and are for 2000 or 2001.

a. Two-thirds of all property tax revenues collected in the United Kingdom are shared with higher levels of government.

the benefits funded by the tax, such as education and roads. An additional reason may be that the coverage of the tax is not very wide.

At least in the medium term, a sensible policy option would be to expand the tax revenue generated by recurrent taxes on property from land-use tax and real estate taxes. Of these, the real estate tax is a much more powerful tax instrument, because it rises with property values, which have increased considerably in China over the past 20 years and will probably continue to rise at least as rapidly as GDP.<sup>12</sup>

Given the untapped potential, this measure should also provide significant additional revenues to the more advanced municipalities, including Shanghai, Beijing, and other coastal regions. This new revenue base should be seen as a logical substitute for the revenue returned that these regions currently enjoy.

However, a necessary condition for a well-functioning property tax by value is the construction of a cadastre. The technical and organizational problems involved in doing so are not insurmountable. Several countries with limited resources, including South Africa and Tanzania, have recently constructed cadastres (Kelly and Musunu 2000). In some developing countries in which government experience was lacking, valuation was contracted out to private companies. Valuations can be done in bands (as in the United Kingdom) rather than on precise values. Where no market price is available, cadastres can be created based on replacement cost.

### *Agricultural Taxation and the Conversion of Fees and Charges to Taxes*

The agricultural taxation system dates to the 1958 Agricultural Tax Act (Wen 2000). As Ahmad and Stern (1991) argue, a system of taxing agricultural land can provide a significant source of own revenues to local governments, but a precondition for progressivity with this form of taxation, as with the income tax, is an exemption limit that excludes smaller farmers and simplifies administration. This exemption limit could be specified in terms of land operated or produce equivalent.

It does not appear that such an exemption was contemplated in China. Moreover, with significant unfunded mandates, a proliferation of charges and informal taxes evolved. Given complaints from farmers about excessive taxation, Premier Wen Jiabao's government began to remove all informal fees and the formal agricultural tax in 2004; all were abolished in 2006 (Lin, Tao, and Liu 2006).

The central government provides increased transfers, largely to inland agriculture-based regions, to make up for the local revenue lost as a result of the reforms. While it may take some time to analyze the full implications of this reform, a number of questions arise that should be kept in mind in evaluating this measure and determining the way forward.

First, the magnitude of transfers to compensate for the loss in township revenues from the abolition of self-generated funds in agriculture has not been sufficient: one estimate puts the loss in rural taxes and fees in 2005 at Y150 billion, more than twice the additional transfer from the center of Y66.4 billion. The shortfall is reportedly

resulting in rising township deficits and debt in most provinces except Sichuan and a deterioration in public services (Lin, Tao, and Liu 2006).

Second, the distribution and timing of transfers remain problematic. Although the budget year is on a calendar-year basis, allocations for tied and untied transfers are not determined until a few weeks after the approval of the budget by the National People's Congress in March, leading to considerable uncertainty on the part of local governments as to their overall budget envelopes. Moreover, in some cases, all central transfers do not reach provinces for months following their allocation. This is likely to have a knock-on effect on lower-level budgets, which may have become totally reliant on such transfers.

Third, poor information on local budgeting and outcomes hampers the central government in its programming of the transfer system, and it opens up potential political bargaining by local governments. If the transfer is in the form of an untied grant, the local authorities may not use the funds to provide basic services, generating demands for additional funds. If the transfers are tied to certain programs or outcomes, the center lacks the tools to effectively monitor the spending or sanction misuse.

### *Incentives to Use Tax Instruments and Borrowing*

China already has stringent rules governing local borrowing—rules that have largely been circumvented. Although the Budget Law prohibits local governments from borrowing directly from commercial banks, most levels (including provincial line agencies and country governments) engage in indirect borrowing through fully owned companies or agencies. While some of the borrowing is for infrastructure, such as roads financed by tolls, there is also considerable borrowing for purely governmental functions.

An accurate magnitude for the indirect borrowing is difficult to estimate, although it appears to be happening on a widespread scale. Part of the difficulty, as noted, is that the local governments have no ability to utilize additional own-revenues if they need to. The resort to indirect borrowing reduces accountability and may store up macroeconomic difficulties for the central government.

Although no explicit government guarantee is provided on these loans and banks are expected to assess the project solely on a commercial basis, there appears to be an expectation that local or higher-level governments would resort to bailouts if needed. This expectation will be heightened if adequate own-source revenues are not provided to local governments. It is thus important for higher-level governments to maintain a comprehensive register of risks.

China's policy toward subnational borrowing could be reconsidered. The simple prohibition of borrowing for local governments has not worked. Authorizing local governments to issue debt instruments and rely only on market discipline would require the establishment of own-source revenues as well as other reporting and prudential requirements. This may make sense for some of the more advanced municipalities, such as Beijing and Shanghai.

### *Enhanced Transparency*

The final figures for special-purpose grants and equalization transfers are determined by the Ministry of Finance in April of the financial year beginning in January. This requires subnational administration to prepare their budgets without knowing how much available financing they have.

A clear system of budget classification is needed in China, based on international standards such as the International Monetary Fund's *Government Finance Statistics 2001*, as well as an associated chart of accounts, to track both revenues and spending on a consistent basis at all levels of government. This reform, being introduced by the Ministry of Finance, should improve information flows from the top down.

The tracking of budget execution is being facilitated through the establishment of TSAs in provinces such as Anhui and Sichuan. In Sichuan this has entailed the closure of agency bank accounts. All budget, extrabudgetary, and off-budget revenues are channeled through the TSA.<sup>13</sup> There are electronic links between the TSA in the local People's Bank of China, the Treasury, and spending units (facilitated by Sichuan's excellent telecommunications networks). Spending units are allowed one zero-balance account in a commercial bank for authorized (low-value) transactions. Sichuan uses the previous year's spending patterns to determine the spending and cash limits for the first five months of the year. Thus, additional spending (or reductions in spending) envisaged under the central budget on a full-year basis have to be accommodated in a six- to seven-month period, leading to unintended fluctuations in subnational spending.

In most provinces where there is no TSA, there is an indefinite period during which budgetary spending from one year can be carried over to the next year. This causes potential difficulties in separating and apportioning spending according to the year of appropriation. Establishing proper accountability under these circumstances can be difficult. The situation is complicated by the predominance of off-budget activities, which are not subject to legislative oversight, and the unfettered indirect borrowing by local administrative bodies through shell companies. Nationwide extension of the TSA reform should help local governments deal with these problems.

The legal framework may need to be strengthened to sanction local governments that fail to meet minimum requirements that should be met out of own-revenues and untied transfers.

While there is a monthly reporting requirement on local budgetary operations to the Central Ministry of Finance, some provinces (other than those, like Sichuan, that are developing treasuries) are unable to provide information on actual spending on a timely basis. Most are able to report no more than the allocation of budget funds to the accounts of spending units. Actual spending, including extra budgetary and off-budget spending, is often not known until the end of the year.

The emphasis on transparency is critical to ensure that the available tax instruments are utilized effectively in establishing a proper competitive environment for subnational operations.

## Recommendations for Reform

Since the major reforms of 1994, only marginal changes to China's tax system have been made. In each case, concerns about the subnational implications of the changed revenues affected the design of the reform and limited the scope of the tax measures. The overall effect has been considerable complexity and lack of transparency.

Many taxes have unfinished reform agendas. Moving from a P-VAT to a C-VAT and extending the tax to services would generate considerable revenue losses for local governments. The move to a C-VAT would exclude capital goods from the tax base and generate losses for the central government. Extending coverage of the VAT to services would lead to substantial revenue gains to the center, but it would imply elimination of the business tax on most services, an important source of revenue for local governments. In the absence of compensatory mechanisms, there would therefore be little chance that these reforms would be carried out.

The revenue-returned element in the tax system also needs review. Although technically part of the transfer system rather than a tax, the system interacts with indirect taxes, because it is designed to reallocate centrally collected tax revenues back to the provinces. The revenue-returned formula is not transparent, and it distinguishes between regions in an arbitrary way. Moreover, while it is designed to grow more slowly than VAT and consumption tax revenue, it may take decades for it to shrink in importance, especially if economic growth slows. In contrast, simple sharing of VAT revenue is transparent and uniform across regions. However, it is permanently disequalizing.

There are several options for compensation. However, it turns out that the reforms considered here would not affect all the provinces uniformly. The move to a C-VAT, for instance, would disproportionately affect provinces in which industry represents a large share of economic activity. Poorer provinces, in which agriculture is still predominant, and richer provinces, in which services play a growing role, would be less affected.

Compensating the provinces for their revenue shortfall by changing some parameters of the current system would thus not be effective. In the case of a move to a C-VAT, local governments could be compensated either by retaining a larger share of VAT revenue or by increasing the standard VAT rate. Neither change would adequately target provinces facing revenue shortfalls or reduce the regressivity of the current system, however, even if the revenue-returned mechanism were included.

A more drastic move away from the current system may be called for. One option could be to extend the equalization grants introduced in 1994. The 1994 fiscal reforms correctly designed an equalization transfer system based on expenditure needs and revenue capacities. However, the resources subsequently available

to the system were inadequate to make any significant equalization impact. In such a mechanism, any change in the capacity of a province to mobilize revenue would be picked up in the formula and the amount of transfers modified accordingly. A more targeted compensation system could hence be provided, adequately compensating the provinces facing revenue shortfalls as a result of tax reform.<sup>14</sup>

This redesigned transfer system would have the potential to achieve more effective redistribution, but it could probably not do so in isolation. Other measures would be needed to convince richer provinces to give up their revenue returned and accept a more redistributive system. Such a comprehensive reform package would include a joint reassessment of expenditure responsibilities together with revamped revenue assignments, as well as more transparent access to capital markets and enhanced governance.

Currently, almost all tax rates and bases are set by the central government, even for taxes for which all revenues go to local governments. Tax reforms are needed to provide provinces and counties with some control over rates of assigned taxes at the margin. This is a key element of fiscal accountability. The choice of taxes should be such as not to lead to excessive economic distortions or tax competition.

There are strong arguments for standardizing the base for the personal income tax. However, bounded control over a number of percentage points for provinces (piggybacking) should provide them with much greater room for maneuver. Such reforms would also provide significant revenues to the more advanced coastal provinces, thereby reducing the political pressures for returning revenue. More extensive use of property taxes at the county-level, including enhanced valuation and recording mechanisms for leasehold properties, and basing annual taxes on the annual lease value equivalent should also be considered.

Poorly designed transfers can obviate any incentive to utilize own-source revenues. The absence of proper own-source revenue handles can shift the responsibility for poor service delivery to higher-level governments, creating the dynamic accountability problems described above.

These reforms form part of an extensive and interlocking package of measures that will take several years to implement fully. China cannot move on all these fronts simultaneously and rapidly. Although the pace of the reforms may be gradual, the scope should be comprehensive. The design of the overall reform package should be both internally consistent and consistent with the overall goals of the process.

## Notes

This chapter draws on joint work with Raju Singh of the International Monetary Fund and Benjamin Lockwood of Warwick University. Helpful comments from Annalisa Fedelino are acknowledged.

1. In China, the term *local government* is taken to represent all levels of subnational administration, including provinces and municipalities, counties, and other lower levels.



2. "Fiscal dentistry" has been common in South Asia (Rao 2002).
3. The enterprise income tax on foreign companies was also subjected to the 33 percent tax rate, but investment incentives reduced the effective tax rate to 15 percent or less (for a description of the rate structures for domestic and foreign enterprises, see Ter-Minassian and Fedelino 2006).
4. The discussion in this and the following section draws on Ahmad, Lockwood, and Singh (2004).
5. Figure 6.2 shows a realistic case of 50 percent collection efficiency, but the picture is similar in the other polar case of 100 percent collection efficiency. Note also that three outlying provinces are responsible for the inverted-U- shape. If these provinces are excluded, the richer provinces would be seen to lose more than the poorer ones.
6. Generally, the new rate is equal to 0.25 times  $134.17/(134.17 - X)$ , where  $X$  is the revenue gain/loss in billions of yuan.
7. In 2001 the financial and insurance sectors accounted for 28 percent of the business tax proceeds.
8. In terms of the Chinese classification of national income, the service sectors added to the VAT base are services to farming, forestry and fishery, geological prospecting and water conservancy, transport, storage, post and telecommunications services, real estate, and other services, as well as one-third of social services, health care, sports and social welfare, education, culture, arts, radio, film and television, scientific research, and polytechnic services.
9. Let  $R_i$  denote the business tax revenue in province  $i$ . Then  $a_i = \lambda s_i$  for province  $i$ , where  $s_i$  is the share of insurance and finance in province  $i$ , and  $\sum_i a_i R_i = 0.28 \sum_i R_i$ . Solving these equations for  $\lambda$  and substituting back into the first equation yields  $a_i = 0.28 s_i / \frac{\sum_i s_i R_i}{\sum_i R_i}$ .
10. Of course, when the VAT share of 25 percent is included, a province receives 25 percent plus the incremental tax share.
11. The extremely high figure for the United Kingdom reflects the facts that property tax is the only source of revenue for local government and a large part of the property tax on commercial property (the Uniform Business Rate) accrues to the central government.
12. The average price per square meter for the sale of land-use rights in China rose from Y223 in 1987 to Y1,279 in 1996 (Ding and Knaap 2001).
13. Separate operating and settlement arrangements are in place for off-budget funds.
14. Ahmad, Singh, and Fortuna (2004) discuss this option in greater detail.

## References

- Ahmad, E., K. Li, and T. Richardson. 2002. "Recentralization in China?" In *Managing Fiscal Decentralization*, ed. E. Ahmad and V. Tanzi. New York: Routledge.
- Ahmad, E., B. Lockwood, and R. Singh. 2004. "Taxation Reforms and Changes in Revenue Assignments in China." IMF Working Paper WP/04/125, International Monetary Fund, Washington, DC.

- . 2005. "Financial Consequences of the Chinese VAT Reform." *International VAT Monitor* May/June: 181–86.
- Ahmad, E., G. Qiang, and V. Tanzi, eds. 1995. *Reforming China's Public Finances*. Washington, DC: International Monetary Fund.
- Ahmad, E., R. Singh, and M. Fortuna. 2004. "Toward More Effective Redistribution: Reform Options for Intergovernmental Transfers in China." IMF Working Paper WP/04/98, International Monetary Fund, Washington, DC.
- Ahmad, E., and N. H. Stern. 1991. *The Theory and Practice of Tax Reform in Developing Countries*. Cambridge: Cambridge University Press.
- Ahmad, E., and V. Tanzi, eds. 2002. *Managing Fiscal Decentralization*. New York: Routledge.
- Ambrosiano, F., and M. Bordignon. 2006. "Normative versus Positive Theories of Revenue Assignments in Federations." In *Handbook of Fiscal Federalism*, ed. E. Ahmad and G. Brosio. Cheltenham, United Kingdom: Edward Elgar.
- Besley, T., and S. Coate. 2003. "Centralized versus Decentralized Provision of Local Public Goods: A Political Economy Approach." *Journal of Public Economics* 87 (12): 2611–37.
- Bird, R. M., and P. Gendron. 2000. "CVAT, VIVAT, and Dual VAT: Vertical 'Sharing' and Interstate Trade." *International Tax and Public Finance* 6 (7): 753–61.
- Brennan, J., and J. Buchanan. 1980. *The Power to Tax: Analytical Foundations of a Fiscal Constitution*. Cambridge: Cambridge University Press.
- Devereux, M. P., and R. Griffiths. 1998. "Taxes and the Location of Production: Evidence from a Panel of U.S. Multinationals." *Journal of Public Economics* 68 (3): 335–67.
- Ding, C., and G. Knaap. 2001. "Land Values and the Emergence of Land Markets in Beijing, China." Lincoln Institute of Land Policy Working Paper, Cambridge, MA.
- Ebrill, L., M. Keen, J. P. Bodin, and V. Summers. 2001. *The Modern VAT*. Washington, DC: International Monetary Fund.
- Fedelino, A., and T. Ter-Minassian. 2006. "Intergovernmental Fiscal Relations in China." Paper prepared for the Stanford Conference on Economic Challenges in Asia, Palo Alto, Calif., June 1–3.
- Keen, M. 2000. "VIVAT, CVAT, and All That: New Forms of Value-Added Tax for Federal Systems." Working Paper WP/00/83, International Monetary Fund, Washington, DC.
- Kelly, R., and Z. Musunu. 2000. "Implementing Property Tax Reform in Tanzania." Lincoln Institute of Land Policy Working Paper, Cambridge, MA.
- Lockwood, B. 2006. "The Political Economy of Decentralization." In *Handbook of Fiscal Federalism*, ed. Ehtisham Ahmad and Giorgio Brosio. Cheltenham, United Kingdom: Edward Elgar.
- Ministry of Finance. Various years. *Finance Yearbook*. Beijing.
- Ministry of Health. 2005. *A Health Situation Assessment of the People's Republic of China*. Beijing.
- Montinola, G., Y. Qian, and B. Weingast. 1995. "Federalism Chinese Style: The Political Basis for Economic Success in China." *World Politics* 48 (1): 50–81.
- Musgrave, R. 1961. "Approaches to a Fiscal Theory of Political Federalism." Reprinted in R. Musgrave. 1986. *Public Finance in a Democratic Society, Collected Papers*, vol. 2. Brighton, United Kingdom: Wheatsheaf.
- National Bureau of Statistics. 2002. *China Statistical Yearbook 2002*. Beijing: China Statistics Press.

- Oates, W. 1972. *Fiscal Federalism*. New York: Harcourt-Brace.
- Qian, Y., and B. Weingast. 1996. "China's Transition to Markets: Market-Preserving Federalism, Chinese Style." *Journal of Policy Reform* 1: 149–86.
- Rao, M. Govinda. 2002. "Fiscal Decentralization in Indian Federalism." In *Managing Fiscal Decentralization*, ed. Ehtisham Ahmad and Vito Tanzi. New York: Routledge.
- Wen, T. J. 2000. "Reform of the Agricultural Tax System in China." In *Governance, Decentralization and Reform in China, India and Russia*, ed. J-J. Dethier. New York: Kluwer.
- Xu, S., and M. Lin. 1995. "Reform and the Market Economy and Tax in China." In *Reforming China's Public Finances*, ed. E. Ahmad, G. Qiang, and V. Tanzi. Washington, DC: International Monetary Fund.
- Zee, H., and F. Hameed. 2006. "Reforming China's Personal Income Tax." *Chinese Economy* 39 (2): 40–56.

Part III

Intergovernmental Relations and  
Fiscal Transfers



# Fine-Tuning the Intergovernmental Transfer System to Create a Harmonious Society and a Level Playing Field for Regional Development

7

ANWAR SHAH AND CHUNLI SHEN

*Get at the root of the problem while solving current issues.*  
—Chinese proverb

Central-provincial and provincial-local fiscal transfers are the dominant source of revenues of subnational governments in China. In 2003 they financed 67 percent of provincial, 57 percent of prefecture, and 66 percent of country and lower-level expenditures (Qiao and Shah 2006). Most service delivery responsibilities are assigned to subnational governments in China, but for reasons of efficiency in tax collection and administration, the central government collects revenues far in excess of its expenditure needs. In 2003 the central government collected 70 percent of consolidated revenues but spent only 30 percent of consolidated expenditures. The fiscal surplus of the central government enables it to use its spending power to influence local priorities and provide financing to subnational jurisdictions for the achievement of national objectives.

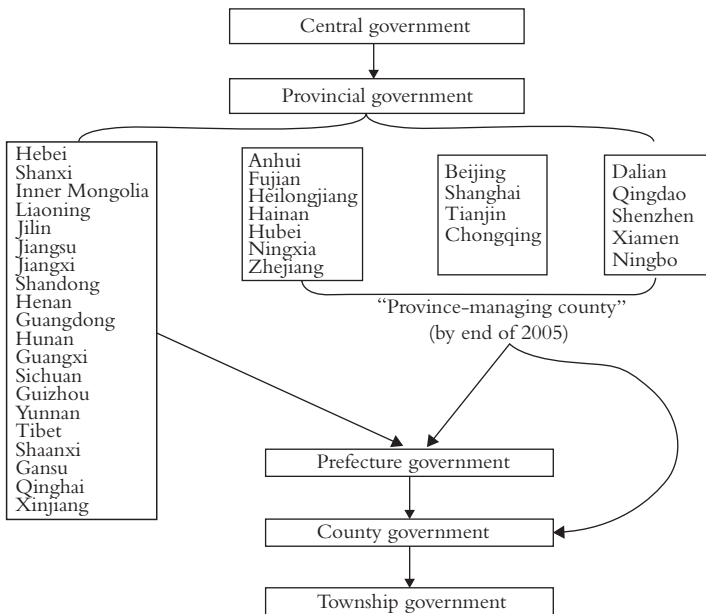
This chapter examines the incentives associated with the design of such transfers and their implications for the efficiency and equity of public service provision and accountable local governance. The next section presents an overview of the structure of central-provincial fiscal transfers. The second section describes provincial-local transfers. The third section examines the economic impact of these programs. The fourth section highlights conceptual and practical considerations in designing fiscal transfers. The fifth section reviews the existing structure of intergovernmental transfers. The last section presents plausible reform options for the existing system of fiscal transfers to further national objectives.

## The Current System of Central-Provincial Transfers

China’s fiscal system is based on a layer-cake model, in which there is a strict vertical hierarchical relationship among different orders of government (figure 7.1). The central government determines only transfers to provincial governments<sup>1</sup>; it makes no grants directly to prefecture, county, or township governments. The only exception is that county governments receive transfers directly from provincial governments in seven provinces (Anhui, Fujian, Hainan, Heilongjiang, Hubei, Ningxia, and Zhejiang) and four metropolitan areas (Beijing, Chongqing, Shanghai, and Tianji) as well as in the five separately planned cities, in which the “province managing county” model was implemented by 2005.<sup>2</sup> The design of subprovincial transfers is similar to that of central transfers to provincial governments, although the composition of grants varies significantly across provinces because of the wide range in fiscal resources across regions.

Central transfers in China can be classified into two broad categories: general-purpose and specific-purpose transfers. General-purpose transfers consist of revenue-sharing transfers; the tax rebate, designed to return a fraction of revenues by origin (province of collection); and the equalization transfer, established in 1995

**Figure 7.1** China’s Layer-Cake Model of Intergovernmental Grant Flows



Source: Authors’ rendition based on data from the Ministry of Finance.

in an effort to ease widening regional disparities.<sup>3</sup> The three transfers constituted about 64 percent of total central transfers in 2004. The equalization grant has grown rapidly in size, from Y2.1 billion in 1995 to Y74.5 billion in 2004 (5 percent of total central-provincial transfers) (table 7.1).

Specific-purpose transfers include grants for increasing the wages of civil servants, grants for rural tax reform, grants for minority regions, pre-1994 subsidies, and other ad hoc transfers. About 200 ad hoc grants—termed “earmarked grants” (*Zhuanxiang Zhuanyi Zhifu*) by the Ministry of Finance—are used to subsidize a wide variety of spending projects, such as capital constructions and social relief for calamities. In 2004 the largest central-provincial fiscal transfer was revenue-sharing transfers (Y469.5 billion), followed by tax rebates (Y404.97 billion) and earmarked grants (Y322.33 billion). The three transfers accounted for more than 80 percent of total central-provincial transfers.

Total per capita central transfers range widely across provinces (figure 7.2), with Henan receiving the smallest per capita total central transfers (Y646) and Shanghai, China’s richest province, receiving the largest (Y5,079) in 2004 (the average province received Y1,117 per capita). Shanghai received the largest per capita revenue-sharing transfers (Y2,830) and Tibet the smallest (Y81) (table 7.2). The tax rebate was also unequally distributed, with Shanghai receiving the largest rebate (Y2,123) and Jiangxi receiving the lowest (Y126). For obvious reasons, the six coastal provinces (Beijing, Guangdong, Jiangsu, Shanghai, Tianjin, and Zhejiang) did not receive any equalization transfers. Tibet received the largest per capita equalization transfer (Y705).

### *General-Purpose Transfers*

China has three types of general-purpose transfers: revenue-sharing transfers, tax rebates, and equalization transfers. In 2004 total general-purpose transfers amounted to Y949 billion, about 64 percent of total transfers by the central government.

#### REVENUE-SHARING TRANSFERS

Subnational governments in China receive 25 percent of the proceeds of value added tax (VAT) and 40 percent of enterprise income taxes and personal income tax from the central government. Because the central government determines the tax base and rate and collects VAT and most income taxes, in the provinces these tax revenues should be classified as general-purpose transfers, following the convention in the public finance literature.

#### TAX REBATES

With the 1994 tax reform, VAT and excise taxes were brought under central tax administration. A program of tax rebates was instituted for these taxes that returned a fraction of the revenues to the province of origin. The provinces were ensured that every province would receive at least the VAT and excise tax revenues it retained in 1993 and that current rebates would equal the previous year’s rebate



**Table 7.1 Intergovernmental Transfers in China, 2003 and 2004**

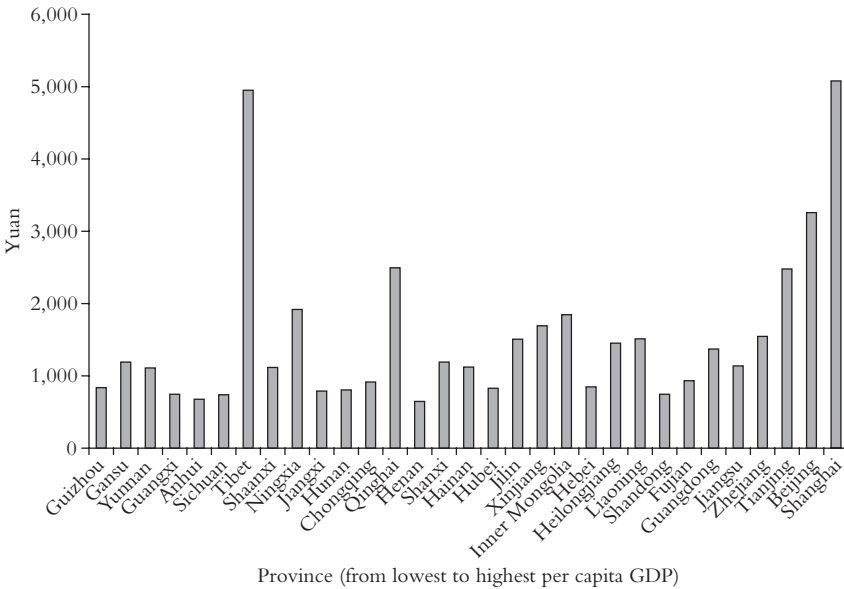
<i>Transfer</i>	<i>Central-provincial transfers</i>				<i>2003</i>		<i>2003</i>	
	<i>2004</i>		<i>2003</i>		<i>provincial-prefecture transfers</i>		<i>provincial/prefecture-county transfers<sup>a</sup></i>	
	<i>Amount</i> <i>(yuan, billion)</i>	<i>Percentage of</i> <i>total transfers</i>	<i>Amount</i> <i>(yuan, billion)</i>	<i>Percentage of</i> <i>total transfers</i>	<i>Amount</i> <i>(yuan, billion)</i>	<i>Percentage of</i> <i>total transfers</i>	<i>Amount</i> <i>(yuan, billion)</i>	<i>Percentage of</i> <i>total transfers</i>
<i>General-purpose transfers</i>								
Revenue-sharing transfers <sup>b</sup>	469.5	31.6	355.6	30.6	231.0	28.8	111.4	20.6
Tax rebate	405.0	27.2	342.4	29.5	166.7	20.8	126.2	23.3
Equalization transfer <sup>c</sup>	74.5	5.0	38.0	3.3	39.6	4.9	30.5	5.6
Subtotal	949.0	63.8	736.0	63.4	437.3	54.5	268.1	49.5
<i>Specific-purpose transfers</i>								
Grants for increasing public sector wages	91.9	6.2	89.9	7.7	79.2	9.9	68.5	12.7

Grants for rural tax reform	52.3	3.5	30.5	2.6	33.0	4.1	33.8	6.3
Grants to regions with large minority populations	7.7	0.5	5.8	0.5	1.7	0.2	1.7	0.3
Pre-1994 subsidies	12.6	0.8	12.4	1.1	18.2	2.3	16.5	3.0
Ad hoc transfers <sup>d</sup>	322.3	21.7	242.6	20.9	149.3	18.6	98.2	18.1
Other <sup>e</sup>	51.4	3.5	43.7	3.8	84.2	10.4	54.4	10.1
Subtotal	538.2	36.2	424.9	36.6	365.6	45.5	273.1	50.5
Total	1,487.2	100.0	1,160.8	100.0	802.7	100.0	541.2	100.0

*Source:* Authors' calculations, based on data from Ministry of Finance.

- a. Whether a county receives transfers from the provincial or prefectural government depends on whether its province has implemented the “province managing county” reform.
- b. Revenue-sharing transfers since 2002 include the following shared taxes: VAT, enterprise income tax, and personal income tax. Before 2002 the revenue-sharing transfers reflected only the amount of local VAT revenue.
- c. The equalization transfer refers to the transitory period grant established since 1995.
- d. Ad hoc transfers refer to earmarked grants (Zhuanxiang Zhuanyi Zhifu), as categorized in the Ministry of Finance dataset.
- e. Other transfers include various accounting closing transfers, civil service unit reform subsidies, and uncategorized transfers in the Ministry of Finance dataset.

**Figure 7.2** Distribution of Total per Capita Transfers from the Central Government, by Province, 2004



Source: Authors' calculations, based on data from the Ministry of Finance.

Note: Provincial governments in China receive 25 percent of the proceeds of the VAT and 40 percent of enterprise and personal income taxes from the central government. These shared tax revenues are considered revenue-sharing transfers in this chapter and included in total central government transfers.

plus 30 percent of the growth in VAT and consumption tax revenues (Budget Committee 2002). Algebraically,

$$TR_t = TR_{t-1} \left[ 1 + 0.3 \left( \frac{VAT_t - VAT_{t-1} + ET_t - ET_{t-1}}{VAT_{t-1} + ET_{t-1}} \right) \right],$$

where  $TR_t$  = the tax rebate to a province at year  $t$ ;  $VAT$  = value added tax; and  $ET$  = excise taxes.

In 2002 the personal income tax and the enterprise income tax were also brought under central tax administration, and a program of tax rebate similar to the VAT rebate was instituted. Effective on January 1, 2002, all income taxes from enterprises and individuals were shared equally by the central government and provincial governments.<sup>4</sup> In 2003 the central government's share was raised to 60 percent. To promote stability in provincial revenues, an income tax rebate program was instituted to ensure that all provinces receive income tax revenues that are no lower than those they received in 2001.

**Table 7.2 Central Government Transfers, by Region, 2004**

Item	China			Eastern China			Central China			Western China		
	Smallest	Largest	Mean	Smallest	Largest	Mean	Smallest	Largest	Mean	Smallest	Largest	Mean
GDP per capita	4,078 (Guizhou)	42,768 (Shanghai)	12,614	9,405 (Hainan)	42,768 (Shanghai)	19,351	7,449 (Anhui)	13,893 (Heilongjiang)	9,376	4,078 (Guizhou)	11,376 (Inner Mongolia)	7,430
Total transfers from central government	646 (Henan)	5,079 (Shanghai)	1,117	745 (Shandong)	5,079 (Shanghai)	1,352	646 (Henan)	1,506 (Jilin)	883	739 (Sichuan)	4,950 (Tibet)	1,075
<i>General-purpose transfers</i>												
Revenue-sharing transfers	81 (Tibet)	2,830 (Shanghai)	330	179 (Hainan)	2,830 (Shanghai)	610	119 (Jiangxi)	324 (Shanxi)	164	81 (Tibet)	237 (Xinjiang)	152
Tax rebates	126 (Jiangxi)	2,123 (Shanghai)	313	172 (Hainan)	2,123 (Shanghai)	523	126 (Jiangxi)	276 (Jilin)	175	139 (Guizhou)	359 (Yunnan)	194
Equalization transfers	0 (Beijing, Guangdong, Jiangsu, Shanghai, Tianjin, Zhejiang)	705 (Tibet)	3	0	108 (Hainan)	14	54 (Henan)	125 (Jilin)	71	41 (Yunnan)	705 (Tibet)	100
<i>Specific-purpose transfers</i>												
Ad hoc transfers	31 (Guangdong)	1,657 (Tibet)	249	31 (Guangdong)	413 (Liaoning)	127	166 (Henan)	612 (Jilin)	288	180 (Guangxi)	1,657 (Tibet)	366

Source: Authors' calculations, based on data from the Ministry of Finance.

Note: Provincial governments in China receive 25 percent of the proceeds of the value added tax and 40 percent of enterprise and personal income taxes from the central government. These shared tax revenues are considered revenue-sharing transfers in this chapter and included in total central government transfers.

### EQUALIZATION TRANSFERS

In 1995 the equalization grant, China's first formula-based transfer, was established in an effort to reduce regional fiscal disparities. The amount of the equalization transfer is determined by three factors: the province's standard revenue, its standard expenditure, and the share of the standard provincial fiscal gap in the total fiscal gap. Algebraically,

$$ET_i = TET \times \frac{SE_i - SR_i}{SE - SR},$$

where  $ET_i$  = the equalization transfer for province  $i$ ;  $TET$  = the total equalization grant available in the budget year;  $SE_i$  = the standard expenditure of province  $i$ ;  $SR_i$  = the standard revenue of province  $i$ ;  $SE$  = the total standard expenditure of the country; and  $SR$  = the total standard revenue of the country. The size of the pool for the equalization transfer ( $TET$ ) is determined by the central government on an ad hoc basis, subject to annual funding availability.

Standard revenues are equal to standard local own and shared taxes plus the tax rebate plus various grants less remittances to the central government. In the formula, the tax rebate, various grants, and remittances to the central government are actual amounts paid by the central government. For each type of tax, the standard tax revenue is determined by multiplying the standard tax base by the standard tax rate. For personal income tax, the standard tax base includes salaries and income of private industrial and commercial enterprises. The actual income tax collected from other bases is regarded as the standard revenue. The income tax base of salaries is estimated using per capita taxable salaries net of exemptions and number of employees. The tax rate of salaries is the local average effective tax rate, adjusted by a regional coefficient. Standard expenditures are measured as total spending of seven sectors, including personal expenditures (salaries and bonus) and office expenditures (vehicles, heating, and other).

The equalization grant has grown very rapidly, from Y2.07 billion in 1995 to Y74.5 billion in 2004 (figure 7.3). Nevertheless, growth in specific-purpose transfers has outpaced the growth of equalization transfers.

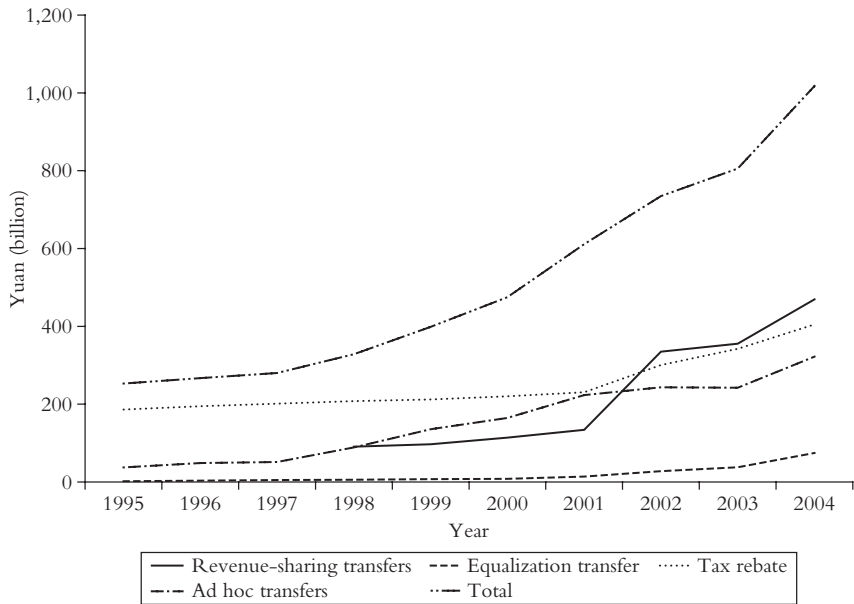
### *Specific-Purpose Transfers*

The central government administers myriad specific-purpose transfers for advancing central policy objectives. These programs are described in this section.

### GRANTS FOR INCREASING THE WAGES OF CIVIL SERVANTS

The central government raised the wage rate for public sector employees in 1999 and 2001. To implement this policy in the western and central regions, in 1999 it established a special grant to fill the fiscal gap caused by the central policy mandate.

Figure 7.3 Central-Provincial Transfers, 1995–2004



Source: Authors' calculations, based on data from the Ministry of Finance.

Note: Data on revenue-sharing transfers are available only since 1998. Ad hoc transfers (called "earmarked grants" by the Ministry of Finance) account for the major portion of specific-purpose transfers.

On July 1, 1999, the wage rate was increased by Y120 per capita per month. It was raised another Y100 per capita per month on January 1, 2001; on October 1, 2001, wages were increased by another Y80 per capita per month. This increase was accompanied by the introduction of a bonus system for civil servants (equivalent to about one month's wages) and by the establishment of a subsidy system for remote areas. More than 700 counties were eligible to receive this grant. Provinces faced with difficulties paying teachers' wages in rural elementary and middle schools also received this transfer (Zhang and Martinez-Vazquez 2003).

The grant allocation can be written as

$$WageGrant_i = ExpIncrease_i \times BasicExpenditureRatio_i$$

where  $WageGrant$  = the grant for increasing wages received by province  $i$ ;  $ExpIncrease$  = the increase in provincial budgetary expenditure as a result of the central government's policy of increasing wages; and  $BasicExpenditureRatio$  = the ratio of personal and office expenses to the total disposable revenue of province  $i$ . According to the formula, the size of the grant received by province  $i$  depends on the size of the increase in provincial expenditures as a result of the wage policy and the share of basic expenditures (including personnel and office expenses) in the

province's total disposable revenue. The increased expenditure is determined by the number of civil servants in province *i* and the standard of wage increase by the central government. In 2004 total transfers for this purpose were Y91.9 billion.

#### GRANTS FOR RURAL TAX REFORM

Another transfer was established in 2000 to foster implementation of the central government's policy of abolishing "three village deductions and five township charges" (*xiangtongchou he cun tiliu*) and gradually doing away with agricultural taxes. The "three deductions" collected by villages are collective investment, public welfare funds, and cadre compensation. The "five charges" include charges for rural education, family planning, militia training, and rural road construction and maintenance, as well as subsidies to entitled groups levied by townships. This transfer is aimed at filling the fiscal gap caused by the rural tax reform. In 2004, Y52.3 billion was transferred to provincial governments under this grant program.

#### GRANTS FOR MINORITY REGIONS

The grant for minority regions was established in 2000 to support economic development in regions in which large numbers of ethnic minorities reside—regions that tend to be backward economically. The total grant equals a base amount of Y1 billion in 2000 plus a yearly growth rate equal to that of central VAT revenue plus the rebate of 80 percent of the central increased VAT collection in minority areas. This transfer was Y7.7 billion in 2004.

#### PRE-1994 GRANDFATHERED SUBSIDIES

Pre-1994 subsidies are the contracted fixed grants under the "fiscal contracting system" during 1988–93.<sup>5</sup> In both 2003 and 2004, this grant totaled Y12.6 billion. Since 1994 local governments have continued to remit revenues to or receive transfers from the center according to their fiscal contracts in effect in 1993. The amount of transfers is approximately equal to the estimated gap between revenue and expenditure in the base year. Sixteen provinces (Fujian, Gansu, Guizhou, Guangxi, Hainan, Inner Mongolia, Jiangxi, Jilin, Ningxia, Qinghai, Shandong, Shannxi, Sichuan, Tibet, Yunnan, and Xinjiang) still receive this type of grant.

#### AD HOC TRANSFERS

Ad hoc transfers are categorized as "earmarked grants" by the Ministry of Finance. The number and size of ad hoc transfers have grown over time. Currently, there are about 200 programs, accounting for more than 20 percent of total transfers by the central government (see figure 7.3). These transfers are program based and allocated for specific purposes, such as subsidizing agricultural development, supporting infrastructure construction, assisting backward regions, or providing emergency funding for natural catastrophes. This transfer reached Y322.3 billion in 2004.

## Structure of Provincial-Local Fiscal Transfers

All central transfers to subprovincial levels pass through provincial governments in China. It therefore matters how provinces manage their relationships with lower orders of government. Currently, these relationships are guided by two models. In 2005 the traditional “prefecture managing county” model was still practiced in 20 provinces. In this model, provincial governments deal only with prefecture governments on fiscal matters; prefecture governments deal with county governments.

In the second model, the “province managing county” model, some provincial governments bypass the prefecture level and deal directly with county governments on fiscal matters. The fiscal connection between the prefecture and the county is entirely removed. The model had been implemented in 11 provincial-level governments (7 provinces [Anhui, Fujian, Hainan, Heilongjiang, Hubei, Ningxia, Zhejiang] plus 4 metropolitan areas [Beijing, Chongqing, Shanghai, and Tianjin]) and 5 separately planned cities (Dalian, Ningbo, Qingdao, Shenzhen, and Xiamen) by the end of 2005. The province managing county model is currently enjoying substantial popularity in China, and it is expected that more provincial governments will adopt it in the near future.

Further down the bureaucratic level, county governments provide transfers to township governments in most cases. For some poor jurisdictions, the central government encourages a “county replacing township” model, in which the township government no longer acts as an independent budget unit. It is hoped that government efficiency can be improved with fewer managerial layers.

Like central government transfers, subprovincial transfers can be divided into two major categories: general-purpose grants and specific-purpose grants. General-purpose grants include revenue-sharing transfers, tax rebates, and the equalization transfer (figure 7.4). Specific-purpose transfers consist of grants for increasing the wages of public servants, grants for rural tax reform, grants for minority regions, pre-1994 subsidies, and ad hoc transfers. The equalization transfer and the tax rebate are regulated by the center and calculated by identical formulas at subnational levels. Provincial governments retained 29.2 percent of the transfers they received from the center and passed 70.8 percent on to prefectures (see table 7.1). Prefectures in turn passed on 75.4 percent to county governments.

## Impact of Fiscal Transfers: Empirical Evidence

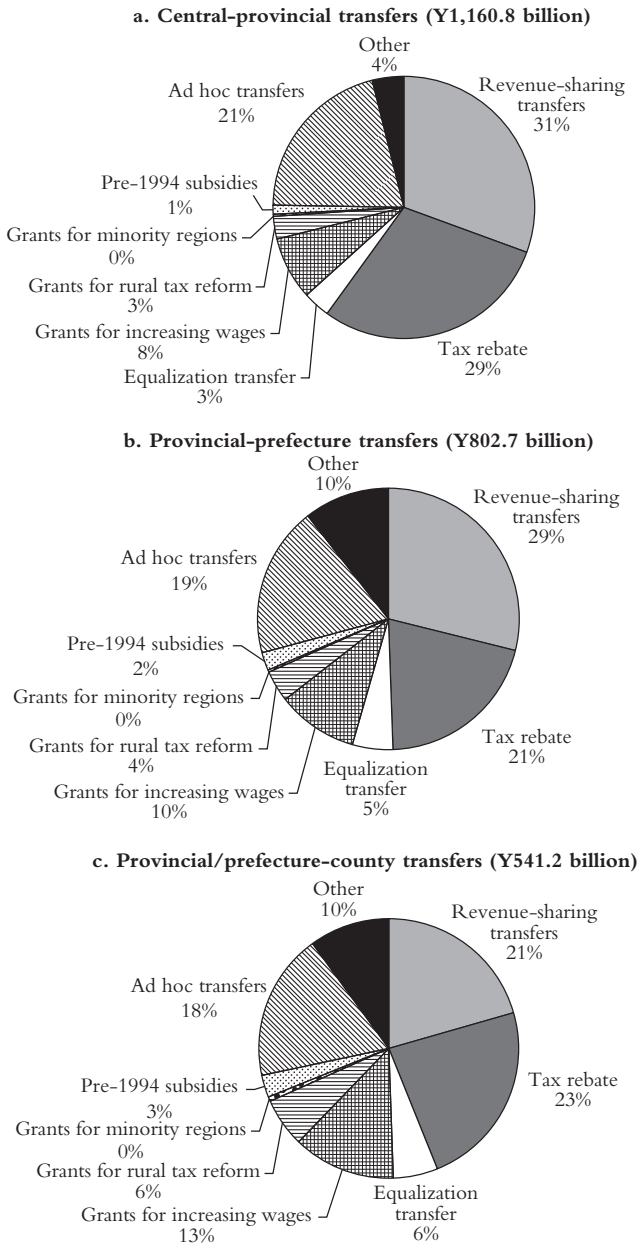
Examining the empirical impact of the existing system of transfers can shed light on how well the system has succeeded in meeting its objectives. This section examines the equalization effects of major transfer programs.

### *Equalization Transfers*

Per capita equalization transfers are negatively correlated with provincial gross domestic product (GDP) and per capita provincial revenues (table 7.3) They are



**Figure 7.4** Composition of Transfers at Different Levels of Government, 2003



Source: Authors' calculations, based on data from the Ministry of Finance.

**Table 7.3 Correlation between Various Types of Intergovernmental Transfers and Provincial Economic Indicators, 2004**

<i>Indicator</i>	<i>Per capita equalization transfers</i>	<i>Per capita ad hoc transfers</i>	<i>Per capita specific-purpose transfers</i>
Per capita GDP	-0.38	-0.36	-0.28
Per capita revenues	-0.31	-0.28	-0.22
Per capita expenditures	0.18	0.20	0.27

*Source:* Data for provincial GDP, provincial population, provincial revenues, provincial expenditures, and provincial unemployment are from the National Bureau of Statistics 2005.

*Note:* Sample size = 31.

positively correlated with per capita provincial expenditures and the provincial unemployment rate, but the correlation is weak, as reflected by the relatively low value of the indicator. The Gini coefficients of inequality suggest that equalization transfers have a mildly equalizing impact on provincial revenues (as a result of the grant, the coefficient falls slightly, from 0.365 to 0.351) (table 7.4). The weak effect can be attributed mainly to the small pool of the grant, which accounted for only about 5 percent of total central transfers; across the country, the grant amounted to just Y3 per capita in 2004. Thus, the grant's redistributive impact is insignificant.

### *Specific-Purpose Transfers*

Specific-purpose grants show a negative correlation with per capita provincial gross domestic product and per capita provincial revenues. Taking this category of grant into consideration, the Gini coefficient for provincial revenues is reduced from 0.365 to 0.295.<sup>6</sup> Thus, the grants have an equalizing impact on provincial revenues.

### *Other Ad Hoc Grants*

Ad hoc grants tend to be negatively correlated with per capita provincial gross domestic product, and per capita provincial revenue, and they have an equalizing impact on provincial revenue, reducing the Gini coefficient from 0.365 to 0.283. Surprisingly, the equalizing effect of the earmarked grants is even stronger than that of the equalization transfer, perhaps partly because the per capita equalizing transfer is very small (about 1 percent of the per capita earmarked grants). While the program appears to promote provincial equity in a limited sense, the grant design does not score well on most other criteria, such as transparency, predictability, simplicity, and objectivity.

**Table 7.4 Equalization Impact of Central Government Transfers on Provincial Revenue, by Type of Transfer, 2004**

<i>Item</i>	<i>Mean (per capita yuan)</i>	<i>Weighted Gini index</i>
Provincial revenue without transfers	904	0.365
Provincial revenue with equalization grants	906	0.351
Provincial revenue with ad hoc grants	1,153	0.283
Provincial revenue with specific-purpose transfers	1,070	0.295

*Source:* Authors' calculations, based on data from the Ministry of Finance.

*Note:* Sample size = 31.

## Designing Fiscal Transfers: Conceptual and Practical Considerations

The design of fiscal transfers is of critical importance for the efficiency and equity of local public service delivery and the fiscal health of subnational governments. This section covers the theory and practice of intergovernmental transfers, outlining the economic rationale and discussing principles for designing grant programs.

### *Economic Rationale for Intergovernmental Fiscal Transfers*

Intergovernmental transfers are the dominant source of revenues for subnational governments in China. The design of these transfers is therefore critical to the efficiency and equity of local service provision and the fiscal health of these governments. To enhance accountability, at all levels of government it is desirable to match revenue means (the ability to raise revenues from own sources) as closely as possible with expenditure needs. However, higher-level governments must be allowed access to revenues in excess of those needed to fulfill their own direct service responsibilities, so that they are able to use their spending power through fiscal transfers to fulfill national and regional efficiency and equity objectives.

National fiscal transfers can be divided into six broad objectives. Each requires a particular design of fiscal transfers (table 7.5).

### *Criteria for the Design of Intergovernmental Fiscal Transfers*

A number of principles should be considered in designing individual grant programs (Shah 1994).

- *Autonomy.* Subnational governments should have complete independence and flexibility in setting priorities, and they should not be constrained by the

**Table 7.5 Principles and Better Practices in Grant Design**

<i>Grant objective</i>	<i>Undesirable grant design features</i>	<i>Desirable grant design features</i>	<i>Examples of better practices</i>
Bridge fiscal gap	Deficit grants, tax-by-tax sharing	Reassignment of responsibilities, tax abatement, tax-base sharing	Tax abatement and tax-base sharing in Canada
Reduce regional fiscal disparities	General-revenue sharing with multiple factors	General nonmatching fiscal-capacity equalization transfers	Fiscal equalization programs in Canada and Germany
Compensate for benefit spillovers		Open-ended matching transfers with matching rate consistent with spill-out of benefits	Grant for teaching hospitals in South Africa
Set minimum national standards	Conditional transfers with conditions on spending; ad hoc grants	Conditional nonmatching block transfers with conditions on standards of service and access	SUDS program in Brazil; grants for roads and primary education in Indonesia before 2000; health transfers in Canada; education transfers in Chile and Colombia
Influence local priorities in areas of high national but low local priority	Ad hoc grants	Open-ended matching transfers (preferably with matching rate that varies inversely with fiscal capacity)	Matching transfers for social assistance in Canada
Achieve economic stabilization	Stabilization grants with no future upkeep requirements	Capital grants; must ensure funds are available for operating expenses associated with the capital projects	Limit use of capital grants and encourage private sector participation by providing political and policy risk guarantee

Source: Shah 1994, 2007a, 2007b.

categorical structure of programs and uncertainty associated with decision making at the center. Tax-base sharing—allowing subnational governments to introduce their own tax rates on central bases, formula-based revenue sharing, or block grants—is consistent with this objective.

- *Revenue adequacy.* Subnational governments should have adequate revenues to discharge the responsibilities designated to them.
- *Equity.* Allocated funds should vary directly with fiscal need factors and inversely with the taxable capacity of each jurisdiction (see Shah 1996 for an application).
- *Predictability.* The grant mechanism should ensure predictability of subnational governments' shares by publishing five-year projections of funding availability.
- *Efficiency.* Grant design should be neutral with respect to subnational governments' choices of resource allocation to different sectors or types of activity.
- *Simplicity.* Grant allocation should be based on objective factors over which individual units have little control. The formula should be easy to understand, so that grantsmanship is not rewarded.
- *Incentives.* Grant design should provide incentives for sound fiscal management and discourage inefficient practices. There should be no specific transfers to finance subnational government deficits.
- *Safeguard of grantor's objectives: accountability for results.* Accountability for results is best achieved by having grant conditions specify results to be achieved, giving the recipient flexibility in the use of funds, and holding recipients accountable for results.
- *Single focus.* Each grant should focus on a single objective.

Some of these criteria could be in conflict with others. A grantor may therefore have to assign priorities to various factors in comparing design alternatives.

### *Lessons from International Practice*

Shah (2007b) provides a number of important lessons from worldwide practices in intergovernmental transfers. These lessons include both practices to avoid and practices to consider.

#### NEGATIVE LESSONS: PRACTICES TO AVOID

Cross-country experience with practices that were *not* effective yields a variety of lessons for designing intergovernmental transfers:

1. General revenue-sharing programs with multiple factors undermine accountability and do not advance fiscal efficiency or fiscal equity objectives. Tax-by-tax revenue sharing should also be avoided because of its possible perverse incentives for the donor tax administration. Tax decentralization or tax-base sharing offers better alternatives to a general revenue-sharing program because they enhance accountability while preserving subnational autonomy.

2. Grants to finance subnational deficits create incentives for running higher deficits in the future.
3. Fiscal-effort provisions as part of unconditional grant programs should be avoided. Improving service delivery while lowering tax costs should be public sector objectives.
4. Input- or process-based or ad hoc conditional grant programs undermine local autonomy, flexibility, and fiscal efficiency and fiscal equity objectives.
5. Capital grants without assurance of funds for future upkeep should be revised because they have the potential to create white elephants.
6. Negotiated or discretionary transfers in general in a decentralized fiscal system may create dissension and disunity.
7. Independent grant commissions or agencies outside the government typically opt for complex solutions.

Because of these problems, these features should be avoided.

#### POSITIVE LESSONS: PRACTICES TO ADOPT OR STRIVE TOWARD

Cross-country experience has also identified a variety of good practices to keep in mind when designing intergovernmental transfers:

1. *Keep it simple.* In the design of fiscal transfers, rough justice may be better than full justice. A simple and transparent system is likely to have wider acceptability.
2. *Focus on a single objective in one grant program, and make the design consistent with the objective.* Having multiple objectives in a grant program increases the risk that none of the objectives will be met.
3. *Introduce sunset clauses.* It is desirable to have the grant program reviewed periodically (say, every five years) and renewed. In the intervening years, no changes should be made to the program, so that all governments are certain about budgetary programming.
4. *Achieve fiscal equalization through a grant program that equalizes per capita fiscal capacity to a specified standard.* The calculations required to equalize fiscal capacity using a representative tax system are relatively straightforward. They are less data intensive and demanding than those required to equalize fiscal expenditures. Fiscal need equalization should be achieved through output-based per capita (per service population) national minimum standards grants.
5. *In specific-purpose grant programs, establish conditionality on outputs or standards of access and quality of services rather than conditionality on inputs and processes.* This facilitates the achievement of the grantor's objectives without undermining local choices on how best to deliver such services. Simple output-based transfers can facilitate the achievement of national minimum standards.
6. *Listen to all stakeholders, and reach acceptable compromises using objective criteria.* There is no single model of institutional arrangements that is superior to others. A national consensus on the standard of equalization is critically important for the sustainability of the program. Intergovernmental forums have worked well in several countries, including Canada and Germany.

## Review of the Existing Structure of Intergovernmental Transfers in China

This section analyzes various grant programs in China. It then draws general conclusions regarding the overall system of intergovernmental transfers in China.

### *General-Purpose Transfers*

China uses three types of general-purpose transfers: revenue-sharing transfers, tax-rebate transfers, and equalization grants. Each of these transfers is examined below.

#### REVENUE-SHARING TRANSFERS (TAX-SHARING PROGRAM)

The VAT was brought under central government administration in 1994. In 2002 the personal income tax and enterprise income tax came under central government control, and a tax-by-tax-sharing system was introduced, under which 25 percent of VAT and 40 percent of personal income tax and enterprise income tax revenues are returned to the provinces by origin. The centralized administration of these taxes ensures a common base and uniform taxation across the country. This feature is particularly desirable for VAT administration. For residence-based personal income taxes and residence-based enterprise income taxes, uniformity of base is desirable, but uniformity of tax rates can be foregone in the interest of greater provincial autonomy and flexibility. While residence-based personal income taxes are desirable, enterprise income taxes must be source based and should have formal rules to attribute income to various locations. Residence-based enterprise taxes have the potential to deprive poor provinces of significant revenues, because company headquarters are usually located in richer provinces. In addition, residence-based enterprise taxes have the potential to encourage wasteful tax competition and beggar-thy-neighbor policies. The existing system of tax-by-tax sharing weakens provincial flexibility and accountability, because provincial governments no longer have the ability to vary the tax rates or to justify taxing choices to provincial residents. The tax-by-tax-sharing feature of the existing arrangements is also undesirable, because in principle it may create incentives for the central administration to make greater effort at the margin raising revenues from bases that are not shared, although there is no evidence that this has actually occurred in China.

#### TAX-REBATE TRANSFERS

The tax rebate program was instituted to ensure provinces that centralization of tax administration would not have adverse consequences for provincial revenues. The program ensured that provinces receive at least the same revenues they received from VAT in 1994 and the personal income tax and enterprise income tax in 2001. This is a static guarantee, with a built-in tendency to terminate itself after a few years. A dynamic element was introduced for VAT by allowing the previous year's rebate entitlement to be augmented by 30 percent of the growth

in VAT revenues. This rebate is difficult to justify beyond the initial “hold harmless” provisions. Some scholars have argued that the tax effort incentives provided by this grant rewards richer provinces and contributes to widening fiscal disparities across regions (Tsui 2005).

#### EQUALIZATION GRANTS

In a large and diverse country with a decentralized fiscal system, a fiscal equalization program is considered to be the glue that may hold the country together. With the objective of advancing regional fiscal equity and harmony, in 1995 China adopted an objective comprehensive equalization program patterned after the Australian model. The program attempts to equalize both fiscal capacity and expenditure needs.

The fiscal equalization is highly complex and lacks the most important feature of a good system, namely, an explicit equalization standard, on which there is broad societal consensus, that determines both the total pool and the allocation to provinces needed to bring all provinces to the national average standard. Such a standard should be based on reliable data. The complexity of China’s program and several design flaws, described below, make it unlikely that the program will achieve regional fiscal equity.

Like Australia, China adopted an ad hoc year-to-year variable fixed pool that is unrelated to an equalization standard based on national consensus. A fixed pool negates commitment to establishing reasonably comparable levels of public services at reasonably comparable levels of fiscal burdens across the country.

The representative tax system (RTS) is usually used to equalize, at an explicitly defined standard, different revenue-generating potential from local ownership and the exploitation of tax bases under a decentralized fiscal system. China’s fiscal system, in which all major dynamic and productive tax bases are centralized, limits the potency of a fiscal capacity equalization program. As in Australia, China’s provincial and local revenue base is small. Unlike in Australia, subnational governments in China do not have any autonomy in determining their own tax bases and rates. Furthermore, national tax bureaus supervise subnational tax bureaus.

The RTS is conceptually desirable. However, given China’s centralized fiscal system, adoption of an RTS system complicates matters and is unlikely to yield results that are significantly different from those obtained by equalizing actual revenues. (The difference would arise primarily from differences in enforcement by the central tax collection agency in various jurisdictions.) Potential yields are calculated to avoid the unwelcome incentive/disincentive effects for tax administration of the use of actual revenues in equalization grants. The Chinese fiscal system is similar to the German fiscal system in that local governments in both countries simply implement central tax policies and have little or no discretion in defining own bases and own tax rates. Recognizing that an RTS would not make a significant difference and would introduce complexity, Germany opted for a simple system equalizing actual revenues.



Like Australia, China uses the representative expenditure system (RES) to calculate expenditure needs. China uses an even greater degree of rigor than does Australia in making such calculations. While such calculations are desirable conceptually, in practice they have a number of serious limitations. For personnel expenditures, for example, such calculations assume a straitjacket management paradigm and implicitly discourage innovative practices that emphasize managing for results, such as alternative service delivery frameworks that embody elements of competitive provision and outsourcing; they also internalize generous and wasteful expenditure policies in richer provinces. Similar concerns apply to other expenditure categories, such as fuel expenditures. The econometric approach to the RES assumes unchanging functions and modes of service delivery as well as stable coefficients—hardly plausible assumptions for a dynamic economy like China. Australia abandoned an econometric approach to RES in the 1990s for these reasons. Its current approach to expenditure need calculations remains highly complex and controversial. It is a major source of discontent with the current equalization program.

While desirable, expenditure need equalization requires difficult and complex analysis, which invites controversy and debate. It also turns equalization into a black box for all but a handful of gurus. In view of these drawbacks, fiscal need compensation is best achieved through output-based transfers for merit goods.

In conclusion, China's fiscal equalization is highly complex but lacks the basic ingredients of a good equalization system, namely, that there should be an explicit equalization standard on which there is broad societal consensus and this agreed standard in turn should determine both the total pool and the allocation to provinces that are to be brought up to the national average standard. Further, such calculations should be based on authentic data available to all, and the overall system should be simple for a wider acceptance of the program.

### *Specific-Purpose Transfers*

This section examines major types of specific-purpose transfer programs.

#### GRANTS FOR INCREASING THE WAGES OF CIVIL SERVANTS

Grants for increasing the wages of civil servants compensated provincial and local governments for centrally mandated wage increases between 1999 and 2001. This program made sense the year it was instituted, but the rationale for maintaining the program in the long run is not clear. The program represents a tacit admission on the part of the central government that existing tax assignment and transfers are not commensurate with the fiscal responsibilities of sub-national governments. But such fiscal deficiency is best addressed through tax decentralization or tax-base-sharing programs. Providing grants for civil service wages creates perverse incentives for inflating payrolls. Other countries, such as Brazil, have introduced fiscal responsibility legislation to cap wage expenditures

at all levels of government, so that government agencies have incentives to deliver services rather than work as employment-creation agencies.

#### GRANTS FOR RURAL TAX REFORM

Grants for rural tax reform are intended to help rural governments deal with the fiscal gap arising from the elimination of rural taxes and charges in 2000. Such transfers represent only a stopgap measure, not a long-term solution to problems of rural public finance. A long-term solution requires examination of options to reassign taxing and spending responsibilities, institute output-based transfers, or both.

#### SPECIAL GRANTS FOR MINORITY REGIONS

Preserving diversity of cultures is an important goal of the Chinese government. Provinces with large populations of ethnic minorities receive an ad hoc grant equal to a base amount of Y1 billion plus the annual growth rate of central VAT revenue and the rebate of the 80 percent of increased VAT collection in these provinces. While this transfer is easy to justify, the specific design of a small ad hoc grant needs reexamination.

#### PRE-1994 SUBSIDIES AND OTHER AD HOC TRANSFERS

Pre-1994 subsidies (equivalent to the fiscal gap experienced by some provinces in 1993) have been sustained for more than a decade. These subsidies can no longer be justified.

China has more than 200 additional transfers from line agencies. There is not enough information on these programs to make informed comment.

## Principal Limitations of the Current System

China's fiscal transfer system is remarkable for transferring large sums of money to subnational governments in an objective manner. The system has enabled provincial and local governments to deliver a quantity and quality of public services that is better than most developing countries and emerging market economies. The system has a number of limitations, however.

1. *Complexity and opacity.* Many transfer programs were designed in an ad hoc manner as short-term palliatives for dealing with emerging issues and crises but allowed to continue in perpetuity without any serious review. The system is opaque, with only a handful of experts understanding all programs and their underlying allocation basis.
2. *Piecemeal approach to gap filling.* Many programs have been implemented to deal with the large fiscal gaps created by existing assignments (table 7.6). A multitude of programs—including tax-by-tax sharing, tax rebates, and transfers for

- implementing the increase in salaries of public employees, implementing the rural tax-for-fee reform, and the transfer for abandoning the agriculture tax—are designed to partially fill these fiscal gaps.
3. *Lack of central coordination and transparency.* As a result of the way China approves and consolidates budgets (from the bottom up), the amount of transfers is unknown until the central budget is approved. Consequently, subnational budgets are not able to reasonably estimate intergovernmental transfers until execution of the central budget starts. An audit report from the National Audit Office (2003) found that only 22.5 percent of total intergovernmental subsidies from the central government were reported in the provincial accounts of the 17 provinces audited. The story is further complicated by the large number of agencies that make almost independent determinations of their grant programs, without formal centralized review and coordination.
  4. *Lack of a regulatory framework.* All transfer programs in China are instituted by executive order; they do not require formal approval by the National People's Congress. No program includes a sunset clause or review requirements for renewal. This informality breeds incentives for programs to be introduced in a "putting out the fire" fashion—that is, to institute grant programs without ensuring how various pieces of the puzzle fit together.
  5. *Lack of consistency between design and objectives.* Almost all programs fail to provide an incentive and accountability framework to provide reasonable assurance that objectives are achieved. The equalization program is state of the art in its technology, but it has no clear objectives and no standard or variable ad hoc pool. There is no assurance that governments deal with fiscal disparities based on a consensus standard.
  6. *Focus on input controls.* All specific-purpose programs emphasize input controls, with no accountability for results; not a single transfer program is output based in practice. No transfers are made to ensure national minimum standards of basic services across the nation.
  7. *Lack of consistency between the management paradigm and China's new role in the world.* China's transfer programs perpetuate a public management paradigm that is out of step with the role of China as a world leader in a globalized and localized world.
  8. *Lack of a tailored approach to provincial-local transfers.* Provincial-local transfers use the same allocation criteria as transfers from the central government to provincial

**Table 7.6 Vertical Fiscal Gap, 2003**  
(percent)

<i>Level of government</i>	<i>Share of revenues</i>	<i>Share of expenditures</i>	<i>Fiscal surplus or deficit</i>
Central	71.0	30.1	40.9
Provincial	5.7	18.5	(12.8)
Subprovincial	23.3	51.4	(28.1)

*Source:* Authors' calculations, based on unpublished data from the Ministry of Finance.

governments. These criteria do not discriminate among local governments by type of government, population size, or the urban/rural character of their services. Imposition of a one-size-fits-all approach contributes to bottlenecks in the delivery of rural services as a result of inadequate financing.

## **Pathways to Reform**

The pathways to reform presented here are guided primarily by economic rationale, principles of good grant design, and lessons from experience. They describe one possible package of policy reform options for dealing with the principal issues facing China today.

### *Sharing Tax Bases or Decentralizing Taxes to Handle the Fiscal Gap*

China could discontinue tax-by-tax sharing for personal income tax and enterprise income tax and allow provincial and local governments to impose supplementary variable flat rate charges. In addition, subnational governments could be given the flexibility to set their own tax rates within a defined range. It is also important to make the enterprise income tax a source-based tax and set rules that attribute income to various locations based on taxes such as VAT, employment taxes, and sales tax. Doing so would allow western provinces to claw back additional enterprise income tax revenues and discourage wasteful interjurisdictional tax competition. These measures have the potential to reduce the fiscal gap while enhancing accountability to local residents.

### *Establishing a Legal Framework and Designating a Coordinating Ministry*

Industrial countries and a growing number of developing countries require grant programs to be established through enabling umbrella legislation (fiscal arrangements acts) and implementing regulations. They also designate a coordinating body, usually the Ministry of Finance. China could consider instituting a legislative framework for major grant programs and designating the State Council or the Ministry of Finance to play a coordinating role. In addition, a fiscal arrangements committee comprising representatives of the central government and subnational governments, chaired by the central government's minister of finance, could be appointed to act as the primary initiating and deliberative body on central transfers.

### *Establishing a Framework for Fiscal Transparency, Responsibility, and Accountability*

In the foreseeable future, the central government will remain the dominant source of financing subnational services in China, especially in the western regions and in the provision of rural services throughout the country. Over time, China has afforded ever-expanding autonomy to local governments. To forestall future fiscal

risks, it is important to establish a national framework for fiscal transparency, responsibility, and accountability that is binding on all levels of government. This framework should specify principles and rules for fiscal prudence and fiscal discipline, credit market access, and fiscal insolvency for local governments, and it should ensure transparency and access to information by all. Recent experiences of Brazil and South Africa with such legislation may be instructive for China.

### *Rationalizing and Simplifying the Fiscal Equalization Program*

China's fiscal equalization program could be rationalized and simplified by introducing an explicit standard of equalization, such as a national average standard for fiscal capacity or a fraction of this standard that subnational governments must meet. This standard should determine both the pool and the allocation. The RTS could be simplified by having fiscal capacity calculated from only eight sources: VAT, personal income tax, enterprise income tax, business tax, urban maintenance and construction tax, housing property tax, vehicle taxes, and all other taxes combined. User charges should be excluded from these calculations. The RES should be discontinued for fiscal need calculations; instead, per capita (per service population) output-based transfers for national merit goods should be used, as discussed below.

### *Instituting National Minimum Standards Grants*

China could institute national minimum standards grants by introducing output-based fiscal transfers to achieve national minimum standards in merit goods, such as education, health, and infrastructure. The central government must play a larger role in financing rural services, in view of rural areas' inability to raise adequate own-source revenues.

Merit-based transfers could be based on the relevant service population. For example, a performance-oriented education grant could use the school-age population as the basis of allocations (Shah 2002, 2007b). Unconditional equal per pupil distributions could be made to both public and private schools, as long as the local government raises achievement scores and provides universal access to primary and secondary education regardless of parents' income. Schools that do not comply with the standards imposed by the central government could face public censure and reduction of their grant funds. Incentives for cost efficiency could be included by allowing local governments to retain savings.

### *Tailoring Provincial-Local Transfers to the Size and Urban/Rural Nature of the Local Area*

Local areas vary in population, size, area served, and type of services offered. In view of this, it would be advisable to classify local governments by population size, municipality type, and urban/rural character and to apply separate formulas to each class and type of municipality. It is also important to give special consideration to financing rural services.

## Customizing Infrastructure Assistance to Local Governments

To deal with infrastructure deficiencies, a blend of capital grant finance and responsible access to borrowing may be needed in different provinces. The central government could consider providing local governments with assistance on project design and evaluation and credit market access.

## Notes

The authors are grateful to Professor Baoyun Qiao of Shanghai University for comments and inputs.

1. China's five separately planned cities—Dalian, Ningbo, Qingdao, Shenzhen, and Xiamen—are treated as provincial governments fiscally.
2. In the “Province Managing County” model, the provincial government directly manages the counties. There are no fiscal relations between the prefecture governments and the county governments.
3. The equalization transfer was called a *transitory period grant* until 2001; since 2002 it has been called a *general-purpose grant*.
4. The income tax from the following enterprises is excluded from the sharing policy: rail transportation, the state post office, the Industrial and Commercial Bank of China, the Agricultural Bank of China, the Bank of China, the Construction Bank of China, the State Development Bank, the China Bank of Agricultural Development, the Import and Export Bank of China, offshore oil and national gas enterprises, the China Petroleum and Natural Gas Co. Ltd., and the China Petroleum Chemical Co. Ltd.
5. The fiscal contracting system included six types of central-provincial revenue-sharing methods, each applied to some provinces. For instance, the method “fixed contracted remittance” means the province remitted to the central government a fixed amount every year.
6. The weighted Gini index, which weights each difference in per capita revenue by its population size, is calculated by the equation

$$G = \left( \frac{1}{2\bar{R}} \right) \sum_i^n \sum_j^n |R_i - R_j| \frac{p_i p_j}{p^2},$$

where  $\bar{R}$  is the national mean;  $p_i$  and  $p_j$  are the populations of provinces  $i$  and  $j$ , respectively;  $p$  is the national population; and  $n$  is the number of provinces.  $G$  ranges from 0 for perfect equality to  $(1 - \frac{P_i}{p})$  for perfect inequality.

## References

- Budget Committee, National People's Congress. 2002. *Discussion of Fiscal Transfers by Experts at Home and Abroad*. [In Chinese: *Zhongwai Zhuanjia Lun Caizheng Zhuanyi Zhifu*] Beijing: China Financial and Economic Publishing House.
- Ministry of Finance. 2006. “Intergovernmental Grant Flow in China.” Beijing.

- National Audit Office. 2003. *Audit Report on Central Budget and Other Fiscal Revenue and Expenditure*. Beijing.
- National Bureau of Statistics. 2005. *China Statistical Yearbook*. Beijing: China Statistics Press.
- Qiao, Baoyun, and Anwar Shah. 2006. "Local Government Organization and Finance in China." In *Local Governance in Developing Countries*, ed. Anwar Shah. Washington, DC: World Bank.
- Shah, Anwar. 1994. *The Reform of Intergovernmental Fiscal Relations in Developing and Emerging Market Economies*. Washington, DC: World Bank.
- . 1996. "A Fiscal Need Approach to Equalization." *Canadian Public Policy* 22 (2): 99–115.
- . 1998. "Balance, Accountability, and Responsiveness: Lessons about Decentralization." Policy Research Working Paper 2021, World Bank, Washington, DC.
- . 2002. "Fiscal Decentralization in Developing and Transition Economies." In *Federalism in a Changing World: Learning from Each Other*, ed. Raoul Blindenbacher and Arnold Koller. Montreal and Kingston: McGill–Queen's University Press.
- . 2004. "Fiscal Decentralization in Developing and Transition Economies. Progress, Problems and the Promise." Policy Research Working Paper 3282, World Bank, Washington, DC.
- . 2007a. "Institutional Arrangements for Intergovernmental Fiscal Transfers and a Framework for Evaluation." In *Intergovernmental Fiscal Transfers: Principles and Practice*, ed. Robin Boadway and Anwar Shah, 293–318. Washington, DC: World Bank.
- . 2007b. "A Practitioner's Guide to Intergovernmental Fiscal Transfers." In *Intergovernmental Fiscal Transfers: Principles and Practice*, ed. Robin Boadway and Anwar Shah, 1–54. Washington, DC: World Bank.
- Tsui, Kai-yuen. 2005. "Local Tax System, Intergovernmental Transfers and China's Local Fiscal Disparities." *Journal of Comparative Economics* 33: 173–96.
- Zhang, Zhihua, and Jorge Martinez-Vazquez. 2003. "The System of Equalization Transfers in China." Working Paper 03-12, Andrew Young School of Policy Studies, Georgia State University, Atlanta.

# The Reform of Intergovernmental Fiscal Relations in China: Lessons Learned

## 8

JIWEI LOU

A significant feature of China's economic reform, which began in 1978, is the devolution of the central government's control over the economy to subnational governments. The fiscal system has been decentralized across five levels of governments—national, provincial, municipal, county, and township—categorized broadly as center, provincial, and local governments (all subprovincial governments).

Changes in public finances were heralded by shifts in revenue bases: the system of 100 percent taxation of (largely) state-owned enterprises (SOEs) was gradually replaced by a modern system of corporate taxation in line with international norms, leading to a precipitous decline in both total government revenues and the central government's share of revenues (Ahmad, Keping, and Richardson 2002). Throughout the 1980s, the inability of the central government to cut spending as revenue declined created persistent budget deficits, which contributed to mounting inflationary pressures. Reforms also led to the shedding of several social functions, which expanded expenditure responsibilities for SOEs (Wong 1991). The central government also responded to fiscal pressure by attempting to devolve expenditure responsibilities to lower levels of government, which also faced considerable fiscal pressures. The result was complex bargaining among different levels of government over sharing schemes (sharing rates and period). The resulting fiscal pressures created by the contract system of the 1980s led to undesirable responses by subnational governments, which diverted resources from budgetary to extrabudgetary channels; duplicated industries to capture revenues that formerly flowed to the national treasury; granted generous tax concessions to local SOEs under their jurisdictions; and expanded local bank lending to these SOEs.

This chapter outlines some major economic and administrative mechanisms that affect intergovernmental fiscal relations. The next section briefly describes the evolution of China's intergovernmental fiscal relations in the reform period. The second section discusses the improvement of the transfer payment system. The third section identifies the major policy lessons learned.



## The Process of Reform in China

China's fiscal system has undergone a series of reforms since the 1980s. The changing nature of the contracting relations between the center and subnational governments reflects the growing fiscal pressures on the center and its search for a tax system that is relevant for a (socialist) market economy (Xu and Lin 1995).

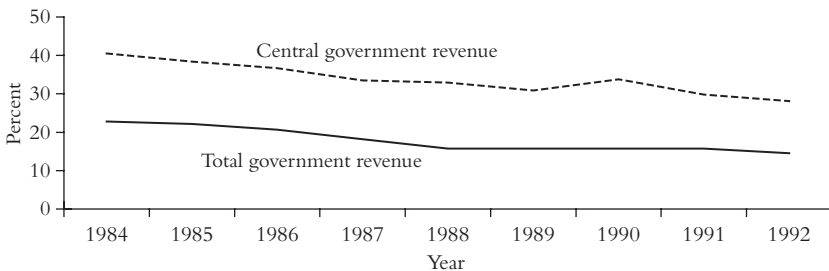
### *The Fiscal Contracting System*

From 1988 to 1993, China adopted the "fiscal contracting system," under which each level of government contracted with the next level up to meet certain revenue and expenditure targets. Central and subnational governments shared the revenue proportionately or in the form of a fixed quota plus a percentage share. At the same time, subnational governments were required to finance their own expenditures through self-generated and shared revenues.

With market mechanisms playing an increasingly important role in resource allocation, the downside of this system started to surface. Competition among localities, especially in developed areas, to provide the most attractive (that is, the lowest) taxes constrained the growth of fiscal revenues. Local governments also acted to avoid sharing their revenues with the central government. Total revenues declined as a share of GDP (figure 8.1), and the central government's share of revenues fell sharply. The resulting pattern of a "weak trunk with strong branches" forced the central government to continuously borrow from local governments. As a result, the central government's role in narrowing regional fiscal disparities was weakened, and its support for basic public services limited.

In a rapidly growing economy in which fiscal contracts represent a large share, the rate of increase in tax revenues is less than that of income growth. Tax policy

**Figure 8.1 Central Government Revenue as a Percentage of Total Government Revenue and Total Government Revenue as a Percentage of GDP, 1984–92**



Source: Ministry of Finance 2001.

thus becomes a procyclical mechanism that exacerbates economic fluctuations instead of moderating them (Agarwala 1992). When government expenditure increases in line with GDP, the deficit is likely to expand.

The fiscal contracting system also increased regional disparities, because it favored better-off provinces with more bargaining power and allowed provinces to move some revenues to extrabudgetary funds without sharing them with the center. Provinces with enormous economic potential, such as Guangdong, accumulated a substantial and growing revenue base by retaining most of the incremental revenues within the province. This shift in financial flows from the early 1980s—when the central government received more from provinces with surpluses than it paid out in transfers and grants (Ahmad 1997)—handcuffed the central government in stabilizing the economy and bridging horizontal imbalances.

The transition from a vertical hierarchy to horizontal administration began with Deng's decentralization of state enterprise ownership to provincial and county governments and local communes during the 1970s (Sachs, Woo, and Yang 2000). Since 1983 the central government has been less involved in supervising provincial-level appointments, making appointments only "one level down." Directors of fiscal agencies and tax bureaus are now appointed by provincial governments and their party committees (Huang 1996).

In combination with fiscal decentralization, provincial governments now have the wherewithal and authority to circumvent central plans and policies in favor of regional priorities. Although provincial fiscal agencies and tax bureaus are subject to the hierarchical (professional) instructions of the Ministry of Finance, they are under the leadership of their respective provincial governments.

The new mechanism has problems of its own. As one observer notes, "The shortcoming of the two-level downward system was excessive centralization and unwieldiness; the problem with the one-level system was that it encouraged nepotism and localism because it concentrated too many appointment decisions locally" (Manion 1985).

### *The Tax-Sharing Reform*

In 1992 the 14th National Congress of the Communist Party of China clearly defined the objective of reform as the establishment of a socialist market economy system. Based on the experiences of China and other countries, the government launched the "tax-sharing" reform in 1994. The reform—the most intensive and far-reaching institutional innovation in Chinese intergovernmental fiscal relations since 1949—created a framework of fiscal relations between central and local governments, using the policy tools of taxes and transfers that encourage the development of a market economy.

In order to implement this tax-assignment system and ensure the effective collection of the central government's revenues, the central and provincial tax administrations were separated, with the establishment of the State Administration of Taxation (SAT), which is responsible for collecting central and shared taxes.

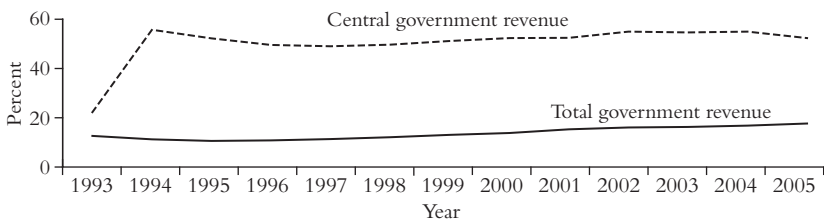
The central and provincial governments are responsible for collecting their own taxes. SAT collects the shared taxes and shares the receipts with the central and provincial governments.

This new tax-assignment system met with unprecedented resistance from provincial authorities, who obtained significant concessions from the central government (Wang 1997). In practice, after the provinces share taxes with the center under the new rule effective since 1994, they would have had to hand over remittances to or receive subsidies from the center according to the old revenue-sharing contracts. To overcome resistance, the central government therefore issued a guarantee to the provinces, ensuring them that they would receive the revenues they received under the pre-1994 system.

The 1994 reforms of the tax-sharing system strengthened the central government's ability to achieve macroeconomic stabilization, regional equalization, and the efficient provision of public goods. The objectives of the reform package were to simplify and rationalize the tax structure by reducing tax types and tax rates, unify the tax burden on taxpayers, and reduce exemptions; raise the revenue to GDP ratio; raise the central to total revenue ratio; and put central-local revenue sharing on a more transparent, objective basis by shifting the negotiated sharing of general revenues to an automatic rules-based system of tax assignment.

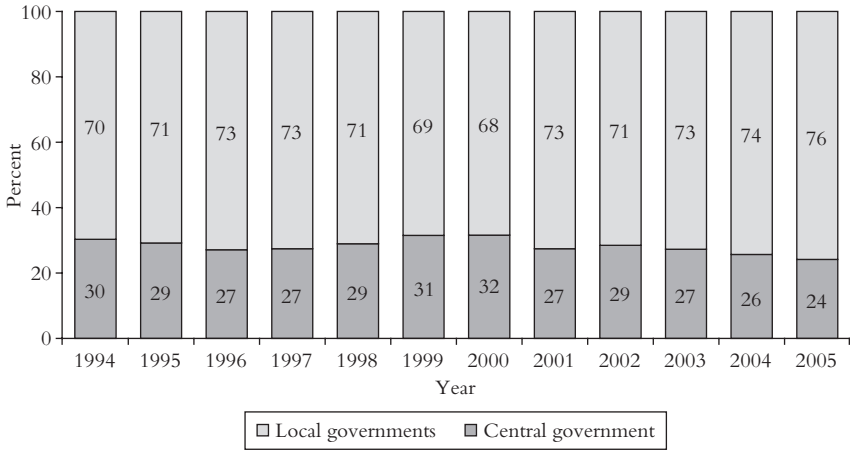
A unified taxation system was established so that local governments could no longer introduce tax reductions or exemptions without approval by the central government. These measures contributed to the rapid growth in overall government revenues (figure 8.2). Between 1994 and 2005, national fiscal revenues increased from Y521.8 billion to Y3,161.8 billion, an average annual increase of 17.8 percent. Total government revenue as a percentage of GDP increased from 12.3 percent in 1993 to 17.3 percent in 2005. Central government revenue as a percentage of total government revenue grew from 22.0 percent in 1994 to 52.3 percent in 2005 (figure 8.2), dramatically reducing the central government's

**Figure 8.2** Total Government Revenue as a Percentage of GDP and Central Government Revenue as a Percentage of Total Government Revenue, 1993–2005



Source: Ministry of Finance 2006.

**Figure 8.3 Percentage of Government Expenditure Made by Central and Local Governments, 1994–2005**



Source: Ministry of Finance 2006.

reliance on local governments to turn over tax revenues. As a result, the macro-adjustment and macro-control capacity of the central government increased.

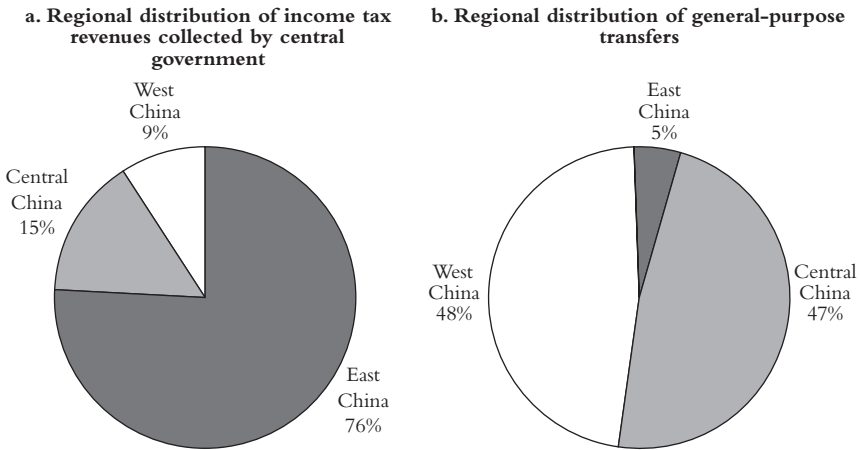
As government revenues increased, governments at all levels were able to substantially increase their resources for public services, including education, science and technology, agriculture, social security, and infrastructure. These increases helped ensure smooth progress of the key reforms of the economic system.

The reform also enabled the central government to narrow regional fiscal disparities. Since 1994 central government expenditure as a percentage of total government expenditures had been kept at about 30 percent, dropping slightly in recent years (figure 8.3). Additional resources have been allocated to poorer regions and to achieve more-balanced growth and increase fairness and harmony in intergovernmental fiscal relations. In 2005 the ratio of fiscal revenues in the eastern, central, and western parts of China stood at 60:23:17, while the ratio of their expenditures stood at 46:29:25, indicating the redistributive role played by the central government. Since 2000 the importance of spending by local governments has risen (figure 8.3).

### *Reform of the Sharing of Income Tax Revenues*

The income tax-sharing reform, launched in 2002, is designed to enhance the development of a market economy, increase taxation of a growing revenue base, and permit additional resources to be allocated to achieve more-balanced regional development. While maintaining the central government’s exclusive right to corporate income tax revenues in a limited number of sectors, including railway

**Figure 8.4 Regional Distribution of Income Tax Revenues and General-Purpose Transfers, 2005**



Source: Author calculations, based on data from Ministry of Finance 2006.

and postal services, the reform led to an increase in the central government's share of all other income tax revenues from 29 percent to 60 percent over two years.

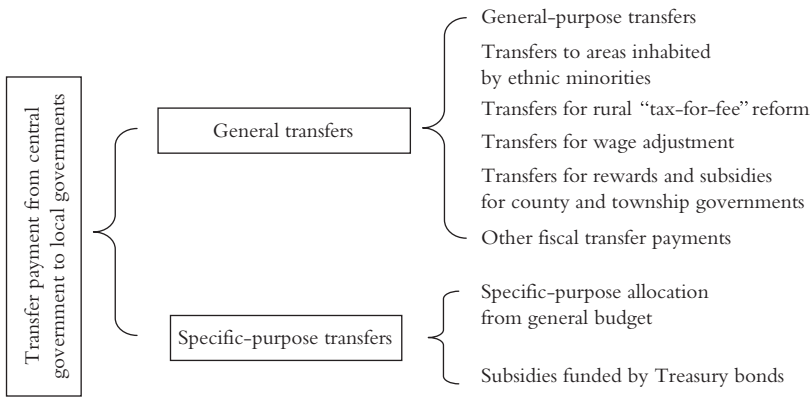
The reform also established a mechanism to ensure steady growth of general-purpose transfers, to improve the effectiveness of equalization efforts by the central government. As a result of the reform, nearly 80 percent of the income-tax revenues collected by the central government comes from eastern China (figure 8.4). The additional revenues are used for general-purpose transfers to localities, especially in central and western China. General transfers from the central government to local governments increased from Y2.1 billion in 1995 to Y112 billion in 2005, with 95 percent of them transferred to the central and western areas. The revenues available for equalization transfers are greater than they were following the 1994 reforms, creating a major redistributive effect.

### Improvement of the Transfer Payment System

In order to balance regional fiscal disparities and promote equalization of public services, an equalization transfer system was established, with the amounts available for equalization increasing over time. At the same time, the allocation and management mechanisms for specific-purpose transfers were refined. To ensure that no province lost resources because of the reforms, provinces also received a lump-sum transfer equivalent to the transfers received in the pre-1994 period. As a result of these reforms, China now has a transfer system and uses instruments commonly used in more-advanced countries (figure 8.5).

The magnitude of transfer payments has increased continuously. Transfer payments from the central government to local governments reached Y733 billion

Figure 8.5 Intergovernmental Fiscal Transfer System



Source: Ministry of Finance 2006.

Note: Some items included in general transfers, such as transfers to areas inhabited by ethnic minorities or transfers for wage adjustment, could be classified as special-purpose transfers. Because recipient governments are free to use these transfers as they choose, they are classified as general transfers here.

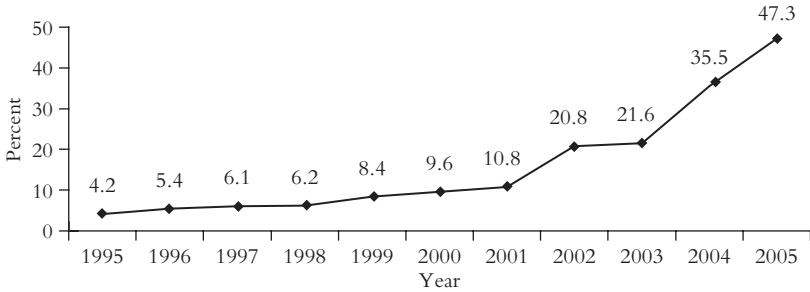
(exclusive of tax-revenue returns) in 2005, accounting for 29.4 percent of total local expenditures. These transfers included Y381.3 billion of general transfers and Y351.7 billion of specific-purpose transfers. Transfers were made to autonomous regions and prefectures with large populations of ethnic minorities, with a view to promoting the development of these regions and safeguarding national unity. The “tax-for-fee reform” was made mainly to reduce the financial burdens on China’s 800 million farmers and to provide adequate resources for basic public services in China’s vast rural areas.<sup>1</sup> General transfers were made on the basis of standardized revenues and expenditure needs of local governments, with more subsidies given to resource-poor areas.

The structure of transfer payments has been continuously adjusted. In recent years, the central government was committed to curbing the growth of specific-purpose transfers and increasing the resources made available through general fiscal transfers. As a result, the percentage of general fiscal transfers in total transfer payments increased dramatically (figures 8.6 and 8.7).

Redistributive efforts have become increasingly effective. Generally speaking, general fiscal transfers provide for the standardized reallocation of resources while taking into account the extent of the fiscal needs and resources of different regions. Specific-purpose transfers also put more emphasis on areas inhabited by ethnic minorities and areas with weaker fiscal capacity. As a result, overall transfer payments have narrowed large disparities in public service capacity across regions (figure 8.8).

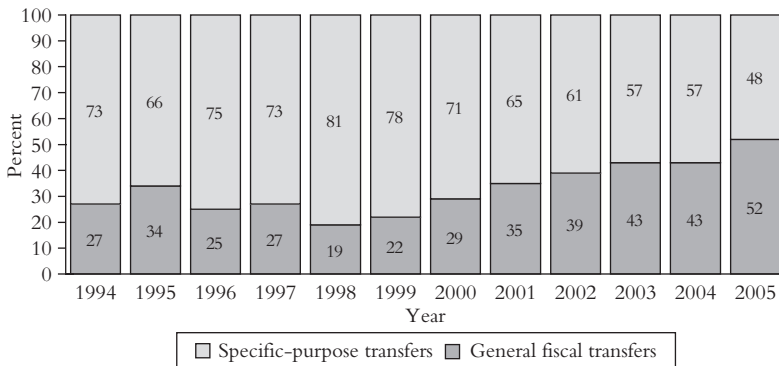
A few issues in intergovernmental fiscal relations are still pending. First, although assignment of revenue responsibilities was initially rationalized, expenditure responsibilities of different levels of government have yet to be defined in

**Figure 8.6** Year-on-Year Increases in General Transfer Payments, 1994–2005



Source: Ministry of Finance 2006.

**Figure 8.7** Transfer Payments from the Central Government to Local Governments, 1994–2005



Source: Ministry of Finance 2006.

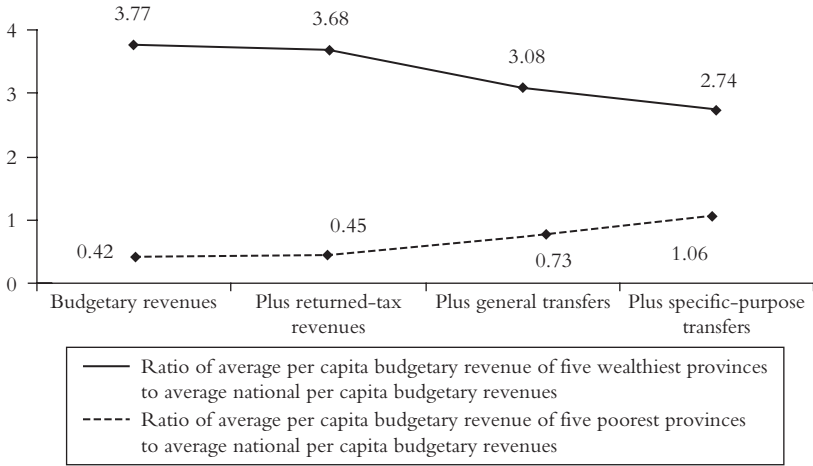
sufficient clarity or detail. Moreover, frequent changes occur in the process of implementation. Second, some local governments have borrowed so recklessly that their mounting debts have become hidden threats to sustainable financial and economic development. These issues need to be addressed gradually, given the political economy considerations of reform in the Chinese context.

### Policy Lessons Learned

Several policy lessons can be drawn from the evolution of intergovernmental fiscal relations in China.

1. *An evolutionary approach to reform best suits conditions in China.* From the tax-sharing system reform of 1994 to the income tax-sharing reform of 2002,

Figure 8.8 Equalization Effect of Transfer Payments, 2005



Source: Author calculations, based on data from the Ministry of Finance 2006.

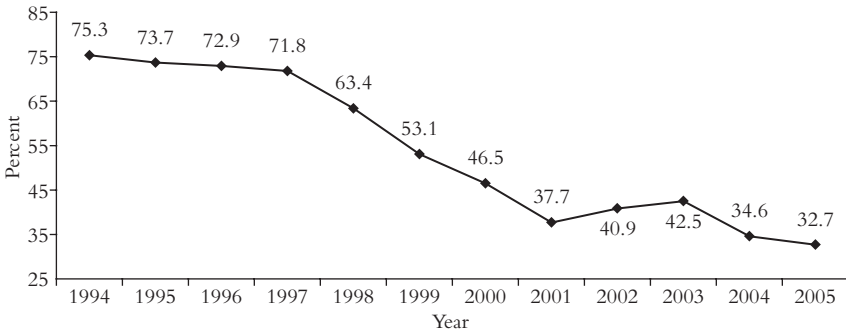
Note: The y axis is defined as the average of the five wealthiest and five poorest provinces to the national average for different revenues and transfers. The five wealthiest provinces are Shanghai, Beijing, Tianjin, Zhejiang, and Guangdong. The five poorest provinces are Sichuan, Anhui, Gansu, Guizhou, and Tibet.

China adopted an evolutionary approach to reform. This approach focused on redistributing incremental revenues above a “hold harmless” transfer equivalent to all transfers before the reform. Adopting such an approach was important to avoid major disruptions and ensure buy-in from local governments. After reform, a large revenue-returned element was included, to provide a large, albeit diminishing, share of additional revenues to the provinces that generate the revenues; this feature has been important in protecting growth in these regions. Together these reforms created a unique tax-return system in China, reflecting principles that have now been incorporated in the new political economy literature on fiscal federalism (Ahmad and Brosio 2006). In 2005 the total amount of tax revenue distributed from the central government to the local governments reached Y375.8 billion, accounting for 32.7 percent of the central government’s expenditures as transfers to local governments (figure 8.9).

Most tax-revenue returns are concentrated in eastern China, resulting in the widening of regional fiscal disparities (World Bank 1989, 1993, 1995, 1999). This may reflect one of the characteristics of China’s evolutionary approach to reform. It also reflects the balance between the needs of growth in the country as a whole and in the better-off regions. Moreover, as the annual increment of returned revenues of value added tax and excise duty is fairly small and the amount of returned income tax revenue is fixed, tax-revenue returns as a percentage of the central government’s expenditures as subsidies to local governments are gradually

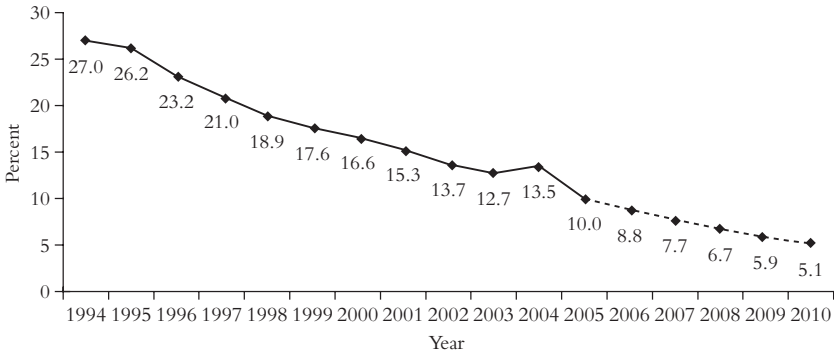


**Figure 8.9** Tax Returns as a Percentage of Total Returns and Subsidies from the Central Government to Local Governments, 1994–2005



Source: Ministry of Finance 2006; Ministry of Finance database.

**Figure 8.10** Change in Increment of Returned VAT and Excise Duty Revenues as a Percentage of Total Increment of Revenues of These Two Taxes, 1994–2010



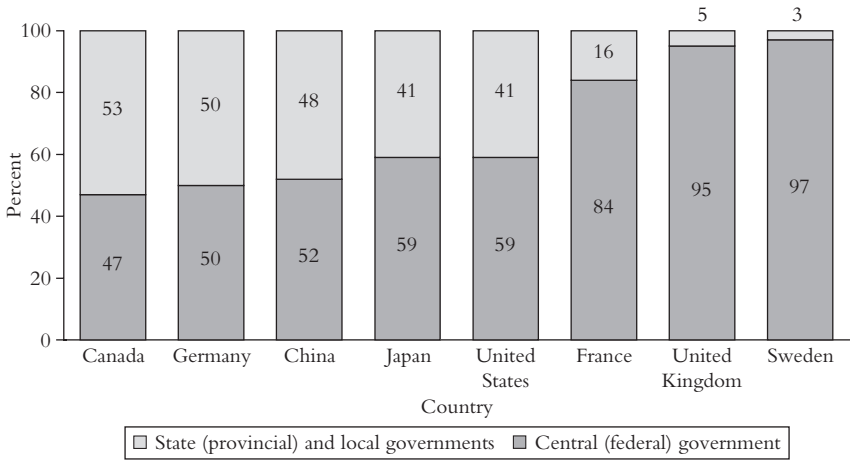
Source: Ministry of Finance 2006; Ministry of Finance database.

decreasing (figure 8.10). This approach may have resulted in slower redistribution, but it weakened resistance to the reform, leading to stable and steady economic and social progress and is suited to conditions in China.

2. *A moderate level of centralization is necessary for equalization in a large economy.* Over the past two decades, fiscal decentralization reform has swept across the world, aiming to bring public service decision making closer to the general public. The situation in China is peculiar for several reasons.

First, in the early years of reform and opening up, reforms delegated power and gave economic benefits to local governments. Although the macro-control capacity

Figure 8.11 Ratio of Central Government to Local Government Revenues, in Selected Countries



Source: China statistics are from China’s Ministry of Finance (2005); statistics for other countries are from OECD revenue statistics (1965–2000).

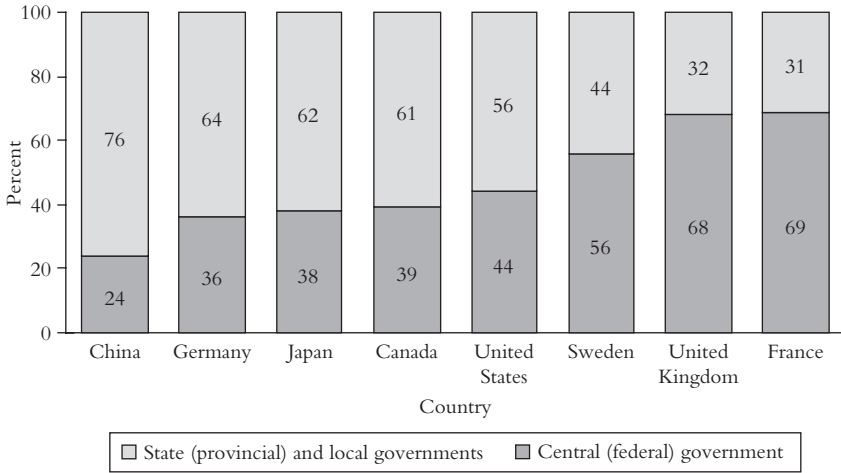
of the central government was somewhat strengthened after the implementation of the tax-sharing reform, central government revenue as a percentage of total government revenues stood at 52 percent in 2005 (figure 8.11). (If tax-revenue returns are taken away and such government resources as extrabudgetary revenues are taken into consideration, the percentage is even lower.) This percentage is lower than in well-developed market economies and even other developing economies.

Second, the central government accounts for 24 percent of total government expenditures in China. This figure is lower than in other countries (figure 8.12). The percentage of public servants working for the central government is also much lower in China (6 percent) than in the world as a whole (33 percent) (figure 8.13).

As a result of such an expenditure structure, many tasks that should be handled by the central government are passed on to local governments. The central government provides specific-purpose transfers to local governments, and its intervention in local government affairs covers almost every field of the economy and society. After a series of reforms, various kinds of institutional conflicts still remain, and institutional barriers have yet to be completely removed.

Third, because of its many levels of government, vast geographical area, and relatively large economic and social disparities across regions, China has long followed the principle of “multiple levels of administration under a unified leadership.” As a result, institutional arrangements for intergovernmental fiscal relations at the subprovincial levels are made based on local conditions, leaving considerable room for discretion in the decision making of local, particularly provincial, governments.

**Figure 8.12 Ratio of Central Government to Local Government Expenditures, in Selected Countries**

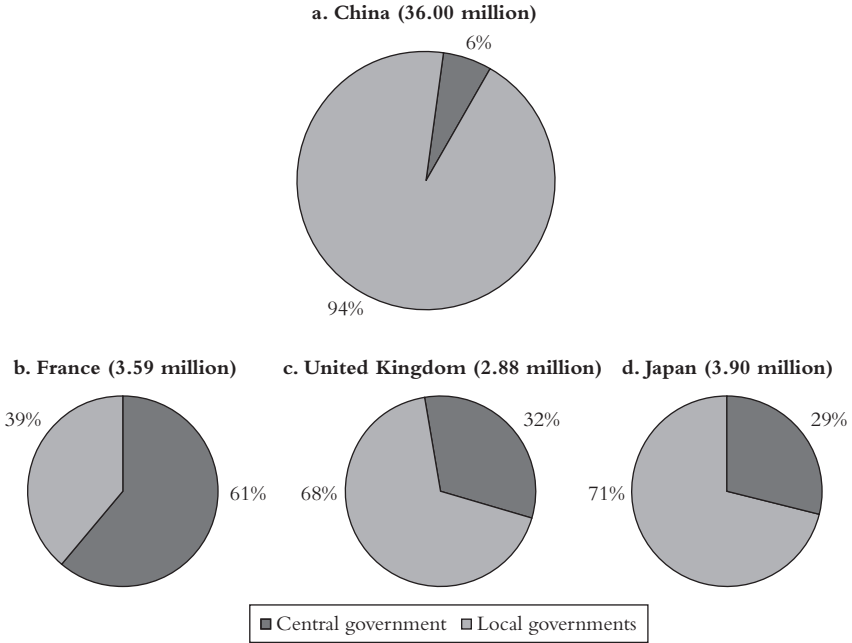


Source: China statistics are from China's Ministry of Finance (2005); statistics for other countries are from OECD revenue statistics (1965–2000).

China is a populous country with uneven distribution of natural and human resources. As a result, economic development is very unbalanced across regions. In the early years of reform and opening up, when economic development was at a fairly low level, regional fiscal disparities were not very obvious, and the means of redistribution at the disposal of the central government were also limited. In recent years, however, with the gradual improvement of the market economic system, productive factors have begun to flow across regions, concentrating in areas with better infrastructure and stronger manpower. As a result, regional fiscal disparities have widened. Under such circumstances, it would be difficult for the central government to effectively play its redistributive role or to promote equalization of regional public services without a fair degree of centralization.

3. *A well-developed fiscal system at the subprovincial level is indispensable.* The reform of intergovernmental fiscal relations involves intergovernmental systems and institutional arrangements at all levels of government; it should not be kept at the central and provincial levels alone. In the past, China paid more attention to fiscal relations between the central government and provincial governments, leaving the subprovincial assignment of revenues and expenditures and the subprovincial transfer payment system to be defined and implemented by provincial governments based on local conditions. However, despite larger transfer payments from the central government, the capacity of local governments to provide public services has not improved accordingly, and fiscal disparities across subprovincial governments remain large. The share of expenditures of governments at the provincial and city levels increased constantly, while that of governments at the

**Figure 8.13** Percentage of Public Servants Employed by the Central Government and Local Governments, in Selected Countries, 2002



Source: Ministry of Finance 2006; Ministry of Finance database.

county and township levels kept decreasing; at the grassroots level, considerable fiscal difficulties were encountered. Accordingly, in 2005 a policy was announced aimed at alleviating the fiscal difficulties faced by governments at the county and township levels within three years. The policy put in place an incentive/disincentive mechanism featuring “three rewards and one subsidy.”<sup>2</sup> It encouraged provincial governments to take responsibility for coordinating balanced development in the regions under their jurisdiction, to increase transfer payments to governments at the grassroots level, to ensure that governments at the county and township levels have the fiscal means commensurate with their expenditure responsibilities, and to take measures to ease the fiscal difficulties of governments at the county and township levels. In order to simplify the hierarchy of fiscal management and improve management efficiency within the current institutional framework of administrative governance, the center also encouraged qualified areas to actively experiment with the reform featuring direct supervision of county governments by provincial governments and to vigorously push ahead with supervision of township finance by county governments. Generally speaking, these efforts have resulted in remarkable achievements.

4. *The equalization of public services is critical.* Despite extraordinary achievements since 1978, China's level of development is still very low in per capita terms. Development therefore remains a major theme and top priority. At the same time, income disparities across regions and social strata are great. For these reasons, China must strictly adhere to the principle of giving priority to efficiency while putting emphasis on social equity and making unremitting efforts to advance the process of public service equalization.

At the current stage, implementing a minimum guarantee system for the basic level of public service across regions is not only a matter of urgency but also a practical and feasible policy choice. It was based on such a concept that in 2006, a mechanism was adopted to guarantee public funding for rural compulsory education.

## Notes

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1. The tax-for-fee reform was first introduced in 1994 on a pilot basis before being extended throughout China. Its aim was to eliminate the growing administrative and arbitrary fees imposed on farmers and to reduce and standardize farmers' tax burden. The central government abolished, exempted, or reduced 15 charges, including quarantine certificates, land-use certificates, licensing fees for using water, education fees, and charges for fishing-boat inspections. The central government later abolished all agriculture taxes.
2. "Three rewards and one subsidy" is the central government's policy for alleviating public financial difficulties in poor counties and towns, promoting the healthy development of the rural economy, and building a harmonious society. The Ministry of Finance grants financial rewards to county governments that have increased their tax revenues and provincial governments that have increased fiscal transfers to poor counties; county governments that have streamlined government departments and personnel; and major grain-producing counties. It provides subsidies to areas in which county and township governments have performed well in reducing poverty.

## References

- Agarwala, Pamgopal. 1992. *China: Reforming Intergovernmental Fiscal Relations*. World Bank Discussion Paper 178, Washington, DC.
- Ahmad, Ehtisham. 1997. "China." In *Fiscal Federalism in Theory and Practice*, ed. Teresa Ter-Minassian. Washington, DC: International Monetary Fund.
- Ahmad, Ehtisham, and Giorgio Brosio, eds. 2006. *Handbook of Fiscal Federalism*. Cheltenham, United Kingdom: Edward Elgar.

- Ahmad, Ehtisham, Li Keping, and Tom Richardson. 2002. "Recentralization in China?" In *Managing Fiscal Decentralization*, ed. Ehtisham Ahmad and Vito Tanzi. London: Routledge.
- Huang, Yasheng. 1996. "Central-Local Relations in China During the Reform Era: The Economic and Institutional Dimensions." *World Development* 24 (4): 655–72.
- Manion, Melanie. 1985. "The Cadre Management System, Post Mao: The Appointment, Promotion, Transfer and Removal of Party and State Leaders." *China Quarterly* 102 (June): 203–33.
- Ministry of Finance. Various years. *China Finance Yearbook*. Beijing.
- OECD (Organisation for Economic Co-operation and Development). *Revenue Statistics 1965–2000*. Paris.
- Sachs, Jeffery, Wing Thye Woo, and Xiaokai Yang. 2000. "Economic Reforms and Constitutional Transition." *Annals of Economics and Finance* 1 (2): 435–91.
- Wang, Shaoguang. 1997. "China's Fiscal Reform in 1994: An Initial Assessment." *Asian Survey* 37: 801–17.
- World Bank. 1989. "China: Revenue Mobilization and Tax Policy Issues and Options." Report 7605-CHA, Washington, DC.
- . 1993. "China: Budgetary Policy and Intergovernmental Fiscal Relations." Report 11094-CHA, Washington, DC.
- . 1995. "China: Public Investment and Finance." Report 14540-CHA, Washington, DC.
- . 1999. *China: Preferential Tax Policy*. Washington, DC.
- Wong, Christine P. W. 1991. "Central-Local Relations in an Era of Fiscal Decline: The Paradox of Fiscal Decentralization in Post-Mao China." *China Quarterly* 128: 691–715.
- Xu, Shanda, and Ma Lin. 1995. "Tax Reform and Market Economy in China." In *Reforming China's Public Finances*, ed. Ehtisham Ahmad, Gao Qiang, and Vito Tanzi. Washington, DC: International Monetary Fund.



# Creating a Regulatory Framework for Managing Subnational Borrowing

## 9

LILI LIU

China has invested about 10 percent of its GDP annually in infrastructure since the 1990s, a much higher rate than in many other emerging economies.<sup>1</sup> Under China's decentralized fiscal structure, subnational governments have taken up a large share of infrastructure investments, particularly in urban areas.<sup>2</sup> As the Chinese Budget Law prevents subnational governments from borrowing, given the fiscal budget constraint, how have they financed large infrastructure investments since the 1990s?<sup>3</sup>

Subnational governments finance infrastructure principally through revenues generated from land transactions and from borrowing indirectly off budget, through public utility companies, special-purpose vehicles, and urban development investment corporations. Together, investment financing from proceeds from land leasing and public bank lending securitized on land and property valuation account for 80–90 percent of infrastructure financing by subnational governments.<sup>4</sup> Urban development investment corporations also issue infrastructure bonds, with the approval of the central government, and private financing is emerging.<sup>5</sup>

China's success in financing and developing subnational infrastructure has been remarkable. Financing infrastructure through land leasing and bank loans securitized on land and property valuation has not only significantly expanded the financial resources available for infrastructure, it has also facilitated the development of competitive land and housing markets.<sup>6</sup> However, limitations on the current ways of financing infrastructure by subnational governments have increased; if not addressed, they could constrain future infrastructure development, augment fiscal risks, and impede financial market deepening.

The limitations are several. First, financing infrastructure through land lease is not sustainable in the long run because of its one-time nature.<sup>7</sup> Second, infrastructure investment companies and special-purpose vehicles borrow heavily from state-owned banks, which have weak incentives to price returns and risks, leading to less efficient investment financing decisions. Third, implicit off-budget debt and liabilities are nontransparent and difficult to monitor.<sup>8</sup> This type of debt not only creates contingent liabilities for subnational governments, it may also implicate the central budget. Fourth, the dominance of public banks in the financing of



infrastructure affects the development of a more diversified and efficient financial market to intermediate savings and investments.

The solution to the large off-budget subnational debt problem in China should not lie in prohibiting subnational borrowing. There are tremendous benefits from granting subnationals access to the financial market. But unregulated subnational borrowing raises the risk of insolvency, which would threaten local service delivery and macroeconomic and financial system stability.<sup>9</sup> The way forward is to develop a regulatory framework that can help expand subnational borrowing, strengthen subnational fiscal discipline, and manage potential risks while at the same time supporting reforms in the intergovernmental fiscal system and deepening financial market reforms for more efficient utilization of capital.

The rest of this chapter is organized as follows. The next section identifies the benefits and risks of subnational borrowing. The following section summarizes regulatory frameworks for subnational borrowing based on cross-country experiences, looking first at *ex ante* regulations and then at *ex post* insolvency mechanisms that enforce preventive rules and discipline both borrowers and creditors. The last section puts forward tentative ideas on reform options and priorities for China.

## Benefits and Risks of Subnational Borrowing

Allowing subnational governments to access the financial market yields four principal benefits. First, it enables subnational governments to access more resources with which to finance infrastructure. The unprecedented scale of urbanization in China requires large-scale infrastructure financing, much beyond what fiscal transfers and subnational own-tax revenues can afford. In China bank loans securitized by land valuation for infrastructure financing already account for more than half of subnational governments' extrabudgetary funds (see World Bank and Development Research Center of the State Council of China 2005). In the United States, most subnational infrastructure is financed by bonds raised in the capital market.<sup>10</sup>

Second, subnational borrowing finances infrastructure of long-term assets more efficiently and equitably. Infrastructure investment benefits future generations, who should therefore also bear the financing cost. The maturity of the debt should match the economic life of the assets the debt is financing; amortization of the liabilities should be matched by the depreciation of the assets being financed. Matching asset life to maturity term represents sound public policy, because it means that infrastructure services are paid for by those who use them.<sup>11</sup>

Third, allowing subnational governments to access the capital market can expose them to market disciplines and reporting requirements, strengthening fiscal transparency and good governance. Rigorous creditworthiness assessment by independent credit rating agencies is a precondition for accessing the capital market.<sup>12</sup> It requires disclosure of independently audited public financial accounts, which strengthens the role of the market in fiscal monitoring and surveillance. The promotion of credit rating is an important step in the development of the capital

market that has a strong bearing on the dynamics of fiscal and financial risks at the subnational level. Fiscal transparency also helps national and subnational governments manage debt rollover risks associated with interest and exchange rates and maturity structure, as well as contingent liabilities, such as locally managed infrastructure contracts and off-budget activities.

Fourth, expanding subnational borrowing facilitates financial market deepening. Bond financing can become a viable alternative to bank lending, thereby deepening the structure of financial markets. In several advanced countries, the subnational bond market represents a significant portion of the debt market (Liu and Waibel 2007a).<sup>13</sup> Individual investors are the largest holders of U.S. subnational bonds, followed by mutual funds, bank trust accounts, banks, insurance companies, and corporations (Maco 2000). Greater mobility of international capital and diversification of financial instruments have contributed to the rise of subnational bond markets in emerging market countries. Private capital has emerged to play an important role in subnational finance in countries such as Hungary, Mexico, Poland, and Romania.<sup>14</sup>

Notwithstanding the benefits of subnational borrowing, in the absence of an effective regulatory framework, substantial risks exist, as manifested by experiences of subnational fiscal stress and debt crises in countries such as Brazil, Hungary, Mexico, and the Russian Federation.<sup>15</sup> Understanding the root causes of these fiscal and debt crises helps policy makers develop an effective subnational regulatory framework that can minimize the occurrences of systemic crises. While China has not yet experienced explicit and systemic subnational insolvency, many lower-level subnational governments reportedly experience financial stresses and have implicit liabilities.

Although expenditure–revenue imbalances may cause subnational fiscal stress, the regulatory framework for borrowing has a profound impact on the fiscal sustainability of a subnational government, as the increase in the fiscal deficit is feasible only when it is financed.<sup>16</sup> Unregulated subnational borrowing grew rapidly in countries such as Hungary and the Russian Federation in the 1990s, contributing to subnational fiscal stress. Borrowing was also facilitated by the decentralization process, which granted subnational governments substantial autonomy in debt financing.

The fiscal deficit itself may not constitute a problem if borrowing is used to finance capital investment and economic growth.<sup>17</sup> However, subnational governments in Hungary, India, and the Russian Federation borrowed heavily to finance operating deficits, leading to unsustainable debt paths.<sup>18</sup> In India much of the growth in fiscal deficits in states in the late 1990s was driven by borrowing to finance revenue deficits; at the height of the crisis, for example, more than 70 percent of new borrowing was used to finance existing debt service in some states.<sup>19</sup>

The debt profile of subnational governments can also have inherent rollover risks, which would be exacerbated by macroeconomic and financial shocks.<sup>20</sup> Before the macroeconomic crises in Mexico in the mid-1990s and in the Russian Federation in the late 1990s, subnational governments in both countries had risky

debt profiles—short maturities, high debt-service ratios, and variable interest rates. Macroeconomic crises exposed the vulnerability of these governments' fiscal positions and triggered widespread subnational debt crises.<sup>21</sup>

Subnational borrowing behavior is strongly influenced by the design of the inter-governmental fiscal system and the structure of financial markets. Market participants may tolerate an unsustainable fiscal policy by a subnational government if history backs their perception that the central government implicitly guarantees the debt service of the subnational government (Ianchovichina, Liu, and Nagarajan 2006). Imprudent lending based on implicit guarantees from the central government contributed to subnational fiscal crises in Hungary, Mexico, and the Russian Federation. And lending to subnational governments was dominated by public banks in Brazil,<sup>22</sup> Hungary, and India, which had weak incentives to price returns and risks.

Finally, deteriorating fiscal positions were not monitored carefully in these countries before the crises. Credit ratings by independent rating agencies did not exist. Hidden and contingent liabilities quietly eroded the financial health of governments, leading to an outburst of fiscal crises without warnings. Among Indian states in the late 1990s, special-purpose vehicles became a convenient way of circumventing tight budgets. Guarantees by states to support the market borrowing of loss-making public sector undertakings, a contingent liability, grew rapidly.

There are striking similarities between the early development of subnational debt in the United States and developments in emerging markets today. Before the financial crisis of the early 1840s, many states aggressively sought debt financing of their large infrastructure projects. Several states owned public banks, which participated in the financing of infrastructure projects. Some infrastructure projects were developed by the public enterprises created and owned by the states; others were financed by states but owned and operated by private entities. State experimented with a variety of ways of financing investments. Some involved taxless finance, which did not require raising taxes immediately but resulted in taxpayers assuming contingent liabilities.<sup>23</sup>

Other sources of off-budget liabilities also go unreported in published fiscal accounts. Growing subnational civil servant pensions under the pay-as-you-go system have been a serious and growing threat to subnational financial health in Brazil and India. Nonperforming assets of banks owned by subnational governments in Argentina and Brazil contributed to the subnational debt crisis of the 1990s. In many developing countries, the cash-reporting system systematically underestimates the financial liabilities of subnational governments by failing to capture arrears to suppliers, contractors, and central government agencies or delayed payment of civil servant wages and pensions.

## Regulatory Frameworks for Subnational Borrowing

The development of regulatory frameworks for subnational borrowing in emerging economies since the late 1990s is the direct result of, and response to, subnational fiscal stress and debt crisis. The regulatory frameworks in many countries are still

evolving, and the pace of putting together a full range of regulatory elements varies (Liu and Waibel 2006, 2007a). These countries' experiences offer useful lessons as China searches for ways to resolve its large implicit subnational debt and develops a system for regulating future subnational borrowing.<sup>24</sup>

A comprehensive regulatory framework consists of two parts. The first part addresses ex ante controls and regulations and the monitoring of subnational governments' fiscal position;<sup>25</sup> the second part deals with ex post subnational debt restructuring in the event that a subnational government becomes insolvent. Ex ante borrowing regulation and ex post insolvency mechanisms complement each other. Insolvency mechanisms increase the pain of circumventing ex ante regulation for lenders and subnational borrowers, thereby enhancing the effectiveness of preventive rules. Without ex post insolvency mechanisms, ex ante regulations can easily turn to excessive administrative control and game playing between the central government and subnational governments.

### *Ex Ante Regulations*

Ex ante regulations specify the purpose, types, and procedures of borrowing. Brazil substantially strengthened its ex ante regulations in response to repeated waves of subnational debt crises.<sup>26</sup> The federal government bailed out subnational debtors in previous crises, but the resolution of the third debt crisis was conditioned on states undertaking difficult fiscal and structural reforms. The avoidance of unconditional bailouts in 1997 was intended to resolve the moral hazard problem. Ex ante borrowing regulations were embedded in the debt-restructuring agreements between 25 states and the federal government in 1997, sanctioned by various pieces of legislation. In 2000 the Fiscal Responsibility Law consolidated various regulations into one unifying framework.<sup>27</sup> In Mexico a new borrowing framework was developed in 2000 to address the subnational debt crisis triggered by the financial crisis of 1994–95. Subnational debt stress in Colombia was less severe than in Brazil or Mexico, but the country nevertheless developed a borrowing framework, as defined by Law 358 in 1997, Law 617 in 2000, and the Fiscal Transparency and Responsibility Law in 2003. To avoid the subnational debt crises experienced by countries in the region, Peru, while embarking on decentralization in 2002, developed subnational borrowing rules (the Fiscal Responsibility and Transparency Law in 2003 and the General Debt Law in 2005). After the state fiscal crises in India in the late 1990s, the 12th Finance Commission put forward recommendations on fiscal rules and targets and incentives for states for compliance.<sup>28</sup>

There are several key elements in ex ante regulations across countries, according to Liu and Waibel (2006). First, borrowing is allowed only for long-term public capital investment. Some European countries, such as Germany and the United Kingdom, have enacted fiscal rules of a balanced budget net of public investment (the “golden rule”).<sup>29</sup> A number of middle-income countries, including Brazil, Colombia, Mexico, Peru, and the Russian Federation, have recently adopted the golden rule. This rule has itself been subject to criticism. The main concern is that

politicians can escape fiscal rule constraints by shifting current expenditures into capital accounts that are difficult to measure properly (see Mintz and Smart 2006). In the United States, the rules governing subnational borrowing depend on the type of debt issued, the revenue used to service the debt, and the type or form of government issuing it. These rules vary from state to state.

Second, frameworks set limits on key fiscal variables, such as the fiscal deficit, the primary deficit, debt-service ratios, ceilings on guarantees issued, and so on. In India a state with a debt-service ratio exceeding 20 percent is classified as having debt stress, triggering the central government's close monitoring of additional borrowing by the state.<sup>30</sup> Based on the recommendations of the 12th Finance Commission, fiscal responsibility legislation is mandatory for all states in India, with the revenue deficit to be eliminated and the fiscal deficit reduced to 3 percent of gross state domestic product by fiscal year 2009. Colombia sought to limit subnational debt to payment capacity (Law 358 in 1997 and the Fiscal Transparency and Responsibility Law in 2003). A traffic-light system was established to regulate subnational borrowing. Subnational governments rated in the red-light zone are prohibited from borrowing; those in the green-light zone are permitted to borrow. The red-light zone includes subnational governments in which the ratio of interest to operational savings exceeds 0.4 and the ratio of debt stock to current revenues exceeds 0.8.<sup>31</sup> In Brazil the debt-restructuring agreements between the federal government and states established a comprehensive list of fiscal targets, including the debt to revenue ratio, the primary balance, personnel spending as a share of total spending, own-source revenue growth, investment ceilings, and a list of state-owned enterprises or banks to be privatized or concessioned.

Third, several legal frameworks, such as those in Brazil, Colombia, and Peru, include procedural requirements that subnational governments establish a medium-term fiscal framework and a transparent budgetary process. This measure is intended to ensure that key components of fiscal accounts move within a sustainable debt path and that fiscal adjustment takes a medium-term approach, in order to better respond to shocks and different scenarios. The transparent budgetary process includes debates by the executive and legislative branches on spending priorities, funding sources, and required fiscal adjustments.

Fiscal transparency is becoming an increasingly integrated part of fiscal frameworks in Brazil, India, Mexico, and South Africa. These include independently auditing subnational financial accounts, periodically publicly disclosing fiscal accounts, exposing hidden liabilities, and moving off-budget liabilities onto the budget.

To improve fiscal transparency, Mexico introduced a credit rating system for subnational governments, as an element of the regulatory framework for subnational borrowing. Although participation is voluntary, the provisional requirements for lenders effectively make the credit rating a prerequisite for subnational borrowing, as banks are required to apply the highest capital reserve ratio—which implies the largest spread—to loans to subnationals that do not have credit ratings.

Several reforming states in India have started to move off-budget liabilities onto the budget and established a measure of the consolidated fiscal deficit that goes

beyond the traditionally reported fiscal deficit. The reported fiscal deficit does not capture the financing deficit of large public sector undertakings, which implicitly are states' liabilities.

### *Ex Post Mechanisms for Dealing with Insolvency*

The effectiveness of ex ante regulation is limited without an ex post mechanism for dealing with subnational insolvency to deter irresponsible borrowers and imprudent lenders. Overreliance on ex ante regulations, including central government approval of individual loans, limits the role of markets in monitoring subnational borrowing and debt. In Canada and the United States, markets play a vital role in the surveillance of subnational borrowing. Although it is not realistic for developing countries to rely heavily on financial markets for monitoring subnational borrowing, they should conscientiously aim at fostering markets in the design of regulatory frameworks.

Ex post regulatory systems, or subnational insolvency mechanisms, deal with insolvent subnationals. Insolvency can occur either because subnationals mismanage their fiscal affairs or because exogenous shocks occur. The insolvency mechanism serves multiple purposes. It helps an insolvent subnational government maintain essential services while undergoing debt restructuring, and it improves the subnational government's creditworthiness, so that it can reenter the capital market. An insolvency mechanism also protects creditor rights, thereby helping to nurture embryonic capital markets, reduce borrowing costs, and extend debt maturity.

A well-designed insolvency mechanism enforces hard budget constraints on subnational governments.<sup>32</sup> However, public insolvency differs fundamentally from the bankruptcy of a private corporation because of the public nature of the services governments provide. This leads to a tension between protecting creditors' rights and maintaining essential public services. Creditors' remedies for dealing with defaulters are narrower for subnationals than they are for corporations, leading to greater moral hazard (strategic defaults). While a corporation is able to dissolve itself, this route is barred for subnational governments. When a private corporation goes bankrupt, all of its assets are potentially subject to attachment. By contrast, the ability of creditors to attach assets of subnational governments is greatly restrained in many countries.

The need for a collective framework for resolving debt claims is even greater in the context of subnational insolvency. There are not only conflicts between creditors and debtor, but there are also conflicts among creditors—that is, the so-called holdout problem, in which individual creditors often demand preferential treatment and threaten to derail debt restructurings voluntarily negotiated between a majority of creditors and the subnational debtor.<sup>33</sup> Creditors' remedies in contract laws are effective to enforce discrete unpaid obligations, but they fail if there is a general inability to pay. Individual ad hoc negotiations are costly, impracticable, and harmful to the interests of a majority of creditors. The holdout problem is less serious if debts are concentrated in a few banks. However, a collective framework

for insolvency restructuring takes on more importance as the subnational bond markets develop and subnational bonds are issued to numerous creditors.

Insolvency mechanisms establish a set of predetermined rules to allocate default risk. These rules anchor the expectations of both borrowers and lenders that both sides will share the pain of insolvency. They enhance the credibility of a hard budget constraint for subnational governments.<sup>34</sup> Pressures for political ad hoc intervention decrease, as restructurings become more institutionalized. Enhanced credibility for the no-bailout promise better aligns incentives. Effective insolvency and creditor rights systems allow better management of financial risks.<sup>35</sup>

There are two main approaches to subnational insolvency: the judicial approach and the administrative approach. Various hybrids also exist. Judicial procedures place courts in the driver's seat. Courts make key decisions that guide the restructuring process, including when and how a municipal insolvency is triggered and how credits are prioritized among competing claims. As debt discharge is highly complex, the judicial approach has the advantage of neutralizing political pressures during restructuring. However, the ability of courts to influence fiscal adjustment of subnational entities is extremely limited because of the legal mandates governing budgetary matters in the executive and legislative branches in many countries. Administrative interventions, by contrast, usually allow a higher level of government in the executive and legislative branches to intervene, temporarily taking direct political responsibility for many aspects of financial management.

The choice of approach varies across countries, depending on history, political and economic structure, and the motivation for establishing an insolvency mechanism. In Hungary a desire to neutralize political pressure for bailing out insolvent subnational governments favored the judicial approach. South Africa's legal framework for municipal bankruptcy is a hybrid, blending administrative intervention with the role of courts in deciding debt restructuring and discharge.<sup>36</sup> Its framework includes sequential administrative interventions in the event of municipal financial distress: an early warning system consisting of various indicators, intervention by provincial governments, and intervention by the central government. Meanwhile, municipalities in South Africa can appeal to courts for staying, restructuring, or discharging debt. In Brazil, after having bailed out insolvent subnational entities in two earlier debt crises, the federal government chose an administrative approach to dealing with the third debt crisis. The federal government intervened directly in fiscal and debt adjustment, imposing rigorous structural reforms to tackle the root causes of fiscal insolvency; instilled fiscal transparency; and essentially imposed a fiscal and debt-adjustment package based on reform conditions.<sup>37</sup>

The United States has both judicial and administrative approaches. In response to widespread municipal defaults during the Great Depression, in 1937 the U.S. Congress adopted a municipal insolvency law, known today as Chapter 9 of the U.S. Bankruptcy Act.<sup>38</sup> The primary aim of this legislation was to deal with the holdout problem. It was recognized that the mandamus is useful for enforcing unpaid discrete obligations but ineffective if the subnational entity is generally unable to pay.<sup>39</sup>



Chapter 9 is a debt-restructuring mechanism for political subdivisions and agencies of U.S. states.<sup>40</sup> It provides the procedural machinery whereby a debt-restructuring plan acceptable to a majority of creditors can become binding on a dissenting minority. Only municipal debtors may file for Chapter 9, and states must give them specific authorization to do so (this is one instance of how the U.S. Constitution gives states control over municipalities). Federal courts may not exercise jurisdiction over the policy choices and budget priorities of the debtor.

Many states have adopted their own frameworks for dealing with municipal financial distress for two reasons. First, municipalities are political subdivisions of the states. Second, state consent is a precondition for municipalities to file for Chapter 9 in federal court. There is no uniform approach across states. Seventeen of the 50 states give specific authorizations, 7 states grant permission on a case-by-case basis, and 26 states ban municipalities from filing for Chapter 9 (see Laughlin 2005).<sup>41</sup> Examples of states' direct involvement can be found in the State of New York's resolution of New York City's debt crisis in 1975 and the State of Ohio's fiscal early warning system monitoring the financial health of municipalities.

Judicial or administrative, any insolvency mechanism contains three central elements: a definition of insolvency, which serves as a trigger for the procedure; fiscal adjustment by the debtor, to bring spending in line with revenues and borrowing in line with debt-service capacity; and negotiations between the debtor and creditors, to restructure debt obligations and potential relief.

#### TRIGGERS

Specific legal definitions serve as procedural triggers for initiating insolvency proceedings. Hungary and the United States define insolvency as the inability to pay. South Africa uses one set of triggers for serious financial problems and another for persistent material breach of financial commitments.<sup>42</sup> In all three countries, the bankruptcy code empowers the bankruptcy court to dismiss petitions not filed in good faith. Since bankruptcy procedures have the power to discharge debt, a subnational entity may file purely for the purpose of evading debt obligations. The Bankruptcy Code in the United States erects obstacles to municipal filing beyond those faced by private debtors, discouraging strategic municipal bankruptcy filings.<sup>43</sup>

Who can file for bankruptcy? The class of eligible filers differs across countries. In the United States, a municipality can file for bankruptcy only if it is insolvent, has worked or attempted to work out a plan to deal with its debts, and has been authorized by the state to file for bankruptcy.<sup>44</sup> The fact that the requirements for filing under Chapter 9 are more stringent than those for filing under Chapter 11 reflects the constraint set by the U.S. Constitution. A creditor cannot bring a municipality, against its will, into a federal court, based on the 11th amendment of the U.S. Constitution. In contrast, in South Africa any creditor can file a claim against a municipality.<sup>45</sup> In Hungary a creditor can petition the court if a municipality is in arrears for more than 60 days.<sup>46</sup> Schwarcz's (2002) model law for subnational insolvency allows only municipalities to file.<sup>47</sup>



### FISCAL ADJUSTMENT

Fiscal adjustment and consolidation are preconditions for financial workouts. Often fiscal mismanagement is the root cause of subnational insolvency. Even if subnational insolvency is triggered by exogenous shocks, such as a sharp rise in real interest rates during a currency crisis, fiscal adjustment is inherent to the insolvency proceeding.

Ianchovichina, Liu, and Nagarajan (2006) present a framework for analyzing subnational fiscal adjustment. Like fiscal adjustment by the central government, subnational debt sustainability is influenced by economic growth of the subnational economy, real interest rates, and the subnational's primary balance. They argue, however, that subnational fiscal adjustment differs qualitatively from national fiscal adjustment. Subnational fiscal adjustment is complicated by the respective legislative mandates of the central vis-à-vis subnational governments and by the intergovernmental finance system. Unable to issue their own currency, subnationals cannot use seigniorage finance. They cannot freely adjust their primary balance because of legal constraints on raising own revenue, dependence on central government transfers, and central government influence over key expenditure items, such as wages and pensions. If public sector banks dominate lending, lending rates may be subsidized, bank lending to subnational entities may exceed statutory requirements, and credit risk concerns may be compromised. Many policies that affect the growth and fiscal health of the subnational economy are designed largely or exclusively by the central government. Even in a decentralized system such as the United States, where subnationals have broad freedom to control expenditures, raise revenues, affect the interest rate spread in a competitive financial market, and influence growth, fiscal adjustment often requires difficult political choices of cutting expenditure and raising revenues.

### DEBT RESTRUCTURING

Debt restructuring lies at the heart of any insolvency framework. In administrative interventions, the higher level of government often restructures the subnational's debt obligations into longer-term debt instruments. The 1997 debt agreements between the Brazilian federal government and 25 states, though strengthened by ex ante regulations, might be seen as an ex post mechanism as well, because the agreements were imposed on a case-by-case basis as a condition for debt restructuring.

Debt discharge represents a major departure from the principle that contracts ought to be honored.<sup>48</sup> A mature judicial mechanism is well placed to ensure that discharges are fair and equitable. Discharges are thus typically limited to judicial mechanisms. Ex post modification of contracts needs to be tightly circumscribed. If creditors feel that they have been treated unfairly, there is a substantial risk that they will stop lending. Perceptions of "equitable" are likely to differ across countries, as distributional judgments are involved.

Debt restructuring and debt discharge are complex. One basic question is who holds the cram down power—that is, confirmation of bankruptcy plans despite the opposition of certain creditors.<sup>49</sup> Under the U.S. Chapter 9, the municipal

debtor controls the debt-adjustment plan and modifies the terms of existing debt instruments. To the critical question of what the debtor is able to do over the objection of creditors, Chapter 9 incorporates basic Chapter 11 requirements: at least one impaired class of claims approves the plan, secured creditors receive at least the value of the securitized property, and unsecured creditors often lose out.<sup>50</sup>

In Hungary the Debt Committee is chaired by a court-appointed financial trustee, who is required by the debt law to be independent of the local government under proceeding. The Committee is charged with preparing a reorganization plan and debt-settlement proposal.<sup>51</sup> The plan and proposal are decided by majority vote of the Committee and presented to creditors. A debt settlement is reached if at least half of creditors whose claims account for at least two-thirds of total undisputed claims agree to the proposal. Creditors within the same group must be treated equally.<sup>52</sup> The Act also stipulates the priority of asset distributions. If disagreements arise on distribution, the court makes the final decision, which cannot be appealed.<sup>53</sup>

South Africa's legislation stipulates that debt discharge and settlement of claims must be approved by the court. The settlement of claims follows the following order: secured creditors, provided that the security was given in good faith and at least six months before mandatory intervention by the provinces; preferences provided by the 1936 Insolvency Act; and nonpreferential claims, which are settled in proportion to the amount of each claim.

The rescaling of debt obligations represents a major intervention in contract rights. Insolvency law reconciles this clash of creditor rights and inability to pay. It formalizes the relationship between creditors and a subnational debtor in financial distress. Insolvency law preserves the legal order by superseding contractual violations with a new legal act.<sup>54</sup> A procedure for subnational insolvency recognizes that resolving financial distress through mechanisms guided by law is preferable to muddling through repeated, costly, and often unsuccessful negotiations.

The maturity of the legal system influences the appropriate choice of procedure. Implementation of insolvency procedures—in both the corporate and subnational contexts—rests on the shoulders of insolvency experts and institutions (courts) that resist political influence and corruption. In many emerging economies, limited judicial and administrative capacity may be a binding constraint. The first focus should therefore be on developing institutional ingredients and training bankruptcy professionals. In countries in which the judicial system is embryonic, formal procedural guidelines may be a stepping stone to a fully developed mechanism. This interim solution can be used to build institutional and professional capacity (Gitlin and Watkins 1999).

While Chapter 9 offers a valuable reference for other countries, its framework cannot be copied without care. Against the background of a mature intergovernmental fiscal system and a market-oriented financial system, Chapter 9 was conceived with the narrow objective of resolving the holdout problem. In countries in which intergovernmental systems are still evolving or lending to subnational governments is dominated by a few public institutions, the development of

a subnational insolvency mechanism must be sequenced with other reforms. The unique federal structure of the United States also profoundly influences the specific design of Chapter 9 (with respect to the role of federal courts in the debt-adjustment plan of an insolvent municipality, for example). As the insolvency mechanism needs to define the respective role of different branches and tiers of government, a country's political and economic history plays a key role in shaping the design of the insolvency mechanism.

## Reform Options for China

The cross-country experiences described in this chapter offer valuable lessons for China's reform options. The ban on subnational borrowing in China has not worked: subnational governments borrow off budget. Off-budget borrowing has played an important role in financing infrastructure and promoting growth in China. Its limitations—the lack of transparency, the lack of monitoring, the implicit debt, and the dominance of public bank lending, which affects the growth of more-diversified and competitive subnational credit markets—have become more important in recent years, however. As China is now emphasizing more efficient growth, developing a regulatory framework to allow subnational governments to access capital markets should become a policy priority.

An effective framework can reap the benefits of allowing subnational borrowing while mitigating its risks. Subnational borrowing can expand the financial resources available for infrastructure investment to support continuing rapid urbanization while facilitating more efficient and equitable infrastructure financing. The rationalization of subnational borrowing would enhance fiscal transparency and increase the role of markets in fiscal surveillance. It would also facilitate the reform of financial markets to intermediate savings and investments more efficiently.

If subnational governments are allowed to access the capital market, several key issues need to be addressed. First, strengthening a framework for fiscal transparency is a precondition for subnational governments to access capital markets. Benefiting from legislative reforms in other countries, China can require that subnational governments disclose their fiscal accounts, which could be audited by independent organizations. The disclosure should not be limited to direct government budgetary accounts; all special-purpose vehicles created by subnational governments should disclose their financial accounts. A comprehensive list of fiscal indicators evaluated by international rating agencies can serve as a reference on types of fiscal information to be disclosed (Liu and Tan 2007).

Second, the regulatory framework should spell out *ex ante* rules governing the purpose of borrowing, the types of debt that can be incurred, and the debt instruments and the procedures for issuing debt. *Ex ante* regulations in the United States and other countries can provide useful references. Creditworthiness assessments by reputable rating agencies should be required of all subnational governments wishing to access the capital market. Mexico's enforcement of credit rating through required risk-adjusted capital reserve ratios for lenders offers a useful example.

Third, key elements of insolvency mechanisms could be developed that not only restructure any implicit distressed subnational debt but also deal with possible future insolvency. How the central government restructures subnational debt will not only influence profoundly the future borrowing behavior of borrowers, it will also shape the expectation of lenders, particularly when the set of suppliers of subnational creditors is expanded to include private creditors. Experiences from other countries show that it may not be politically feasible not to rescue a failed subnational government, particularly when dysfunctional service delivery affects a large segment of the population. However, international experiences have also demonstrated repeatedly that unconditional bailouts of subnational governments lead to moral hazard, encouraging irresponsible fiscal behavior by subnational governments and reckless lending.

Based on cross-country experiences, several key design considerations should be considered in crafting insolvency mechanisms. First, the tension between the contractual rights of creditors and the need for maintaining public services in the event of financial distress and default needs to be balanced. Second, subnational entities need to face hard budget constraints. Third, clear and predictable rules need to be established to anchor expectations of borrowers and creditors. Fourth, the subnational entity and creditors need to share the burden of insolvency. Finally, countries face a choice between a judicial, an administrative, or a hybrid approach to insolvency. Actual mechanisms differ across countries; the design chosen depends largely on country-specific circumstances.

China could consider a phased approach, allowing fiscally strong subnational governments to access the capital market first. Although legislation to allow subnational borrowing cannot favor selected subnational governments, differentiation could be designed as self-selective—that is, only those subnational governments that have adopted fiscal transparency and budgetary reforms could be allowed to access the markets.

A phased approach could also apply to types of bonds. China should expand revenue bonds before expanding general obligation or other types of bonds.<sup>55</sup> Revenue bonds, issued by subnational governments and public utilities, reinforce self-sustaining finance, because the repayment of principal and interest draws entirely from the revenues generated from the project financed by the bonds.<sup>56</sup> These bonds therefore allow the market to play a central role in enforcing debt limitation, pricing risks, and matching the maturities of liabilities and assets. More important, revenue bonds reconfirm that sustainability is about the ability of the borrower to service the debt rather than the level of the debt.

Certain preconditions must be met for revenue bonds to work. Tariff structures for infrastructure projects should be set based on sound regulatory frameworks. Subnational entities, such as special-district or special-purpose vehicles, that go to the market to raise funds should be willing to undertake corporate governance reforms and allow their accounts to be audited independently. Hard budget constraints on these special-district and special-purpose vehicles are a must. Without such constraints, the credit rating agency would assume explicit or implicit guarantees, distorting credit ratings and spreads.

A regulatory framework for subnational borrowing frameworks is inseparable from other reforms. Strengthening their revenue base helps subnational governments access capital markets. Reforms of the intergovernmental fiscal system increase the capacity of subnational revenue. China's new corporate bankruptcy law should help develop corporate bond markets and increase financial restructuring expertise, both of which can help design and implement the insolvency mechanism for subnational entities. More competitive financial markets price and allocate risks more efficiently. While ongoing banking reforms would encourage competition and efficiency, subnational bonds as an alternative to bank lending would further strengthen competition. Finally, securities law and antifraud enforcement reduce costs, increase investors' confidence, and deepen financial markets.

## Notes

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1. For example, public infrastructure investment by Indian states has stayed below 3 percent of their gross state domestic products since the 1990s. In Brazil public investment by the general government (including for infrastructure) shrunk about 50 percent between 1998 and 2006, to about 2 percent of GDP.
2. The term *subnational* refers to all tiers of government below the central government. The category should also include special-purpose vehicles or investment companies created by subnational governments.
3. The Budget Law (1995) forbids subnational governments from borrowing in financial markets without approval from the State Council. The term financial market refers to bank lending and bond financing.
4. The central government also issues bonds and on-lends proceeds to subnational governments. Subnational governments have also used loans from multinational organizations through sovereign guarantees. Intergovernmental fiscal transfers play a minimal role in infrastructure financing; beneficiary (user) charges are extensive in financing operations and maintenance in coastal regions, such as Shanghai. Subsidies and fiscal transfers are playing an important role in financing infrastructure in rural and lagging regions. Data on investment financing are based on World Bank and Development Research Center of the State Council of China (2005), which also reports that from 2001 to 2003 alone, revenues from land-use right transfer fees were Y910 billion.
5. The approval procedure is reported to be complex and done on a case-by-case basis. Bond financing is small relative to bank lending. Private financing includes concession agreements, initial public offerings (IPOs), and joint ventures.
6. For implementation shortcomings, see World Bank and Development Research Center of the State Council of China (2005).

7. The land-use right transfer fee is a one-time payment made by land users for obtaining urban land-use rights for a period of time, usually about 70 years for residential use and 40 years for commercial use.
8. There are no comprehensive data on the implicit subnational debt. According to the Development Research Center of the State Council (2003), subnational governments borrow excessively, their outstanding debts are significant, and their repayment behavior is unknown.
9. In a legal sense, subnational insolvency refers to the inability to pay debts as they fall due. Yet details vary across countries. In a number of countries, specific legal definitions serve as “procedural triggers” for initiating insolvency procedures. See Liu and Waibel (2007a).
10. In the United States, 60 percent of subnational capital spending is financed by bonds raised in the capital market, 25 percent is provided by federal grants (primarily for highways), and 15 percent comes from current revenues (Petersen 2005).
11. However, borrowing to finance infrastructure can burden future generations with debt without corresponding benefits when infrastructure is badly planned and managed.
12. For a review of how international rating agencies S&P, Moody’s, and Fitch assess subnational creditworthiness, see Liu and Tan (2007).
13. Subnational bonds are bonds issued by states, counties, cities, towns, and special-purpose government entities to finance public investments. The United States has the largest subnational bond market, with \$2.23 trillion in subnational bonds outstanding as of January 1, 2006.
14. Growth in subnational bond markets in emerging market countries has not been steady, with debt crises in the 1990s affecting their growth. Since 2001 growth in subnational bond markets has picked up in countries such as Mexico, Poland, Romania, and the Russian Federation. Public banks still dominate subnational lending in countries such as Brazil and India. For more discussion, see Liu and Waibel (2007a).
15. See Liu and Waibel (2006) for a review of subnational debt crises in Brazil in the 1980s and 1990s, India in the late 1990s, Mexico in 1994–95, and the Russian Federation in 1998–2000.
16. Such finance can take multiple forms, including direct borrowing and the accumulation of arrears.
17. This assumes that economic growth translates into increased debt-service capacity. This may not happen if a subnational government is unable to exploit its growing tax base. In this case, borrowing can still provoke a fiscal crisis, even when the proceeds are put to good use.
18. Ianchovichina, Liu, and Nagarajan (2006) analyze key factors affecting subnational fiscal sustainability.
19. The revenue deficit is current expenditure (such as wages, pension outlays, subsidies, transfers, and spending on operations and maintenance) net of total revenues. For more discussion of state fiscal crises in India, see Ianchovichina, Liu, and Nagarajan (2006).
20. Rollover risk refers to the fact that debt will have to be rolled over at an unusually high cost or, in extreme cases, cannot be rolled over at all. To the extent that rollover risk is limited to the risk that debt may have to be rolled over at higher interest rates, it may

- be considered a type of market risk. However, because the inability to roll over debt, exceptionally large increases in government funding costs, or both can lead to or exacerbate a debt crisis, it is often treated differently (IMF and World Bank 2001).
21. Between 1998 and 2001, at least 57 of the Russian Federation's 89 regional governments defaulted. In 2001, six years after the peso crisis, 60 percent of subnational governments in Mexico still struggled financially. One interesting difference is that subnational governments were allowed to borrow overseas in Russia while such borrowing was prohibited in Mexico. Subnational governments in Mexico were not insulated from foreign exchange risks, however, as the risks were transmitted through inflation and interest rates.
  22. Bonds were a major source of financing in São Paulo.
  23. For details on state debt crises in the United States in the early 1840s, see Wallis (2004). For implications of the U.S. experience for developing countries, see Liu and Wallis (2007).
  24. The focus of this chapter is on demand-side regulation. The supply-side story would need to look at various elements of the financial system, including competition and prudential regulations.
  25. See Ter-Minassian and Craig (1997) for a summary of *ex ante* subnational borrowing control frameworks in more than 50 countries. See Liu and Waibel (2006) for a review of regulations since the late 1990s in several countries.
  26. Brazil has always had statutory controls on subnational borrowing—controls on new borrowing and on the total stock of debt, expressed as percentages of revenue. But these controls had loopholes, which subnational governments were creative in exploiting. The regulations were strengthened in the late 1990s, leading to the unifying framework of 2000.
  27. For a review of Brazilian debt crises and remedies, see Dillinger (2002). For a review of fiscal responsibility legislation in several Latin American countries, see Webb (2004).
  28. The constitutionally mandated Finance Commission convenes every five years to determine the sharing of revenues between the center and the states. Depending on its terms of reference, it may also recommend measures to improve state finances.
  29. Short-term borrowing for working capital can be permitted, but provisions should be built in to prevent executive branches from using rollover borrowing as a way of borrowing long term to cover operating deficits.
  30. The debt-service ratio measures debt-service capacity. National governments monitor the debt-service ratio of subnational entities, but they define payment capacity differently. Brazil defines it as the share of current revenue net of transfers. Colombia defines it as the share of operational savings. India defines it as the ratio of debt-service payments to total revenues. Peru treats it as the share of current income, including transfers. The Russian Federation defines it as the share of total budgetary expenditures.
  31. Law 358, passed in 1997, introduced a rating system for subnational governments by establishing Indebtedness Alert Signals. These signals were based on two indicators: a liquidity indicator (interest payment/operational savings) and a solvency indicator (debt/current revenue). Subnational governments were classified into one of three zones. Governments in the red-light zone were not allowed to borrow, governments in the green-light zone were allowed to borrow, and governments in the yellow-light zone

- were allowed to borrow with the permission of the central government. Law 795, passed in 2003, eliminated the yellow-light category. Law 617, passed in 2000, established a ceiling for the ratio of discretionary current expenditure to non earmarked current revenues. The implementing rules for Law 819, which was passed in 2003, added a third indicator to the traffic-light system by relating the primary surplus to debt service.
32. If there is a bail-out system, subnationals are likely to share the country rating by rating agencies, giving them easier and cheaper if indirect access to the financial market.
  33. The inability to compel holdouts to cooperate in a negotiated compromise motivated the passage of Chapter 9 in the United States (McConnell and Picker 1993).
  34. Insolvency law exercises a disciplining function (Paulus 2006).
  35. A study by the World Bank (2005) addresses creditor rights and insolvency standards in the context of corporate bankruptcy. Key principles apply to the subnational context, bearing in mind the differences between public and private bankruptcy.
  36. South Africa has three spheres of government: federal, provinces, and municipalities. Provinces generally do not borrow from the financial market.
  37. For a review of state debt crises in Brazil and debt restructuring packages, see Dillinger (2002).
  38. The Bankruptcy Act of 1938 (known as the Chandler Act), 50 Stat. 654 (1937), amending the 1898 U.S. Bankruptcy Act, was the first law governing municipal bankruptcy in the world, although other countries had contemplated the introduction of similar mechanisms earlier (for example, Switzerland in the second half of the 19th century [see Meili 1885]). In 1934 the U.S. Supreme Court declared an earlier version of this legislation unconstitutional (see *Ashton v. Cameron County Water Improvement District No. 1*, 298 U.S. 513).
  39. The mandamus is a court order obliging public officials to take a certain course of action. For an excellent account on the mandamus and its motivation for Chapter 9, see McConnell and Picker (1993).
  40. The enactment of the statute was one more step in a series of regulatory reforms on subnational borrowing since the first subnational debt crisis in the early 1840s. After the 1840s crisis, 12 states adopted new constitutions, and 11 of the 12 required that the state legislature adopt new procedures for authorizing state borrowing. Other reforms at the time included opening access for infrastructure finance and development and eliminating taxless finance (Wallis 2004).
  41. The seven states with attached conditions include Illinois, Ohio, North Carolina, Pennsylvania and New York.
  42. In the United States, a municipality is considered insolvent if it is either currently not paying debts as they become due or unable to do so. In Hungary triggers are set off when the debtor has neither disputed nor paid an invoice sent by a creditor within 60 days of receipt (or of the date due if the due date is later) or has not paid a recognized debt within 60 days of the due date.
  43. Only municipalities face a statutory requirement of insolvency. Section 109(c) imposes a procedural bar that is unique to Chapter 9 debtors. It requires pre-filing efforts by the municipal debtor to work out its financial difficulties. The debtor must have reached agreement toward a plan, have failed to do so despite good faith negotiations, or have



- been unable to negotiate because negotiations were “impracticable.” Municipalities need state authorization to file for bankruptcy.
44. United States, Chapter 9, 109 (C) (2).
  45. South Africa, Municipal Finance and Management Act, 2003, Chapter 13, Section 151 (a).
  46. Law on Municipal Debt Adjustment, Law XXV, 1996.
  47. Based on the experiences of Japan and the United States, Schwarcz drafted a law for subnational insolvency that may serve as a model for decentralizing countries elsewhere. It focuses on dealing with hold-out creditors and preventing bailouts.
  48. The contract clause of the U.S. Constitution (Article I, section 10, clause 1) protects contracts against ex post impairment.
  49. Courts in the United States can confirm a plan if it has been accepted by at least one impaired class, does not discriminate unfairly, and is fair and equitable.
  50. For case histories, see Kupetz (1995) and McConnell and Picker (1993).
  51. The Law on Municipal Debt Adjustment, Law XXV, 1996, Chapter II, § 9 (3) stipulates the financial trustee’s independence.
  52. Law on Municipal Debt Adjustment, Law XXV, 1996, Chapter III, § 23.
  53. Law on Municipal Debt Adjustment, Law XXV, 1996, Chapter IV, § 31. Assets are distributed to creditors in the following order: (a) regular personnel benefits, including severance pay; (b) securitized debt (securitized by mortgage and other lines); (c) debts due to the central government; (d) social insurance debts, taxes, and public contributions as tax; (e) other claims; and (f) interest and fees on debt obligations continued during the bankruptcy proceeding.
  54. The U.S. experience suggests that in the absence of a bankruptcy framework, public entities in financial distress will use every possible technicality to challenge the validity of their outstanding obligations. Widespread challenges in a default wave during the 19th century led to the development of the bond counsel opinion, which certifies that the obligation is “legal, valid, and enforceable.”
  55. A general obligation bond is secured by a pledge of the issuer’s taxing power (limited or unlimited). General obligation bonds of local governments are paid from property taxes and other general fund revenues. A double-barreled bond is backed by a special tax or a specific source of revenue as well as by the full faith and credit of the issuer. A limited tax bond is secured by a pledge of a tax whose rate or amount is limited.
  56. No financing structure has been of greater importance to the growth of the U.S. subnational debt market than revenue bonds. Of the \$226.6 billion in long-term bonds issued in the United States in 1999, about 70 percent (\$156.4 billion) were revenue bonds; only 30 percent (\$70.2 billion) were general obligation bonds. See Liu and Wallis (2007) for details and a description of the most significant institutional reforms in the 150-year history of the development of the U.S. subnational debt market.

## References

- De Angelis, Michael. 2006. *Municipal Insolvency and Debt Adjustment*. Development Alternatives Inc., Bethesda, MD.

- Development Research Center of the State Council of China. 2003. *Report on Local Government Debt and Solution*. Beijing.
- Dillinger, William. 2002. *Brazil: Issues in Fiscal Federalism*. World Bank Report 22523, Latin America and the Caribbean Region, Washington, DC.
- Gitlin, Richard A., and Brian N. Watkins. 1999. "Institutional Alternatives to Insolvency for Developing Countries." In "Building Effective Insolvency Systems." World Bank, Washington, DC.
- Ianchovichina, Elena, Lili Liu, and Mohan Nagarajan. 2006. "Subnational Fiscal Sustainability Analysis: What Can We Learn from Tamil Nadu?" World Bank Policy Research Working Paper 3947, Washington, DC.
- IMF (International Monetary Fund), and World Bank. 2001. "Guidelines for Public Debt Management." Washington, DC.
- Jókay, Charles, Gábor Szepesi, and György Szmecana. 2004. "Municipal Bankruptcy Framework and Debt Management Experiences 1996–2000." In *Intergovernmental Finances: A Decade of Experience*, ed. Mihaly Kopanyi, Deborah L. Wetzel, and Samir El Daher. Washington, DC and Budapest: World Bank and Local Government and Public Service Initiative/Open Society Institute.
- Kupetz, David S. 1995. "Municipal Debt Adjustment under the Bankruptcy Code." *Urban Lawyer* 27 (3): 531–604.
- Laughlin, Alexander. 2005. "Municipal Insolvencies: A Primer on the Treatment of Municipalities under Chapter 9 of the U.S. Bankruptcy Code." [http://www.wileyrein.com/directory.cfm?attorney\\_id=556](http://www.wileyrein.com/directory.cfm?attorney_id=556).
- Liu, Lili, and Kim Song Tan. 2007. "Creditworthiness Assessment of Subnational Governments." World Bank, Economic Policy and Debt Department, Washington, DC.
- Liu, Lili, and Michael Waibel. 2006. "Subnational Borrowing Notes on Middle-Income Countries." World Bank, Economic Policy and Debt Department, Washington, DC.
- . 2007a. "Subnational Borrowing, Insolvency and Regulations." World Bank, Economic Policy and Debt Department, Washington, DC.
- . 2007b. "Subnational Insolvency: Cross-Country Experiences." World Bank Economic Policy and Debt Department, Washington, DC.
- Liu, Lili, and John Wallis. 2007. "Infrastructure Financing, Debt Limitation, and Subnational Debt Market Development: Lessons from the United States." Draft. World Bank, Economic Policy and Debt Department, Washington, DC.
- Maco, Paul S. 2000. "Building a Strong Subnational Debt Market: A Regulator's Perspective." *Richmond Journal of Global Law and Business* 2 (1): 1–31.
- McConnell, Michael, and Randal Picker. 1993. "When Cities Go Broke: A Conceptual Introduction to Municipal Bankruptcy." *University of Chicago Law Review* 60 (2): 425–95.
- Meili, Friedrich. 1885. *Rechtsgutachten und Gesetzesvorschlag betr: Die Schullexecution und den Concurs gegen Gemeinden*. Bern: Schmid Franke & Cie.
- Mintz, Jack M., and Michael Smart. 2006. "Incentives for Public Investment under Fiscal Rules." World Bank Policy Research Working Paper 3860, Washington, DC.
- Paulus, Christoph. 2006. "Disciplining Function." Humboldt Universität, Berlin.
- Petersen, John. 2005. "U.S. Municipal Bond Market: Model or Maverick?" School of Public Policy, George Mason University, Arlington, VA.

- Schwarcz, Steven L. 2002. "Global Decentralization and the Subnational Debt Problem." *Duke Law Journal* 51 (4): 1179–250.
- Ter-Minassian, Teresa, and Jon Craig. 1997. "Control of Subnational Government Borrowing." In *Fiscal Federalism in Theory and Practice*, ed. Teresa Ter-Minassian. Washington, DC: International Monetary Fund.
- Wallis, John Joseph. 2004. "Constitutions, Corporations, and Corruption: American States and Constitutional Changes, 1842–52." NBER Working Paper 10451, National Bureau of Economic Research, Cambridge, MA.
- Webb, Stephen B. 2004. "Fiscal Responsibility Laws for Subnational Discipline: The Latin American Experiences." World Bank Policy Research Working Paper 3309, Washington, DC.
- World Bank. 2005. "Principles and Guidelines for Effective Insolvency and Creditor Rights Systems." Washington, DC. [http://www.worldbank.org/ifa/rosc\\_icr.html](http://www.worldbank.org/ifa/rosc_icr.html).
- World Bank, and Development Research Center of the State Council of China. 2005. "China: Land Policy Reform for Sustainable Economic and Social Development." Washington, DC.

Part IV

Education and Innovation  
Financing



# Financing Lifelong Learning

10

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The knowledge economy is transforming the demands of the labor market in economies throughout the world, requiring that people constantly update, absorb, and apply new knowledge and skills. As a result, education and training are becoming key strategic elements of international competitiveness and growth. Schools and training institutions thus need to prepare workers for lifelong learning. Educational systems need to put more focus on developing learners' decision-making and problem-solving skills and teaching them how to learn on their own and with others. The role of government needs to change from being the main provider of education and training to being the architect and manager of a system with multiple providers and multiple pathways to education and training.

China has begun to readjust its education and training system to cope with the challenges of moving toward a knowledge economy. Its 11th Development Plan defines three areas as strategic priorities for education development: universalizing compulsory education, promoting vocational education, and improving the quality of higher education (Wen 2005b). These are critical parts of the lifelong learning system that have strategic importance for dealing with various challenges. They need to be implemented with proper institutional, curricular, and pedagogical reforms.

This chapter focuses on the challenge of financing the increased demand for education and training. The first section sets the context by discussing the need to increase the coverage and quality of formal educational systems and to upgrade the skills of the millions of people already outside the formal educational system. The second section focuses on the financing challenge. The last section summarizes the chapter's main conclusions and policy recommendations.

## Increased Demand for Education and Training in a Knowledge Economy

China faces massive challenges to equip itself to compete in the global knowledge economy. As this section shows, these challenges cannot be met without building a lifelong learning system—a system in which the government cannot be the only player.

## *Main Challenges Facing the Sector*

China's education and training sector needs to respond to a variety of challenges, including the growing competitive pressure stemming from integration into the global economy; the enormous education and training needs of the country's very large population; the low level of educational attainment; large regional disparities in access and attainment; and new needs arising out of the continuing transition to a market economy, massive structural change, and restructuring. Each of these challenges is examined below.

### COMPETITIVE PRESSURE

Since its accession to the World Trade Organization, China has faced increased international competition. To compete internationally—by transforming an economy that still relies mainly on labor-intensive manufactures to one that moves up the global production value chains—China needs to increase total factor productivity. Doing so will require major structural and institutional readjustments.

### LARGE SIZE

China has the world's largest education and training market—and the market is growing very rapidly. Between 1990 and 2002, China's population grew at an average annual rate of 1.0 percent. Over the same period, formal school enrollment grew 2.0 percent, secondary enrollment rose 5.0 percent, and tertiary enrollment rose 13.1 percent a year. Adult education enrollment grew 5.2 percent a year, with adult tertiary education growing at an annual rate of 10.6 percent and adult technical training growing 16.3 percent a year (Hu 2004). The total number of students at the tertiary level (including informal) reached 23.8 million in 2004, exceeding that of the United States and accounting for about 22 percent of the world's total tertiary students (authors' calculations, based on data from the Ministry of Education and the National Bureau of Statistics).

Projections of demand for education in China are even more dramatic. According to the Working Group on China Education and Human Resource, led by the Ministry of Education, China's student populations peaked in 2004, when the number of people 15–17 reached about 75.9 million and the number of people 18–22 reached about 124.9 million. Educating this large population will require massive investments in education and training.

### LOW EDUCATIONAL ATTAINMENT

China has made impressive strides in improving the educational attainment of its population over the past two decades. By 2003, 51.4 percent of people 6 years old and older had attained secondary education, and 5.5 percent had attained tertiary education (Ministry of Education and National Bureau of Statistics 2005). Between 1990 and 2004, junior-secondary level gross enrollment rose from 67 percent to 94 percent; senior-secondary enrollment rose from 22 percent to 47 percent; and tertiary enrollment rose from 3.4 percent to 19.0 percent.

Despite these increases, the overall educational attainment of the population remains low by the standards of countries in the Organisation for Economic Co-operation and Development (OECD). China had an illiteracy rate of about 11 percent (15.9 percent for females) in 2003. The average number of years of education for the total labor force was 8.0, and only 4.7 percent of the adult Chinese population had tertiary education (Ministry of Education and National Bureau of Statistics 2004). These figures are much lower than in the OECD, where the average labor force participant has 11.7 years of education and 24.0 percent have higher education (figure 10.1). In 2004 just 0.4 percent of China’s agricultural labor force and 6.7 percent of its manufacturing labor force had attended university (National Bureau of Statistics and Ministry of Labor and Social Security of China 2005). This low level of educational attainment constrains China’s ability to absorb the new knowledge necessary to maintain and increase competitiveness and to redeploy workers from low-productivity jobs and sectors to higher-productivity ones.

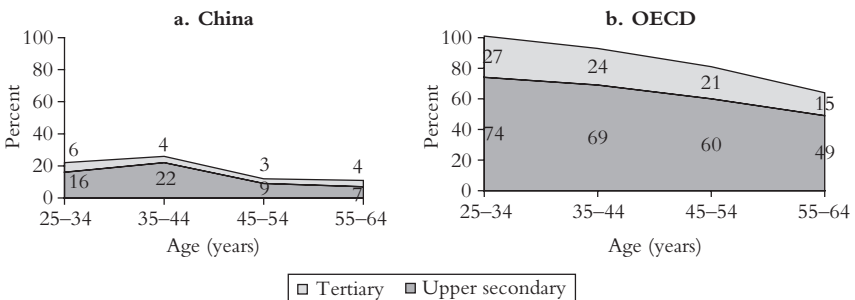
A critical issue will be how to upgrade these skills. Doing so will require examining China’s experience with massive public retraining programs as well the experiences of other countries. It will also require looking at the scope for increasing and improving firm-based training, drawing on the experience of other countries.

LARGE REGIONAL DISPARITIES

Although China’s overall literacy rate has risen significantly in the past few decades, there are increasingly wide disparities across and within provinces. As a result of unbalanced economic development, the coastal regions have relatively high levels of educational attainment and educational resources (from both the public and private sectors). Elsewhere, both educational attainment and resources for education are lower.

Differences in illiteracy rates across provinces are huge. While the illiteracy rate in the western provinces is 21–40 percent, the rate in most coastal regions is below 10 percent. The level of educational attainment of the labor force and secondary

**Figure 10.1 Percentage of Population in China and OECD that Completed Upper-Secondary or Tertiary Education, 2001**



Source: OECD 2003a.



**Table 10.1 Education Levels of the Labor Force, by Region, 2004**  
(percent)

<i>Region</i>	<i>No education</i>	<i>Primary</i>	<i>Lower secondary</i>	<i>Upper secondary</i>	<i>Tertiary</i>
Eastern	4.1	20.8	45.6	18.0	11.6
Middle	4.5	25.7	49.3	13.9	6.6
Western	14.2	35.7	33.2	10.2	6.7
National average	6.2	27.4	45.8	13.4	7.2

*Source:* Authors' calculations, based on data from National Bureau of Statistics and Ministry of Labor and Social Security of China 2005.

enrollment rates also vary widely across regions (table 10.1). In 2000 enrollment rates in Beijing and Shanghai were close to 90 percent, while Guangxi, Guizhou, Hainan, and Tibet had enrollment rates that were one-third lower.

There are also large—and growing—rural-urban disparities, with the illiteracy rate still very high in rural areas. The average ratio of urban to rural incomes was 3.21 in 2004, up from 1.72 in 1985 (World Bank 2005). In 2000 the percentage of people with tertiary education was 18 times higher in urban areas than in rural areas, and the percentage of people with senior-secondary education was 4 times as high. The average years of education was 7.3 for the rural labor force and 10.2 for the urban labor force in 2002.

Rural-urban gaps are also reflected in the quality of teachers. In urban primary schools, 57 percent of teachers have at least a junior college education, while in rural areas the proportion is only 25 percent (China Development Research Foundation and UNDP 2005).

Part of the reason for the large disparities in primary and secondary education has to do with the way education is financed in China. After the 1986 reform, China reformed the structure of education funding such that the central government (including the Ministry of Education and other line ministries) and provincial governments finance higher education institutions while governments below the provincial level finance primary and secondary education. A common arrangement in rural areas is that villages are responsible for providing, administering, and financing primary education; townships are responsible for lower-secondary education; and county governments are responsible for upper-secondary education. In cities, district governments are responsible for providing, administering, and financing primary education, and city governments are responsible for secondary education.

Given their generally weak revenue capacities, rural governments at the county and township levels are underfunded (Fock and Wang 2005). This situation grew worse during the 1980s and 1990s, as expenditure responsibilities were devolved. Since 2004–05, teachers' salaries at the compulsory education level have been paid by county- and township-level governments, increasing the burden on them.

Because the quantity and quality of services provided in a locality depend on its fiscal status (including transfers), huge regional imbalances exist.

There is a close association between per capita GDP and per student spending in primary schools across provinces. Spending ranged from Y520 in Henan Province to Y5,429 in Shanghai Province in 2003—nearly the same difference as in overall per capita budgetary spending. As the economic growth gap widened substantially across regions in the 1990s, large and growing disparities in public spending and services emerged, with huge gaps between urban and rural service provision (Fock and Wang 2005). The result has been serious underprovision of compulsory education, especially in poor rural areas, in terms of both quantity and quality. In many rural areas, schools are housed in dilapidated buildings, classrooms are unlit and unheated, and students have neither desks nor chairs. In order to fulfill the mandate of providing nine years of universal compulsory education, some local governments have had to greatly increase the fees they levy, and many have run into debt to finance the construction or renovation of schools.

Although a series of reforms aimed at supporting rural and lagging areas—including the rural tax-for-fee reform, elimination of agricultural taxes, and increases in central to subnational transfers—has improved the financial situation of rural governments and more resources have been channeled to equalization transfers, their effects have been limited, leaving huge regional disparities.<sup>1</sup> Specific-purpose transfers favor poorer areas, but they have been offset by rapid growth in non-equalizing transfers, as well as a more rapidly growing own-revenue base in richer localities than in poorer ones. Moreover, most of the transfers to counties and townships are earmarked for specific purposes and are intended either to implement policies such as the rural fee reform and replace part of the revenues that local governments lost or to address specific needs identified by the central government as national priorities. As a result, rural governments, especially in poor areas, are still heavily underfunded (Fock and Wang 2005). This inadequate intergovernmental system has hindered the implementation of national priorities, including universal compulsory education. Furthermore, in many cases, limited education funding is not being properly or efficiently used. In some situations, funding is used for purposes other than education; in others, the budget increase for compulsory education is being used mostly to raise the salaries of teachers and other school staff rather than to increase enrollments, expand school facilities, or improve teaching quality.

#### TRANSITION TOWARD A MARKET ECONOMY

It has been a quarter of a century since China embarked on its transition toward a market economy. This transition has sparked enormous social, political, and economic change. Major reforms have included land transfers to households; implementation of the household responsibility system; the granting of the right of farmers to transfer their rights to land; encouragement of the private sector; privatization or management and ownership reforms of state-owned enterprises (SOEs); and recognition of private property and ownership (endorsed by a constitutional amendment in March 2004).

These changes have set free enormous new productive forces, giving China a competitive advantage globally. The transition has also created a huge demand for new skills and competencies, including entrepreneurship, creativity, and flexibility; organizational and problem-solving abilities; communications and team-work skills; management, marketing, branding, consulting, and distribution abilities; and skills in information and communications technology.

#### MASSIVE STRUCTURAL CHANGE AND RESTRUCTURING

Since the reform and open-door policy, China's economy has grown more than 9 percent a year, and dramatic changes have occurred in the country's economic structure. Between 1980 and 2004, agricultural output as a percentage of GDP dropped from 30 percent to 13 percent, while the output of the service sector increased from 21 percent to 41 percent. Between 1980 and 2002, agricultural employment as a share of total employment decreased from 69 percent to 43 percent, and employment in the service sector increased from 12 percent to 29 percent.<sup>2</sup> This trend will continue at a similar or even faster rate in the future. By 2020 China's economy will be more industry and service oriented, which will require a labor force with new skills and qualifications geared toward a knowledge-based economy. China's education and training system needs to adapt to this change, with multiple pathways and providers, flexible but sound qualification recognition systems, and new curricula and pedagogies.

The employment challenge will be daunting. About 12 million to 15 million people a year in China move from agricultural activities to cities and nonagricultural activities; about 300 million are projected to urbanize by 2020 (Cooper 2004). Meanwhile, millions of workers have been or are being laid off from SOEs, and the unemployment rate is skyrocketing (official numbers do not include many of these laid-off workers). This challenge creates an urgent need for large-scale retraining and reskilling programs for laid-off workers and rural migrants.

Skilled laborers are in short supply. Technical workers account for only one-third of total industrial workers, and most of them are junior technicians; engineers account for just 4 percent of technical workers, creating a bottleneck for China's industrial upgrading (Wen 2005a). To address this problem, the Chinese government has identified vocational education as a strategic priority.

#### *The Need for a System of Lifelong Learning*

The education and training challenge for China is enormous. About 80 percent of the population needs or is undertaking education or training. This figure includes a labor force of about 770 million workers, who constantly need new and better skills to remain competitive; 260 million students in the formal education system; and 68 million adult learners attending various nondiploma adult schools or training institutions.

Education and training must address two kinds of demand. The first is social needs, which include inculcating a sense of national identity, providing basic education, and supplying other public goods, such as retraining laid-off workers

or poor rural immigrants. These types of programs should be provided by the government. The second is market needs that go beyond basic literacy and numeracy to the new skills necessary to compete in the knowledge economy. These skills can be supplied by a combination of the public and private sectors.

There are two main sources of supply: formal education and training. Both are supplied by a combination of public and nongovernment providers, including the private sector. There is a need for an effective governance and management system that coordinates between different government and nongovernment providers; builds bridges and allows credit transfer across different components, such as formal education and training or work experience; accredits and certifies suppliers of education and training and the education and skills acquired by individuals; provides information about market needs and the quality of public and private providers; and develops an effective way of financing the different components of this large and complex system.

### *Refining the Role of Government*

The government alone cannot accomplish the daunting task of building a lifelong learning system. Such a system must involve multiple players and develop multiple pathways. The government's role needs to change from controlling and providing education and training to serving as architect, coordinator, facilitator, integrator, monitor, innovator, and assurer of quality. Meanwhile, the private sector, intermediaries, and nongovernmental organizations (NGOs) need to be fully mobilized.

The government's new role will involve coordinating across line ministries of the central government, as well as coordinating efforts by the central, provincial, and local levels and between the government system and nongovernment partners (table 10.2). (For more details, see Dahlman, Zeng, and Wang [2007].)

## **Financing Education and Training**

Secondary and tertiary enrollment rates in China are far lower than in upper-middle- or high-income countries (table 10.3 and figure 10.2). As China moves from its current status as a lower-middle-income country to an upper-middle-income country—and eventually to a high-income country—it will have to increase these enrollment rates.

Financing lifelong learning requires focusing public spending on programs for which social returns exceed private returns (such as basic education) and increasing private spending on investments that yield higher private returns (such as most higher and continuing education). Government intervention beyond the basic levels should target learners from low-income backgrounds and areas in which social returns are expected to exceed private returns.

### *Increasing Public Expenditure*

Financing the expansion and improvement of the formal education system and the training and retraining system will cost an estimated 6–9 percent of GDP

**Table 10.2 Traditional and New Roles of Government in Education and Training**

<i>Policy issue</i>	<i>Current role</i>	<i>Role in the knowledge economy</i>
Integration/coordination at the national level	Compartmentalized in different ministries, including education, labor, personnel, and various line ministries, such as agriculture, postal services, and communications	Coordinated multisectoral approach with multiple pathways to learning flexible system of recognizing learning and linking to labor market needs
Administration and regulation	Provides rules and regulations; controls number of students that can receive degrees	Creates incentives; facilitates diverse providers; encourages more self-regulation by fostering more timely and transparent information on changing needs, performance of students, and providers of education and training; offers career counseling; ensures accountability to parents, students, employers, and society
Coordination across vertical levels	One-way control and regulation from top down; little flexibility for experimentation	Two-way mutual support and partnerships; willingness to pilot and experiment with new approaches
Government as enabler	Government controls and regulates; strong bias toward being main provider of formal education and training, little recognition of private providers	Government creates choices, provides information and incentives, facilitates cooperation and provision, including those by nongovernment partners

Linkage between education  
and the labor market/society

Supply is institution driven, little adjustment by public sector to changing demands, some adjustment by spontaneous rise of private providers. Emphasis is on training millions of agricultural migrants and retraining workers laid off from SOEs; much less emphasis on massive task of retraining employed workers for new skill requirements.

Demand is market and learner driven. Government provides solid basic public education and core skills, including learning how to learn throughout one's lifetime and just-in-time specialized learning based on changing needs.

Qualifications assurance system

National standards linked with curriculum and student assessments; insufficient linkage to market and social needs

Diverse systems of recognition and quality control, including linkages between different levels of vocational and academic qualifications that recognize formal and informal education and training and integrate learning, qualifications, and labor market needs

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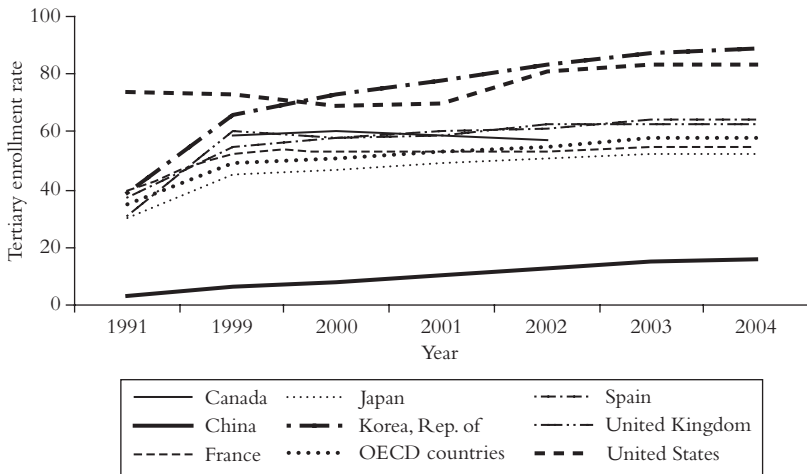
Source: Authors.

**Table 10.3** Gross Primary, Secondary, and Tertiary Enrollment Rates, by Country Income Level, 2005

Country/income level	Primary	Secondary	Tertiary
Low income	102	45	9
Lower-middle income	115	76	22
China	118	73	19
Upper-middle income	105	86	43
High income	100	100	67
Korea, Rep. of	105	93	90
United States	100	95	82
World average	107	65	24

Source: World Bank Development Data Platform Database 2006.

**Figure 10.2** Tertiary Enrollment Rates in Selected Countries, 1991–2004



Source: World Bank Educational Statistics Database 2006.

(Dahlman, Zeng, and Wang 2007). Current education spending is about 4.9 percent of GDP, with the public share at about 3 percent of GDP, less than half of what is required. This level of spending is low compared with developed countries. According to the *World Competitiveness Yearbook 2005* (IMD 2005), China ranked 56th out of 60 economies in public education spending.

China's public education spending per 10 million people is higher than that of India or the South and East Asian average, but it is much lower than the average for Latin American or developed countries. China accounts for 22 percent of the world's population but only 2 percent of global education expenditures (table 10.4).

**Table 10.4 Public Education Expenditure in Selected Countries and Regions, 2000–03**

Item	China	India	South and East Asia <sup>a</sup>	Latin America	United Kingdom	United States
				and the Caribbean		
Total population (millions)	1,300	1,000	600	520	60	280
Percentage of global population	22	17	10	9	1	5
Public education expenditure (billions of dollars)	45	16	18	94	72	480
Percentage of global budget	2.0	0.7	0.8	4.2	3.2	22
Expenditure per 10 million people (billions of dollars)	0.36	0.16	0.3	1.8	12	17
Percentage of GDP	2.8 <sup>b</sup>	4.1	3.0 <sup>c</sup>	4.3	5.3	5.7

Source: Perkinson 2004b; World Bank Development Data Platform database 2006.

a. Does not include China or India.

b. Data are for 2004.

c. East Asia only.

### *Improving the Allocation of Resources*

The distribution of spending on education ranges widely across regions and levels of education (OECD 2006). Gaps across provinces have grown, especially for primary education (table 10.5).

Funding-deprived schools in poor regions, especially in rural areas, resort to nonfiscal and extrabudgetary funds, often collected in the form of “joint construction fees” or as voluntary donations, as charging tuition for compulsory education is forbidden by law (Wang 2004). Although the central government and provincial governments provide a financial subsidy to poor areas, the subsidy is a small ad hoc instrument rather than a regular part of financing for compulsory education.

The government recently recognized that it had been failing in public rural education. On December 24, 2005, the State Council issued a new policy document on reforming the financing of rural education. The document emphasized the importance of rural compulsory education, acknowledged the achievements, identified problems, and set out new goals. The problems included the lack of clearly delineated responsibilities for education investment by governments at different levels; the mismatch between financial needs and actual provision; the inadequacy of resources and the poor allocation of resources to compulsory rural education;



**Table 10.5 Interprovincial Differences in per Student Spending on Primary and Lower-Secondary Education, 1989, 1997, and 2003**

Province	Primary level			Lower-secondary level		
	1989	1997	2003	1989	1997	2003
Highest spending (yuan)	393	2,351	7,030	788	3,425	7,798
Lowest spending (yuan)	75	255	677	174	491	929
Ratio of highest spending to lowest spending	5.2	9.2	10.4	4.5	7.0	8.4
Mean spending (yuan)	166	593	1,295	353	1,096	1,668

Source: Tsang 2002; Ministry of Education and National Bureau of Statistics 2004.

Note: Data for 2003 reflect increased spending by the private sector and individuals.

and the heavy financial burden on farmers for their children. To improve compulsory education in rural areas, in February 2006 the State Council issued a “Notice on Deepening the Reform of Rural Compulsory Education Financing Mechanism” (box 10.1).

Lessons on the institutional arrangements needed to ensure the funding of compulsory education can be drawn from other countries. In France all school teachers are civil servants, enjoying all civil service benefits. In the United States, much of the money for basic education is earmarked from property taxes, which gives basic education a reliable annual source of funding. In many countries, a national minimum standard is adopted for national or regional intergovernmental fiscal transfers. All these systems could be useful models for China. Once government financial conditions improve, China should raise the number of years of compulsory education to 12.

Another issue that needs to be examined is the funding of higher education relative to other education levels and to training. In the past China has increased education spending, but much of the additional spending went to higher education, not basic education, where funding is needed most. Between 1998 and 2003, the share of total public education spending for higher education increased from 18.9 percent to 24.1 percent, while the share of spending devoted to primary education fell from 34.5 percent to 33.6 percent (table 10.6). Nongovernmental expenditure on higher education accounted for 46.6 percent of total spending in 2001, 7 percentage points lower than in the United States, 12 points lower than in Japan, and 37 points lower than in the Republic of Korea (table 10.7 and figure 10.3). In 2003 this share increased to 53.2 percent, equal to the U.S. 1998 level. In OECD countries, with the exception of the Republic of Korea, more than 90 percent of primary and secondary education and at least 80 percent of primary and secondary education are paid for publicly (OECD 2005a). China needs to increase its public spending on compulsory education significantly and to look at the relative costs and benefits of funding other levels.

### **Box 10.1 Deepening the Reform of Financing Mechanisms for Compulsory Rural Education**

The State Council has proposed promising steps to improve the financing of compulsory education in rural areas. These measures include the following:

- Elimination of tuition and fees for rural compulsory education and provision of free textbooks and financial assistance for boarding students. The cost of tuition and fees will be shared by the central and local governments at a ratio of 8:2 in western regions and 6:4 in middle regions. In eastern regions, the ratio will vary depending on specific provincial situations.
- Improvement in the financing security of rural compulsory education. Top priority will be given to the appropriation of budgeted rural education funds by the per student standards stipulated by each province or municipality. Funding will be shared by the central and local governments in the same ratios as for tuition and fees.
- Establishment of a long-term mechanism for school repair and maintenance for rural compulsory education. In the western and middle regions, the costs will be shared evenly by the central and local governments. In the eastern region, the costs will be borne by the provinces.
- Strengthening and improvement of teachers' salary security mechanism for rural primary and secondary schools. To ensure that teachers' salaries are paid on time and in full, provincial governments must strengthen the fiscal transfer of funding to poor areas. The central government will provide some support for the western and middle regions as well as parts of the eastern region.

The following measures will be implemented over five years:

- In 2006 tuition and fees were eliminated for rural compulsory education in the western region, and the central government began to provide public financial assistance for the western region.
- In 2007 the same measures were implemented in the middle region and part of the eastern region.
- In 2008 per student public funds should reach the autumn 2005 standards stipulated by each province or municipality.
- In 2009 the central government will issue the per student funding standards for rural compulsory education. If provincial or municipal standards are lower than the central standards, half of the difference will be made up, with the needed funds shared by the central and local governments at the same ratios as for tuition and fees.
- By 2010 the central public funding standards for rural compulsory education should be fully realized.

*(continued)*

**Box 10.1 (continued)**

The measures and implementation steps specified in the notice are promising. But to guarantee the expected results, reform of current spending priorities and budget allocation mechanisms of local governments is urgently needed. More funding should be allocated to teaching and facilities than to personnel, and poor areas should be given top priority. A more rigorous monitoring system and a more transparent and open budgeting process are essential for smooth and fair implementation.

Source: Chinanews.com 2006.

**Table 10.6 Public Expenditure on Education, by Level, 1998 and 2003**  
(percent)

<i>Level of education</i>	<i>1998</i>	<i>2003</i>
Primary education	34.5	33.6
Regular secondary	29.6	30.0
Specialized secondary education	6.2	3.7
Higher education	18.9	24.1
Other (including kindergartens, enterprise technical schools, and vocational training schools)	10.8	8.6
Total	100.0	100.0

Source: Authors' calculations, based on data from Ministry of Education and National Bureau of Statistics, various years.

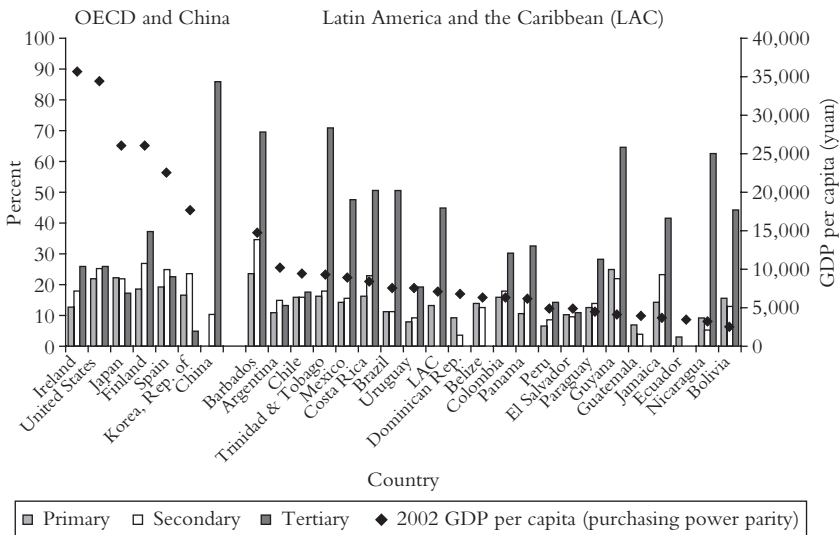
**Table 10.7 Share of Nongovernmental Education Expenditure in Selected Countries, by Level, 2002**  
(percent)

<i>Country</i>	<i>Primary, secondary, and postsecondary nontertiary education</i>	<i>Higher education</i>
China	30.4	46.6
Japan	8.3	58.5
Korea, Rep. of	22.6	85.1
United States	8.4	54.9

Source: Ministry of Education 2005; OECD 2005a.

Note: Figures for China are for 2001.

**Figure 10.3 Per Student Expenditure as a Percentage of per Capita GDP, in Selected Countries, by Level, 2002**



Source: IADB 2006.

Note: Data for secondary and tertiary levels in Latin America and the Caribbean and for all levels in China are for 1999.

### *Increasing the Efficiency and Effectiveness of Resources*

Throughout the world, the provision of education is inefficient in terms of input and output measures, and the sector has suffered from some of the lowest increases in productivity. The lack of efficiency stems from the fact that in most countries, the sector is traditional and overregulated. In addition, the structure of education spending is misaligned in China, where a much larger portion of spending is channeled to personnel expenses than in most other countries, and half of personnel expenses is spent on nonteaching staff (Jia and Guo 2002).

To extend access to education to a larger number of people when financing is limited, it is important to improve the incentive regime of the public education system, including by improving management and increasing accountability. The focus must be not just on inputs but on outcomes and relevance. The pedagogy of teaching and learning must be improved and the number of repeaters reduced. More effective use must also be made of information and communication technologies, particularly Internet-based education, which can massively reduce costs.<sup>3</sup>

In addition, funding should focus more on raising quality than increasing quantity. While China should maintain the high quality of its elite institutions, more resources should be dedicated to improving the overall quality of education and training systems, especially those at the lower end, and to increasing their relevance.

### *Increasing Nontuition Revenue Sources*

China began implementing its tuition and financial assistance system in the 1980s. Tuition is currently the second-largest funding channel, after government appropriations. In 2003 tuition and other fees accounted for 18.1 percent of total investments in formal education, 7.4 percentage points more than in 1995 (table 10.8). In higher education, tuition accounted for more than 30 percent of total investments, an increase of more than 17 percentage points over 1995 and a higher level than the 19 percent of total spending that went to U.S. public universities and colleges in 1995–96. At private higher education institutions in China, tuition reached a high of 70 percent of total education investment in 2004 (Hu 2004). The balance came from social donations (donations from social organizations, such as NGOs and organizations of overseas Chinese); enterprise sponsorships; reinvestment of profits; and other sources.

Tuition helps many schools ease their financial problems, but it has allowed some schools to overexpand, building facilities that are not fully used. At other schools, income from tuition is being used largely to improve the well-being of teaching and administrative staff rather than to improve pedagogy and content (Dahlman, Zeng, and Wang 2007).

China's education market seems to lack sufficient channels to attract much finance from foundations and social philanthropy, and it lacks policy incentives for mobilizing investments. Although tuition charges have increased rapidly in formal education, public funding remains the main source of financing. In 2003 nongovernmental (including private) sources other than tuition accounted for about 38 percent of total investments in education.<sup>4</sup>

Tuition charges and other fees should be eliminated at the compulsory education level, and the nongovernmental portion of tuition and fees in tertiary education should be increased, especially the portion from social groups, private

**Table 10.8 Sources of Investment Funding for Formal Education, 2003**

<i>Funding source</i>	<i>Percentage of total</i>
Public appropriations	62.0
Income from not-for-profit operations <sup>a</sup>	27.7
Tuition and fees	18.1
Social groups and individuals	4.2
Social fundraising and donations	1.7
Other	4.4
Total	100.0

*Source:* Ministry of Education 2005.

a. A large part of this income is revenue from public school-affiliated enterprises and public schools' contracting services that are invested in education.

investors, and donations. These three sources accounted for only 2.1 percent of total tertiary education revenue in 2003, while tuition and fees accounted for almost 31 percent.<sup>5</sup> Although bank loans account for only a small portion of total education financing, with the rapid expansion of higher education, the nonperforming loans of tertiary institutions are increasing rapidly, jeopardizing these institutions' sustainability and increasing the financial risks already overburdening state-owned banks (CASS 2006).

As economic conditions improve, the demands and expectations of parents for the education, especially tertiary education, of their children will continue to grow. Many middle- and high-income families will want to send their children not just to any university but to a good one. In the past, families built up savings to pass on to their children. Today they are more interested in using these savings—estimated at Y60 trillion—to invest in their children's education (Dahlman, Zeng, and Wang 2007).

Cross-country comparison reveals that in many other countries, a larger share of expenditures on tertiary education comes from the private sector (table 10.9). The figures imply that China should be able to deploy more private resources—especially private and social investments—for tertiary education than it currently does. One estimate suggests that annual demand for higher education in China will grow from 8.1 million students in 2000 to 44.6 million in 2025 (Bohm and others 2002).

**Table 10.9** Shares of Public, Private, and Household Expenditures on Tertiary Education in Selected Countries, 2003 (percent)

Country	<i>Expenditure on tertiary education by source</i>		<i>Household spending on education as percentage of total household expenditure</i>
	<i>Public</i>	<i>Private</i>	
Australia	48.7	51.3	33.7
China <sup>a</sup>	53.4	46.6	30.8
India	77.8	22.2	22.2
Indonesia	43.8	56.2	49.4
Japan	41.5	58.5	58.5
Korea, Rep. of	14.9	85.1	63.8
New Zealand	62.5	37.5	37.5
United States	45.1	54.9	38.9
OECD mean	78.1	21.9	18.5

Source: OECD 2003a, 2005; Ministry of Education and National Bureau of Statistics 2004.

a. Data are for 2003 and are calculated based on figures from the Ministry of Education (2004). The "private" share includes revenue from public school-affiliated enterprises and public school contracting services that are invested in education. If this part is excluded, private funding accounts for only about 33 percent of total spending. Spending by social groups, private investors, and donors (the "real" private funders) accounted for 2.1 percent of total tertiary revenue in 2003; tuition and fees accounted for almost 31 percent.

Unless private resources are mobilized to reduce tuition for needy students, young people from low-income families in villages and towns will be unable to access tertiary education.

### *Expanding Private Provision*

The growing gap between education demand and supply calls for a larger role for private provision. At the tertiary level, the gap will only widen in the next few years, as the age group for tertiary education peaks. Moreover, based on the experience of OECD countries, additional demand for tertiary education will come from people beyond the typical 18–25 age cohort, who find that they need a tertiary degree to remain competitive (OECD 2005a).

Globally, the share of private investment in education in developing countries has been increasing, while the share of public investment has been declining. In developed countries such as Australia, Japan, and the United States, the share of private funds reached a quarter of all education funds in 2002; the figure was slightly more than 40 percent in the Republic of Korea (OECD 2005a).

The private sector has stepped in to meet the growing education and training needs stemming from rapid economic growth and restructuring. Though still seriously constrained, it has become a very important complement to the public sector in the education and training market. According to Ministry of Education (2005) statistics, in 2004 China had 78,500 private schools and educational institutions (excluding vocational training institutions), in which 17.7 million students were enrolled. Intermediary organizations, such as associations, unions, and other NGOs, are also becoming more active and important. How to build an effective governance system to fully release the energies of various players is thus a very important issue.

Since passage of the “Law on Promoting Private Education in China,” in December 2002, private education has been developing very rapidly. In April 2004 the National People’s Congress passed the “Regulations on Implementing the Promotion Law,” marking a new stage in the development of private education. Despite this progress, however, the development of private provision still faces numerous institutional and management barriers, such as government overintervention, unfair treatment, lack of recognition, and quality issues. In 2003 private institutions accounted for 11.2 percent of total tertiary institutions and 7.3 percent of total tertiary enrollments (Dahlman, Zeng, and Wang 2007).

China needs to encourage the growth of private institutions by providing sufficient financial incentives for investors to continue their operations. Because China’s education market is not mature, the finances of private institutions need to be monitored to ensure that they are not charging much more than their services are worth. To improve quality, the same cost-benefit auditing mechanisms used for public higher education institutions should be used for private ones.

Experiences in the United States indicate that the for-profit education industry has several competitive strengths because of its market-based approach,

practicality, and innovative delivery methods. For-profit higher education institutions are not allowed in China, but this policy may change.

In other countries, for-profit institutions tend to focus on the commercially oriented part of the higher education market—providing professional programs, in business, commerce, accounting, and law, for example—where private returns to students are closer to social returns. This still leaves a large role for public tertiary institutions in areas in which social returns exceed private returns, such as research and the humanities, as well in retraining millions of displaced workers from agriculture and industry.

In the future, China may decide to provide “portable” student grants or loans that can be used at any licensed institution of higher education, private or public. It will then be essential that quality monitoring and licensing of private higher education institutions be comparable to that for public institutions. Portable grants and loans make full use of private preferences and decision making; to protect individual and societal benefits, these choices must be based on accurate information about costs and benefits at the institution and department levels (World Bank 2002).

Unlike in the former planned economy, the appropriate role of the government is no longer as planner or sole provider but as the architect of the system, setting the rules, standards, procedures, and institutions to provide some level of management, quality assurance, and accountability for the system (box 10.2). To play this role effectively, the government needs to do the following:

### **Box 10.2 Characteristics of an Effective Legal and Regulatory Framework for Education and Training**

An effective legal and regulatory framework is one that

- caters to student diversity and program flexibility;
- meets the growing demand for skilled labor;
- accommodates lifelong learning and training for adults and the unemployed—new kinds of learners—retraining them with more relevant skills;
- provides quality assurance and quality improvement systems, “top-down” and “bottom-up”;
- facilitates order in the local market by being more enabling and less controlling;
- allows local providers to compete with resident and distance providers;
- offers incentives for private investment and participation;
- promotes national and cross-border transferability of credits and students; and
- facilitates equity, by blending financial subsidies and grants with finance on market-driven terms.

*Source:* Perkinson 2004a.



- *Craft clearer policies on public and private provision of education and training.* Clarity is essential for the benefits of diverse provision to be fully realized while retaining sufficient equity to avoid social polarization and confusion. The growth of private education is both inevitable and desirable, especially at the tertiary level. Enrollment could be expanded considerably if substantial new financing sources were provided and effective quality assurance provided. Elite higher education institutions could be expanded by allowing them to set up subsidiaries in different provinces. (Beijing University, Tsinghua University, and other elite public universities are beginning such initiatives.) Private institutions should also be encouraged to undertake some social responsibilities and to provide diverse and innovative ways to meet society's need for education and training (Tan 2004).
- *Give more incentives and assistance to private education and training.* Excessive government intervention and biased policies should be removed, and appropriate rights, fees, taxation, and financial regulations as well as licensing, monitoring, and evaluation and assessment mechanisms should be put in place to properly recognize and protect the private sector. Many quality assurance and service functions, such as accreditation, certification, evaluation, information, and consulting, can be handled by intermediary organizations (associations, consulting firms, and the like). Although laws and regulations governing private education have been passed, more detailed provisions, procedures, and policies must be formulated if implementation is to be effective.
- *Establish minimum standards for licensing, and provide potential consumers (students, families, and employers) with information to make informed choices.* The first responsibility is being fulfilled as part of the Ministry of Education's higher education reform program and quality assurance activities. The second is less well developed for private institutions but could be integrated into the agenda of the National Information and Career Center for University Students (OECD 2003b).

### *Increasing Equity*

As more and more private provision is allowed, even public schools (mainly tertiary institutions) start to charge tuition, and fiscal responsibility for education is further decentralized, inequality is growing. While some eastern provinces are discussing mandating 12 years of compulsory education, the western region is still struggling to provide 9 years of basic education. In both rural and urban areas, individuals are increasingly paying for education themselves. The government's share of total education expenditure declined from 84.5 percent in 1991 to 62.0 percent in 2003, while the share of tuition and incidental fees rose from 4.4 percent to 18.1 percent (Ministry of Education and National Bureau of Statistics, various years). With rising out-of-pocket expenses on education, children in many poor families may not be able to access postcompulsory education or even complete their compulsory schooling.

The government needs to strengthen its support for poor regions and families. It could do so by providing financial aid to poor regions, families, and students. Such aid could include revenue transfers for education, grants, fellowships, scholarships, work-study programs, education vouchers, tuition reduction and waivers, and special loans. Many of these instruments are already in place in some areas, but poor design or implementation has limited their effectiveness.

The desire for equity and equality of opportunity are the main reasons why the central government plays the leading role in providing primary and secondary schooling. At the tertiary level, equity means more cost-sharing and less direct financing and provision, so that more of the large private returns to tertiary are borne by students. Thus, increases in fees and the substitution of loans for grants are both equitable and helpful in limiting the public cost of tertiary education (Verry 2000).

#### SCHOLARSHIP, GRANT, WORK-STUDY, AND TUITION-WAIVER PROGRAMS

The government introduced a national scholarship program in 1983; by 1986 scholarships had become the major source of financial aid for university students. Because scholarship funds come from the budgets of higher education institutions, institutions have little incentive to award scholarships, however. Moreover, because scholarships are based on merit, not need, the proportion of scholarships awarded to students from upper- and middle-income families is high. Scholarships in China thus do little to help mitigate the financial difficulties of poor students (Shen and Li 2003).

This situation must be corrected. Governments and universities should work together to ensure that both merit-based and need-based full scholarships (covering tuition, fees, and residential costs) are available. The government should also consider extending interest-free periods for poor students and unemployed workers.

In 1993 the central government established “subsidy funds for special needy students.” But this kind of aid is often awarded only in the winter, and every eligible applicant receives a similar amount of money (Y200–Y400), which is often insufficient.

In 2002 the Ministry of Finance and the Ministry of Education established the State Grants Foundation. State grants are awarded to needy undergraduates who excel in formal higher education institutions. Every year about 45,000 students (about 0.6 percent of regular undergraduates in 2004) receive grants. These students are also exempt from tuition.

China also has work-study and tuition-waiver programs.<sup>6</sup> But because of inadequate coverage, small amounts, and a tightening job market that has reduced the number of part-time jobs available for students, the benefits of these financial aid instruments have been significantly curtailed. This situation calls for the government to provide more financial assistance and to effectively implement various financial aid programs. A nationwide assessment and monitoring system is necessary to make the programs truly functional.

## SCHOOL VOUCHERS

Educational voucher programs promote equity, efficient use of resources, and competition for better-quality services. They are the principal mechanism for encouraging school choice. Although they are used in both OECD and developing countries to address equity concerns and promote school choice, there is still much debate about their advantages and disadvantages. Under voucher programs, parents are allowed to choose schools, creating intense incentives for schools to increase enrollment, and school management is granted autonomy to respond to demand. Gauri and Vawda (2003) conclude that vouchers for basic education in developing countries can enhance outcomes when they are limited to modest numbers of poor students in urban settings, particularly in conjunction with existing private schools with surplus capacity. The success of more ambitious voucher programs depends on the institutional infrastructure, which represents a challenge in industrial and developing countries alike. The high level of management capacity and institutional infrastructure required makes implementation of such programs more difficult.

Interdistrict school choice has helped encourage competition among district public schools. In the United States, for instance, parents choose public school districts by choosing the location of their residence, as property taxes are the main source of funding for public schools in each district. Many researchers have found that increasing school choice simultaneously raises educational achievement and lowers costs (Greene 2000). Evidence from Canada, where 92 percent of the population enjoys publicly funded school choices, presents a compelling case for increasing school choices (Robson and Hepburn 2002).<sup>7</sup>

In China vouchers could be widely used for formal education; vocational education; and training for farmers, rural migrants, urban workers, and people laid off from former SOEs. Through a voucher program, limited training funds or subsidies would be effectively used for training workers and upgrading skills.

Although this system has not been applied widely in China, some programs have been piloted at the local level, and vouchers are gradually being expanded to certain education segments on a national scale. One successful example is the program in Zhejiang Province (box 10.3).

## TAX SUBSIDIES

Tax subsidies are one way of encouraging learning through government policy intervention. They are especially important for continuous and adult learning. Tax subsidies can be provided in several ways, including granting tax credits after employees successfully complete an officially recognized vocational training program or allowing companies to deduct the cost of training of their employees from their taxable income.<sup>8</sup>

The problem with a tax subsidy is that it does not help people in the lowest (tax-free) income class. Because this category usually includes people with the lowest education level, it is advisable to maintain or broaden direct government-supported training or retraining programs. For this purpose, it is important to allocate a larger

### **Box 10.3 Expanding Enrollment in Zhejiang Province through Education Vouchers**

To introduce competition into public schools and give students more choices, in 2001 Changxin County (with a population of about 620,000 people), in Zhejiang Province, implemented a voucher system. The government distributed the vouchers (worth Y200–Y500) to each student; parents can choose any school for their children, whether or not it is in their school district. In the second half of 2001 Changxin County also began to issue vouchers, valued at Y500 each, to students studying at private schools at the compulsory level.

To ease the shortage of skilled workers, the county also implemented the voucher system in vocational schools, providing vouchers worth Y300 per student. This initiative helped increase enrollments at vocational schools from 1,403 in 2000 to 3,306 in 2002.

In 2002 Changxin County began issuing vouchers (worth Y200–Y300) for poor students. As a result, not a single student in the county was denied compulsory education because of poverty. The county's voucher system was also implemented for senior-secondary school. By the end of 2002, more than 5,000 students had benefited from the vouchers, which totaled Y2.2 million.

Greatly encouraged by the success of Changxin County, the Private Education Research Center of Zhejiang University and the China Education Pioneer Net jointly launched the Pioneer Education Voucher (worth Y500 each) to support students enrolled in private tertiary institutions. This program—the first education voucher program in China sponsored by the private sector—applied to all private higher education institutions nationwide. In 2005 about 100,000 students from Henan, Jiangsu, Shangdong, Zhejiang, and other provinces received this voucher.

In 2005 the Zhejiang provincial government decided to implement the education voucher system for rural compulsory education throughout the province. About 400,000 rural poor students received vouchers for compulsory education. Students from rural families with annual per capita income below Y1,500 or from township families with annual per capita disposable income below Y3,000, as well as other types of poor students, are eligible for the voucher.

*Source:* Xinhua Net 2002; EP-China Net 2005; Zhejiang News Net 2005.

portion of government funds to training support to the unemployed and unskilled workers threatened by unemployment (Polonyi 1998).

#### STUDENT LOANS

A major increase in aggregate financial support is needed to allow tertiary institutions to sustain their current enrollments and meet the demands for quality enhancement. If the number of students is to increase, as projected, even more funding will be required.

In addition to an increase in state budget allocations and tuition and fees, an expanded student loan scheme should be developed to help students and their families, especially poor ones, meet the high costs of tertiary education. The very significant increases in tuition required to fund the greatly expanded higher education system can be borne by students and their families only if a much more flexible student loan scheme is created (OECD 2003a).

Student loans are also needed to expand and modernize China's vocational education and training systems. Students from all socioeconomic levels who want to undertake formal, informal, or nonformal vocational programs should be able to access student financing facilities.

The need for more innovative financing solutions is arguably greater for vocational education and training than for traditional academic education. Almost 90 percent of public education funding in China is provided by local governments, but regional differences in education spending benefit the eastern provinces. A 2003 market survey sponsored by the International Finance Corporation and the Swedish government estimated that public tertiary institutions received more than 40 percent of their income from nonstate sources (SweDevelop Report 2003). Education financing from state sources for vocational education and training is unclear because of the lack of reliable data, but the share of total costs borne by students and nonstate sources is likely to be substantially higher than at regular secondary and tertiary institutions.

An initial student loan scheme was introduced in 1986 and expanded nationwide in 1987. But the average loan amount was small (Y300 a year) and the repayment period very short (the loan had to be paid back before graduation). This kind of loan did not help students meet the rapidly rising costs of higher education.

In 2000 the government introduced the General-Commercial Student Loans Scheme, which applied to all postsecondary students and their parents or guardians. The target group was all students 18 and older enrolled in higher education institutions (both public and private). The same year, the government started a second loan scheme. This scheme—the Government-Subsidized Student Loan Scheme—holds students alone responsible for paying back their loans, releasing the education institution from responsibility for repaying defaulted loans and interests.

By the end of 2002, banks had approved about Y4.5 billion for 526,450 applicants. About 39 percent of applicants received loans, including just 29 percent of poor students (Ziderman 2004). Moreover, about half of eligible students did not even submit applications for loans, because they did not want to disclose their economic status, they were in debt, or their institutions did not participate in the loan scheme. Institutions eligible for the loan scheme are limited to regular full-time higher education institutions, excluding private and adult institutions.

A loan of Y2,135 a year (the average amount) barely covers tuition and living costs. Moreover, in 2002 the average loan size at central institutions was 70 percent higher than at local institutions (Shen 2004). This disadvantages needy students from remote and poor areas, who are concentrated at local institutions,

which have fewer resources. (Local living costs are slightly lower in absolute terms, but they are still very high relative to the family incomes of the needy students.)

The Government-Subsidized Student Loan Scheme increased access to higher education institutions for low-income students and prevented drop out, but the program still has many problems (Shen and Li 2003):

- Although the scheme is meant for needy students, banks prefer to grant loans to students with the best ability to repay the loan on time.
- Precise criteria do not exist for defining a “poor” student, making it difficult for banks to decide whether to grant a loan.
- Inequities exist at the individual, provincial, and institutional levels.
- Cancellation of dead loans is complicated and time-consuming.
- The default rate (estimated at 10–20 percent) is high—and the shorter the repayment period, the heavier the risk of defaulting on the loan.

The major reasons for the high default rate include the short repayment period, the difficulty students have finding jobs after graduation, the lack of a personal credit system, and the lack of effective enforcement. Almost one-third of university graduates cannot find jobs upon graduation, and the repayment burden for students who do—estimated at 36 percent of the average annual income of a borrower in the first year after graduation, 32 percent in the second, 28 percent in the third, and 25 percent in the fourth—is very heavy, increasing the likelihood of default (Shen 2004). The main sanction for a student who defaults is to publish his or her name, identification card number, and university in the media. Resorting to legal action is only a recent phenomenon and is very costly for banks. These deficiencies seriously hinder expansion of the government-subsidized student loan system.

Analysis of five Asian case studies on student loans and international experience identified characteristics of “good-practice” loan schemes (box 10.4). These characteristics might be useful for Chinese policy makers in designing a loan scheme.

### *Creating a Market for Financing Education and Training*

To enhance the ability to finance education and training, it is important to develop a multifaceted financial market. By themselves, private institutions cannot absorb all of the default risk inherent in typical student lending. The government must leverage private sector resources to make education and training more accessible and affordable and to encourage employers, individuals, and the self-employed to view them as priorities. It could do so by developing a new asset class in local financial markets, in which blocks of student loans could be resold in secondary markets once satisfactory student loan portfolio experience and performance have been established. As China’s financial market for education and training matures, it is only a matter of time before large education and training institutions issue bonds to raise capital for their future financing requirements, as is common in the United States and some other countries.

### Box 10.4 Characteristics of Good Student Loan Schemes

Cases studies of student loan programs in China, Hong Kong (China), the Republic of Korea, the Philippines, and Thailand, as well as experience in other countries, identified 20 characteristics of a good loan scheme. This work suggests that a good loan scheme should

1. be sufficiently large in coverage to achieve national impact;
2. have clearly defined objectives;
3. consider policy alternatives to the loan scheme;
4. analyze any planned departure from a mortgage-type loan scheme;
5. give preference to unitary schemes;
6. ensure governmental funding is sufficient to provide sustainable loan capital;
7. use nongovernment funds wherever possible to provide loan capital;
8. appraise the financial viability of loan schemes before implementation, and monitor it continually;
9. implement appropriate decentralization of administrative roles;
10. ensure that individual loans are sufficient to meet student needs;
11. justify subsidized loans;
12. respect equity across income groups;
13. provide grants and loans as part of a single policy, and administer them together;
14. develop appropriate and effective eligibility and screening criteria;
15. develop proactive targeting mechanisms;
16. outsource loan repayment to collection agencies whenever possible, usually through commercial banks;
17. avoid heavy repayment burdens to reduce default;
18. penalize repayment evasion to reduce default;
19. develop a solid information base, and employ technical experts for loan evaluation and appraisal; and
20. learn from international experience, and avoid blindly copying foreign institutional models without taking into account local realities.

*Source:* Ziderman 2004.

## Conclusion

Expanded education and training are becoming increasingly important for development and international competitiveness. To meet this challenge, China needs to significantly expand the size and improve the quality of its education and training system. It also needs to develop a broad system of lifelong learning. Doing so will require a new definition of the role of government, one in which

the government is the architect and manager of a system with multiple providers and multiple pathways to education and training.

The government must allocate more resources to public education, particularly to ensure that free compulsory education is available in all provinces. It must also improve the allocation and management of resources and increase the efficiency of public and private education. The government needs to improve cofinancing mechanisms—by raising tuition for tertiary public education, strengthening the student loan market, and encouraging greater private provision of education and training, for example. It should give more attention to equity issues and develop appropriate mechanisms, such as scholarships and vouchers, to ensure that capable students from low-income families have the opportunity to acquire more education and skills.

## Notes

This chapter is based on the authors' 2007 book, *Enhancing China's Competitiveness through Lifelong Learning*, published by the World Bank.

1. Under this policy, fees were converted into taxes, corvée labor and illegally imposed fees were abolished, and villagers were given the right to vote on investment projects to which they contribute.
2. Chinese government statisticians revised their estimate of the size of China's economy upward in 2005. Using data from a 2004 economic census, statisticians from the National Bureau of Statistics uncovered about \$285 billion in previously unreported GDP, 16.8 percent more than previously thought. According to the new figures, in 2004 the service sector's share of GDP rose from 31.9 percent to 40.7 percent, agriculture fell from 15.2 percent to 13.1 percent, and industry dropped from 52.9 percent to 46.2 percent. The new figures reveal that services play a larger role in the overall economy than previous data had indicated.
3. For more on the potential of information and communication technologies to improve productivity and quality, see Dahlman, Zeng, and Wang (2007).
4. This figure is overstated because it includes investments from public school-affiliated enterprises and other sources, which should probably be counted as public funding.
5. Calculation is based on data from the *China Educational Statistics Yearbook* (Ministry of Education and National Bureau of Statistics 2004).
6. Students can earn Y1.5–Y2.0 an hour through work-study; average earnings are Y80–Y150 a month (Shen and Li 2003).
7. On average, Canadian students outperform their U.S. counterparts; recent work has shown that their strong performance owes much to better achievement among students from less-advantaged backgrounds. Among the key differences between U.S. and Canadian publicly funded education is that a number of Canadian provinces provide public funding to qualifying private, independent schools. Historically, these funds have taken the form of direct per student grants, akin to vouchers, although the province of Ontario is currently implementing a refundable tax credit for parents whose children



attend independent schools. International comparisons show that Canadian provinces that provide public funding to private schools tend to have both higher average achievement scores and better scores for less-advantaged students.

8. For a discussion of alternative financing approaches, see Polonyi (1998).

## References

- Böhm, A., D. Davis, D. Meares, and D. Pearce. 2002. "Global Student Mobility 2025: Forecasts of the Global Demand for International Higher Education." IDP Education, Canberra, Australia.
- CASS (Chinese Academy of Social Sciences). 2006. "China Social Situation Analysis and Prediction 2005–06." *CASS Bulletin*, January, Beijing.
- China Daily. 2005. "Student Loans System Needs Improving." December, Beijing.
- China Development Research Foundation and UNDP (United Nations Development Programme). 2005. *China Human Development Report 2005*. Beijing and New York: UNDP.
- China National Bureau of Statistics. Various years. *China Educational Finance Statistical Yearbook*. Beijing.
- Chinanews.com. 2006. "State Council Decision on Deepening the Rural Compulsory Education Financing Security Mechanism." February 8.
- Cooper, S. 2004. "China: The Two-Edged Dynamo." *Viewpoint*, July.
- Dahlman, C., Douglas Zhihua Zeng, and Shuilin Wang. 2007. *Enhancing China's Competitiveness through Lifelong Learning*. World Bank Institute, Washington, DC.
- EP-China Net. 2005. "Pioneer Education Voucher: Changing the Fate of Education." [www.ep-china.net](http://www.ep-china.net).
- Fock, Achim, and Christine Wang. 2005. "Extending Public Finance to Rural China." Background paper for the international seminar on "Public Finance for Rural Areas," organized by the Ministry of Finance and the World Bank, Beijing, October.
- Gauri, Varun, and Ayesha Vawda. 2003. "Vouchers for Basic Education in Developing Countries: A Principal-Agent Perspective." World Bank Policy Research Working Paper 3005, Washington, DC.
- Greene, J. P. 2000. "A Survey of Results from Voucher Experiments: Where We Are and What We Know." Civic Report 11, Manhattan Institute for Policy Research, New York.
- Hu, Angang. 2004. "Government Role and Functions in Building a Lifelong Learning Society." Background study for the World Bank.
- IADB (Inter-American Development Bank). 2006. *Education, Science and Technology in Latin America and the Caribbean: A Statistical Compendium of Indicators*. Washington, DC.
- IMD (International Institute for Management Development). 2005. *World Competitiveness Yearbook 2005*. Lausanne, Switzerland: IMD.
- Jia, Kang, and W. Guo, eds. 2002. *A Study on Public Education Spending and Management*. [in Chinese] Beijing: China Finance Economy Publishing House.
- Kalliarekos, Kosmo. 2004. "Higher Education in China: Lessons from the U.S. Higher Education Experience for Developing a System of Lifelong Learning." Paper presented at the International Forum on Lifelong Learning, Shanghai, December 15–17.

- Ministry of Education. 2005. *National Educational Development Statistics Bulletin*, April. Beijing.
- Ministry of Education, and National Bureau of Statistics. Various years. *China Educational Statistics Yearbook*. Beijing: People's Education Press.
- National Bureau of Statistics, and Ministry of Labor and Social Security of China. 2005. *China Labor Statistical Yearbook*. Beijing: China Statistics Press.
- OECD (Organisation for Co-operation and Development). 2003a. "Cross-Border Post-Secondary Education in the Asia-Pacific Region." *Proceedings of the OECD/Norway Forum on Trade in Educational Services*, Trondheim, November.
- . 2003b. *Education at a Glance 2003*. Paris.
- . 2005a. *Education at a Glance 2005*. Paris.
- . 2005b. "E-Learning in Tertiary Education: Where Do We Stand?" Center for Educational Research and Innovation, Paris.
- . 2006. "Challenges for China's Public Spending: Towards Greater Effectiveness and Equity." Paris.
- Perkinson, R. 2004a. "Positive Regulatory Environments for Private Sector Participation." Paper presented at the International Forum on Lifelong Learning, Shanghai, December 15–17.
- . 2004b. "Snapshot of the Global Education Market." Paper presented at the International Forum on Lifelong Learning, Shanghai, December 15–17.
- Polonyi, I. 1998. "Alternative Approaches to Financing Lifelong Learning (Country Report–Hungary)." Coordination Office for Higher Education, Budapest.
- Robson, W., and C. Hepburn. 2002. "Learning from Success: What Americans Can Learn from School Choice in Canada." *School Choice Issues in Depth* 1 (2). Milton & Rose D. Friedman Foundation, Indianapolis, IN, and the Fraser Institute, Vancouver.
- Shen, Hong. 2004. "The Most Urgent Problem in Student Loan Scheme in China: Repayment." *Harvard China Review* 5 (1).
- Shen, Hong, and W. Li. 2003. "A Review of the Student Loans Scheme in China." United Nations Educational, Scientific and Cultural Organization (UNESCO), Bangkok.
- SweDevelop. 2003. "A Market Study of *Minban* Higher Education in China." Report prepared for the International Finance Corporation.
- Tan, Songhua. 2004. "The Development Pattern and Trends of China's Private Education." Paper presented at the "International Forum on Lifelong Learning," Shanghai, December 15–17.
- Tsang, Mun C. 2002. "Intergovernmental Grants and the Financing of Compulsory Education in China." Teachers College, Columbia University, New York.
- Verry, Don. 2000. "Financial Resources for Lifelong Learning: Evidence and Issues." Background paper prepared for the international conference "Lifelong Learning as an Affordable Investment," organized by the OECD and Human Resources Development Canada, December 6–8.
- Wang, Yidan. 2004. *Governance of Basic Education: Service Provision and Quality Assurance in China*. World Bank Institute, Washington, DC.
- Wen, Jiabao. 2005a. "Greatly Promoting Vocational Education with Chinese Characteristics." Speech given at the National Vocational Education Conference, Beijing, November 7.

- . 2005b. Speech given during the presentation of the Fifth National Higher Education Teaching Awards, Beijing, October 26.
- World Bank. 2002. *Lifelong Learning in the Global Knowledge Economy: Challenges for Developing Countries*. Human Development Network Education Group (HDNED), Washington, DC.
- . 2005. "Policy Note on Employment of Migrants." East Asia and Pacific Region, Human Development Division, Washington, DC.
- Xinhua Net. 2002. "Creating a Fair Education Input Mechanism: Changxin Initiated the First Education Voucher System in China." December 29. <http://www.zj.xinhua.org/old/200212/29/100024168.htm>.
- Zhejiang News Net. 2005. "Four Hundred Thousand Poor Students Get Meals for Free: Zhejiang Push Rural Education Development." <http://www.zj.xinhua.org/old/200212/29/100024168.htm>.
- Ziderman, Adrian. 2004. *Policy Options for Student Loan Schemes: Lessons from Five Asian Case Studies*. United Nations Educational, Scientific and Cultural Organization (UNESCO), Bangkok.

# Strengthening China's Technological Capability

11

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In less than 20 years, China mastered a broad range of codified industrial technologies to become the world's leading manufacturer of mass-produced goods. By 2006 it had become the fourth-largest economy in the world and the third-largest trading nation.

China is now aiming higher, preparing to compete with the industrial front-runners on the basis of industrial production capability in more complex products and services as well as on the basis of industrial innovation and design in a number of fields. To telescope the time needed to achieve this objective, China is increasing its outlays on research and development (R&D) and seeking to build an innovation system that will deliver quick results. China's spending on R&D rose from 1.1 percent of GDP in 2000 to 1.3 percent of GDP in 2005. In absolute terms the growth was even more impressive, because national product increased by an average annual rate of more than 9 percent during this period. On a purchasing power parity basis, China's research outlay was among the world's highest, far greater than that of Brazil, India, or Mexico (UNCTAD 2005).<sup>1</sup>

With competitiveness keyed ever more closely to innovation, a progressive upgrading of technology is viewed as a necessity by firms in many industries. In China's case, accelerating the development of technology is acquiring urgency because returns on existing product lines are being squeezed by rising costs and a massive expansion in industrial capacity, both in China and worldwide (Ma, Nguyen, and Xu 2006).<sup>2</sup> By strengthening technological capabilities, Chinese firms can reduce their dependency on foreign sources and increase their profit margins. Investing more in technology will also enable China to progressively reduce the energy and resource coefficients of its GDP and offset an anticipated trend increase in the relative prices of these commodities.<sup>3</sup>

While the advantages of assimilating, applying, incrementally refining, and contributing to the development of ever more complex technologies are obvious, several issues remain to be resolved. Two questions are particularly important for China. First, what is the feasible pace of technology development and, in particular, the scope for pushing the technology frontier outward in a few important scientific

fields with the potential for significant industrial spillovers? Second, at China's current level of development, what is the mix of policy initiatives that will cost-effectively deliver the desired rate of progress?

## Acquiring Manufacturing Capabilities

To begin answering these questions, one must look first at China's current industrial system and the underlying technological capability. By all accounts, China's industrial base is exceptionally broad. This is in part the result of the industrial strategy initiated in the 1950s, which aimed at achieving a measure of self-sufficiency in a wide range of capital and consumer goods. Guided by this strategy, China built up a geographically dispersed base of heavy industries and, in the 1970s, began investing substantially in manufacturing capacity for light consumer items, farm equipment, and electronics in rural and urban areas. Although during the 1980s, China lagged behind some of its industrializing neighbors, several decades of investment helped create a diversified industrial system, a large pool of engineering and production line skills, and a fund of "learning" from building, running, and maintaining manufacturing facilities by drawing mainly on domestic resources only, as Japan and the Republic of Korea did earlier.

Since 1980, when China's "open door" policy began integrating China with the global economy, the country's capabilities have been extensively augmented by importing plant and equipment embodying new technologies; by licensing industrial technology; by attracting foreign direct investment (FDI); through the circulation of knowledge workers, mainly Chinese trained abroad, who have become an important conduit for technology transfer; and more recently, through the help of domestic R&D. In its effort to strengthen industry, China has been aided by two closely related trends. First, because of the maturing of certain technologies and the parallel growth of consumer markets, many manufactures have become standardized commodities. Second, the very process of "commodification" has been supported by the codifying of the associated technologies, some embedded in equipment, others available from suppliers. These changes have made it easier to absorb new production methods and quickly achieve high levels of efficiency. These developments have also made the production of mass-market items increasingly mobile globally.

China has benefited more from these trends than most other countries because it was better prepared to assimilate manufacturing technology, for a number of reasons. These included the advantages of a potentially huge domestic market; the early—and successful—penetration of foreign markets in light manufactures, both of which encouraged investment in capacity; and the rapid increase in the number of workers with secondary and tertiary education. Export-led growth was greatly aided by the flow of FDI, as firms in Hong Kong (China) and other neighboring economies shifted production facilities to take advantage of China's low-wage industrial workforce and establish a foothold in the Chinese market (Berger and Lester 1997). As a result of the transfer of hard and soft technologies, aided by the

growth of human capital, industrial capability has grown by leaps and bounds, facilitated by the elastic supply of rural workers to China's burgeoning industrial cities in strategic locations along the east coast. The buildup has been supported by rising investment in urban, transport, and energy infrastructure, which has helped sustain China's cost advantage, making it the workshop of the world for a range of mass-produced goods.

To what extent is this remarkable achievement related to technological capability and innovation? China has clearly demonstrated a knack for absorbing and harnessing codified technologies far in excess of other industrializing countries. It has also invested heavily in fixed plant, which has lowered the average age of equipment to 7 years (compared with 17 years in the United States) (Boston Consulting Group 2006). At the same time, the number of science and technology workers rose sharply, from 755,000 in 1998 to 1.2 million in 2004 (Shang 2005).

The speed with which China has imitated technologies and mastered production skills has been impressive. However, the degree of innovativeness has been limited. This is most clearly apparent from the composition of China's major manufactured exports and the nature of the commercial innovations associated with China's leading companies.

Computers and peripherals, storage devices, electronic components, other office equipment, consumer electronics, textiles, toys, and footwear make up a large share of China's major exports (table 11.1). By 2005 China was the world's largest exporter of information and communication technology-based products, and almost one-third of its exports were classified as "high-tech." Although the domestic value added in the mature electronic products subsector (which includes cathode ray tube—televisions and refrigerators) is rising steadily as more components are sourced domestically, indigenous technology inputs remain relatively insignificant. The manufacture of computers and office equipment still largely involves the assembly of imported components or components produced locally based on foreign technologies.

Early innovations by companies such as Stone, Founders, and Lenovo enabled computers to use Chinese characters through additional hardware, such as add-on cards or printers, and word-processing software (Lu and Lazonick 2001; Lazonick 2004).<sup>4</sup> Huawei and ZTE—arguably the most innovative of China's firms—are now able to match their foreign competitors in the optical networking, midrange router market, and second-generation telecoms market, and they are trying to develop homegrown third-generation technologies (Sigurdson 2005; Business China 2006). But although some companies have substantial research programs, none has yet to emerge as a leader in its focal product group.

Chinese firms are active in the fields of biotechnology, pharmaceuticals, alternative energy sources, and nanotechnology.<sup>5</sup> They are registering patents, but so far the development of new commercial technologies remains at an early stage. Although there has been a surge in the level of patent applications in China (to more than 130,000 in 2004), the bulk of patents registered are in electronics,

**Table 11.1 China's Top 25 Exports, 2004**

<i>Description</i>	<i>Harmonized code, 1988–92</i>	<i>Percentage of China's total exports</i>
Parts and accessories of automatic data processing machines	847330	4.0
Digital automatic data processing machines	847120	4.0
Input or output units	847192	4.2
Transmission apparatus	852520	3.1
Parts for radio, TV transmission, and receiver equipment not specified elsewhere	852990	2.3
Monolithic integrated circuits, digital	854211	1.9
Computer data storage units	847193	1.5
Video recording or reproduction apparatus, except magnetic tape	852190	1.5
Optical devices, appliances	901380	1.4
Video recording or reproducing apparatus, magnetic tape	852110	1.2
Color television receivers, monitors, and projectors	852810	1.2
Cargo containers	860900	1.1
Static converters not specified elsewhere	850440	0.9
Parts and accessories of recorders, except cartridges	852290	0.9
Oils, petroleum, bituminous, and distillates, except crude	271000	0.9
Coke, semicoke of coal, ignite, peat, and retort carbon	270400	0.9
Printed circuits	853400	0.9
Footwear, rubber soles, plastics, and uppers of leathers not specified elsewhere	640399	0.9
Automatic data processing machines and units not specified elsewhere	847199	0.9
Bituminous coal, not agglomerated	270112	0.8
Footwear, other soles, and uppers of rubber or plastics not specified elsewhere	640299	0.8
Trunks, suitcases, etc. with plastic or textile outer surface	420212	0.8
Digital computer central processing units, with some storage, input, and output	847191	0.8
Sound-reproducing and nonrecording apparatus not specified elsewhere	851999	0.7
Pullovers, cardigans, etc. made of synthetic fiber, knits	611030	0.7
Total		38.4

*Source:* UN COMTRADE data obtained through WITS system.

information technology, and telecoms (table 11.2), and almost half were filed by nonresidents. Of the almost 50,000 patents granted in China, nearly two-thirds were to nonresidents (WIPO 2006). China ranked fourth in the world in 2004 patents granted by the national agency, after the United States, Japan, and the European patent office (WIPO 2006).

These statistics need to be treated with caution, because patenting in a number of fields is to a substantial degree motivated by the desire of firms to accumulate large patent portfolios, often of limited value, to use as bargaining chips in dealing with their competitors (Ziedonis and Hall 2001). Newer firms sometimes register patents as a signaling device to establish their viability (and attract funding), even if the “new” knowledge content and innovation are minor (Hall 2006a).<sup>6</sup> The explosion of patents in the United States in the 1980s occurred partly for these reasons. The more recent rates of patenting in the life sciences and in software represent changing practices among U.S. academic scientists and not necessarily a significant broadening of technological possibilities (Graham and Mowery 2004; Branstetter and Ogura 2005; Hall 2005, 2006b; Hunt 2006). Sanyal and Jaffe (2004) find that the increase in patents can also be traced to a lowering of examination standards in the United States and overseas. The increase in patent litigation

**Table 11.2 Number of Patents Filed by and Granted to Chinese Companies**

<i>Company</i>	<i>Sector</i>	<i>Number of domestic patents<sup>a</sup></i>	<i>Number of international patents granted</i>
Huawei	Telecommunications equipment	4,618	78
Haier	Electronics	2,790	32
ZTE	Telecommunications equipment	1,865	8
Lenovo	Information technology	1,665	0
Bao Steel	Steel	403	0
Tsinghua Tongfang	Information technology	324	1
VIMICRO	Information technology	316	0
FAW	Automobile	253	0
Chery	Automobile	231	0
Foundertech	Information technology	146	0
SMIC	Information technology	157	0
CDTT	Telecommunications equipment	132	0
Langchao	Information technology	115	1
TCL	Electronics	86	6

Source: Ma, Nguyen, and Xu 2006.

a. Includes patents granted and patent applications filed and released (published) by the government patent office.



reflects changes in the judicial system that make it easier to assert or defend intellectual property.<sup>7</sup>

Chinese companies have been unusually swift in mastering production technologies by leveraging latent capacities nurtured before 1980. However, China's technology capability is comparable to that of other large middle-income countries. China is climbing the technology ladder by absorbing technology from more advanced countries; by all accounts, it is doing better than its rivals in Southeast Asia. Can the time spent in catching up be shortened significantly? If so, how and at what cost?

## International Experience with Technological Change

Empirical evidence indicates that the returns from R&D investments can be handsome. Indeed, private returns can average 28 percent, while social returns can be as high as 90–100 percent. The elasticities of total factor productivity with respect to R&D range from 0.03 to 0.38, with higher rates in the United States than in Europe or Japan (Wieser 2005).

Whether and how China can attain these outcomes is an open question, which can be partially illuminated by examining the experience of a few countries.<sup>8</sup> Comparators can be divided into three groups: large industrial countries that are innovative and leading exporters of complex manufactures (such as Germany, Japan, and the United States); smaller industrial economies that have attained notable levels of innovation in key industries (including Finland, Israel, the Republic of Korea, Sweden, and Taiwan [China]); and large industrializing countries that have become globally competitive producers of a limited range of manufactures and services through the acquisition of specific technological expertise (such as Brazil and India).

### *Lessons from Large, Leading Exporting Countries*

Several lessons of relevance to China today can be drawn from the experience of these countries. The breadth and technological eminence of Germany, Japan, and the United States have been built up over a century or more through the combined efforts and investments of the business sector, the government, and a variety of research and teaching institutions (Mazzoleni 2005). The business sector—in particular, large “anchor” firms—has increasingly taken the lead through investment in research and even greater spending on development.<sup>9</sup> However, in the United States and to a lesser extent Japan and Germany, the government's technology and education policies, through a variety of programs, many undertaken collaboratively with the private sector, have been critical for technology development; at varying times and to varying degrees, governments have taken the lead in pushing technological development, both generally and in specific areas. The success of corporate and government efforts has depended on the supply of trained and talented people from and the research conducted by universities and

research centers (Mowery 2005). The creation of intermediary institutions—ranging from regional business networks and Fraunhofer Institutes (in Germany) to providers of risk capital, such as the Small Business Innovation Research program (in the United States)—has helped bridge the information gap between universities and businesses. In each of these three countries, tertiary-level institutions for training, research, and technological intermediation carry the imprint of government policy.

In the context of these three quite different countries, the aspects that arguably deserve emphasis include

- the strong impetus for innovation and the institutional framework provided by national and subnational governments, backed by direct funding of research, fiscal and other incentives, the creation of intermediary organizations, and the procurement of products or services;<sup>10</sup>
- the lead taken by major companies (such as Novartis, Merck, Sun, Philips, and Google) in developing technologies and, in the process, mobilizing the resources of other firms, and the talent in universities;<sup>11</sup>
- the broad scope of technological development and the reinforcement it provided over time—that is, advances in some sectors pulled advances in others, through what Hirschman (1958) labeled “unbalanced growth.” This is important because an effective innovation system can require approximately equal performance from all its key parts, something that has been captured by the O-ring theory (Kremer 1993). Moreover, as increasing numbers of innovations are at the intersection of several disciplines, technological capability across subsectors and collaboration across industrial boundaries and among firms able to pool specific expertise is becoming the key driver of technological change. Technological diversification increases patenting by firms and their R&D spending while reducing the risks from specialization (Garcia-Vega 2006). In many fields, companies are finding that innovations in hardware are insufficient without parallel innovation in associated processes and services. Often—as in the case of Dell, General Electric, IBM, and other companies—services drive the success of products and are the main sources of profit;
- financial instruments and institutions that permitted the entry of innovative new firms and the growth of dynamic mid-size ones;
- the generation of expertise, which underpins broad technological advance, and the support of such expertise with research of comparable scope (a relatively small number of universities in key urban centers have provided the foundations on which this dynamic technological capability has been built); and
- the creation, to varying degrees, of conditions promoting openness to ideas, heterogeneity among participants conducting research (increasingly in teams), and scope for autonomous action; competition among firms, universities, and research entities; and urban knowledge networks (“wikicapital”) (see Yusuf 2007).

These features were most conspicuous in the United States, which has led in terms of innovativeness. However, in all three countries, the maturing of broad technological capability has taken close to a century, and it is not apparent that the pace was constrained by expenditures on research or technology development.

### *Lessons from Late-Starting Economies*

Late-starting economies offer another perspective on technological capability that is largely consistent with the conditions described above. Brazil, Finland, India, Israel, the Republic of Korea, and Taiwan (China) are now ranking members of the rising technological elite. Their efforts to build an indigenous innovation system began gathering momentum only in the 1970s and the 1980s (Roos, Fernstrom, and Gupta 2005). In the majority of cases, governments took the initiative in creating tertiary-level teaching institutions and axial research institutes. The Korea Advanced Institute of Science and Technology (KAIST), for example, created in 1981 in the Republic of Korea, and the Industrial Technology Research Institute (ITRI), created in 1973 in Taiwan (China), contributed significantly to the strengthening of the technology base. Their efforts were complemented by some expansion in tertiary-level enrollment, although research at universities, basic or applied, initially received little attention (as was the case in Japan and to a lesser extent Germany). Many of the early efforts were directed toward assimilating foreign technologies. Business firms, whether private or public, took the lead in Brazil, Finland, India, the Republic of Korea, and Taiwan (China); in Israel, the state, especially defense agencies, played a larger role, as did foreign high-tech firms, which tapped the supply of local skills starting in the 1990s.

A few major firms dominated technology development in these countries. In the Republic of Korea, corporations such as Hyundai and Samsung began the shift from technology assimilation to new product development and the quest for systematic innovation. Nokia in Finland; TSMC, Hon Hai Precision, and Acer in Taiwan (China); Embraer and Embraco and some of the agrobusinesses in Brazil all increased their spending on technology at this time, in response to international competitive pressures reinforced by government incentives for R&D. Engagement with foreign multinationals, technology transfer through imports, and global exporting activities contributed to technology development, albeit less in Brazil and India than elsewhere.

Since the start of the new millennium, governments in these countries and the OECD have begun placing greater emphasis on the contribution of technology to industrial competitiveness and growth. Governments are committing more resources—public as well as private—to R&D, and they are trying to position universities to support these initiatives by improving the quality of the education they provide, conducting more research, and developing and commercializing technologies through linkages with businesses.<sup>12</sup> Behind these initiatives is a growing recognition that a broadening of technological capability through more and better basic research and more ambitious programs for developing technologies is vital for

growth. For countries seeking steady gains in export performance, diversifying the product mix and increasing the share of higher-quality items that command premium prices while exiting from product lines where returns are being squeezed is the strategy promising the best returns (Hummels and Klenow 2005).

One measure of the development of technological capability in these countries and on the potential for diversification is provided by the statistics for patents registered in the United States between 2001 and 2005. Like articles in refereed scientific journals, patents are only a partial indicator of scientific prowess, because many patents are never used for any purpose (just as a high fraction of scientific papers are never cited or used to advance technology). Patents are also registered by companies for purposes of cross-licensing and defending against lawsuits. Although such factors limit the usefulness of patent data, the data nonetheless convey a sense of the scale of technology development and the areas in which it is most intense.

By the end of 2006, China ranked 24th in the world in the number of total patents granted by the United States Patent and Trademark Office (USPTO), with 3,178 patents. For the five years ending in 2006, it ranked 20th in the world, with 2,053 patents. While these scores represent an increase over 2001, when China ranked 24th in the world, patents from China are only now beginning to make their presence felt.

What is most striking from the USPTO data is the narrow focus of patenting in the sample of countries reviewed relative to the United States and Japan (tables 11.3 and 11.4). For instance, the top 10 patent classes account for 39 percent of U.S. patents granted to China but just 21 percent of patents granted to U.S. firms. The main fields of patent dominance (life sciences and semiconductors for the United States, electronic components for Japan) account for much less than 10 percent of all patents in these countries. By comparison, for Finland, the Republic of Korea, and Taiwan (China), electronics or telecommunications account for 30–40 percent of all patents. In addition, a handful of firms in each of these economies accounts for

**Table 11.3 Top 10 Patent Classes as a Percentage of All Patents in Selected Economies, 2001–05**

<i>Economy</i>	<i>Percentage of total patents in economy</i>
Finland	43.3
Korea, Rep. of	40.0
China	38.5
Taiwan (China)	37.5
Brazil	28.3
Japan	25.6
United States	20.7

Source: U.S. Patent and Trademark Office ([www.uspto.gov/](http://www.uspto.gov/)).

**Table 11.4 Top 10 Patent Classes by Residents of Selected Economies, 2001–05**

<i>Country/patent category</i>	<i>Patent class</i>	<i>Number of patents granted</i>	<i>Percentage of patent class</i>
<i>Brazil</i>			
Refrigeration	62	30	5.8
Drug, bio-affecting, and body-treating compositions (includes class 514)	424	19	3.7
Pumps	417	18	3.5
Wells (shafts or deep borings in the earth, for oil and gas, for example)	166	13	2.5
Organic compounds (includes classes 532–570)	532	13	2.5
Fluid handling	137	12	2.3
Receptacles	220	11	2.1
Surgery (medicators and receptors)	604	11	2.1
Joints and connections	403	10	1.9
Chemistry: molecular biology and microbiology	435	10	1.9
Total			28.3
<i>China</i>			
Electrical connectors	439	269	17.0
Drug, bio-affecting, and body-treating compositions (includes class 514)	424	106	6.7
Electricity: electrical systems and devices	361	52	3.3
Catalyst, solid sorbent, or support thereof: product or process of making	502	36	2.3
Chemistry: molecular biology and microbiology	435	28	1.8
Organic compounds (includes classes 532–570)	532	28	1.8
Synthetic resins or natural rubbers (includes classes 520–528)	520	27	1.7
Active solid-state devices (transistors, solid-state diodes)	257	23	1.4
Pulse or digital communications	375	21	1.3
Image analysis	382	21	1.3
Total			38.5
<i>Finland</i>			
Telecommunications	455	563	13.9
Multiplex communications	370	329	8.1
Paper making and fiber liberation	162	250	6.2
Pulse or digital communications	375	133	3.3
Telephonic communications	379	111	2.7
Surgery (includes class 600)	128	97	2.4

(continued)

Table 11.4 (continued)

<i>Country/patent category</i>	<i>Patent class</i>	<i>Number of patents granted</i>	<i>Percentage of patent class</i>
Drug, bio-affecting, and body-treating compositions (includes class 514)	424	93	2.3
Communications: radio wave antennas	343	60	1.5
Synthetic resins or natural rubbers (includes classes 520–528)	520	60	1.5
Organic compounds (includes classes 532–570)	532	57	1.4
Total			43.3
<i>Japan</i>			
Active solid-state devices (for example, transistors, solid-state diodes)	257	7,367	4.4
Semiconductor device manufacturing: process	438	5,920	3.5
Stock material or miscellaneous articles	428	5,032	3.0
Incremental printing of symbolic information	347	4,062	2.4
Synthetic resins or natural rubbers (includes classes 520–528)	520	3,805	2.2
Optics: systems and elements	359	3,715	2.2
Static information storage and retrieval	365	3,437	2.0
Computer-graphics processing and selective visual display systems	345	3,348	2.0
Radiation imagery chemistry: process, composition, or product thereof	430	3,340	2.0
Electrophotography	399	3,323	2.0
Total			25.6
<i>Republic of Korea</i>			
Semiconductor device manufacturing: process	438	2,363	11.8
Active solid-state devices (transistors, solid-state diodes)	257	1,104	5.5
Static information storage and retrieval	365	1,000	5.0
Liquid crystal cells, elements, and systems	349	861	4.3
Electric lamp and discharge devices	313	521	2.6
Multiplex communications	370	483	2.4
Computer-graphics processing and selective visual display systems	345	477	2.4
Telecommunications	455	432	2.2
Miscellaneous active electrical nonlinear devices, circuits, and systems	327	394	2.0
Dynamic information storage or retrieval	369	384	1.9
Total			40.0

(continued)

**Table 11.4 (continued)**

<i>Country/patent category</i>	<i>Patent class</i>	<i>Number of patents granted</i>	<i>Percentage of patent class</i>
<i>Taiwan (China)</i>			
Semiconductor device manufacturing: process	438	3,586	13.2
Active solid-state devices (transistors, solid-state diodes)	257	1,521	5.6
Electrical connectors	439	1,496	5.5
Electricity: electrical systems and devices	361	1,053	3.9
Illumination	362	645	2.4
Tools	81	445	1.6
Land vehicles	280	382	1.4
Static information storage and retrieval	365	357	1.3
Computer-graphics processing and selective visual display systems	345	356	1.3
Exercise devices	482	334	1.2
Total			37.5
<i>United States</i>			
Drug, bio-affecting, and body-treating compositions (includes class 514)	424	18,203	4.3
Semiconductor device manufacturing: process	438	11,604	2.8
Chemistry: molecular biology and microbiology	435	10,382	2.5
Active solid-state devices (for example, transistors, solid-state diodes)	257	7,856	1.9
Surgery (includes class 600)	128	7,276	1.7
Multiplex communications	370	7,064	1.7
Synthetic resins or natural rubbers (includes classes 520–528)	520	7,029	1.7
Stock material or miscellaneous articles	428	6,463	1.5
Organic compounds (includes classes 532–570)	532	6,255	1.5
Multicomputer data transferring (electrical computers and digital processing systems)	709	5,071	1.2
Total			20.7

Source: U.S. Patent and Trademark Office ([www.uspto.gov/](http://www.uspto.gov/)).

one-third to one-half of all patents.<sup>13</sup> In the case of China, electronics accounts for close to a quarter of patents. In contrast, in Brazil, which has few patents, the pattern is fairly diffuse, with some bunching in the agrotechnology and mining sectors.

These data indicate that three of the most technologically dynamic smaller economies—Finland, the Republic of Korea, and Taiwan (China)—have fairly narrow capabilities, mainly in electronics/telecommunication components of

various kinds and the life sciences. Limited as it is, this capability took more than 25 years to develop, and it resides mainly in a few large, domestic corporations that have production facilities and in some cases research laboratories all over the world. The areas of specialization are significant in three respects: they are in the throes of technological change; the nature of technologies in these areas prompts companies to undertake much patenting, sometimes of relatively minor advances for defensive reasons and for purposes of cross-licensing; and the codification of technology and its diffusion are fairly rapid, so that the rents from each generation of technology are quite short-lived.

Several inferences can be drawn from the experience of these countries that complement the lessons from the United States, Germany, and Japan. One is that 25 years may be enough time to build technological capability in only a few areas. This capability may not be adequate to support the development of a regularly refreshed and diversified mix of products and services. A slowing of the tempo of change, unforeseen technological advances, or a migration of key researchers could quickly erode the narrow base of capabilities created.

A second inference is that the capability resides mainly in a small number of organizations whose headquarters and research facilities are located in a handful of major urban centers. Where these organizations are multinational corporations, their longer-term interests may not coincide with those of their current home country. In a globalizing world, it is all too possible to imagine companies moving their primary research activities and production facilities overseas. Were a Nokia or a Samsung to shift the bulk of its R&D overseas, the technological capability of Finland and the Republic of Korea could be seriously impaired, if not immediately, at least over time.

A third and related inference is that in Brazil, India, the Republic of Korea, and even Taiwan (China), research capability in the university sector remains limited; there are few institutional foci for cross-disciplinary research or intermediaries to promote the commercialization of applied research, although efforts to create them are now ongoing. Universities in these countries often lack the faculty, the recruiting policies, and the incentives to build balanced expertise across disciplines, including in the social sciences and the humanities or to motivate cross-disciplinary work. Additional funding cannot easily change staffing patterns, administrative and teaching responsibilities, departmental hierarchies, or promotion ladders. And even where larger budgets could help raise the salaries of university researchers, which are often low, recruiting staff at the appropriate levels would be a complex undertaking. Attracting and retaining high-quality staff and building a fund of experience are tasks that can span decades, even if there is a pool of national or international skills to tap.

Should China heed this experience? If so, how might doing so cause it to adapt its policies? Given China's size, its apparent success in mastering manufacturing technologies, and its growing supplies of science and technology personnel, the argument can be made that given a sufficiently large investment, China could achieve within another two decades what took the United States close to a century to put in place.



## Accelerating Technological Advance

It may be feasible to create the technological capability to close the gap in selected areas of electronics within a decade, especially if multinational corporations from East Asia and other parts of the world continue to shift their production and research to China. However, even if the technology gap is closed, China may not become a significant innovator in specific subfields. Japan's experience suggests that catching up may be the easier part. Becoming a serial innovator is far more demanding.

The trends in innovation and the unpredictable nature of technological change argue for broad technological capability spanning many fields, similar to that of the United States. China has the size and industrial potential to achieve broad technological capability. Doing so, however, is certain to be time-consuming, and the pace of progress is likely to be determined by the development of significant innovation-oriented anchor firms in the corporate sector, as well as by basic and applied research at universities, research centers, and other institutions. These institutions will determine advances in knowledge, influence whether some of this knowledge leads to advances in technology, and intermediate the diffusion of this technology, particularly to smaller firms.

The extent to which a few corporations, universities, research centers, and individuals account for a high proportion of innovation says something about the quality of researchers. During the "catch-up" phase, having large numbers of science and technology personnel to assimilate technology from abroad may be an advantage. In contrast, innovation depends largely on the quality of the researchers, the size of the research teams, the research environment, the resources at their disposal, researchers' willingness to explore technological possibilities, and in many instances their readiness to engage in long-range basic research. In the life sciences and nanotechnology, where progress is rooted to advances in basic science, the architects of innovation are the star scientists who are experienced managers of research teams and institutes. These men and women lead and inspire others but also encourage debate and challenge current paradigms. Where new technologies are becoming more closely linked to not just basic science but also the enlightened concentration of inputs from several disciplines, the quality of the lead researchers and their ability to assemble cross-national and cross-cultural teams take on even greater significance.<sup>14</sup> Equally important is the readiness to focus not just on the fashionable fields but to look beyond at other promising areas. The inference is that the return from improvements in quality is rising fast. Trading quality for quantity might not be a good policy recipe, but quality is difficult to nurture, takes much longer, and is politically less rewarding than expanding tertiary enrollments or multiplying the number of research programs. Furthermore, the capacity and resources to cover diverse fields of enquiry, several in some depth, can be a major advantage.

Over the past 20 years, China has initiated a number of programs to promote technology development (table 11.5). These programs and many other initiatives relating to technology development constitute an impressive and sustained effort

**Table 11.5 National Programs with an Impact on University Research in China**

<i>Program</i>	<i>Agency</i>	<i>Year begun</i>	<i>Focus</i>
Spark	Ministry of Science and Technology	1985	Improve agricultural technology and develop agro-industrial clusters
Torch	Ministry of Science and Technology	1998	Develop high-tech industries and development zones and provide laboratories and equipment
Program 863 (national high-technology research and development program)	Ministry of Science and Technology	March 1986	Enhance international competitiveness and improve overall capability of R&D in high technology (with 19 priorities)
National Key Technologies R&D Program	Ministry of Science and Technology	1982	Support applied R&D to meet critical technological needs in key sectors
Program 973 (national basic research program)	Ministry of Science and Technology	June 1997 (combined with Climbing program, initiated in 1992)	Strengthen basic research in line with national strategic targets (primarily in agriculture, energy, information, resources and environment, population and health, and materials)
R&D, Infrastructure, and Facility Development	Ministry of Science and Technology	1984 (National Key Laboratories Program)	Support National Key Laboratories Development Program, National Key Science Projects Program, and National Engineering Technology Research Centers Development Program
National Natural Science Foundation	National Natural Science Foundation	1986	Promote and finance basic and some applied research

*(continued)*

**Table 11.5 (continued)**

<i>Program</i>	<i>Agency</i>	<i>Year begun</i>	<i>Focus</i>
Program 211	Ministry of Education	1995	Improve overall institutional capacity and develop key disciplinary areas in selected universities, and develop public service system of higher education (three networks)
Program 985	Ministry of Education	1998 (first phase); 2004 (second phase)	Turn China's top 150 universities into world-class research institutions

*Source:* Sigurdson 2005; Wu 2007.

to build capacity. China's demonstrated ability to rapidly absorb foreign technology indicates that the programs are working.

At this juncture, there may no longer be a need for national programs to focus on basic quantitative indicators such as the number of science and technology personnel, the number of papers published in major journals, the level of R&D, and the number of patents issued. These indicators are growing robustly and may convey a misleading impression of innovativeness (Sigurdson 2005; WIPO 2006; Zhou and Leydesdorff 2006).<sup>15</sup> Instead, policy effort could now be brought to bear more forcefully on four areas. In conjunction with ongoing activities, focusing on these areas might make a greater contribution to helping China acquire the technological capability that undergirds an innovative economy.

- Promote R&D in larger corporations, Chinese and foreign, to prepare the ground for greater innovativeness, encourage global sourcing of research by the corporate sector, and spur the formation of research partnerships and consortia. This effort has already begun: many Chinese firms (such as Lenovo and Huawei) and foreign companies (including Microsoft, Novartis, Intel, Nokia, Google, and SAP) are conducting R&D in China and coordinating it with their research elsewhere.
- Enlarge the contribution of key universities to innovation, especially through a focus on basic research in a variety of scientific fields.
- Create and strengthen intermediary organizations that can help form alliances among firms; multiply formal and informal mechanisms of engagement between university researchers and firms; increase access to risk capital from venture

capitalists and angel investors; and facilitate the development and commercialization of research.

- Use urban policies to create the infrastructure and environment needed to germinate the social networks—local and international—that induce new knowledge creation, and maximize knowledge spillovers, including the exchange of tacit knowledge. Despite the shrinking of distance made possible by information technology, the geography of innovation remains highly location specific. Worldwide, probably no more than two dozen metropolitan areas attract and retain some of the most talented researchers and account for a disproportionate share of technological advances.

### *Promoting Research and Development*

Increasing spending on R&D up to a certain threshold is necessary to build technological capacity. How much spending is needed to reach this threshold, how quickly it should be attained, and how far beyond the threshold spending should be pushed are uncertain.<sup>16</sup>

Fiscal incentives for R&D are widely used in industrial countries and have been introduced in China as well.<sup>17</sup> The weight of international empirical evidence suggests that they are effective in raising corporate spending on research.

The tax incentives currently being extended to firms in China are generous by international and East Asian standards. They include an exemption of up to 150 percent of R&D expenditure from corporate income tax and the provision of carry forward of any unutilized amount to offset tax liabilities up to four years in the future. Accelerated depreciation allowances permit firms to treat expenditures on equipment worth less than Y300,000 as overhead; for more expensive equipment, the depreciation period can be shortened to as little as three years. High-tech startups pay no income tax for the first two years and 15 percent for the next three years (less than half the normal rate of 33 percent). The reduction can be applied for another three years if the firm remains classified as a high-tech enterprise. Companies that incur heavy expenditure on fixed investment as a part of their R&D activities will benefit from the switch to a consumption-type VAT.<sup>18</sup> Import duty exemptions on equipment for R&D purposes further augment earnings. Firms in the biotech, telecom, new materials, aeronautics, information technology, and electronics fields derive substantial benefits from such preferential tax treatment.

Tax incentives are complemented by direct central and subnational government spending on R&D. Grants by various ministries have reached significant levels and are rising faster than revenues. In addition, procurement policies of government agencies are designed to favor firms that are designated as innovative. This is especially helpful for firms in the telecom, electronics, automotive, and customized software industries.

How, at this stage, might these policies be tailored to produce the best results? Increased spending on some activities classified for tax purposes as R&D might have

low social returns, particularly where firms are still mainly in the assimilation stage and poorly equipped in terms of strategy; managerial expertise; and organizational, design, and technical skills to conduct meaningful research or to use research findings for commercial purposes.

These constraints, especially the shortage of seasoned midlevel research managers, might argue for tax incentives that encourage the pooling of research efforts by companies and a variety of alliances. The formation of research consortia might be one approach to favor. Joint programs with local or foreign universities might be another. Tax incentives could be made particularly generous for joint research programs with foreign companies, based on the scale of the foreign involvement and the subsector that is the focus of the research. This approach would encourage multinational corporations that already benefit from incentives to localize research activities to work more closely with Chinese firms.<sup>19</sup>

Incentives to offshore some research and engage more closely with researchers would recognize the realities of a globalizing research environment. This does not undermine the case for strengthening local capacity; it does argue for taking full advantage of international research and design capabilities where possible (as demonstrated by Brilliance Auto), in the interests of enhancing competitiveness. Offshoring research could put pressure on local research entities to improve their own performance; international research joint ventures can also be important vehicles for technology transfer. In short, as circumstances permit, the fiscally cost-effective approach to supporting corporate research at China's current stage of development might be one that stresses pooled effort locally and globally. This approach would recognize that in certain cases it may be more efficient to allow Chinese researchers to continue working abroad rather than offering them generous incentives to return,<sup>20</sup> only to find what could be initially a less productive niche in the local research environment.<sup>21</sup> The approach would also benefit from a further strengthening of the institutions protecting intellectual property, especially the courts.

Are new firms a significant source of technology advances? The evidence is stronger for the biotech, software, and telecom/electronic components subsectors than for others, and much of the evidence comes from the United States. Fewer data from East and South Asian economies support this position. In India, Japan, the Republic of Korea, and other Asian countries, larger firms are clearly more innovative than smaller ones. Nevertheless, a scheme comparable to the Small Business Innovation Research program in the United States, which targets firms with promising technologies, could increase the flow of innovation from smaller firms by supplementing the venture capital that is already available from government sources and the private sector.

### *Supporting Universities and Creating Linkages with Businesses*

Although the primary locus of technology development and innovation is generally the business sector, the building of capability hinges on the talent produced by and

the mix of research conducted at universities. The leading Western and Japanese universities, a few of which are at the forefront of science and technology development, went through a lengthy gestation period, during which they devised, tested, and refined curricula and pedagogic techniques and established reputations as centers of excellence for higher education. Among these larger universities, many have strengthened their research activities, but the best still view their primary mission as imparting a first-rate education in order to prepare the researchers and knowledge workers who will take up the challenge of science and technology development.

For Chinese universities, which are engaged in an extraordinarily rapid expansion in enrollment, the issue of quality is central, especially for the leading ones.<sup>22</sup> All Chinese universities are adding to their faculties, to the variety of courses they offer, and to their physical infrastructure. Some are also entering into or enlarging the scope of their research. The hierarchical social organization of many departments, which often defines the content of teaching and research, is a major issue. Recruiting a sufficiently diverse junior faculty, from across the country and overseas, with the requisite expertise and skills and bringing them up to speed is a second. Striking an appropriate balance between teaching and research is a third. It may be a decade or more before these issues are satisfactorily resolved. During this period, and possibly beyond, it would be desirable to proceed cautiously with applied research programs aimed at developing commercial technologies and establishing linkages with the business sector. While the leading U.S. universities often conduct research that is a precursor of commercial technologies and university researchers collaborate with their corporate counterparts, even the likes of MIT, Stanford, and the University of California branches are responsible for only a tiny percentage of total patents and spin-offs, and companies in the United Kingdom and the United States give a low ranking to contacts with universities as a source of commercial innovation (Lester 2005; Hughes 2007). Net income from licensing, royalties, and spin-offs represents just a small fraction of the research budgets of these universities (Mowery 2007).

By some measures, Chinese universities have edged past their U.S. counterparts in terms of university-affiliated spin-offs. In 2004, the 600 leading universities had more than 4,500 affiliated companies, close to half of which were described as technology intensive. A large percentage of these enterprises were created to provide jobs to university staff who cannot be laid off, however, and do not represent genuine high-tech spin-offs. Universities such as Tsinghua and Beijing apparently derive sizable revenues from these business activities, but whether most universities are likely to benefit from becoming business conglomerates is uncertain. If they become less specialized and are diverted from their core mission, there is a risk that the quality of both teaching and research could suffer over time (Dasgupta and David 1994). This dilution of core competence often occurs in industrial conglomerates when diversification strains managerial and organizational capacities.

Hence, at least over the course of the next decade, fiscal incentives and budgetary support could help universities move through the transition phase; build the capability for providing a good-quality education that develops creativity; and strengthen

the ability of the leading universities to pursue basic research in novel directions. The larger universities need to be encouraged to pursue links with business firms, but commercial objectives should not overshadow those of teaching and research.

### *Establishing Channels for Focusing Research and Diffusing Research Findings*

A consistent finding of many studies of technological development is that research conducted at universities and institutes diffuses slowly to the business sector, and only a small fraction of this knowledge is ever commercialized.<sup>23</sup> The main beneficiaries are large corporations engaged in in-house research, which are more likely to be seeking new technologies, commissioning new work, and licensing it. Small and medium-size enterprises benefit far less because of lack of preparedness or in-house absorptive capacity, lack of awareness of research being conducted by universities, and the inability or unwillingness to incur the transaction costs of licensing patents or harnessing researchers through consulting contracts or other vehicles for cooperation (Boschma 2005; Kodama and Suzuki 2007).

To remedy this diffusion failure, national and subnational governments and business associations have crafted mechanisms for creating institutional or organizational channels for focusing research efforts and diffusing research findings, especially to small and medium-size enterprises. The purpose of these initiatives, of which there are numerous examples in North America, Europe, and Asia, is to provide resources for priority technologies, to establish networks of firms to circulate new knowledge, and to mobilize the research assets of the region and use them more effectively. In the United Kingdom, for example, Research Council Centers, Regional Development Agencies, and Faraday Partnerships provide such services. The University of California-San Diego's CONNECT program brokers relationships between business firms and researchers. Such midwifery is performed by TEKES (the principal agency funding and promoting technology) in Finland and by state agencies in India (Basant and Chandra 2007).

A somewhat different but equally valuable input is provided by venture capitalists and experienced angel investors. In the United States, angel investors are far more important than venture capitalists for early-stage financing (Branscomb 2004; *The Economist* 2006), and the two sources of capital are essentially complements. Experience suggests that experienced venture capitalists and angel investors with deep knowledge of an industry, organizational skills, local knowledge, and many contacts, local and foreign, are the most useful. Accumulating such human capital is a function of business successes and time, as well as the overall urban environment, including the social environment.

### *Creating Urban Centers that Attract Innovation Activities*

Innovative activities are largely urban phenomena, localized in relatively few urban regions (Hall 2001; Markusen and others 2001; Florida 2002). These

centers, which host some of the world's leading universities and research institutes, have attracted major anchor firms and have well-developed sources of finance, including sources of risk capital. The presence of successful universities, dynamic firms, and multiple sources of finance is closely related to urban development strategies that have helped create a physical and social environment that is conducive to innovation.

Physical location and history are often important (as in the cases of Boston or the San Francisco Bay Area, for instance), but the maintenance of an urban comparative advantage based on technology requires sustained investment in infrastructure, services, and institutions. Such development depends on the leadership, fiscal resources, organizational skills, and policies of municipal governments, conducted within a framework defined by the national authorities. Such a national framework and local development initiatives have broader aims than simply stimulating technological innovation, but building technological capacity can become a major component of central and subnational policies. The central government can promote localized technological capability through intergovernmental fiscal measures; targeted research grants; support for specific public universities and research institutes; funding for science parks; and infrastructure development that pulls in industry and institutions such as those buttressing intellectual property that encourage innovation.

Municipal governments can reinforce these measures and research, as subnational governments in the United States have done (table 11.6) (Jenkins, Leicht, and Wendt 2006). Municipalities also play an important role in the creation of science parks, often adjacent to research centers, as well as in land-use policies, which determine housing and commercial development. From the perspective of technological innovation in a globalizing environment, arguably the most important municipal-level actions with significant long-term fiscal implications are the provision of high-quality public services, social amenities, urban transport, and an information technology system, which together with efficient regulations influence the attractiveness of an urban center for knowledge-based activities. Maintaining and progressively modernizing such services and such infrastructure involves a high level of current expenditures. The ability to mobilize the needed revenue depends on the elasticity of the local tax system; the adequacy of charges and fees for services; the effective division of labor between public and private providers; and strong governance, in particular the harnessing of e-governance. Because fiscal governance and IT capacities in large coastal cities and smaller inland cities differ, the potential for and advantages of technological development will accrue more to some urban centers than others.

In China, Shanghai, Beijing, Shenzhen, Guangzhou, Chengdu, and Xian are among the urban centers that are taking the lead in building urban innovation capability. In both Shanghai and Beijing, central and municipal authorities are investing heavily in physical infrastructure and services, including science parks and university R&D (Sigurdson 2005). The challenge ahead for these and other cities is to achieve and sustain a high level of public services. Shanghai, Beijing, Xian, and other cities



**Table 11.6 Industrial Promotion Policies in the United States**

<i>Entrepreneurial policies</i>	<i>Industrial recruitment policies</i>	<i>Labor regulations</i>
Public venture capital funds	Bond-based financing	Minimum wage laws
Technical assistance centers	Loans for building, construction, equipment, and machinery	Fair employment laws
Business incubators	Loan guarantees for building, construction, equipment, and machinery	Absence of right-to-work laws
Research parks	Aid for plant expansion	
	Matching funds for city-county industrial financing	
	Funds for development-related public works	
	Incentives for establishing industrial plants	
	Tax exemption on land-capital improvements	
	Tax exemption on equipment and machinery	
	Inventory tax exemption on goods in transit and manufacturing inventories	
	Tax exemption on new equipment and raw materials	
	Tax incentive for job creation and industrial investment	
	Accelerated depreciation on industrial equipment	
	State-supported training and retraining of industrial workers	
	State-financed speculative building	
	Free land for industry	
	State- and city-owned industrial park sites	
	State funding of city-county master plans	
	Feasibility studies for selection of plants	
	Recruiting and screening of industrial employees	
	Training of hard-core unemployed	

Source: Jenkins, Leicht, and Wendt 2006.

also need to substantially improve their social amenities, particularly recreational amenities and the quality of the environment, which remain weak points. Improvements along these lines will help attract and retain talented people and dynamic firms.

If the recent geographical patterns of technological innovation persist, most advances in technology will be concentrated in a small number of urban centers. The development strategies of China's leading cities will thus influence the growth and distribution of research capabilities, the location decisions of anchor firms, and the emergence of links between firms and research institutions.

## Conclusion

China is determined to achieve technological parity with the world's leading economies within the next decade or two. Its R&D efforts are deployed across a broad front, ranging from automotive and electronics technologies to high-energy physics, space exploration, nuclear energy, and consumer-product design. The government is allocating large sums to research and providing generous incentives to private firms, domestic and foreign. But as international experience clearly demonstrates, financing is only one factor, albeit an important one. The productivity of an innovation system also depends on the wealth of talent and the depth and heterogeneity of experience. Research shows that the creativity of talented people is stimulated by society and the degree to which companies maximize the commercial benefits from R&D through effective strategies, management, and coordination of research with production and marketing (see for instance, Yusuf 2007).

## Notes

1. *Science* (2007) describes how some of this money is being spent on state-of-the-art laboratories.
2. Schott (2006) finds that even though China's exports rank third in the degree of overlap with OECD countries, the prices it receives have been declining over time relative to OECD prices.
3. China's research efforts in the areas of space and defense technologies, as well as cooperative programs with Brazil, the European Union, and Israel, are described in Sigurdson (2005).
4. The initial focus of innovation and research efforts in China in the late 1970s was on simplifying the printing of Chinese materials. At that time, computers were unable to represent or print thousands of Chinese characters. Printing was still done using lead typesetting, which required workers to select each character manually from a shelf of thousands of Chinese characters (Lu and Lazonick 2001; Lazonick 2004). This process was labor intensive and repetitive; computerization greatly enhanced productivity.
5. The possibility of introducing fuel cell-based cars on a mass scale is being considered in Shanghai.

6. According to Hall (2006a: 5), “the survey evidence from a number of countries shows rather conclusively that patents are not among the important means to appropriate returns to innovation, except perhaps in pharmaceuticals.” Most patents are never cited or worked on; for the leading U.S. universities, the top five patents (usually biomedical ones) account for two-thirds of their patent-related revenue (Mowery 2007).
7. The surge in IT-related patenting and the increasing frequency with which patent infringement is becoming the basis of threatened or actual legal action has aroused much concern, because it threatens innovation and raises its costs (Jaffe and Lerner 2006). A recent Supreme Court decision in the United States (*KSR International Co. v. Teleflex Inc. et al.*) points to a raising of the bar on patents and an attempt to contain costly legal battles.
8. A recent RAND Corporation assessment classifies China as the industrializing economy with the best chance of implementing the top 16 technology applications (Silbergliitt and others 2006). Barriers to catching up remain, however, as described by Wang (2006).
9. In Silicon Valley, firms such as Lockheed, Hewlett-Packard, Varian, and General Electric were the initial anchor firms (Agrawal and Cockburn 2003; Adams 2005; Lecuyer 2005).
10. State-level governments have also been very active in Germany and the United States (Jenkins, Leicht, and Wendt 2006).
11. The corporate sector is now responsible for the bulk of the research conducted, and corporate research activities are conducted to fully exploit the knowledge and research potential in other countries (Carlsson 2006).
12. The European Union, for example, has proposed creating a European Institute of Technology modeled on MIT.
13. Nokia received 24 percent of all patents issued by the USPTO to Finland-based firms. Samsung received 40 percent and LG 17 percent of all Korean patents. The top 10 patenting organizations accounted for 71 percent of patents granted to Korea-based organizations between 2001 and 2005.
14. Judson (2005) examines the importance of growing a “scientific culture” in China, which can be a slow process. Cao (2004) cautions that China may not be able to realize its ambition of winning a Nobel Prize in science any time soon, because the gap between China and the West is still wide. Aizenman and Noy (2006) show that scientific leadership has lagged increases in GDP and is influenced by wars and immigration, particularly in the United States and Germany.
15. China is emerging as a leader in the field of nanoscience, with a growing list of publications (Zhou and Leydesdorff 2006).
16. Without a well-crafted strategy and a coordinated approach to R&D and the commercialization of research outputs, R&D spending does not readily translate into profits (Jaruzelski, Dehoff, and Bordia 2005).
17. On the R&D tax credit, the voluminous body of research is essentially positive: the credit does stimulate R&D and increase welfare. However, the gains depend on (a) the design of the instrument (whether it is volume based or incremental [which affects deadweight losses], temporary or permanent, complicated or simple, subject to a cap); (b) the administrative burden imposed on companies by the claims process; and (c) the speed with which firms are reimbursed. A volume-based tax that has no cap, includes

- extra provisions for small and medium-size enterprises that are permanent, and is simple to claim is the most attractive, although it does entail higher deadweight losses (see Hall and van Reenen 1999; Bloom, Griffith, and van Reenen 2002; and Russo 2004).
18. VAT rebates on semiconductors offered after June 2000 and amended in 2001 were ended in April 2005 (Sigurdson 2005).
  19. The contribution of research consortia in Japan has been described by Branstetter and Sakakibara (1998, 2002). Such consortia have also been created in the Republic of Korea and the United States (see Sakakibara and Cho 2002; Sakakibara and Branstetter 2003). Although the results are not as compelling with regard to the role of foreign firms in China, Whalley and Xin (2006) find that foreign companies and joint ventures that on balance were more capital, technology, and skill intensive were responsible for nearly 60 percent of exports and close to 40 percent of China's growth in 2003–04. They were also responsible for almost half of all patent applications to China's patent agency in 2005 and nearly two-thirds of all patents granted (WIPO 2006).
  20. The Chinese government provides financing for researchers willing to return to China to work for up to one year in areas outside their selected fields. These activities include joining research programs sponsored by the state, ministries, or provincial governments; helping domestic institutions solve key scientific issues; and giving lectures and conducting training, attending international conferences or important national meetings, and assisting in technology transfer and technical exchanges. The sponsorship consists of international travel and living allowances. The *Chunhui* program has sponsored 8,000 Chinese scholars with PhD degrees obtained overseas who returned to China to carry out short-term work. The Yangtze River Fellowship program awarded 537 overseas Chinese scholars appointments in Chinese universities for curriculum building, teaching, and joint academic research. China also established overseas student business bases or industrial parks, organized jointly by the central and provincial governments to help returned overseas students to start up businesses in China. The central and provincial governments share the expenses of building infrastructure and other facilities and providing services as required for the business environment (<http://www.moe.gov.cn>; <http://www.mop.gov.cn>).
  21. Of the 300 scientists of Chinese origin who are recognized as leaders in their fields, only 5 have returned to China (Cao 2004). While the research environment in China is changing, seniority is a paramount criterion in decision making, and junior scientists are often unwilling to challenge their mentors or elders, according to Cao.
  22. China had more than 1,000 colleges and universities in 2004, several hundred of which offered graduate courses. Total enrollment was 14 million. The target for 2010 is enrollment of 30 million (Sigurdson 2005).
  23. Adams, Clemmons, and Stephan (2006) review the literature on diffusion from universities and estimate that the modal lag period is more than three years.

## References

- Adams, James D., J. Roger Clemmons, and Paula E. Stephan. 2006. "How Rapidly Does Science Leak Out?" NBER Working Paper 11997, National Bureau of Economic Research, Cambridge, MA.

- Adams, Stephen B. 2005. "Stanford and Silicon Valley: Lessons on Becoming a High-Tech Region." *California Management Review* 48 (1): 29–51.
- Agarwal, Ajay, and Iain Cockburn. 2003. "The Anchor Tenant Hypothesis: Exploring the Role of Large, Local, R&D-Intensive Firms in Regional Innovation Systems." *International Journal of Industrial Organization* 21 (9): 1227–53.
- Aizenman, Joshua, and Ilan Noy. 2006. "Prizes for Basic Research: Human Capital, Economic Might and the Shadow of History." NBER Working Paper 12226, National Bureau of Economic Research, Cambridge, MA.
- Basant, Rakesh, and Pankaj Chandra. 2007. "Role of Educational and R&D Institutions in City Clusters: An Exploratory Study of Bangalore and Pune Regions in India." *World Development* 35 (6): 1037–55.
- Berger, Suzanne, and Richard K. Lester. 1997. *Made by Hong Kong*. Hong Kong: Oxford University Press.
- Bloom, Nick, Rachel Griffith, and John van Reenen. 2002. "Do R&D Tax Credits Work? Evidence from a Panel of Countries 1979–1997." *Journal of Public Economics* 85 (1): 1–31.
- Boschma, Ron A. 2005. "Proximity and Innovation: A Critical Assessment." *Regional Studies* 39 (1): 61–74.
- Boston Consulting Group. 2006. *The New Global Challenge: How 100 Top Companies from Rapidly Developing Economies Are Changing the World*. Boston.
- Branscomb, Lewis. 2004. "Where Do High-Tech Commercial Innovations Come from?" *Duke Law and Technology Review* 5. [www.law.duke.edu/journals/dltr/articles/2004dltr0005.html](http://www.law.duke.edu/journals/dltr/articles/2004dltr0005.html).
- Branstetter, Lee, and Yoshiaki Ogura. 2005. "Is Academic Science Driving a Surge in Industrial Innovation? Evidence from Patent Citations." NBER Working Paper 11561, National Bureau of Economic Research, Cambridge, MA.
- Branstetter, Lee, and Mariko Sakakibara. 1998. "Japanese Research Consortia: A Microeconomic Analysis of Industrial Policy." *Journal of Industrial Economics* 46 (2): 207–33.
- . 2002. "When Do Research Consortia Work Well and Why? Evidence from Japanese Panel Data." *American Economic Review* 92 (1): 143–59.
- Business China. 2006. "The Trouble with China's Own 3G Standard." February 27.
- Cao, Cong. 2004. "Chinese Science and the 'Nobel Prize Complex.'" *Minerva* 42 (2): 151–72.
- Carlsson, Bo. 2006. "Internationalization of Innovation Systems: A Survey of Literature." *Research Policy* 35 (1): 56–67.
- Dasgupta, Partha, and Paul A. David. 1994. "Toward a New Economics of Science." *Research Policy* 23 (5): 487–521.
- The Economist*. 2006. "Giving Ideas Wings." September 16.
- Florida, Richard. 2002. *The Rise of the Creative Class—And How It's Transforming Work, Leisure, Community and Everyday Life*. Philadelphia: Perseus Books.
- García-Vega, Maria. 2006. "Does Technological Diversification Promote Innovation? An Empirical Analysis for European Firms." *Research Policy* 35 (2): 230–46.
- Graham, Stuart J. H., and David C. Mowery. 2004. "Submarines in Software? Continuities in US Software Patenting in the 1980s and 1990s." *Economics of Innovation and New Technology* 13 (5): 443–56.

- Hall, Bronwyn H. 2005. "Exploring the Patent Explosion." *Journal of Technology Transfer* 30 (1-2): 35-48.
- . 2006a. "Issues in and Possible Reforms of the U.S. Patent System." Paper presented at the "Cooperative Symposium on 21st Century Innovation Systems for Japan and the United States: Lessons from a Decade of Change." Tokyo, January 10.
- . 2006b. "Patents." Department of Economics, University of California, Berkeley.
- Hall, Bronwyn H., and John van Reenen. 1999. "How Effective Are Fiscal Incentives for R&D? A Review of the Evidence." Working Paper 7098, National Bureau of Economic Research, Cambridge, MA.
- Hall, Peter. 2001. *Cities in Civilization*. New York: Fromm International.
- Hirschman, Albert O. 1958. *The Strategy of Economic Development*. New York: W. W. Norton & Co.
- Hughes, Alan. 2007. "University Industry Linkages and UK Science and Innovation Policy." In *How Universities Can Promote Economic Growth*, ed. Shahid Yusuf and Kaoru Nabeshima. Washington, DC: World Bank.
- Hummels, David, and Peter J. Klenow. 2005. "The Variety and Quality of a Nation's Exports." *American Economic Review* 95 (3): 704-23.
- Hunt, Robert M. 2006. "When Do More Patents Reduce R&D?" *American Economic Review* 96 (2): 87-91.
- Jaffe, Adam B., and Josh Lerner. 2006. *Innovation and Its Discontents: How the Broken Patent System Is Endangering Innovation and Progress, and What To Do About It?* Princeton, NJ: Princeton University Press.
- Jaruzelski, Barry, Kevin Dehoff, and Rakesh Bordia. 2005. "The Booz Allen Hamilton Global Innovation 1000: Money Isn't Everything." *Strategy+Business* 41. [www.strategy-business.com/resiliencereport/resilience/rr00027?pg=0](http://www.strategy-business.com/resiliencereport/resilience/rr00027?pg=0).
- Jenkins, J. Craig, Kevin T. Leicht, and Heather Wendt. 2006. "Class Forces, Political Institutions, and State Intervention: Subnational Economic Development Policy in the United States, 1971-1990." *American Journal of Sociology* 111 (4): 1122-80.
- Judson, Horace Freeland. 2005. "The Great Chinese Experiment." *Technology Review* 108 (11): 52-61.
- Kodama, Fumio, and Jun Suzuki. 2007. "How Japanese Companies Have Used Scientific Advances to Restructure Their Businesses: The Receiver-Active National System of Innovation." *World Development* 35 (6): 976-90.
- Kremer, Michael. 1993. "O-Ring Theory of Economic Development." *Quarterly Journal of Economics* 108 (3): 551-75.
- Lazonick, William. 2004. "Indigenous Innovation and Economic Development: Lessons from China's Leap into the Information Age." *Industry and Innovation* 11 (4): 273-97.
- Lecuyer, Christophe. 2005. *Making Silicon Valley: Innovation and the Growth of High Tech, 1930-1970*. Cambridge, MA: MIT University Press.
- Lester, Richard. 2005. "Universities, Innovation, and the Competitiveness of Local Economies." Industrial Performance Center Working Paper 05-010, Massachusetts Institute of Technology, Cambridge, MA.
- Lu, Qiwen, and William Lazonick. 2001. "The Organization of Innovation in a Transition Economy: Business and Government in Chinese Electronic Publishing." *Research Policy* 30 (1): 55-77.

- Ma, Jun, Nam Nguyen, and Jin Xu. 2006. *China's Innovation Drive*. Deutsche Bank, Hong Kong (China).
- Markusen, Ann, Karen Chapple, Greg Schrock, Daisaku Yamamoto, and Pingkang Yu. 2001. "High-Tech and I-Tech: How Metros Rank and Specialize." Working Paper, Hubert H. Humphrey Institute of Public Affairs, University of Minnesota, Minneapolis.
- Mazzoleni, Roberto. 2005. "Historical Patterns in the Coevolution of Higher Education, Public Research, and National Industrial Capabilities." United Nations Industrial Development Organization (UNIDO), Vienna.
- Mowery, David. 2005. "The Role of Knowledge-Based 'Public Goods' in Economic 'Catchup': Lessons from History." In *Industrial Development Report 2005: Background Paper Series*. United Nations Industrial Development Organization (UNIDO), Vienna.
- . 2007. "University-Industry Research Collaboration and Technology Transfer in the United States Since 1980." In *How Universities Can Promote Economic Growth*, ed. Shahid Yusuf and Kaoru Nabeshima. Washington, DC: World Bank.
- Roos, Goran, Lisa Fernstrom, and Oliver Gupta. 2005. *National Innovation Systems: Finland, Sweden & Australia Compared*. Intellectual Capital Services Ltd., London.
- Russo, Benjamin. 2004. "A Cost-Benefit Analysis of R&D Tax Incentives." *Canadian Journal of Economics* 37 (2): 313–35.
- Sakakibara, Mariko, and Lee Branstetter. 2003. "Measuring the Impact of US Research Consortia." *Managerial and Decision Economics* 24 (2–3): 51–69.
- Sakakibara, Mariko, and Dong Sung Cho. 2002. "Cooperative R&D in Japan and Korea: A Comparison of Industrial Policy." *Research Policy* 31 (5): 673–92.
- Sanyal, Paroma, and Adam Jaffe. 2004. "Peanut Butter Patents versus the New Economy: Does the Increased Rate of Patenting Signal More Invention or Just Lower Standards?" Working Paper, Department of Economics, Brandeis University, Waltham, MA.
- Schott, Peter K. 2006. "The Relative Sophistication of Chinese Exports." NBER Working Paper 12173, National Bureau of Economic Research, Cambridge, MA.
- Science Magazine. 2007. "China Supersizes Its Science." March 9, 1354–56. www.sciencemag.org 315.
- Shang, Yong. 2005. "An Introduction to China's Science and Technology Policy." Belfer Center for Science and International Affairs, Kennedy School of Government, Harvard University.
- Sigurdson, Jon. 2005. *Technological Superpower China*. Northampton, MA: Edward Elgar Publishing.
- Silberglitt, Richard, Philip S. Anton, David R. Howell, and Anny Wong. 2006. *The Global Technology Revolution: Executive Summary 2020*. RAND Corporation, National Security Research Division, Santa Monica, CA.
- UNCTAD (United Nations Conference on Trade and Development). 2005. *World Investment Report 2005*. New York: UNCTAD.
- Wang, Jenn-hwan. 2006. "China's Dualist Model on Technological Catching Up: A Comparative Perspective." *Pacific Review* 19 (3): 385–403.
- Whalley, John, and Xian Xin. 2006. "China's FDI and Non-FDI Economies and the Sustainability of Future High Chinese Growth." NBER Working Paper 12249, National Bureau of Economic Research, Cambridge, MA.

- Wieser, Robert. 2005. "Research and Development Productivity and Spillovers: Empirical Evidence at the Firm Level." *Journal of Economic Surveys* 19 (4): 587–621.
- WIPO (World Intellectual Property Organization). 2006. *WIPO Patent Report: Statistics on Worldwide Patent Activity*. Geneva: WIPO.
- Wu, Weiping. 2007. "Building Research Universities for Knowledge Transfer: The Case of China." In *How Universities Can Promote Economic Growth*, ed. Yusuf Shahid and Kaoru Nabeshima. Washington, DC: World Bank.
- Yusuf, Shahid. 2007. "From Creativity to Innovation." World Bank Policy Research Working Paper 4262, Washington, DC.
- Zhou, Ping, and Loet Leydesdorff. 2006. "The Emergence of China as a Leading Nation in Science." *Research Policy* 35 (1): 83–104.
- Ziedonis, Rosemarie H., and Bronwyn Hall. 2001. "The Effects of Strengthening Patent Rights on Firms Engaged in Cumulative Innovation: Insights from the Semiconductor Industry." In *Entrepreneurial Inputs and Outcomes: New Studies of Entrepreneurship in the United States*, ed. Gary Libecap. Amsterdam: Elsevier Science.





Part V

The Public Health System:  
Access, Service Delivery,  
and Financing



# Funding Public Health

# 12

DAVID B. EVANS AND KE XU

**A**ggregate population health status in China continues to improve steadily. But financial barriers to services, including prevention as well as treatment, keep many people who need services from obtaining them and impose severe financial hardship on many households that do obtain care.

This chapter examines how best to finance the health system to meet the goal of universal coverage. It suggests that there is potential to raise more funds for health in China, particularly through sin taxes. The chapter investigates how the purchasing function, particularly provider payment mechanisms, can be made more efficient in order to improve China's public health system.

## New and Old Challenges

China has made some impressive strides in improving population health over the past several decades. As a result, life expectancy at birth has continued to rise steadily, reaching 72 in 2004, up from 50 in the early 1960s and 65 in the mid-1970s (United Nations 2005).

Despite this achievement, some old challenges remain and new ones have emerged. Population health improvements have been uneven, with geographical and income-related disparities increasingly evident (Wagstaff 2005; Zhang and Kanbur 2005; Li, Zhang, and Tian 2006; Zhao 2006). This is partly linked to the fact that progress in controlling some important communicable diseases, including tuberculosis, has been slower than in countries at similar stages of development (Wagstaff and Lindelow 2007).

In addition, many people cannot now access health services—including prevention, promotion, treatment, and rehabilitation—when they need to (Rao 2004; Wagstaff 2005). The Third National Health Survey, conducted in 2003, revealed that 13.8 million people did not receive ambulatory or hospital care when reporting the need for care (Rao 2004). The incidence of nonuse was substantially higher in rural than urban areas, and nonusers reported that cost was a major impediment to accessing services. According to the survey, 43 percent of hospital discharges were

at the instigation of the patient rather than the doctor, and 63 percent of patients discharged early indicated that the precipitating factor was the lack of ability to pay for continued care (Rao 2004).

The need to pay for health services, including many forms of prevention, is an important reason why people do not seek, obtain, or continue care. Financial barriers seem to be increasing in China (Gao and others 2001), which relies relatively heavily on out-of-pocket payments made directly by households to health care providers to finance its health system. These payments have represented 55–60 percent of total health expenditures since 1998, up from about 20 percent in 1980 (WHO 2006).

The problems associated with high out-of-pocket payments are not limited to preventing access. The other side of the coin is that some people who receive care suffer financial catastrophe or impoverishment as a result. It has been well established that there is a positive correlation between the proportion of households suffering financial catastrophe as a result of health payments and the extent to which countries rely on out-of-pocket payments as a means of financing health (Xu and others 2003a, 2003b; Xu and others 2004; Xu and others 2007). About 5.2 percent of households in China—some 67.5 million people—suffer financial catastrophe each year as a result of having to pay for care (China National Health Economics Institute 2003).<sup>1</sup>

Financial catastrophe is more prominent in rural areas than urban areas and among the poor than the rich (China National Health Economics Institute 2003). Although there is a high correlation between the incidence of financial catastrophe and impoverishment as a result of health payments, even small payments can push households living close to the poverty line into poverty or deepen the impoverishment of people who are already poor (Wagstaff and Van Doorslaer 2003). As a result, health payments have become a major cause of impoverishment in China (Liu, Rao, and Hsiao 2003).

## Achieving Universal Coverage

In May 2005 all of the (then) 192 members of the World Health Organization, including China, endorsed a resolution calling for countries to develop their health financing systems with the goal of achieving universal coverage (WHO 2005). Universal coverage was defined as ensuring that all people have access to needed services without suffering financial catastrophe as a result of paying for them.

Catastrophic expenditures and exclusion from health services do not disappear with rising income. National health financing systems must be designed to protect households from financial catastrophe while ensuring access to needed services (Xu and others 2007). Out-of-pocket spending needs to be reduced through the development of prepayment mechanisms. Prepaid funds need to be pooled across the population in a way that allows all people to access services when they need them, rather than restricting benefits solely to those that can afford to pay for them.

Flexible short-term responses are needed to achieve this long-term solution. In China's case, they will involve a mix of revenue raising and pooling involving tax payments and insurance contributions.

A number of recent policy changes in China have been directed at improving access and reducing the risk of financial catastrophe. These include various schemes to expand insurance coverage among urban employees and the urban poor (Duckett 2001; Liu and others 2002; Liu, Rao, and Hsiao 2003).

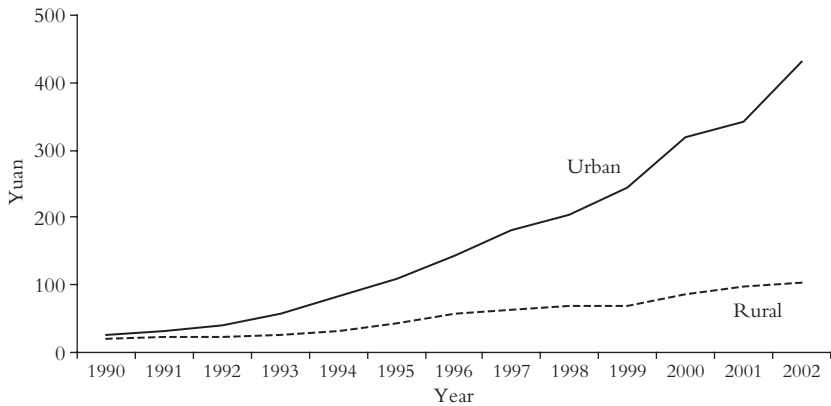
A major pillar of current policy is the revitalization of rural health insurance, launched in 2003, initially in 300 counties. Rural cooperative insurance covered about 90 percent of the rural population in the 1970s; only 5 percent of villages still had cooperative medical schemes by 1985. Various attempts to revitalize the system were made during the 1990s, without a great deal of success (Carrin and others 1999). This partly explains the emphasis placed on expanding coverage in the 11th Five-Year Plan. Rural cooperative medical system (RCMS) coverage is one of the eight obligatory monitoring indicators in the plan, with a goal of increasing coverage from 23.5 percent in 2005 to 80 percent in 2010.

Enrollment in RCMS is voluntary. Premiums are paid by individuals, the local government, and the central government. The rural poor are exempted from premiums, which are paid for jointly by the central government and local governments. Although households contribute only Y10 (about \$1.27) in premiums a year, deductibles range from Y50 to Y300 per service, and copayments are 30–80 percent of levied charges. Some schemes combine pooled insurance with individual medical savings accounts. The package of services to which people are entitled varies considerably across schemes. Some schemes cover only inpatient services, some cover both inpatient and outpatient services, and some cover all inpatient but only selected outpatient services.

To support the increasing reliance on prepayment and the need for government to subsidize the poor, there is clear scope for government to increase its contributions to health from existing revenues. China currently spends about 5.6 percent of GDP on health expenditure, a level similar to that in other countries at similar levels of development. But health expenditure as a proportion of total government revenues has fallen in recent years (Wagstaff and Lindelow 2007). Moreover, although government accounts for about 36 percent of total health expenditures, half of this spending is in the form of social security paid for the health care of the 24 percent of the population with social health insurance (WHO 2006). This leaves only 50 percent of all government expenditures for health services for the rest of the population and for traditional public health functions, such as disease surveillance.

Regional discrepancies also exist. Only about 20 percent of health care expenditure is spent in rural areas, where spending focuses more on clinical services than prevention, promotion, and the overall stewardship function of government. This imbalance extends to out-of-pocket household expenditures per person, with the gap between rural and urban settings in the ability to purchase health care continuing to grow (figure 12.1).

**Figure 12.1 Per Capita Out-of-Pocket Health Expenditure in Urban and Rural China, 1990–2002**



Source: National Bureau of Statistics 2003.

## Increasing Funding for Health

Other chapters in this volume examine problems with China's fiscal system and propose ways of raising more revenue, more efficiently. This chapter focuses on the potential of increasing sin taxes—taxes levied on “bads,” such as tobacco and alcohol—not only to raise more funds for health but, more important, to improve population health.

Tobacco tax rates are generally lower in low- and middle-income than in higher-income countries. China's rate of 38–40 percent of the retail price is lower than the international median tax rate (about 66 percent) and lower than taxes in many other countries in the region (Mackay and Erikson 2002). This suggests considerable room for raising these rates.

Consideration could also be given to the appropriate mix between ad valorem and specific taxes. Yurekli and Onder (2006) argue that specific taxes have a greater impact on overall consumption and are therefore a more efficient means of improving population health; in contrast, ad valorem taxes maximize revenue for government (Eggleston and others 2006). Currently, 21 percent of the retail price is raised from ad valorem taxes in China, with only 3 percent raised from specific taxes. To the extent that Yurekli and Onder are correct, these figures suggest that revenue maximization has taken precedence over public health impact.

While raising more money is important, there is also potential to increase the efficiency of health service organization and delivery in China. There is growing evidence of overuse of high-tech, expensive diagnostics, of overprescription of

pharmaceuticals, and of lengthy hospital stays for people who can afford to pay for inpatient care (Liu 2004; Eggleston and others 2006; Li, Zhang, and Tian 2006). This results in high and increasing revenues per patient episode and a rapid increase in overall health expenditures that is linked more to changes in quantities than changes in price (Eggleston and others 2006).

## Getting the Mix of Policies Right

Developing health financing systems requires consideration of three components. The first, revenue collection, relates to the mechanisms that allow sufficient financial contributions to be collected from different sources in an efficient manner. The second, pooling, focuses on the way contributions are, or are not, pooled so that the risk of having to pay for care is shared rather than borne by each patient individually. The third, purchasing, involves the way contributions are used to purchase or provide effective health interventions (Kutzin 2001; Savedoff and Carrin 2003; Schieber and others 2006; Xu and others 2007). The purchasing function includes what services should be purchased, from whom to buy them, and how providers are paid. A variety of choices can be made about each of these components; the combination of decisions determines the overall efficiency and equity of the system.

Many of the recent financing reforms in China have focused on developing health insurance, which modifies the way funds are raised and pooled. Much has been achieved, but considerable progress can still be made. For example, enrollment in insurance schemes is officially voluntary, although there is considerable government encouragement for people to join. Enrollment rates are reaching 80 percent in many areas, but there is still evidence of adverse selection (that is, only the relatively sick take out insurance) (Wang and others 2006). This problem is magnified by the fact that in many rural areas, healthy younger people have migrated in search of work, leaving fewer low-risk people to cross-subsidize those at higher risk of incurring medical expenses.

The sheer magnitude of copayments also deters many of the poor from using services even when they join the schemes. This means that their contributions actually subsidize the care of richer people who can afford copayments. Some government assistance is currently available to poor people who cannot pay premiums, but little assistance is provided for those who cannot afford copayments. There are a number of other concerns with the existing rural insurance schemes. One is that the individual contribution is a flat rate, regardless of income level (except for the poor, who do not contribute toward the premium). This reduces the ability to pool across income groups living in the catchment area of a particular scheme. A second is the lack of risk equalization across schemes. Mechanisms for providing financial transfers between schemes that serve relatively rich people (who are likely to be healthier) and those that serve relatively poor people (who are likely to be less healthy) are not well developed, meaning that poorer, less healthy communities are likely to have access to fewer and lower-quality services.



While modification of these characteristics of rural insurance will improve equity, the greatest improvements in efficiency are likely to be attained by focusing on the purchasing function, in particular provider payment mechanisms, which are a critical determinant of the overall costs and quality of the system. They are particularly important when combined with prepayment and the pooling of funds. In general, prepayment combined with fee-for-service for medical services (or daily per diem payment for inpatient stays) leads to overservicing and high costs. Other negative effects are that providers tend to minimize the time spent with each patient, administrative costs are high, and there are no incentives for providers to engage in preventive activities (Barnum, Kutzin, and Saxenian 1995; Rodwin and Okamoto 2000; Carrin 2002).

A large part of the overservicing observed in China can be ascribed to the heavy reliance on fee-for-service payments. This overservicing is likely to continue if the growth of health insurance is not accompanied by changes in provider payment mechanisms. Moreover, if providers are free to levy charges as they wish, or to order additional services, out-of-pocket payments made by households can actually rise, rather than fall, after the introduction of health insurance (Lindelov and Wagstaff 2005)—something that seems to have happened already with some forms of health insurance in China (Liu and Zhao 2006).

Capitation payments for outpatient services and case payment for inpatient care remove incentives to overprovide services and may create incentives to provide preventive services. Although there have been some experiments with prospective payment in China (Yip and Eggleston 2004; Meng 2005; Eggleston and others 2006), as yet there appears to be no plan to modify the current payment system extensively.

## Conclusions

China has made great progress in improving population health. It has also recognized the need to reduce financial barriers to services and to reduce the incidence of financial catastrophe linked with out-of-pocket payments. Significant steps have been taken to expand the coverage of health insurance.

There is room to continue expanding and modifying revenue collection and pooling. Focusing only on these issues will not, however, be sufficient to ensure universal coverage. Active consideration of how the purchasing function, particularly provider payment mechanisms, can be made more efficient in an environment of increasing health insurance is critical.

## Notes

This chapter draws on the ongoing work of the Department of Health Systems Financing and the China country office of the WHO. The authors gratefully acknowledge valuable input from Henk Bekedam, Hana Brix, and Shenglan Tang to the conference presentation on which this chapter is based.

1. A household is defined as experiencing financial catastrophe when it spends more than 40 percent of its nonsubsistence income on health in any time period (Xu and others 2003a, 2003b).

## References

- Barnum, H., J. Kutzin, and H. Saxenian. 1995. "Incentives and Provider Payment Methods." HRO Working Paper 51, World Bank, Washington, DC.
- Carrin, G. 2002. "Social Health Insurance in Developing Countries: A Continuing Challenge." *International Social Security Review* 55 (4): 57–69.
- Carrin, G., A. Ron, H. Yang, H. Wang, T. Zhang, L. Zhang, S. Zhang, Y. Ye, J. Chen, Q. Jiang, Z. Zhang, J. Yu, and X. Li. 1999. "The Reform of the Rural Cooperative Medical System in the People's Republic of China: Interim Experience in 14 Pilot Counties." *Social Science and Medicine* 48 (7): 961–72.
- China National Health Economics Institute. 2003. *China Fairness of Health Financial Contribution Report*. Beijing.
- Duckett, J. 2001. "Political Interests and the Implementation of China's Urban Health Insurance Reform." *Social Policy and Administration* 35 (3): 290–306.
- Eggleston, K., L. Li, Q. Meng, M. Lindelow, and A. Wagstaff. 2006. "Health Service Delivery in China: A Literature Review." Policy Research Working Paper 3978, World Bank, Washington, DC.
- Gao, J., S. Tang, R. Tolhurst, and K. Rao. 2001. "Changing Access to Health Services in Urban China: Implications for Equity." *Health Policy and Planning* 16 (3): 302–12.
- Kutzin, J. 2001. "A Descriptive Framework for Country-Level Analysis of Health Care Financing Arrangements." *Health Policy* 56 (3): 171–204.
- Li, J. H., K. N. Zhang, and L. C. Tian. 2006. "Multiple Facets of China's Health Inequality." *Lancet* 367 (9520): 1397.
- Lindelow, M., and A. Wagstaff. 2005. "Health Shocks in China: Are the Poor and the Uninsured 'Less Protected'?" Policy Research Working Paper 3740, World Bank, Washington, DC.
- Liu, G. G., and Z. Zhao. 2006. "Urban Employee Health Insurance Reform and the Impact on Out-of-Pocket Payment in China." *International Journal of Health Planning and Management* 21 (3): 211–28.
- Liu G. G., Z. Zhao, R. Cai, T. Yamada, and T. Yamada. 2002. "Equity in Health Care Access to: Assessing the Urban Health Insurance Reform in China." *Social Science and Medicine* 55 (10): 1779–94.
- Liu, Y. L. 2004. "China's Public Health-Care System: Facing the Challenges." *Bulletin of the World Health Organization* 82 (7): 532–38.
- Liu, Y., K. Rao, and W. C. Hsiao. 2003. "Medical Expenditure and Rural Impoverishment in China." *Journal of Health, Population and Nutrition* 21 (3): 216–22.
- Mackay J., and M. Eriksen. 2002. *The Tobacco Atlas*. Geneva: World Health Organization.
- Meng, Q. 2005. "Review of Health Care Provider Payment Reforms in China." Shandong University, China.

- National Bureau of Statistics. 2003. *China Statistical Yearbook*. Beijing: China Statistics Press.
- Rao, K. 2004. *Main Findings of Third National Health Survey*. Centre for Health Statistics and Information, Ministry of Health, Beijing.
- Rodwin, M. A., and A. Okamoto. 2000. "Physicians' Conflicts of Interest in Japan and the United States: Lessons for the United States." *Journal of Health Politics, Policy, and the Law* 25 (2): 343–76.
- Savedoff, W., and G. Carrin. 2003. "Developing Health Financing Policies." In *Health System Performance Assessment: Debates, Methods and Empiricism*, ed. C. J. L. Murray and D. B. Evans. Geneva: World Health Organization.
- Schieber, G., C. Baeza, D. Kress, and M. Maier. 2006. "Financing Health Systems in the 21st Century." In *Disease Control Priorities in Developing Countries*, ed. D. T. Jamison. New York: Oxford University Press.
- United Nations. 2005. *World Population Prospects: The 2004 Revision*. New York: UN Population Division.
- Wagstaff, A. 2005. "Inequality Decomposition and Geographic Targeting with Applications to China and Vietnam." *Health Economics* 14 (6): 649–53.
- Wagstaff, A., and M. Lindelow. 2007. "Health Reform in Rural China: Challenges and Options." In *China: Public Finance for a Harmonious Society*, ed. J. Lou and S. Wang. Washington, DC: World Bank.
- Wagstaff, A., and E. Van Doorslaer. 2003. "Catastrophe and Impoverishment in Paying for Health Care: With Applications to Vietnam 1993–1998." *Health Economics* 12 (11): 921–34.
- Wang, H., L. Zhang, W. Yip, and W. Hsiao. 2006. "Adverse Selection in a Voluntary Rural Mutual Health Care Health Insurance Scheme in China." *Social Science and Medicine* 63 (5): 1236–45.
- WHO (World Health Organization). 2005. "Sustainable Health Financing, Universal Coverage and Social Health Insurance." Document WHA 58.33, Geneva.
- . 2006. *The World Health Report 2006: Working Together for Health*. Geneva: WHO.
- Xu, K., D. B. Evans, G. Carrin, and A. M. Aguilar. 2004. "Reducing Catastrophic Health Expenditure in the Design of Health Financing Systems." WHO/FER Technical Brief for Policy Makers, 2, World Health Organization, Geneva.
- Xu, K., D. B. Evans, G. Carrin, A. M. Aguilar-Rivera, P. Musgrove, and T. G. Evans. 2007. "Protecting Households from Catastrophic Health Expenditures." *Health Affairs* 26 (4): 972–83.
- Xu, K., D. B. Evans, K. Kawabata, R. Zeramdini, J. Klavus, and C. J. L. Murray. 2003a. "Household Catastrophic Health Expenditure: A Multicountry Analysis." *Lancet* 362 (9378): 111–17.
- . 2003b. "Understanding Household Catastrophic Health Expenditures: A Multi-Country Analysis." In *Health Systems Performance Assessment: Debates, Methods and Empiricism*, ed. C. J. L. Murray and D. B. Evans, 565–72. Geneva: World Health Organization.
- Yip, W., and K. Eggleston. 2004. "Addressing Government and Market Failures with Payment Incentives: Hospital Reimbursement Reform in Hainan, China." *Social Science and Medicine* 58 (2): 267–77.

- Yurekli, A. A., and Z. Onder. 2006. "Evaluating Excise Tax Structure from Public Health Interest: Tobacco Control." Paper presented at the "Seminar on the Taxation of Tobacco in the European Union," Budapest, September 28–29, hosted by the International Tax and Investment Center.
- Zhang, X., and R. Kanbur. 2005. "Spatial Inequality in Education and Health Care in China." *China Economic Review* 16 (2): 189–204.
- Zhao, Z. 2006. "Income Inequality, Unequal Health Care Access, and Mortality in China." *Population and Development Review* 32 (3): 461–83.



# Health Reform in Rural China: Challenges and Options

# 13

ADAM WAGSTAFF AND MAGNUS LINDELOW

China's rapidly growing and increasingly modern economy, kick-started by the market-liberalizing reforms of the 1980s and 1990s, has lifted millions out of poverty (Ravallion and Chen 2006). By contrast, the country's health system—once widely admired by health specialists the world over—has lagged behind.

The change has not gone unnoticed by the government, which has recently embarked on a series of reforms, including a new rural health insurance scheme, a new medical expense safety net scheme for rural residents, and a network of centers for disease control. The government has also substantially increased both capital and recurrent spending on health. These reforms are a major step in the right direction, but the government still faces considerable challenges in the health sector, as it acknowledges.

This chapter presents some workable ideas for further reform, particularly in rural China, where the challenges are greatest. The scope of the reforms covered is broad, reflecting the breadth of the challenges still facing the government and their interconnectedness. Making progress on health insurance without reforming the way providers are paid will simply add to the sector's already high inflation rate, and it risks having providers create still further demand for their services. Likewise, making progress on insurance coverage for catastrophic health risks without tackling the financing, incentive, and accountability issues in public health risks improving the system's performance on financial protection but doing nothing to reverse China's faltering progress on improving health outcomes—the ultimate goal of any health system.

The chapter starts with a review of China's health systems' recent performance and the reasons for the system's apparent deterioration. It then outlines the government's recent reforms and asks how far they address the problems identified in the first section. The third section sets out some ideas for further reforms that address the unresolved issues. The last section examines sequencing, political economy, and capacity issues.

## Unraveling the Causes of China's Deteriorating Health System Performance

Health systems exist to improve health. On this yardstick, China's health system's performance seems to have deteriorated in recent years. In the 1960s and 1970s, China reduced child mortality and maternal mortality dramatically—far faster than would have been expected given its low rate of economic growth at the time and faster than faster-growing neighboring countries.

This pattern changed in the 1980s and 1990s, when China's rate of reduction diminished, falling below what might reasonably have been expected of it given its rapid economic growth at the time and below what slower-growing neighbors were achieving. China reduced tuberculosis mortality and prevalence in the 1990s—largely through the adoption of the Directly Observed Treatment Short Course (DOTS) program—but it did so more slowly than most neighboring countries. According to Ministry of Health data, the past few years have seen increases in communicable disease mortality from some causes, partly but not exclusively as a result of increased deaths from HIV/AIDS and the 2003 SARS (severe acute respiratory syndrome) outbreak.<sup>1</sup>

Inequalities in health—between rich and poor, between city and village dwellers, between the richer east and the poorer center and west—have also become increasingly evident (Zhao 2006). In 2003 the maternal mortality rate was 73 per 10,000 live births among the poorest fifth of the population covered by China's maternal and child health surveillance system and 17 per 10,000 live births in the richest fifth. Health inequalities in China appear to be large by international standards,<sup>2</sup> show no sign of diminishing, and in some respects are increasing (Shen, Habicht, and Chang 1996; Zhang and Kanbur 2005).

### *Out-of-Pocket Costs: A Barrier to Getting Care and a Cause of Poverty*

Why has China's progress on improving population health faltered? One obvious explanation is that people who need health care are no longer getting it when they need it. The evidence on this is mixed. There is some evidence of increased utilization of key interventions, including prenatal checkups and attended deliveries. But there is also evidence of falling utilization of some services and of increasing numbers of people needing care and not receiving it.<sup>3</sup> In the 2003 National Health Survey (NHS), 50 percent of respondents (up from 36 percent in 1993) who had been ill in the previous two weeks reported not having sought care (Ministry of Health 2004a). Thirty percent of respondents said they had not been hospitalized despite having been told they needed to be. And among those who did go to hospital, nearly half discharged themselves against their doctor's advice.

This level of nonuse of health care by people who need it begs the question: why? While many factors are undoubtedly important in shaping people's utilization

decisions, one factor emerges as increasingly important in China: cost. Of respondents in the 2003 NHS who said they should have been hospitalized but were not, the majority—three-quarters in rural areas and 85 percent among the poorest fifth of the population—cited inability to afford care.

Even in public health, out-of-pocket payments are common. In two counties studied, as much as half of expenditures on public health were financed through out-of-pocket payments—a far higher percentage than in other countries (Wang, Sun, and Chen 2002). Immunization outside the World Health Organization's Expanded Program on Immunization (EPI) is the largest single source of household out-of-pocket expenditure on preventive public health services. But there is evidence of out-of-pocket payments for EPI immunization, which is supposedly free, and of out-of-pocket payments for tuberculosis treatment outside DOTS, even though DOTS treatment is perfectly adequate for most tuberculosis patients and free. Unsurprisingly, this emphasis on out-of-pocket payments in public health is estimated to have had negative effects on coverage rates (Liu and Mills 2002).

When people do obtain treatment in China, they often fall into financial difficulty as a result. In the 2003 NHS, 30 percent of poor (*pinkun*) households said that health care costs were the reason they were in poverty. In contrast to the situation in many other Asian countries, household spending on health care as a share of total household expenditure is highest among the poor in China (Gao and others 2002; O'Donnell and others 2005). Furthermore, the fraction of the population experiencing catastrophic health expenses (defined as expenses that are more than 25 percent or 40 percent of nonfood consumption) is higher in China than elsewhere in Asia, and it is also higher among the poor (van Doorslaer and others 2005). Moreover, the situation is getting worse: between 1978 and 2003, out-of-pocket expenditures grew in real terms at an annual rate of 15.7 percent, taking private health spending as a share of total health spending from about 20 percent to nearly 60 percent (figure 13.1).

The high and rising cost of medical care in China means that health shocks can have devastating consequences for households, especially poor ones. The problem is compounded by the lack of any safety net scheme that protects families not just from the medical care costs but also from the income losses associated with illness, which may be even larger than the direct costs of medical care (Lindelov and Wagstaff 2005).

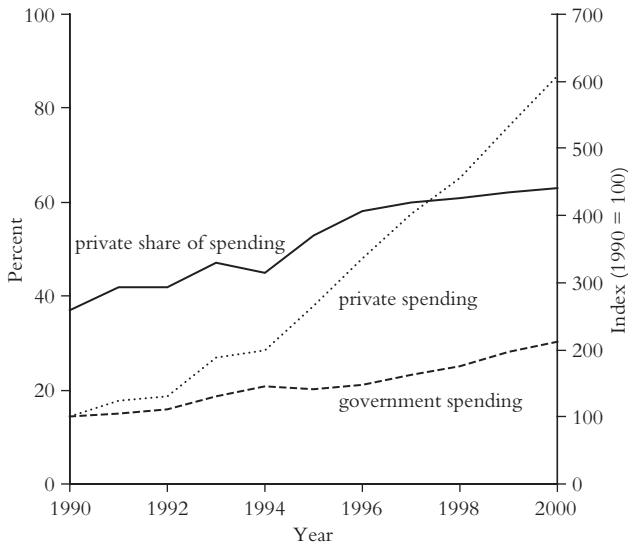
### *Why Is Health Care in China So Unaffordable?*

There are two possible reasons why households in China have to pay such large out-of-pocket costs when they are hospitalized. One is that households may lack insurance coverage. The other is that the cost of care is high relative to per capita income. Both explanations turn out to be correct.

Relative to per capita income, out-of-pocket spending in China is very high, with a single inpatient spell involving out-of-pocket spending equivalent to nearly 60 percent of annual per capita consumption—substantially more than in other countries



**Figure 13.1 Out-of-Pocket Health Spending in China, 1990–2000**



Source: Ministry of Health 2004b.

Note: Government and private spending are measured on the right-hand axis. Private spending as a percentage of total spending is measured on the left-hand axis.

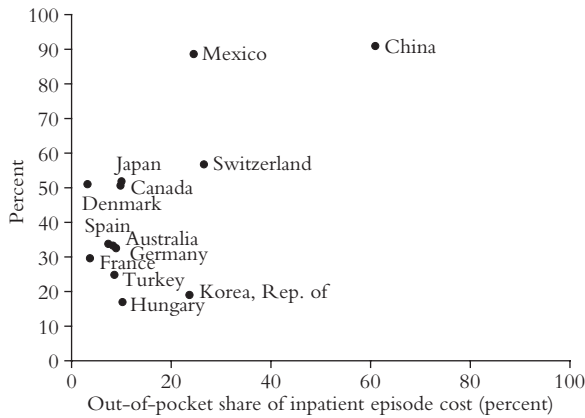
(figure 13.2). In the Republic of Korea, Mexico, and Switzerland, the figure is just over 20 percent. In most countries, the figure is even lower. The high fraction of the cost of care paid out of pocket in China reflects the lack of health insurance.

The cost of care in China is also high relative to China's per capita income. Only Mexico comes close. Hungary and Turkey—both, like China, middle-income countries—have inpatient care costs that are much lower relative to their per capita incomes.

What makes health care in China so costly relative to GDP? One possibility is that health care in China may be produced in a (technically) inefficient way in comparison with other countries. Resources could be lying idle, patients could be held in hospital unnecessarily long, and so forth. The other possibility is that, although delivered efficiently, the mix of interventions that China's health system delivers may be too expensive relative to per capita income. That is, China may be delivering care that upper-middle-income and upper-income countries can afford, but China currently cannot. It seems likely that both factors are at work, though separating them is not easy.

That China's health sector is inefficient seems clear enough. At 60 percent, its average bed occupancy rate is below that of all OECD countries except Turkey. Its case flow (the number of cases per bed per year) is less than that of all OECD

**Figure 13.2 Out-of-Pocket Expenses and Cost of Inpatient Care in Selected Countries**



*Source:* Data for OECD countries on both the cost of an inpatient episode (the numerator) and average per capita household consumption expenditure (the denominator) are from OECD (2006) or OECD technical papers on national health accounts. Data are for the latest year available, which varies across countries (ranging from 1999 to 2002). Data for China are from the 2003 National Health Survey and the Ministry of Health Statistical Digest and refer to 2003.

*Note:* The y axis represents the cost of a single inpatient episode as a percentage of annual per capita household consumption.

countries except Japan, reflecting the high average lengths of stay in China and Japan. Stays are shorter in township health centers (THCs) than in county hospitals, but because THC bed occupancy rates are very low, their case flows are barely higher than those of higher-level hospitals. China thus seems to have more beds than it needs, relative to the demand for hospitalization. Along with these underutilized beds go underutilized staff and overinvestment in equipment. Costs, as a result, tend to be higher than they need be. Excess capacity in county hospitals results in an increase in average costs of about 5 percent; in THCs costs are about 40 percent higher than they would be if excess capacity were eliminated.

It is not just that there is more capacity than necessary to treat the current numbers of patients. Patients who are treated tend to be treated in a very costly way, and at least in some cases, the extra costs are not medically warranted. It has been estimated that 20 percent of expenditures associated with the treatment of appendicitis and pneumonia were clinically unnecessary (Liu and Mills 1999). The oversupply of drugs is a well-known problem in China, which has one of the highest shares of pharmaceutical expenditures in total health expenditure in the world (nearly 45 percent in 2003, compared with an average of about 15 percent in the OECD) (Jacobzone 2004; Ministry of Health 2004b). Unsurprisingly, studies suggest that drug spending on this scale is not medically necessary. In one study of village clinics, it was found that less than 1 percent of drug prescriptions were

reasonable (Zhang, Feng, and Zhang 2003). Caesarean sections have increased in China faster than can be explained by increases in risk factors (Cai and others 1998). China has more magnetic resonance imaging (MRI) scanners per million people than Mexico and Thailand, which are considerably more affluent (Hutubessy, Hanvoravongchai, and Edejer 2002), and about 2.5 times as many as would be expected on the basis of its per capita income.

### *Provider Incentives, Costs, and the Quality of Care*

What accounts for the high and rising cost of health care in China?<sup>4</sup> Part of the explanation is that the resource intensity of care changes as incomes grow and people acquire insurance coverage. This explains why one recent study finds that some types of health insurance in China actually increase out-of-pocket spending: the insured receive a more resource-intensive style of care (Lindelow and Wagstaff 2005). It also explains why as incomes in China have risen, utilization has either fallen or stayed largely unchanged but the unit cost of care has risen.

Increased resource intensity could, in principle, reflect patients “choosing” to spend some of their extra purchasing power—because of insurance or rising income—on better-quality care, guided in this process by well-meaning medical providers who have only their patients’ best interests in mind. But it could also reflect doctors and hospitals manipulating demand for their own benefit, taking advantage of their superior knowledge of medical matters and the trust relationship they enjoy with their patients. Such “supplier-induced demand” need not necessarily result in patients receiving medically unnecessary care. But the evidence suggests not only that demand inducement exists in China but that much of the extra care that Chinese patients receive is indeed medically unnecessary.

Why does this happen? The answer lies in the peculiar combination of provider payment and regulatory and governance arrangements in Chinese health care. Chinese providers are paid largely through fee-for-service, with some budgetary financing. Prices are set by the government in such a way that providers have a strong financial incentive to induce demand for drugs and some services. This was not always the case. Under the old planned economy (before 1980), providers were financed largely from the government budget or commune. Things changed in the early 1980s, when the planned economy model was discarded. In the face of declining government revenues, local governments limited their support of public facilities to a fixed annual subsidy, often just sufficient to pay basic salaries. Urban hospitals received the lion’s share of these supply-side subsidies. In return, public facilities were granted the freedom to generate “business income” by charging patients for drugs and services and to retain any surplus at the end of the year (Liu, Xu, and Wang 1996). In addition, many public facilities implemented a “personal responsibility system,” under which financial bonuses (and fines) for individual staff are tied to quality and quantity standards or revenue targets (Zheng and Hiller 1995).

Public providers were not, however, given *carte blanche*. They were limited in hiring and firing decisions, as well as in many other managerial decisions. And

they were limited in the prices they could charge. The government's policy was to keep basic care affordable by setting the price of such care well below cost while allowing providers to cross-subsidize such care by pricing drugs and high-tech care above cost. The government may not have anticipated the inevitable result: that providers would seek to shift demand from unprofitable low-tech care to profitable drugs and high-tech care (Liu and Mills 1999; Liu, Liu, and Chen 2000).

### *What Happened to Health Insurance?*

Few people in China—especially in rural China—have health insurance. This was not always the case. Before the reforms of the 1980s, almost all Chinese citizens were covered by some form of health insurance. Agricultural workers were covered by the old commune-based Cooperative Medical Scheme (CMS), state-owned enterprise workers were covered by the Labor Insurance Scheme (LIS), and civil servants and other government workers were covered by the Government Insurance Scheme (GIS). There were some gaps in coverage (not all urban schemes covered dependents, for example), but the gaps were relatively small (during the 1970s, the CMS covered an estimated 90 percent of the rural population). China's near-universal coverage is thought to have been one reason for its spectacular success in improving health outcomes during the 1970s (Sidel 1993).

During China's transition from a planned to a market economy, health insurance coverage fell dramatically and became increasingly unequal. The decollectivization of agriculture resulted in the almost total collapse of the CMS. By 1993 less than 10 percent of the rural population had health insurance. Despite attempts to resuscitate the CMS during the 1990s (Cretin and others 1990; Carrin and others 1999) coverage nationally has remained stubbornly low. By 2003, 80 percent of China's rural population—some 640 million people—lacked health insurance. Even the new Basic Medical Insurance (BMI) scheme in urban areas covered less than 40 percent of the urban population in 2003, according to that year's National Health Survey.

### *What Happened to Public Health Programs?*

While there may be some differences of opinion over the precise meaning and boundaries of public health, population-based interventions of a public good character, such as surveillance, and personal interventions involving "externalities," such as immunization, are typically considered core public health activities. For many years, China was a world leader in this field. Epidemic prevention stations were established in the early 1950s, a number of disease-specific institutes were set up, and various mass campaigns were launched. It is these public health initiatives—along with the setting up of the CMS—that are largely credited with the spectacular declines in child and maternal mortality, as well as the virtual elimination of malaria.

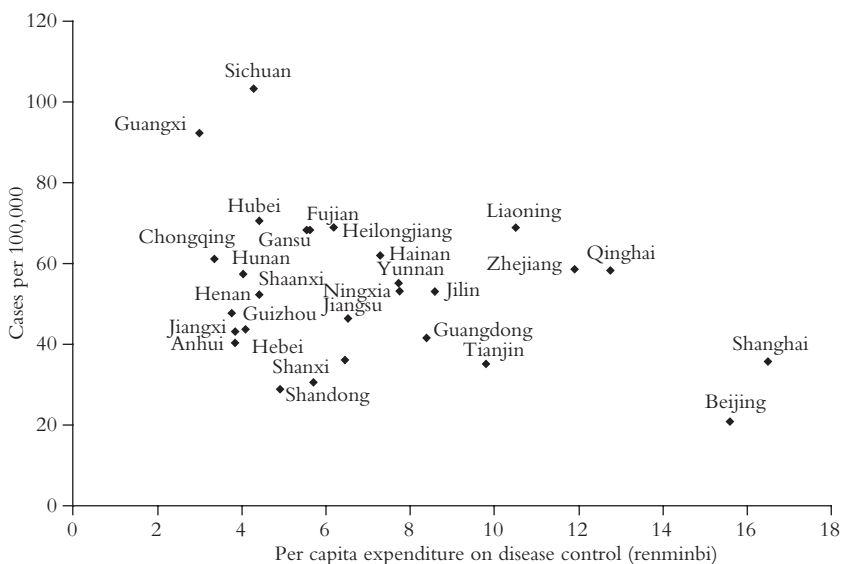
In most countries, public health activities are financed largely out of government expenditure. Although local governments or local agencies administer the program, much of the financing is through earmarked allocations from higher-level

governments, including the central government. This is not the case in China, where local governments (counties) are left largely to their own devices to finance and deliver public health. Budgets are set at the county level, largely using county government revenues. As a result, local governments in the poorest parts of China, which face the toughest public health challenges, spend the least on public health (figure 13.3). Resources from higher levels of government help, but few transfers are earmarked for public health, and while general transfers reduce inequalities across counties and are becoming more redistributive, they leave considerable inequalities in government resources.

Furthermore, transfers from upper-level government come with few strings attached. And while higher-level governments have other means through which to exert influence over—and provide limited support to—lower-level governments in setting priorities and delivering public health programs, in practice their influence and support are limited. As a result, local governments have considerable latitude to choose their own health priorities and within these their public health priorities. The risk is that local officials will choose priorities that reflect their own interests rather than broader concerns, including public health risks to neighboring jurisdictions. China's recent experience with SARS was a powerful reminder of the fact that communicable diseases do not respect county, provincial, or national borders.

Local governments have relied on a variety of financially autonomous providers and public health institutions for the delivery of public health interventions. These

**Figure 13.3** Prevalence of Tuberculosis and Government Expenditure on Public Health, by Province, 2003



Source: National Bureau of Statistics 2004.

include the Centers for Disease Control, the Maternal and Child Health Centers, and the Family Planning Stations, as well as “regular” health providers, such as village doctors, THCs, and county hospitals. The precise mix of public health activities that emerges at the county level thus depends largely on what these providers and agencies decide to deliver, which in turn depends at least in part on the incentives they face at the margin. Much of the revenue of public health providers comes from user charges (an exception is the Family Planning Stations, which are fully funded out of general revenues). Local governments encourage such charges, because they reduce the financial dependence of public health providers on them; some local governments even set revenue targets for providers. These charges, which are used to pay staff bonuses, encourage providers to shift demand from unprofitable business lines (including care such as DOTS drugs, for which providers receive no remuneration at the margin) to profitable ones (such as tuberculosis drugs that are not part of the DOTS package) (Zhan and others 2004).

## **Health Reform in Rural China at a Crossroads**

These problems are widely known in China, and the government has started to introduce measures aimed at resolving them. Initially, its efforts focused on urban areas. More recently, a number of initiatives have been introduced in rural areas as well.

### *Health Insurance for Rural Residents*

With its growing appreciation of the heavy burden that health care costs now place on rural households, the government launched a new health insurance program for the rural population, known as the New Cooperative Medical Scheme (NCMS), to be phased in over a five-year period, starting in 2003. This is a subsidized but voluntary insurance program, with the cost (Y50 per member) in central and western counties split 10:20:20 between the member, local governments (typically county and province), and the central government (in most eastern provinces, there is no central government subsidy, so the split is 10:40:0). The NCMS focuses largely on inpatient expenses and is managed at the county level. Its budget is small relative to current health spending (currently Y240 or so a year in rural areas), necessitating high deductibles, low ceilings, low reimbursement rates, and exclusions. By the end of 2004, 310 of China’s 1,465 rural counties were officially piloting the NCMS, and many more were doing so unofficially. By March 2006 the figure had reached more than 600.

Despite its voluntary nature and short life, NCMS has already achieved high enrollment rates (80 percent or so, including among the poor). Enrollment often reflects an element of persuasion by local officials, especially in counties in which the NCMS has become a priority. The likelihood of joining the NCMS is significantly higher in higher-income households and in households in which a member has a chronic illness, and the likelihood of quitting the NCMS is significantly higher in less-educated households and among people living in counties in which average reimbursement is relatively low.

The NCMS has had a positive impact on utilization (especially at the THC level), which was one of the program's objectives. However, it has apparently not had any statistically significant impact on the amount people pay out of pocket per contact. Like China's urban insurance scheme (Lindelow and Wagstaff 2005), the NCMS appears to have increased both out-of-pocket spending by households and the incidence of catastrophic health spending (spending exceeding 10 percent and 20 percent of income).<sup>5</sup>

The NCMS represents a major step toward achieving China's goal of universal health insurance, but it faces many challenges. Its budget is small relative to out-of-pocket spending in China. Even under the NCMS, out-of-pocket payments will still be the largest source of finance in China's rural health system, accounting for perhaps 55 percent of the total, down from about two-thirds currently. Its emphasis on inpatient care over outpatient care carries the risk that the NCMS will encourage a shift of demand by both patients and providers away from basic, cost-effective interventions delivered in an outpatient setting toward less cost-effective interventions delivered in an inpatient setting. These extra inpatient spells will bring financial gain to the provider, but they may yield only limited health gains to the patient. The likely outcome is that basic services, which providers already face too little incentive to deliver, will be even more underused than they currently are. The NCMS also has relatively few measures in place to reduce the cost of care. Only in a few localities is the NCMS starting to look like a real purchaser, with at least some use of prospective payments. NCMS financing is also inequitable: households that join pay the same flat-rate contribution irrespective of their income, and counties pay the same contribution irrespective of their capacity to pay, except insofar as those in the west and center receive central government assistance and provinces decide to target central government and provincial government assistance on poorer counties (few, in practice, do so). Finally, the NCMS already appears to suffer somewhat from adverse selection, and its reimbursement system is highly complex and poorly understood by members.

### *Health Expense Safety Net Program for Disadvantaged Groups*

In 2003 the Ministry of Civil Affairs announced a medical assistance safety net scheme. This program provides financial assistance with medical expenses and NCMS contributions to specific vulnerable groups. The Medical Assistance budget (typically about Y1.5 per capita) is financed largely by central, provincial, and county-level sources, supplemented by funds from townships, lotteries, donations, and development assistance. In non-NCMS counties, assistance under the program takes the form of direct assistance with out-of-pocket medical expenses. In NCMS counties, the program can help people with their NCMS contribution, with NCMS copayments, or both.

Like the NCMS, Medical Assistance represents a major achievement—especially given its short gestation—and a significant change of policy.<sup>6</sup> Challenges do exist, however.

First, targeting appears to be relatively weak. Central government transfers do not appear to be linked to county income. Within counties it appears that Medical Assistance beneficiaries are not disproportionately poor. In part, this is because poverty is not the only criterion for determining eligibility for Medical Assistance benefits, but other weaknesses in the targeting process are also important.

Second, Medical Assistance appears to be underdisbursing, despite the large amounts disbursed per episode. This problem points to a need not just to target resources better but also either to increase the share of costs reimbursed or to reimburse more people—those a little further up the income distribution.

Perhaps the greatest challenge for Medical Assistance is its *raison d'être* once the NCMS has been fully rolled out and NCMS coverage deepened. At that point, the program's most obvious function will be to provide assistance with the cost of joining the NCMS and making NCMS copayments. Providing such assistance for the poor makes good sense. Whether it makes sense to do so for nonpoor groups as well—as is currently the case—is much less obvious.

### *Reform and Extragovernment Spending on Public Health*

China's government has also been active in public health (Wang and others 2005). Arguably, the most important institutional reform was the creation of the Centers for Disease Control (CDC). The first center was created in Shanghai in the late 1990s, when a number of public health institutions were merged into a single organization and given a new and expanded mandate (Peng and others 2003). Subsequently, most local governments followed suit, and in 2002, the Chinese Academy of Preventive Medicine was transformed into a national CDC, but without powers over the local CDCs, which are autonomous agencies.

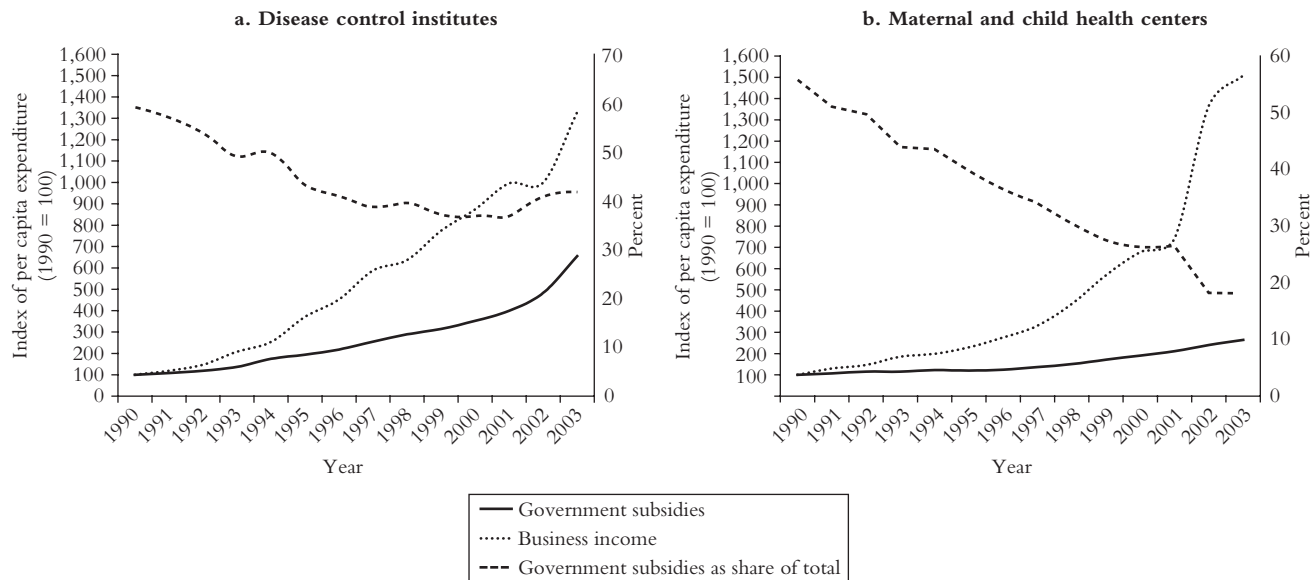
On the policy front, too, the government has been active. Recent health policies, as well as the 11th Five-Year Plan, have reiterated the importance of prevention, including prevention of chronic disease (Wang and others 2005). The past few years have also seen experimentation with new programs, such as management of diabetes and hypertension in selected cities, as well as demonstration sites for chronic disease prevention and control focused on smoking control, physical activity, hypertension prevention, and mental health.

Contrary to what is often claimed, policy and institutional reforms have also been accompanied by a steady increase in government spending on public health, which has kept pace with increases in overall government health expenditure, although not with government expenditure across all sectors. Government spending on public health has increased considerably in the past few years, and as a share of GDP it is similar to that in other countries for which data are available.

What is true is that increases in government subsidies to public health institutions have been dwarfed by trends in their "business income." As a result, the share of government expenditure in overall public health financing has declined steadily (figure 13.4).



**Figure 13.4** Government Spending on and Business Income of Disease Control Institutes and Maternal and Child Health Centers, 1990–2003



Source: Data on government subsidies to public health institutions are from China National Health Accounts (Ministry of Health 2004b) for 1990–94 and from the National Health Accounts background study for 1995–2000 (China Health Economics Institute 2005).

Note: Series are based on classification of expenditure by provider rather than function.

### *Provider Payment Reform*

Patients and insurers still use fee-for-service to pay providers, paying prices that are regulated and distorted in ways that encourage the oversupply of drugs and high-tech interventions. Some modest reforms to the price schedule have occurred, aimed at reducing the distortions in it. Drug pricing policy has also been changed, with the new policy involving the regulation of only selected drugs (10 percent by revenue) rather than the entire range as previously. These measures were expected to reduce drug prices through a combination of increased competitive pressure and more effective procurement. In practice, hospitals have been able to maintain high drug revenues by increasing drug utilization and shifting utilization from one drug to another (regulated to unregulated, low margin to high margin).

Some insurers have begun to move away from fee-for-service. Reforms have occurred largely in urban areas and have included the use of global budgets, diagnosis-related groups (DRGs), and fixed charges per inpatient or per inpatient day. Following the lead of the Basic Medical Insurance scheme, a handful of NCMS schemes have also adopted alternative provider payment methods, including case-based payment for inpatient care and capitation or salary payment for outpatient care. Some of these reforms have involved the use of contracts to define explicit performance criteria—specifying, for example, the package of services to be delivered, the payment methods, quality standards, and the types of drugs to be used. There is no evidence to date on the impact of these reforms on cost and quality in rural areas, though the evidence from urban reforms is encouraging (Yip and Eggleston 2001, 2004).

Reforms to the system of budgetary subsidies have been even less visible. Subsidies take two main forms: a general subsidy to cover part of salaries and other operational costs and a specific subsidy for investments in infrastructure or equipment. General subsidies are typically allocated using criteria such as the number of staff and retirees or the number of beds, with little or no regard for specific objectives or performance criteria. Recently, government policy (CCCP and the State Council 2002) has required county governments to take greater responsibility in the management and financing of THCs to ensure provision of essential public health programs, but there is little evidence on whether this policy change has actually changed the financing practices of local governments.

### *Other Reforms in Service Delivery*

Unsurprisingly, given the starting point, ownership reforms in China's health sector have largely involved conversions from public to private ownership, initially at the village level and more recently at the THC level and above. The evidence on the effects of these conversions, and of differences in ownership, is mixed: some studies have found that THC privatization has been associated with a reduction in cost (Li 2000; Wang, Xu, and Li 2002), but others have suggested that these cost

reductions may be the result of scaling back preventive and public health activities (Li 2001; Wang, 2002; Wang, Liu, and Zhong 2002; Xu 2003).

The absence of a clear link in China between ownership and performance is not out of line with international evidence. It likely reflects the fact that there is no simple one-to-one correspondence between ownership and autonomy. Government providers in China have some of the features of hierarchically controlled budgetary units. But they share many features associated with private for-profit providers, including heavy reliance on self-paying patients, hard budget constraints, internal incentive regimes that stimulate revenue generation, and autonomy over service mix and capital investments. Furthermore, ownership conversions have often made little difference to providers' autonomy on key dimensions. Many newly privatized THCs have continued to receive government budget allocations, and staffing and other management issues have remained largely under the control of the county or township government (Shang, Yuan, and Chen 2001; Jiang 2003).

A variety of reforms in China have been geared toward changing provider autonomy without changing ownership. Local governments have introduced essential drug lists, limiting what physicians can prescribe. Treatment protocols have also been introduced, in an attempt to standardize diagnosis and treatment. Rules have been introduced requiring hospitals to record drug sales separately from other revenues and to remit all profits from drug sales to their local health bureau. The selection of managers and staff has been made more transparent and competitive. In some areas, the government has sought to increase autonomy. It has increased hospitals' power to fire health workers, as long as alternative employment can be found, and issued guidelines aimed at encouraging an open and competitive recruitment process, expanding the variety of contracts used for different types of workers, and facilitating the firing of workers. Some local governments have contracted in management from outside.

The government has also been active in other areas of service delivery. A variety of organizational reforms have been introduced, aimed at rationalizing service delivery. Some counties vertically integrated village clinics with THCs, with the THC becoming the owner of the village clinic; others have integrated hospitals and public health agencies. These organizational changes have not been the subject of evaluation—nothing seems to be known, for example, about whether economies of scale and scope have been achieved. In 2005 the government reformed its hospital accreditation system, moving away from a focus on infrastructure and equipment toward a broader range of criteria, including “scientific management,” patient safety, and service quality. A 1999 law raised the training requirements for medical practice licenses, and a 2005 regulation requires that village doctors be certified physicians or assistant physicians before being granted a license. Enforcing these licensure regulations is proving to be a considerable challenge, not least because of the large number of practicing former barefoot doctors, most of whom lack any formal qualifications at all, even secondary schooling.

## Health Reform in Rural China: Where Next?

Most of the reforms of the past decade have represented steps in the right direction. But China still faces several major challenges: to reduce the cost of health care by increasing efficiency and encouraging a more affordable style of care; to deepen insurance coverage (that is, to reduce the share paid out of pocket) and broaden it (that is, to extend coverage to basic as well as inpatient care); and to improve equity and efficiency by targeting government spending more tightly on the poor and on areas in which the public health needs are greatest. How can China meet these challenges?

### *Purchasing, Providing, and Financing: Who Should Do What?*

Much of the future reform agenda will need to focus on what health care interventions should be paid for, who should pay for them, and who should deliver them. But there is another important question: who should be the “purchaser”?

There is a case for handling public health differently from other services. It makes good economic sense for key public health interventions—whether population based or personal—to be financed at taxpayers’ expense. It may also make sense for a dedicated public health agency—quite likely a reformed CDC—to be given responsibility for ensuring that relevant subpopulations receive appropriate public health interventions. The agency would ideally be fully financed (that is, its revenues would derive solely from a budget funded out of general revenues) and would be expected to deliver population-based public health interventions. There is a case for not having the agency deliver personal public health interventions, which arguably can be delivered by regular providers, as already happens for many interventions. The agency would act as “purchaser,” either directly or indirectly through the NCMS, which would receive agency funds with which to purchase personal public health interventions on the agency’s behalf.

Personal health services of a nonpublic health variety could be covered—insofar as they are covered by a third-party payer—by the NCMS. It makes sense for the NCMS to cover a mix of catastrophic interventions and basic cost-effective personal ones not of a public health nature. Public health measures do not really call for insurance, because they are not associated with financial risk, but the NCMS could arguably be a useful agent for its members in overseeing the quality of their delivery and reducing the extent of unnecessary care. It would make sense for copayments on noncatastrophic care to be higher than copayments on catastrophic care, reflecting the fact that the need for insurance is greater for catastrophic interventions. To prevent supplier-induced demand on uncovered interventions, as has happened in the Republic of Korea (Kwon 2002) but in recognition of resource scarcity, there is a case for including a full range of interventions in the NCMS package but levying higher copayments on interventions that are not for catastrophic conditions or are not cost-effective. Doing so would allow the NCMS to act as a responsible agent for poorly informed patients and to monitor quality and reduce inappropriate care across the board.

### *Additional and Better-Targeted Resources for Public Health and NCMS*

Both the proposed public health agency and the NCMS will likely require additional resources, especially in the poorer parts of China, where health care needs are greatest and the level of locally raised resources is lowest. There is a strong case for tighter targeting of central and provincial government NCMS transfers to poorer counties, for earmarking these transfers for public health, and for targeting counties in which the public health challenges are greatest. County government payments toward the NCMS could also be better linked to capacity to pay through transfers from rich to poor counties within a province, either by having uncapped county government contributions linked to per capita income and pooling them at the provincial level or by creating a “solidarity fund” through which a share (rather than 100 percent) of the “surplus” contributions of richer counties would be used to help finance the programs of poorer counties.

In addition to making NCMS transfers more equitable, additional resources for the NCMS need to be provided, so that the out-of-pocket share of health spending in rural China can be reduced substantially. There are two options for doing so. One is a contributory social insurance model, which would involve substantially higher household contributions, as well as larger government subsidies. To ensure equity, as in all social insurance systems, contributions would be linked to household income. In a country in which the majority of workers are in the formal sector, this can be done through a payroll tax. In China’s rural economy, this option is unavailable, except insofar as the Medical Assistance scheme could focus its efforts on paying the contributions and copayments of those covered by the new rural *Di Bao* program (but not those covered by the *Tekun* and *Wubao* programs). One option for linking contributions to income might be to use generalized means testing, where households are classified into groups according to a variety of indicators of household living standards. Colombia uses such testing in its SISBEN scheme (Escobar 2005). An alternative would be to link contributions to the rental or capital value of the family’s dwelling. Doing so would be in line with recent proposals that China reform its real estate tax toward one in which the base is defined not in terms of residual value, as it currently is, but rather in terms of the capital or rental value of a property (Ahmad 2006). Such a tax plays an important part in local government revenues in many industrial countries: schools in the United States, for example, are financed largely through property taxes. Both the generalized means testing and the dwelling-tax approach would be administratively challenging but not impossible; both would require that NCMS be made mandatory to prevent adverse selection.

The second option is the tax-finance option. Under this option, contributions might still be required, but if so they would be left nominal and flat rate; most of the resources for the NCMS would come from general revenues. The challenge would be not so much preventing adverse selection (which the high subsidy

would mitigate against) but rather deciding whether the collection cost merits continuing to collect contributions.

### *Improving Provider Performance through Strategic Purchasing and Stewardship*

Reducing inefficiency in service delivery and aligning care better with medical needs and the resources available in rural China are important challenges that policy makers will need to tackle, ideally before expanding NCMS and public health. Key will be developing the purchasing capacities of both agencies. The challenges include devising better payment methods to stimulate cost-consciousness among providers, promoting better-quality care, assessing the needs of the population covered, certifying facilities, determining which providers are appropriate to deliver different services, and monitoring the delivery of care. For both institutions, this will require substantial investment in skills, information technology, and management. It will also require guidance and supervision—as well as technical support, financial support, and oversight—from the provincial and central governments. Earmarked transfers to local governments will need to go hand in hand with stronger intergovernmental accountability relations in both NCMS and public health. The knowledge management function of the central government—sharing expertise and experience around the country—will become increasingly important. The central government will also have a role to play in overseeing the process of certification by purchasers and ensuring that it dovetails with its own efforts on licensing and accreditation. Government will also have a key role to play with respect to private providers, particularly in contracting with the NCMS.

Having the NCMS and the public health agency acting as strategic purchasers would result in dramatically different incentives for providers. Providers would need to have the autonomy to respond to these new incentives by upgrading skills, purchasing new equipment, rebalancing their staff mix, developing outreach programs, consolidating with other facilities, and so forth—areas in which providers are currently restricted. These changes could be made with providers acting as autonomous government providers or nonprofit private providers, though each would call for the drafting of appropriate regulations and the setting up of a suitable regulatory structure. Some of these changes could be made within the Ministry of Health structure. Others would require working with other ministries: staffing issues, including pay and hiring and firing decisions; developing pension schemes for retired THC doctors; and drafting regulations and setting up a regulatory structure for nonprofit providers cannot be done by the Ministry of Health alone.

### **Reform Priorities, Sequencing, Piloting, and Political Economy Issues**

Implementing the ideas outlined in this chapter is a medium-term agenda. Some steps are more urgent than others; indeed, some logically precede others. Good candidates for priority actions include

- ensuring that the NCMS covers basic outpatient care and not just catastrophic inpatient care;
- focusing Medical Assistance on *Di Bao* recipients and aligning it with *Di Bao* if not integrating it within it;
- making the NCMS intergovernmental transfers fairer by targeting them on poorer counties;
- developing and introducing simpler copayment arrangements in the NCMS;
- reducing the distortions in the government's price schedule;
- creating a public health agency with overarching responsibility for public health; and
- taking steps to modify the autonomy of providers in different spheres in the appropriate direction.

Some reform ideas would merit piloting, in China's time-honored tradition, but with careful evaluation and policy modification in light of the results as the reforms are rolled out. Candidates include

- linking household NCMS contributions to income, through generalized means-testing or a link to property capital or rental values;
- promoting financial solidarity within provinces, through pooling or a solidarity fund;
- creating appropriately regulated private nonprofit health care providers;
- moving from fee-for-service toward prospective payments for at least the diagnoses that absorb the bulk of inpatient expenditures; and
- having the proposed public health agency subcontract to NCMS the delivery of personal public health interventions, such as vaccinations and screening.

Many reform ideas will require further study, often across several ministries. Obvious examples include

- developing pension schemes for retirees, so that they can be taken off the books of THCs and hospitals;
- developing a pay scale for health workers that "grandfathers" their current bonuses into a new clinical public service unit salary structure; and
- designing and implementing an earmarked intergovernmental transfer scheme for public health that ensures government resources go where public health needs are greatest.

As with all health reforms, political economy issues will play a major role in determining whether and how successfully reforms such as those sketched here are implemented. Minimizing—insofar as is possible—losses suffered by those who lose out from the reform is important. Doing so could be achieved by

- grandfathering bonuses;
- introducing proper pension arrangements for retirees;

- setting initial prospective payment rates on the generous side, so that providers benefit financially from the reform before gradually introducing rates that align payments more closely to costs; and
- providing reemployment opportunities to at least some of the workers of agencies made defunct by the creation of the public health agency.

So, too, is presentation of the real benefits of the reforms, including the benefits to the various actors involved. For example, the consolidation of public health responsibilities into a single agency is likely to make for a workload that is inherently more attractive to public health professionals, who would presumably rather be developing public health needs assessments, designing and operating surveillance systems, and so forth than making ends meet by looking for ways to deliver unnecessary but lucrative drugs to patients with tuberculosis or HIV/AIDS.

International experience suggests that one key factor that is likely to influence the future path of health reform in China is political commitment in general and among the top leadership in particular. Ministers who have pushed through significant health reforms—especially ones that met with opposition, often from providers—have tended to have had strong backing from (and sometimes hands-on involvement by) the top leadership. This was the case with the reform of the United Kingdom's National Health Service in the early 1990s (Le Grand 1999). It was the case with the more recent Mexican reforms (Knaul and Frenk 2005). And it was the case with the reforms in the Republic of Korea (Kim, Chung, and Lee 2004; Kwon and Reich 2005). The emphasis on health in China's recent policies and debates, and the recent large increases in government expenditure, suggest that commitment by China's political leadership to tackling the country's health sector challenges is considerably stronger now than it was even five years ago. Given this commitment, the relatively buoyant state of government finances, and the scope for raising additional revenues along the lines discussed in other chapters in this volume, the chances seem good that the government will build on its recent health reform efforts to address the many remaining challenges the sector faces.

## Notes

This chapter draws heavily on an ongoing World Bank study of China's rural health system being undertaken by a team made up of L. Richard Meyers (team leader), whose helpful comments on an earlier version of this work are acknowledged; Adam Wagstaff; Magnus Lindelow; Shiyong Wang; and Shuo Zhang. Where no source is given, the evidence is contained in the report under preparation.

1. See recent years of China's health statistical digest, available online at China's Center for Disease Control Web site <http://www.chinacdc.net.cn/n272562/n276794/n284075/index.html>.
2. This claim is based on a comparison of inequalities in health indicators across asset quintiles of the China Health & Nutrition Survey, and inequalities across similar



- quintiles in other countries based on the Demographic and Health Survey (Gwatkin and others 2000).
3. The National Health Survey (NHS) shows falling consultation and hospitalization rates between 1998 and 2003.
  4. Between 2003 and 2004, the average cost per case increased by as much as 15–20 percent in central and general THCs and county hospitals, even after adjusting for case mix (numbers of cases treated as inpatients, emergency cases and outpatient cases, and other factors, such as bed stock and local income per capita). Between 2004 and 2005, the increase was even higher: in county hospitals, cost per case increased by one-quarter, while in THCs cost per case increased by as much as one-third.
  5. Catastrophic spending is often defined in relation to nonfood consumption. This study estimated the incidence of catastrophic spending based on aggregate income data, because other data were not available. When total consumption on income is used, lower cut-off points are normally used.
  6. Before Medical Assistance, only limited and piecemeal assistance with medical expenses was provided to vulnerable and disadvantaged groups. Some general safety net programs provided some assistance in some places. The World Bank–funded Health VIII project, which started in 1998 but covers only 90 or so counties, pioneered a Medical Financial Assistance scheme, which appears to have inspired the new Medical Assistance scheme.

## References

- Ahmad, E. 2006. *Taxation Reforms and Sequencing of Intergovernmental Reforms in China: Preconditions for a Xiaokang Society*. International Monetary Fund, Washington, DC.
- Cai, W. W., J. S. Marks, C. H. Chen, Y. X. Zhuang, L. Morris, and J. R. Harris. 1998. “Increased Cesarean Section Rates and Emerging Patterns of Health Insurance in Shanghai, China.” *American Journal of Public Health* 88 (5): 777–80.
- Carrin, G., A. Ron, H. Yang, H. Wang, T. Zhang, L. Zhaing, S. Zhang, Y. Ye, J. Chen, Q. Jiang, Z. Zhang, J. Yu, and X. Li. 1999. “The Reform of the Rural Cooperative Medical System in the People’s Republic of China: Interim Experience in 14 Pilot Counties.” *Social Science and Medicine* 48 (7): 961–72.
- CCCP (Central Committee of the Communist Party), and the State Council. 2002. “Decision about the Development of Rural Health Care.” Beijing.
- China Health Economics Institute. 2005. “Assessing Government Health Expenditure in China.” Background report for the World Bank China Rural Health Study.
- Cretin, S., N. Duan, P. Albert, J. Williams, X. Gu, and Y. Shi. 1990. “Modeling the Effect of Insurance on Health Expenditures in the People’s Republic of China.” *Health Services Research* 25 (4): 667–85.
- Escobar, M. L. 2005. “Health Sector Reform in Colombia.” *Development Outreach* May: 6–9.
- Gao, J., J. Qian, S. Tang, B. Eriksson, and E. Blas. 2002. “Health Equity in Transition from Planned to Market Economy in China.” *Health Policy and Planning* 17 (Suppl.1): 20–29.
- Gwatkin, D., S. Rutstein, K. Johnson, R. Pande, and A. Wagstaff. 2000. “Socioeconomic Differences in Health, Nutrition and Population.” World Bank, Health, Nutrition and Population Sector Unit, Washington, DC.

- Hutubessy, R. C., P. Hanvoravongchai, and T. T. Edejer. 2002. "Diffusion and Utilization of Magnetic Resonance Imaging in Asia." *International Journal of Technology Assessment in Health Care* 18 (3): 690–704.
- Jacobzone, S. 2004. "Pharmaceutical Policies in OECD Countries: Reconciling Social and Industrial Goals." Labour Market and Social Policy Occasional Paper 40, Organisation for Economic Co-operation and Development, Paris.
- Jiang, D. 2003. "Capping the User Charge for Surgical Operations." [In Chinese] *The Discussant* 61.
- Kim, H. J., W. Chung, and S. G. Lee. 2004. "Lessons from Korea's Pharmaceutical Policy Reform: The Separation of Medical Institutions and Pharmacies for Outpatient Care." *Health Policy* 68 (3): 267–75.
- Knaul, F. M., and J. Frenk. 2005. "Health Insurance in Mexico: Achieving Universal Coverage through Structural Reform." *Health Affairs* 24 (6): 1467–76.
- Kwon, S. 2002. "Payment System Reform for Health Care Providers in Korea." *Health Policy and Planning* 18 (1): 84–92.
- Kwon, S., and M. R. Reich. 2005. "The Changing Process and Politics of Health Policy in Korea." *Journal of Health Policy and Law* 30 (6): 1003–26.
- Le Grand, J. 1999. "Competition, Cooperation, or Control? Tales from the British National Health Service." *Health Affairs* 18 (3): 27–39.
- Li, W. 2000. "Rethinking the Sale of Township Hospitals." [In Chinese] *Chinese Health Economics* 4: 12–14.
- . 2001. "Preventive Care Provision after Ownership Reform." [In Chinese] *Chinese Health Economics* 3: 3–5.
- Lindelov, M., and A. Wagstaff. 2005. "Health Shocks in China: Are the Poor and Uninsured Less Protected?" Policy Research Working Paper 3740, World Bank, Washington, DC.
- Liu, X., Y. Liu, and N. Chen. 2000. "The Chinese Experience of Hospital Price Regulation." *Health Policy and Planning* 15 (2): 157–63.
- Liu, X., and A. Mills. 1999. "Evaluating Payment Mechanisms: How Can We Measure Unnecessary Care?" *Health Policy and Planning* 14 (4): 409–13.
- . 2002. "Financing Reforms of Public Health Services in China: Lessons for Other Nations." *Social Science & Medicine* 54 (11): 1691–98.
- Liu, X., L. Xu, and S. Wang. 1996. "Reforming China's 50,000 Township Hospitals: Effectiveness, Challenges and Opportunities." *Health Policy* 38 (1): 13–29.
- Ministry of Health. 2004a. *An Analysis Report of National Health Services Survey in 2003*. Center for Health Statistics and Information, Beijing.
- . 2004b. *Research Report on China National Health Accounts*. Beijing.
- National Bureau of Statistics. Various years. *China Statistical Yearbook*. Beijing: China Statistics Press.
- O'Donnell, O., E. van Doorslaer, R. P. Rannan-Eliya, A. Somanathan, S. R. Adhikari, B. Akkazieva, D. Harbianto, C. C. Garg, P. Hanvoravongchai, A. N. Herrin, M. N. Huq, S. Ibragimova, A. Karan, S-m. Kwon, G. M. Leung, J-f. R. Lu, Y. Ohkusa, B. R. Pande, R. Racelis, K. Tin, K. Tisayaticom, L. Trisnantoro, Q. Wan, B-m. Yang, and Y. Zhao. 2005. "Who Pays for Health Care in Asia?" EQUITAP Working Paper 1, Erasmus University, Rotterdam, and Institute of Policy Studies, Colombo, Sri Lanka.

- OECD (Organisation for Economic Co-operation and Development). 2006. "OECD Health Data 2005." Paris.
- Peng, J., S. N. Zhang, W. Lu, and A. T. L. Chen. 2003. "Public Health in China: The Shanghai CDC Perspective." *American Journal of Public Health* 93 (12): 1991–93.
- Ravallion, M., and S. Chen. 2006. "China's (Uneven) Progress against Poverty." *Journal of Development Economics* 82: 1–42.
- Shang, Y., Y. Yuan, and S. Chen. 2001. "Ownership Reform in Haihe Township Hospital of Sheyang." [In Chinese] *Health Economics Research* 9: 32–33.
- Shen, T., J-P. Habicht, and Y. Chang. 1996. "Effect of Economic Reforms on Child Growth in Urban and Rural Areas of China." *New England Journal of Medicine* 335: 400–06.
- Sidel, V. 1993. "New Lessons from China: Equity and Economics in Rural Health Care." *American Journal of Public Health* 83: 1665–66.
- van Doorslaer, E., O. O'Donnell, R. P. Rannan-Eliya, A. Somanathan, S. R. Adhikari, B. Akkazieva, C. C. Garg, D. Harbianto, A. N. Herrin, M. N. Huq, S. Ibragimova, A. Karan, T-j. Lee, G. M. Leung, J-f. R. Lu, C. W. Ng, B. R. Pande, R. Racelis, S. Tao, K. Tin, K. Tisayaticom, L. Trisnantoro, C. Visasvid, and Y. Zhao. 2005. "Paying Out-of-Pocket for Health Care in Asia: Catastrophic and Poverty Impact." EQUITAP Working Paper 2, Erasmus University, Rotterdam, and Institute of Policy Studies, Colombo, Sri Lanka.
- Wang, F., C. Sun, and S. Chen. 2002. "Research on Equity of Health Resources Distribution in Fujian Province." *Journal of Health Resources* 5 (2): 45–46.
- Wang, L., L. Kong, F. Wu, Y. Bai, and R. Burton. 2005. "Preventing Chronic Diseases in China." *Lancet* 366 (9499): 1821–24.
- Wang, X. 2002. "Provision of Maternal and Child Health Care after Ownership Reform." [In Chinese] *Chinese Rural Health Care Management* 8: 13–14.
- Wang, X., L. Liu, and D. Zhong. 2002. "Ownership Reform in Wenjiashi." [In Chinese] *Health Economics Research* 3: 6–10.
- Wang, Y., C. Xu, and C. Li. 2002. "Adoption of a Joint Cooperative Stock System in Township Hospitals in Jurong, Zhengjiang." [In Chinese] *Social Science* 5: 36–37.
- Xu, Z. 2003. "Problems after Ownership Reform in Township Hospitals." [In Chinese] *Jiangsu Health Care Management* 1: 35–38.
- Yip, W., and K. Eggleston. 2001. "Provider Payment Reform in China: The Case of Hospital Reimbursement in Hainan Province." *Health Economics* 10 (4): 325–39.
- . 2004. "Addressing Government and Market Failures with Payment Incentives: Hospital Reimbursement Reform in Hainan, China." *Social Science & Medicine* 58: 267–77.
- Zhan, S., L. Wang, A. Yin, and E. Blas. 2004. "Revenue-Driven in TB Control: Three Cases in China." *International Journal of Health Planning Management* 19 (Suppl. 1): S63–78.
- Zhang, X., Z. Feng, and L. Zhang. 2003. "Analysis on Quality of Prescription of Township Hospitals in Poor Areas." *Journal of Rural Health Service Management* 23 (12): 33–35.
- Zhang, X., and R. Kanbur. 2005. "Spatial Inequality in Education and Health Care in China." *China Economic Review* 16: 189–204.
- Zhao, Z. 2006. "Income Inequality, Unequal Health Care Access, and Mortality in China." *Population and Development Review* 32 (3): 461–83.
- Zheng, X., and S. Hiller. 1995. "The Reforms of the Chinese Health Care System: County-Level Changes: The Jiangxi Study." *Social Science & Medicine* 41 (8): 1057–64.

Part VI

# Social Security



# Notional Defined Contribution Accounts: A Pension Reform Model Worth Considering

14

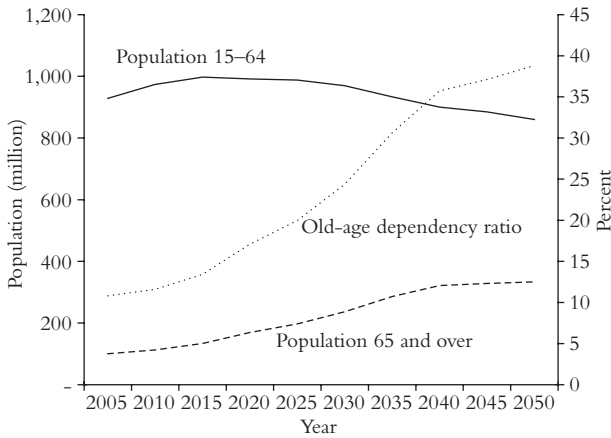
JIANGE LI, MARK DORFMAN, AND YAN WANG

More than 10 years have passed since China introduced substantial reforms to its national urban pension system. During this time, China's population has continued to age, transforming it from a relatively young society to a country that will have one of the world's highest old-age dependency ratios (the ratio of people 65 and over to those 15–64) (figure 14.1). Ensuring that the elderly receive adequate sources of income and are protected from poverty in old age will place significant pressure on the pension system. The framework introduced is consistent with the requirements of a dynamic market economy and global reform trends. It aims to gradually improve the adequacy, affordability, and sustainability of China's urban pension system in the face of the challenges anticipated.

The reform introduced in 1997 initiated a process that has not yet been completed. Many issues—fragmentation, legacy costs, system deficits, a weak framework and infrastructure for voluntary pensions and persistent problems with individual accounts—still require additional refinements to the policy design and supporting institutions. Failure to adequately address these problems will hinder the competitiveness of enterprises in many regions of China, deter labor mobility, affect pension system coverage and compliance, and put greater pressure on public finances.

This chapter examines the rationale behind a notional (or nonfinancial) defined contribution (NDC) approach to resolving some of the challenges facing China's system of individual accounts. The chapter begins by reviewing reforms of China's urban pension system over the past 20 years. The second section reviews China's experience with individual accounts and identifies additional challenges facing the urban pension system. The third section reviews international experience with funded individual accounts. The fourth section assesses the merits of an NDC approach for resolving some of the challenges to individual

**Figure 14.1 Actual and Projected Population Growth and Old-Age Dependency Ratio in China, 2005–2050**



Source: United Nations 2007.

Note: Population figures are measured along the left-hand y axis; old-age dependency ratio is measured along the right-hand y axis.

accounts and recommends a policy approach. The last section summarizes the chapter's main conclusions.

## Reform of China's Old-Age Pension System

Historically, China's urban retirement system was separate for state-owned enterprises (SOEs), collectively owned enterprises, the civil service, and public institutions. As with the provision of other social insurance benefits, no "pooling" arrangement across SOEs was in place; pension liabilities rested solely with the enterprise.

Pension system reform began in 1986, when State Council Document No. 77 encouraged pension pooling across SOEs on a pilot basis at the municipal level. State Council Document No. 33 of 1991 called for the establishment of three tiers of benefits: a basic benefit; a supplemental benefit, to be provided by enterprises on sound financial footing; and a benefit based on savings by individuals.

In 1997 the State Council issued Document No. 26, which provided a national framework for China's urban pension system. For people who started working after 1996 ("new men"), the framework provided for a flat defined benefit of 20 percent of the regional average wage, financed on a pay-as-you-go basis; for funded individual accounts, which accumulate funds from employer and employee contributions as well as from interest accrued on accumulated balances; and for supplemental benefits, based on voluntary contributions to individual accounts. An annuity would be provided at retirement based on the total accumulated funds at retirement.<sup>1</sup> People who retired before the end of 1996 ("old men") were

to receive retirement benefits based on pension rules in place in each municipality before issuance of the State Council decision. People who began work before 1996 but retired after 1996 (“middle men”) were to receive pensions based on a formula for acquired rights, or transition pension, in addition to the 20 percent flat benefit and the benefit from their individual account accumulations.<sup>2</sup>

This framework aimed to achieve “four unifications”:

- *Uniform rate of enterprise contributions.* Total enterprise contributions were targeted not to exceed 20 percent of contributory wages.
- *Uniform rate of individual contributions.* Individual contributions were set at a rate of at least 4 percent of the worker’s contributory wage in 1997, increasing by 1 percent every two years thereafter until reaching 8 percent.
- *Uniform size of individual accounts.* Total contributions by enterprises and individuals to individual accounts were set at 11 percent of the worker’s contributory wage. The employee contribution was set to reach 8 percent and the enterprise contribution to decrease to 3 percent.
- *Uniform pension benefit standard.* Standard vesting provisions were set at 15 years; the statutory retirement age was set at 60 for men and 50 for women (55 for white-collar women).

In an effort to improve the effectiveness of the pension system, in 2000 the government selected the province of Liaoning as a pilot for the following policy adjustments:<sup>3</sup>

- Contributions to individual accounts would no longer come from enterprises but would be borne solely by employees, at a rate of 8 percent of contributory wages.
- Individual accounts would be managed separately from social pooling accounts.
- No subsidies for social pooling would be drawn from the individual accounts.

The pilot was an attempt to fund individual accounts. In September 2006 it was expanded to Henan, Hubei, Hunan, Shanghai, Shandong, Shanxi, Tianjin, and Xinjiang Provinces, starting with a contribution rate of 3 percent.

In 2004 the Ministry of Labor and Social Security set out the regulations for voluntary pensions (“enterprise annuities”). Since then it has begun to implement the process.

## Chinese Experience with Individual Accounts and Continuing Challenges

China’s adoption of funded individual accounts in the 1990s was part of a larger reform of its urban pension system. So far reform has had mixed results.<sup>4</sup>

### *Experience with Individual Accounts*

The framework introduced on a pilot basis in 1991 and nationally in 1997 had two main goals. First, it sought to constrain the fiscal costs of pensions for China’s aging



urban population over the long term and ensure that its urban pension system is financially sustainable. Second, it sought to strengthen the incentives for participation, remove barriers to labor mobility, and raise the level of pooling of pension obligations across communities by adopting a common framework. Individual accounts were one element of such a framework.

#### TRANSITION COSTS

The cost of both funding individual accounts and financing benefits to current retirees proved too costly for most communities in China. The result was “empty” accounts, caused by using current contributions to pay current benefits.<sup>5</sup> This inability to finance transition costs was exacerbated by weak incentives to unify contribution rates and benefit formulas at the municipal or provincial level, as well as by limited social pooling of pension surpluses and deficits at these levels. Although full social pooling was not achieved even at the municipal level, experience from the Liaoning pilot suggests that the reform framework did provide the basis for pooling at the district or county level. It also narrowed differences in contributions and benefits at the municipal level.<sup>6</sup>

#### INCENTIVES FOR COVERAGE

Parallel to implementation of the 1997 framework were measures to widen the scope of required contributors to urban pension systems to include private companies, foreign enterprises, migrant workers, and the self-employed. It is difficult to determine the impact of individual accounts on credibility, employer participation, and worker coverage, although surveys suggest that modifications introduced through the Liaoning pilot increased confidence (World Bank 2005). Efforts to extend coverage beyond SOEs have had limited results. Confidence and coverage remain low because of uncertainty about the design and security of the mandatory system and because of the wide variation in contribution requirements and expected benefit entitlements.

#### INDIVIDUAL ACCOUNT RETURNS

Returns on individual accounts were low in real terms (based on the nominal rate of return on one-year term deposits at financial institutions), because the government (justifiably) did not permit the investment of funds in a broad scope of instruments. Without a strong and uniform nationwide system for managing and supervising individual accounts or a framework for organizing investments in financial markets, the government adopted a prudent approach to limit the risk of permitted investments. Despite this, fraud was uncovered in 2005 in at least six provinces. Although the government has repeatedly called for better management and tighter supervision, evidence of illegal practices continues, casting doubt on the incentive and supervisory structure governing individual accounts.

#### ACCOUNT MANAGEMENT

Some improvements were realized in the account management and information disclosure infrastructure, at least in Liaoning, where the disclosure of individual account information positively affected public perceptions of credibility.

#### PARAMETRIC WEAKNESSES

Necessary parametric reforms to the individual account system were not undertaken. Design flaws in the formula for calculating benefits provided by individual accounts create a future unfunded deficit for such accounts,<sup>7</sup> while relatively low retirement ages, particularly for women, promise a lower replacement of lifetime income from individual accounts than was desired at the time of the reform.

### *Continuing Challenges in the Chinese Urban Pension System*

China's urban pension system faces a variety of challenges, including continuing fragmentation, legacy costs and system deficits, and a weak framework for voluntary pension savings (see China Economic Research and Advisory Programme 2005).

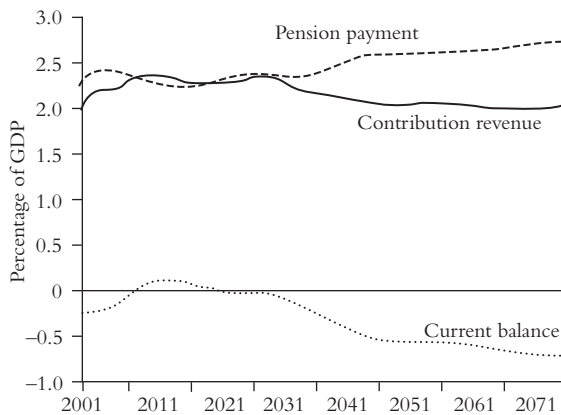
#### FRAGMENTATION

Despite substantial efforts by the central government to unify pension system financing, administration, and parameters at the municipal—and ideally the provincial—level, organization remains highly fragmented, largely municipality based, and, in some areas, still enterprise based. At the municipal level, governments have often been unable to enforce contribution requirements. Fragmented administration, contribution, and benefit parameters have resulted in very little pension portability and contributed to limited coverage. Despite the extension of mandatory contributions to most urban workers over the past few years, contributions from employers and workers outside the SOE sector have remained limited. Remedying such fragmentation through a unified framework and accountability to a central authority is essential to achieving pension portability and labor mobility. A multiyear program of policy reforms and institutional development will be needed to establish the regulatory, administrative, and supervisory framework and institutions necessary to effectively implement the desired policy direction for the old-age retirement system. Remedying the fragmentation of the financing of pensions through municipal, provincial, and eventually national social pooling is essential to diversifying risk and strengthening the incentives for labor mobility and enterprise competitiveness.

#### LEGACY COSTS AND SYSTEM DEFICITS

Pensions in most areas of China pay out more in benefits than they receive in contributions. They thus run deficits. Future deficits are also expected, given current rules

**Figure 14.2** Projected Financial Flows of Current Urban Pension System, 2001–2071



Source: Sin 2005.

and the projected rise in the system dependency ratio (the ratio of retirees to contributing workers) (figure 14.2). Parametric reforms are needed to the qualifying conditions and benefits of the existing pay-as-you-go “social pooling” pension, including the transition provisions, in order to reduce the fiscal burden, improve labor market incentives, and create a stronger foundation for basic old-age income support. In addition, policy makers need to consider the many financing options for these so-called legacy debt obligations, such as burden-sharing between debt issuance (spreading costs over time), tax revenues, social security contributions of current and future workers, and current and future retirees through benefit adjustments.

#### WEAK FRAMEWORK FOR VOLUNTARY PENSION SAVINGS

Employer- and individual-based voluntary pensions are essential to providing levels of consumption smoothing, so that workers need not suffer a substantial drop in their standard of living after retirement. In addition to supplementing the limited capacity of public systems, voluntary private systems also offer the potential for positive developmental synergies by increasing overall savings in the economy and stimulating capital market development. The current system, however, suffers from three key weaknesses. First, employer participation and worker coverage remain low, because of uncertainty about the design and security of the system and because the tax treatment of savings is uneven. Second, the legal framework for the system is not fully developed and cannot, in its current form, provide an adequate foundation to ensure that the system can be effectively regulated to provide the degree of security for an occupational pension system to flourish. Third, the supervision of the system is not developed, lacks an adequate institutional basis, and lacks sufficient resources.

## International Experience with Funded Individual Accounts

International experience with the adoption of funded individual accounts has been motivated by unsustainable fiscal burdens, efforts to improve poverty reduction and consumption smoothing, and a desire to improve incentives and management. Although measuring the performance of such reforms is difficult, the overall results appear to have been mixed.

### *Motivations for Reform*

Around the world, the primary motivations for reform of social security systems have been twofold. The first is fiscal burdens that are projected to be unsustainable over the long term; the second is recognition that systems must be changed to better satisfy their core objectives, improve incentives for participation, and improve fragmented management.<sup>8</sup>

#### UNSUSTAINABLE FISCAL BURDENS

Since the late 1970s, many social security systems around the world have faced financial challenges resulting from aging. Demographic changes have both increased the number of pension beneficiaries relative to contributors and increased the period during which beneficiaries receive benefits (table 14.1). Many mandatory pension systems—particularly, although not exclusively, publicly managed defined benefit schemes operated on a pay-as-you-go basis—pose a

**Table 14.1 Actual (2005) and Projected (2050) Old-Age Dependency Ratios in Selected Countries and Regions**

<i>Region or country</i>	<i>Actual (2005)</i>	<i>Projected (2050)</i>
China	11	39
Brazil	9	31
India	8	21
G10 <sup>a</sup>	23	42
East Asia (including China)	12	41
Latin America and the Caribbean	10	29
Sub-Saharan Africa	6	9
World	11	25

*Source:* United Nations 2007; G10 2005.

*Note:* The dependency ratio is the number of people 65 and over divided by the number of people 15–64.

a. The G10 is made up of 11 industrial countries (Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States).

major fiscal burden or are projected to be financially unsustainable over the long term. Some countries felt that a multipillar approach also offered better risk diversification to manage the fiscal burden amidst the increasing economic volatility caused in part by globalization. Limiting the fiscal burden and achieving financial sustainability was one main motivation behind reforms that included individual accounts in many countries.

#### FAILURE TO SATISFY CORE OBJECTIVES

Many social security systems have not fully delivered on their social objectives of reducing poverty and smoothing consumption. Some have created distortions in the operation of market economies and resulted in redistribution in favor of higher-income groups. Many social security systems have not been adapted to changes in work and family patterns, including the increasing participation of women in formal employment, rising divorce rates, diminishing job stability, and increases in local and international labor migration. Many reforms that established individual accounts aimed to create stronger links between contributions and benefits while adopting targeted modalities aimed to protect elderly people from falling into poverty and establishing the framework and institutional basis for the portability of pension entitlements.

#### WEAK INCENTIVES AND FRAGMENTED MANAGEMENT

A number of social security reforms sought to improve incentives for participation, in an effort to provide access to old-age income protection among the broad base of the population. Doing so has involved establishing unified frameworks for contribution collections, data and fund management and disbursement, and regulation and supervision.

### *Results of Reforms to Funded Individual Accounts*

Measuring the performance of reforms to funded defined contribution (FDC) schemes with individual accounts is difficult for a variety of reasons (box 14.1). Overall, the results appear to have been mixed, raising important questions about the applicability of this approach in China.

#### PROJECTED LONG-TERM FISCAL IMPACT AND SHORT-TERM TRANSITION COSTS

In most Latin American countries adopting second-pillar reforms, pension system deficits were projected to increase initially in order to accommodate transition costs before eventually falling substantially over the long run.<sup>9</sup> Projected improvements in pension deficits in Eastern Europe and Central Asia were also substantial, although much of the improvement was projected to be achieved through parametric reforms to existing first pillars (by raising the retirement age, changing benefit formulas, and changing indexation).<sup>10</sup> In some countries in Latin America and Eastern Europe and Central Asia, this projected long-term fiscal savings was

**Box 14.1 Measuring the Performance of Multipillar Reforms**

In the multipillar conceptual framework widely applied worldwide, reforms typically comprise some combination of five elements: (a) a noncontributory, or “zero” pillar (in the form of a demonstration grant or social pension), which provides a minimal level of old-age poverty protection; (b) a “first-pillar” contributory system, which is linked, to varying degrees, to earnings and seeks to replace some portion of income; (c) a mandatory “second pillar,” which is essentially a fully funded individual savings account with different management options (generally accompanied by modifications to existing mandatory pension provisions); (d) voluntary “third-pillar” arrangements, which can take many forms (individual, employer sponsored, defined benefit, and defined contribution); and (e) “fourth-pillar” informal intrafamily or intergenerational sources of financial and nonfinancial support to the elderly, including access to health care and housing.

Measuring the performance of multipillar reforms is difficult for a variety of reasons:

- The objectives, size, and design of multipillar reforms vary widely. Some reforms in Eastern Europe and Central Asia added small second pillars to existing but downscaled pay-as-you-go first pillars. Many reforms in Latin America replaced the first-pillar with second-pillar-funded individual accounts. Some reforms were initially applied only to younger workers in the labor force, while others applied to all workers from the outset.
- Initial and subsequent conditions varied greatly. A number of countries in Eastern Europe and Central Asia embarked on multipillar reforms in environments of severe fiscal constraints and very limited institutional capacity and financial markets. In contrast, Chile embarked on its multipillar reform after having built up fiscal surpluses in anticipation of financing the transition costs of the reform.
- Multipillar reforms were accompanied by diverse parametric reforms to first-pillar schemes. These parametric changes had a significant impact on the fiscal effect of reform.
- It is difficult to isolate the effects of multipillar reforms, because such reforms are but one of many factors that affect coverage, compliance, savings behavior, financial market development, and growth.
- Most reforms have been in place for too short a period to judge their performance.
- There is no agreed-upon framework for measuring performance. The World Bank applies adequacy, affordability, sustainability, and robustness as evaluation criteria, but every country has different reform objectives with respect to each of these criteria.

Source: Holzmann and Hinz 2005.

mitigated by the rising projected costs of financing minimum pension guarantees and the escalating costs of existing pay-as-you-go schemes (to the degree that such schemes were allowed to remain in place). Governments in both regions had mixed track records of effectively managing the fiscal impact of such transition costs. The option of financing transition costs by issuing debt held by some new pension funds also had uncertain results (Rutkowski 2004).

#### CONTRIBUTIONS TO SAVINGS AND GROWTH

Second-pillar reforms have contributed to the growth of new forms of savings in Latin America, although there is debate over whether such reforms contributed to an increase in savings.<sup>11</sup> There is also debate over the extent to which the reforms generated growth through net additions to savings or greater efficiency of labor and capital markets. As Corbo and Schmidt-Hebbel (2003) note, the increased growth effects arise largely from the choice of financing of the transition, with tax-financed transitions providing more impetus to growth than debt-financed transitions.

#### CONTRIBUTIONS TO THE COMPLEXITY OF FINANCIAL MARKETS

Reforms have contributed to the development of private pension systems in financial markets of Latin America and Eastern Europe and Central Asia. They have also revealed the importance of strong regulation and coordinated efforts at ensuring market development. The importance placed on mandatory contractual savings has encouraged financial sector development, although it is not clear how much of the growth in pension fund assets has taken place at the expense of other institutional investors. In many countries financial market weakness has prevented these new pension funds from managing risk, particularly as international diversification of pension fund portfolios has often been heavily constrained or even prohibited.

#### ADMINISTRATIVE COSTS

Administrative costs have been high in private funded individual account schemes, reducing benefits in Latin America and Eastern Europe and Central Asia.<sup>12</sup>

#### UNIFICATION

The creation of a single, unified national pension system from previously fragmented elements is a critical feature of most second-pillar reforms in Latin America that is of particular relevance to China. This unification included a unified policy framework, unified supervision, and unified standards for collections, account management, and disbursement. Such unification brought about by second-pillar reforms has positive implications for labor market flexibility, equity and redistribution, and long-term fiscal savings.

## COVERAGE

Coverage has stagnated at low levels in many Latin American countries that have undergone structural reforms. A number of contributors may not meet the vesting requirements to qualify for minimum pension guarantees and can expect to receive only minimum social assistance benefits in old age. This has become a social policy concern in an increasing number of countries.

## Applying a Notional Defined Contribution Approach to Individual Accounts

Notional defined contribution (NDC) accounts are one means of strengthening the linkages between individual contributions and benefits. Under an NDC scheme, a worker accumulates a notional balance from employer and employee contributions plus interest on the contributions, which accrues at a notional interest rate determined by a framework defined by law. The notional interest rate is generally set based on the growth rate of either the average or total wages of covered workers. At retirement the worker receives an annuitized pension, calculated based on the notional account accumulation, life expectancy at the age of retirement, and expected indexation of benefits, based on wages, prices, or both. Both the notional interest rate and the annual indexation rate must be selected to be consistent with long-term financial stability and the unfunded character of the system. In addition, the introduction of an NDC scheme generally must be complemented by an FDC buffer fund, which ensures a stable funding source for pension benefits in the face of demographic change and economic volatility, which affect contribution and benefit flows.

### *International Experience*

Experience with NDC reforms is limited.<sup>13</sup> The small number of countries implementing such reforms and the short period of implementation suggest the need for additional study and consideration of design characteristics most appropriate to Chinese objectives, needs, and circumstances, as well as piloting of NDC reform options in diverse conditions within China.

Sweden, Latvia, Poland, and Italy have adopted NDC schemes, and several developed and developing countries are considering doing so. The Swedish reform, adopted in 1994, has been implemented in stages. It includes a distinctive automatic balancing mechanism to ensure sustainability and both an NDC scheme (86 percent of contributions) and an FDC buffer fund (14 percent of contributions). The program included a sizable reserve accumulation from the preexisting system to meet the anticipated demographic burden.

The Latvian reform, implemented in 1996, was the first and only reform to cover all workers from the first year of implementation. A key design challenge was the conversion of rights acquired under the earlier scheme. The NDC contribution rate has been gradually cut, from 20 percent to 10 percent, replaced by contributions to an FDC scheme.



The Polish scheme, introduced in 1999, faced substantial administrative challenges in the years immediately after its introduction. It has remained largely unchanged since its introduction and is projected to move from substantial financial imbalance into balance over the next 50 years, assisted in part by a gradual formalization of the economy after a gradual decline in the size of the working-age population.

The Italian pension reform began in 1992, with the cancellation of some public sector pension liabilities. In 1995 Italy introduced an NDC scheme to new entrants and established a pro rata formula for people with less than 18 years of coverage. Some observers believe that further adjustments are needed to complete the reform process (Franco and Sartor 2006).

### *Advantages over Defined Benefit Schemes*

NDC schemes offer a number of advantages over defined benefit schemes:

- Like FDC individual account schemes, NDC schemes strengthen the linkages between individual contributions and benefits. They thus satisfy some of the objectives behind the establishment of individual accounts on a pilot basis in China in the early 1990s and nationally in 1997.
- NDC schemes ensure the financial sustainability of the pension system by adjusting the notional interest rate and applying actuarial principles in determining benefits.
- NDC schemes pool the longevity risk of people who exceed average life expectancy at retirement age with those who die earlier.
- NDC schemes offer some potential advantages in the portability of accrued rights, particularly where there are differences in accrual rates across communities and unclear rules for adding up rights acquired from different communities and applying different benefit parameters.
- NDC schemes offer the possibility of greater transparency than defined benefit schemes through the disclosure to contributors and retirees of notional account balances and projected benefits.

### *Advantages over FDC Schemes*

NDC schemes also offer a number of advantages over FDC schemes:

- Because contributions to NDC accounts can be used to fund the benefits of current retirees, NDC schemes avoid the transition costs of funded schemes, which force the current generation of workers to both save for their own retirement and fund the retirement of others or to fund current retirees by other means. This means that today's workers generally need not contribute as much as they would under an FDC scheme.

- Although NDC schemes require substantial individual account management infrastructure, they do not require the administrative capacity associated with fund and asset management, and they present less of a challenge for the governance and absorptive capacity of financial markets.
- NDC schemes avoid the short-run asset volatility in financial markets and the potential behavioral impact of switching between fund managers.
- NDC schemes avoid the performance and related risks associated with active reserve management.
- NDC schemes can generally be operated and managed much more inexpensively than FDC schemes. They can therefore provide a larger retirement benefit for a given contribution rate.
- Because NDC schemes require an FDC buffer fund to accommodate demographic change and volatility, it can provide the necessary infrastructure and experience for a future move to greater funding.

### *Disadvantages Compared with Defined Benefit and Funded Defined Contribution Schemes*

NDC accounts do not provide workers with the same predictability of replacement of final income that a defined benefit scheme may offer. Other disadvantages include the following:

- NDC schemes may create greater risk for contributors than FDC schemes, because the notional account balance is backed only by a government benefit promise, not by financial assets.
- Changes over time in the relation between contribution revenues and benefit disbursements need to be managed through changes in the notional interest rate, the annual indexation, and the size of the buffer fund, which introduces additional risks to members.
- NDC accounts will not realize the potential additional return resulting from the difference in the asset performance (net of administrative costs) of an FDC account minus the growth in average covered wages. This difference will be reflected in the benefit the individual would receive at retirement.
- NDC schemes cannot provide a catalyst for financial market development, which FDC schemes appear to have provided in some countries.
- Although the effects of FDC schemes on savings mobilization are unclear, an NDC scheme does not contribute to additional growth of national savings.
- An NDC system still needs to address the legacy costs from the prior or pre-existing system and create a financing mechanism to do so.

### *Alignment of FDC Characteristics with Chinese Needs*

A large NDC scheme and a small FDC buffer fund can be designed to strengthen and refine the current individual account scheme in a way that aligns with Chinese needs and circumstances:

- Avoiding the transition costs associated with an FDC scheme is a substantial advantage in China, where the legacy debt and aging population impose a substantial fiscal burden that cannot be satisfied from other income sources, at least over the next 20–30 years. Furthermore, the stock of existing and future contributors is too narrow to shoulder the burden of legacy debt and ensure both enterprise competitiveness and growing coverage and compliance.
- China does not have the necessary administrative capacity associated with fund and asset management or the financial market infrastructure to support an FDC scheme, and it is unlikely to have such an infrastructure in the short run.
- Neither China's financial markets nor its pension systems are sufficiently developed or regulated and supervised to be able to manage the risks and withstand the volatility to which FDC accounts will no doubt be subject. Avoiding both the volatility and risks associated with FDC accounts is of particular importance to the mandatory pensions scheme in China, because coverage and compliance are contingent on credibility, which could be affected by such risks.
- With a national savings rate in excess of 40 percent and high projected growth rates, additional marginal savings mobilization is not only not necessary to support future growth but will come at the expense of current consumption, which, in the short run, is a priority to support growth policies in China.

### *Recommended Policy*

An NDC scheme, coupled with an FDC buffer fund, provides a sound basis for one pillar of a reformed mandatory urban pension system in China. It is essential that such a pillar be complemented by revised frameworks for minimum pension benefits for vested members and voluntary savings. An NDC scheme and FDC buffer fund serve the essential function of providing a modest mandatory savings vehicle to provide for consumption smoothing in retirement for urban dwellers.

To address challenges related to these schemes, policy makers may want to consider the following measures:

- Establishing a common national framework for individual notional and funded account management, reconciliation, compliance, and disclosure, as well as providing a platform for interregional account portability
- Establishing a policy framework for the FDC buffer fund that minimizes the financial risks to members
- Establishing a viable policy framework for interregional fiscal resource transfers (pooling) so that net transfers of acquired rights as a result of migration are matched by fiscal transfers supporting such rights, mitigating localized fiscal volatility
- Establishing a national framework for regulation and supervision separate from pension administration that ensures that local authorities are held accountable for service delivery according to national standards.

Just as individual accounts composed one element of the reform structure enacted in China in 1997, so too must an NDC pillar be complemented by other pillars in order to provide adequate, affordable, and sustainable old-age income protection in China. Moreover, given the complexity of policies and institutions needed to provide such protection, multiple reform processes will need to be contemplated.

## Conclusions

China is at a critical juncture in its economic transition. Comprehensive reform of its pension system could play an important role in achieving harmonious and sustainable development. China is facing an unsustainable fiscal burden from its urban social security system in the face of a rapidly aging society and a substantial legacy of pension promises to current and soon-to-be retirees. The policy framework adopted in the 1990s is broadly satisfactory, but it now requires refinements in light of recent experience. Having grown old before getting rich, China has no choice but to move to a system that provides low-level benefits and broad, multitiered coverage.

An NDC scheme, coupled with an FDC buffer fund, provides a sound basis for refining the individual account policy framework. An NDC scheme could form one pillar of a reformed mandatory urban pension system. Establishing such a scheme and buffer fund presents related challenges, which require consideration and evaluation. Moreover, the NDC pillar needs to be complemented by revised frameworks for minimum pension benefits for vested members as well as a voluntary savings scheme. Finally, parametric reforms to the existing scheme need to be considered to reduce legacy costs, enhance incentives for participation, and improve old-age income security.

In the face of huge transition costs, policy makers should consider an NDC system as one option for the public pillar. To reduce pressure on the government to provide social security, measures should be crafted to induce employers/enterprises to provide annuities or other forms of commercial insurance to employees. At the same time, other forms of support, such as mutual aid, social philanthropic aid, and family insurance, should be encouraged.

Raising the level of social pooling from the current municipal level is vital for pooling risk, an essential feature of a national social security system. The higher the pooling level, the better the system will be able to cope with risk. Social pooling at the municipal or provincial level is not conducive to labor mobility, because surpluses cannot be transferred from one region to another. Moreover, deficits have to be made up by the central fiscal authorities, limiting the ability of social security funds to cope with risk. The NDC system affords the possibility of strong portability characteristics as long as the levels of social pooling rise.

In the long run, the level of pension benefits should be determined on the basis of the rate of return on individual accounts, including a predetermined rate of return on notional individual accounts. Although China's "demographic dividend" period will soon pass, technology upgrading and the changing structure of consumption will enable it to maintain relatively high growth. This should allow

the NDC rate of return to be set slightly higher than the rate on Treasury bonds, making participants view their pension contributions as a form of savings with attractive yields, thereby creating an incentive to reduce contribution evasion.

When China stipulated the retirement age of enterprise workers, life expectancy was shorter than it is today. Life expectancy continues to rise, making early retirement a luxury China cannot afford. The practice of encouraged or mandatory early retirement should therefore be stopped and the retirement age gradually increased to levels common in other countries, including members of the Organisation of Economic Co-operation and Development (OECD).

Many people in China are concerned that raising the retirement age would reduce the number of job opportunities for new labor force entrants. In a market economy, however, the number of jobs is not fixed and is responsive to the availability of labor; by exercising downward pressure on wages, increased numbers of workers tend to encourage job creation. Although in the very short run there could be effects, in the long run there is no significant relation between retirement age and job opportunities. In advanced countries, raising retirement ages has not systematically increased unemployment. Although the labor market is not currently working efficiently in China, its pension system needs to be established for the long run. The retirement age thus needs to be raised (China Economic Research Advisory Programme 2005).

The difference in the retirement age for white-collar and nonwhite-collar women should be gradually eliminated, so that both retire at 55. The retirement age for all women could then gradually be raised to 60. These changes would greatly reduce the deficit in China's pooled pension funds, possibly allowing the pooled funds to display a surplus as early as 2020. Coupled with the elimination of mandatory retirement rules, the NDC system would create stronger incentives for workers to postpone retirement on their own initiative, increasing their annual retirement benefit and reducing the state's implicit pension liabilities.

The NDC system appears to hold great promise for China. But more research, simulation, and piloting of the program are needed before the system is adopted. Sweden, which took the lead in adopting the NDC system, has had only 13 years of experience with it; some longer-term problems may yet be discovered. Given the enormous costs of a misguided reform, the results of pilot programs will need to be evaluated before a large-scale roll-out of the system is introduced in China.

## Notes

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1. The monthly benefit was to be calculated based on the account balance at retirement divided by 120 or an expected life expectancy at retirement age of 120 months, with no benefit indexation or interest on account balances.
2. The transition pension is based on the formula  $(P * A * Q * M) + K$ , where  $P$  = the accrual factor (typically ranging from 1.0 percent to 1.4 percent);  $A$  = average economy wage for the year prior to retirement;  $Q$  = an index of average contributory wage calculated as  $(X_1 / A_1 + X_2 / A_2 + X_3 / A_3 + \dots + X_n / A_n) / n$ , where  $X_1, X_2, X_3, X_n$  represent the individual's contributory wage levels for the years 1996, 1997, 1998 through to the year before retirement and  $A_1, A_2, A_3, \dots, A_n$  represent the average economy wage for the same years;  $n$  is the length of contributory service (number of years between the time individual accounts were first established [assumed to be 1996] to the year before retirement);  $M$  = length of service before the establishment of the individual account; and  $K$  = fixed amount of supplement (varying by province/municipality ranging from 0 to Y120 per month). See Sin (2005).
3. The adjustments listed pertain to individual accounts. State Council Document No. 42 of December 2000 also encompassed changes to health insurance and social safety net and labor market programs for the urban population. See World Bank (2005).
4. These challenges and some of this discussion were adapted from China Economic Research and Advisory Programme (2005).
5. The World Bank estimates that the baseline implicit pension debt that had accrued by the end of 2003 was 141 percent of GDP (Sin 2005).
6. In early 2005 only 4 of 14 municipalities in Liaoning Province had achieved municipal pooling of pension finances (World Bank 2005).
7. The formula for determining the benefits from individual accounts does not reflect actual life expectancy at retirement age, returns on individual accounts during the withdrawal period, or benefit indexation.
8. This section draws on Holzmann and Hinz (2005).
9. See Zviniene and Packard (2003). Simulations suggest that the deficit projected for 2050 would fall from 8.5 percent of GDP without reform to 0.9 percent with reform in Bolivia and from 2.3 percent of GDP without reform to 0.6 percent with reform in Mexico. In Chile the long-run implicit pension debt was projected to be zero instead of 210 percent of GDP. The unification of systems has also led to substantial fiscal savings, above those estimated earlier.
10. The first pillar generally consists of a defined benefit or NDC scheme that is publicly managed. All of the first-pillar schemes referred to here are defined benefit schemes.
11. Between 1998 and 2002, the ratio of pension fund assets to GDP rose from 3.3 to 11.3 percent in Argentina, from 3.9 to 15.5 percent in Bolivia, from 40 to 56 percent in Chile, from 2.7 to 7.7 percent in Colombia, from 0.4 to 7.4 percent in El Salvador, from 2.7 to 5.3 percent in Mexico, from 2.5 to 8.1 percent in Peru, and from 1.3 to 5.7 percent in Uruguay. Funded schemes have achieved high standards in asset valuation, risk rating, and disclosure. Insurance companies have flourished in their auxiliary role as providers of disability, survivor, and longevity insurance in the new systems. Improved financial sector functioning in Latin America is likely to have had an indirect

- positive effect on saving, even though the direct effect on savings growth is substantially debated. See Gill, Packard, and Yermo (2004).
12. Many countries in Eastern Europe and Central Asia have been increasingly concerned about the administrative costs of the second pillar (Murthi 2003). A number of countries in Latin America and Eastern Europe and Central Asia that have enacted second-pillar reforms have enacted or are considering enacting measures to improve price competition among pension funds. Some schemes have adopted structural measures, such as the centralization of data management, in an effort to reduce costs and improve efficiency.
  13. This section draws on Holzmann and Palmer (2006b).

## References

- China Economic Research and Advisory Programme. 2005. *Social Security Reform in China: Issues and Options*. Beijing.
- Corbo, Vittorio, and Klaus Schmidt-Hebbel. 2003. "Macroeconomic Effects of the Pension Reform in Chile." In *Pension Reforms: Results and Challenges*, 241–329. Santiago, Chile: International Federation of Pension Fund Administrators.
- Franco, Daniele, and Nicola Sartor. 2006. "NDCs in Italy: Unsatisfactory Present, Uncertain Future." In *Pension Reform: Issues and Prospects for Non-Financial Defined Contribution Schemes*, ed. Robert Holzmann and Edward Palmer, 467–92. Washington, DC: World Bank.
- Gill, Indermit, Truman Packard, and Juan Yermo. 2004. *Keeping the Promise of Old-Age Income Security in Latin America*. Washington, DC: World Bank.
- G10. 2005. *Ageing and Pension System Reform: Implications for Financial Markets and Economic Policies*. Report prepared at the request of the Deputies of the Group of 10 by an expert group chaired by Ignazio Visco, Central Manager for International Affairs, Banca d'Italia, Rome.
- Holzmann, Robert, and Richard Hinz. 2005. *Old Age Income Support in the 21st Century*. Washington, DC: World Bank.
- Holzmann, Robert, and Edward Palmer. 2006b. "The Status of the NDC Discussion: Introduction and Overview." In *Pension Reform: Issues and Prospects for Non-Financial Defined Contribution Schemes*, ed. Robert Holzmann and Edward Palmer, 9–11. Washington, DC: World Bank.
- Murthi, Mamta. 2003. "Administrative Costs of Multipillar Systems in ECA." World Bank, Washington, DC.
- Rutkowski, Michal. 2004. "Home-Made Pension Reforms in Central and Eastern Europe and the Evolution of the World Bank Approach to Modern Pension Systems." In *Rethinking the Welfare State: The Political Economy of Pension Reform*, ed. Martin Rein and Winfried Schmahl. Cheltenham, U.K., and Northampton, MA: Edward Elgar.
- Sin, Yvonne. 2005. "China Pension Liabilities and Reform Options for Old Age Insurance." Working Paper 2005-1, World Bank, Washington, DC.
- United Nations. 2007. *Population Estimates and Projections*. Population Division, Department of Economic and Social Affairs, New York. <http://esa.un.org/unpp/>.

World Bank. 2005. *Evaluation of the Liaoning Province Social Security Reform Pilot Analysis of Pension Liabilities and Fiscal Implications under Reform Scenarios*. China and Mongolia Department, Washington, DC.

Zviniene, Asta, and Truman Packard. 2003. "A Simulation of Social Security Reforms in Latin America: What Has Been Gained?" Background paper prepared for the Office of the Chief Economist, Latin American and Caribbean Regional Study on Social Security Reform, World Bank, Washington, DC.





# Realizing the Potential of China's Social Security Pension System

15

MARTIN FELDSTEIN AND JEFFREY LIEBMAN

Like many of the world's nations, China faces significant fiscal challenges from the aging of its population. These challenges are more complicated in China than in most other countries, because they are closely linked to China's efforts to transform state-owned enterprises and facilitate rural to urban migration. But in undertaking social security reform, China has three advantages that most countries do not share:

- It has designed a very attractive social security pension system, combining a basic social pooling benefit and a personal account benefit that reflects individual earnings histories.
- The current economic environment is uniquely favorable for solving the fiscal challenge created by population aging, because economic growth is very rapid and national savings and international reserves are extraordinarily high.
- If correctly implemented, social security reform can contribute to the modernization of the Chinese economy, by enabling workers from former state-owned enterprises and agriculture to make the transition to the market economy and by helping speed the development of China's financial system.

It is essential that China move rapidly to realize the potential of its well-designed social security system. The problem will be much harder to solve if the country waits until the population has aged further and the economic environment is less favorable than it is today.

Four steps could help China realize the potential of its social security system:

- The legacy costs of providing pensions to people who participated in the old economic system should be separated from the new social security pension system. These legacy costs should be treated as inherited national debt and financed at a low current cost.

- The administration of the social security system should be improved. Steps must be taken to increase collections of payroll contributions and to expand the number of workers covered by the system.
- Payroll tax rates should be significantly reduced. China's payroll tax rates are much higher than those of most other countries. These high rates cause firms to evade their required contributions, and they reduce the efficiency of the economy. They can be reduced while still meeting the financing needs of the program.
- The funding of investment-based individual accounts should begin now. Investment-based accounts are needed to build worker confidence in the system and to keep tax rates low in the long run.

## Separating Legacy Costs

Nearly all current pension expenditures represent legacy costs—payments to former employees of state-owned enterprises who were covered under the old economic system and who did not participate as workers in the current social security pension system for more than a few years. The costs of providing social pooling benefits to these workers are part of the costs of making the transition to a market-based economy. Since the benefits of this transition will be shared by many future generations, it is appropriate to share the costs over many generations as well. This is particularly true in China, because economic growth is rapid, implying that future generations will be much richer than current generations. In addition, the current approach—in which today's workers bear all of the burden of financing these legacy costs—leads current workers to feel that they are getting a bad deal from the social security system and to be reluctant to participate in it. For these reasons, these legacy costs should be separated from the social security pension system and treated as inherited national debt.

There is no need to finance all of this debt as the obligations come due. Instead, the interest on the debt can be serviced at a small annual cost, so that the debt remains constant or gradually shrinks as a share of GDP over time. It would also be possible to reduce this debt by selling government assets, including state-owned enterprises, land, and foreign exchange reserves.

The opportunity to use these alternative revenue sources exists because China currently has a low national debt, high rates of national savings, and large international reserves. These conditions may not exist in the future. Therefore, it is important to move as quickly as possible to fully implement the new system, so that it can be self-sustaining in the long run.

## Improving the Management of the System

Currently, many workers do not participate in the system, and many firms avoid some or all of their required contributions. Low participation rates and low compliance rates keep current tax rates unnecessarily high.

The most important thing that can be done to improve payroll tax compliance is to reduce the payroll tax rate by separating legacy costs and funding the social

pooling benefit with a different revenue source. Other needed reforms include (a) creating a single national pension administration that receives all pension revenue and delivers pensions; (b) having the tax authority collect payroll contributions; and (c) undertaking a systematic effort at enforcement and coverage expansion, starting with the largest firms and then extending to all firms. These recommendations are consistent with the findings of experts who have studied the Liaoning pilot.<sup>1</sup>

In addition, in many Chinese firms, a large fraction of employee compensation is in nonwage forms, such as housing benefits and special cash payments. It is important that the payroll tax base include all employee cash compensation, not just wages. If it does not, retirement pensions will be too low and opportunities to evade the payroll tax by shifting compensation to nonwage forms will be too great.

## **Reducing Payroll Tax Rates**

Firms in China currently pay a payroll tax rate of about 20 percent; workers pay a tax rate of about 8 percent to finance the pension portion of the social security system. This combined rate of 28 percent is much higher than the rate in most other countries and is a major barrier to the successful operation of the system. The high tax rate causes firms to avoid required payments, encourages compensation to be structured in ways that are not counted as wages, and reduces economic efficiency.

The payroll tax rate should be reduced to 8 percent, with all of the revenue directed to investment-based individual accounts. Individual accounts of this size would be more than sufficient to achieve the government's objective of a replacement rate equal to 35 percent of a worker's average wage.

Future social pooling costs should be financed with a broad-based tax, such as the value added tax (VAT). While short-term social pooling costs are legacy costs that should be debt financed, the costs of providing social pooling benefits to workers who have participated in the new social security system for at least 15 years should be tax financed on a pay-as-you-go basis.

Currently, payroll tax administration is very inefficient. Tax evasion has produced a small tax base and very high tax rates. If this continues to be the case in the future, then social pooling should be financed with a broader-based tax, such as the VAT. Using a tax with higher compliance would be more efficient and would permit lower tax rates than are possible with the payroll tax. If the VAT were used today to finance social pooling, there would be serious distributional concerns about using a tax whose burden is borne by the entire population to finance benefits for the small subset of the population covered by the pension system. But as coverage rates expand, this important distributional concern will become less significant. If payroll tax administration becomes as efficient as administration of the VAT, it will be appropriate to use the payroll tax to finance the social pooling benefit.

Social pooling should be redesigned by the time today's younger workers retire. It is important that a redistributive pay-as-you-go component such as social pooling be part of the overall system, especially as the system is expanded to cover a larger portion of the population. However, when combined with the retirement income

produced by the individual accounts, the current target of providing a benefit throughout retirement equal to 25 percent of the provincial average wage will produce replacement rates that are very high relative to world standards. Moreover, as the population ages, this generous benefit level means that future payroll tax rates will need to be very high—possibly about 20 percent for the social pooling benefit alone.

For this reason, the social pooling mechanism should be redesigned. Possibilities include the following:

- Reduce expenditures by raising retirement ages (thereby reducing the number of years that people receive this benefit).
- Reduce expenditures by maintaining benefits at the age of retirement at 25 percent of the average provincial wage but permitting benefits at later ages to grow more slowly than would be implied by maintaining this target throughout retirement.
- Replace the social pooling benefit with a better-targeted supplement to the individual account benefits.

Current social pooling gives benefits to those with above-average incomes as well as to lower-income individuals. It could be modified so that it provides a floor on the retirement income coming from individual accounts or a means-tested benefit that reflects people's other retirement resources as well.

## Funding Investment-Based Individual Accounts

China's decision to create investment-based individual accounts was a wise one. Investment-based accounts make the promise of future benefits credible and the link between tax payments and future benefits transparent. These two features are essential for raising compliance with the payroll tax and therefore to expanding coverage of the system to a larger portion of China's population. Investment-based accounts will also keep long-run tax rates much lower than would be possible in a pay-as-you-go system such as a notional accounts system. They will also contribute to the development of the Chinese financial system.

Some experts have suggested that China should follow an alternative approach and adopt an unfunded notional account system in which people's individual accounts are just a record-keeping device (see chapter 14 of this volume). Such an approach has four serious drawbacks for a country like China:

- Because the accounts will be permanently empty, workers and firms will not have confidence that the government will actually pay benefits. Many will therefore continue to be reluctant to pay payroll taxes.
- Because such a system produces revenue in the short run that is not needed to pay benefits (since no money is placed into the accounts), local and provincial governments will become accustomed to using this revenue for other purposes, making it hard to establish a clear principle that payroll tax revenue be devoted to retirement benefits. This will further undermine worker confidence in the system.

- Because a notional defined contribution system is a pay-as-you-go system, tax rates in the long run will have to be very high. An investment-based system can produce a benefit equal to 35 percent of a worker's final wage using a contribution rate of 4–8 percent (depending on the rate of return earned by the investment-based accounts). Over the next 15 years, the ratio of retirees per active worker is projected to fall from 3 to 1 to less than 2 to 1. Under this scenario, a pay-as-you-go system such as a notional defined benefit system would require a substantially higher future tax rate than that required by an investment-based system.
- While Chinese savings rates are currently very high, this may not be the case in the future. An unfunded system reduces national saving and therefore the size of the economy.

The Chinese financial system is still relatively new, and returns on market investments have not been as high as the return on physical investments. The real rate of return on physical assets (that is, business equipment and structures) is difficult to estimate for the Chinese economy. In the United States, this rate is about 10 percent. Because China has so many investment opportunities and a high ratio of labor to capital, the real rate of return should be higher than in the United States (perhaps 15 percent). Financial markets are improving rapidly and financial rates of return over the next decade should start to be in line with the high real return on physical capital.

Moreover, annual individual account investments from an 8 percent tax on the wages of urban workers would be a small percentage of China's GDP and small relative to existing investments in business capital stock and housing. Even in their current state, Chinese financial markets can easily absorb additional investments of this magnitude. Some portion of the investment-based account accumulations could also be invested internationally, since China has a large current account surplus. Thus, there is no need to postpone implementation of the investment-based system until after financial markets are more developed. China should therefore fully implement its investment-based system as soon as possible.

Population aging has the potential to create significant fiscal challenges for China. By taking these four steps to achieve the full potential of its social security system, China will successfully handle the aging of its population and speed the modernization of its economy.

## Note

1. Since 2001, the Chinese government has piloted a variety of social insurance reforms, including funded Social Security retirement accounts, in Liaoning Province (see World Bank 2006).

## Reference

World Bank. 2006. *China: Evaluation of the Liaoning Social Security Reform Pilot*. Report 38183-CN, Washington, DC.



Part VII

Growth, Inequality, and  
Fiscal Reform





# Does the *Di Bao* Program Guarantee a Minimum Income in China's Cities?

16

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While economic reforms and structural changes in the Chinese economy have yielded high rates of economic growth, some subgroups have been adversely affected or unable to participate in the new economic opportunities because of their lack of skills, long-term illness, or disability. The collapse of the old safety net provided by guaranteed employment has left some households vulnerable. Some of the “left behind” households started poor and some became poor, even though aggregate poverty rates have tended to fall over time.<sup>1</sup> Urban areas have figured prominently in concerns about the “new poor.”

*Di Bao* has been the government's main response to this new challenge.<sup>2</sup> Having started in Shanghai in 1993, the scheme became a national policy in 1999, when the State Council issued formal regulations. The program expanded rapidly once it became national policy. By 2003 participation had leveled off at 22 million people, representing 6 percent of urban residents, at a cost of about 0.1 percent of GDP (O'Keefe 2004). The scheme is administered by the Ministry of Civil Affairs.

*Di Bao* aims to provide a transfer to all registered urban households with incomes below a line that is set at the municipal level.<sup>3</sup> The aim is to close the gap between the recipient's income and the local *Di Bao* line (hereafter the “*Di Bao* gap”), so that a minimum income is guaranteed.

Very little is known about the performance of the program in reaching the poor, even though it is one of the largest cash transfer programs in the developing world. On paper, the program eliminates poverty (at least by its own definition of who is poor). How close does it come to this ideal in practice?

This chapter offers the first systematic assessment of *Di Bao*'s performance, based on independently collected household survey data. The chapter focuses on two issues that are central to assessing a program such as *Di Bao*. The first concerns behavioral responses to the program. In assessing targeting performance and poverty impacts of programs such as *Di Bao*, it is common practice to simply

deduct transfers received from posttransfer income to estimate pretransfer income. However, there are concerns that recipients' labor supply or private transfer receipts will fall in response to *Di Bao*, so that the net income gains are lower than the actual money received. On paper, the design of *Di Bao* implies high marginal tax rates, which suggests that there may be strong incentive effects that could undermine the program's effectiveness against poverty. The literature on the design of such programs suggests that the benefit withdrawal rate—the amount by which the transfer payment falls for each extra unit of pretransfer income—should be positive but less than one. For programs aiming to reduce poverty, a benefit withdrawal rate around 0.5 is consistent with evidence on the relevant income elasticity of labor supply (Kanbur, Keen, and Tuomala 1995).

*Di Bao*'s aim of exactly filling the poverty gaps implies a benefit withdrawal rate that is too high. However, it should not be assumed that any program operates exactly the way it is designed to operate. Local administrators can dampen the marginal tax rates to avoid adverse incentive effects in many ways, such as by delaying the withdrawal of benefits when program participants get a new job. There are reports from field work that this happens in practice (O'Keefe 2004). Whether the incentive problems are a concern in reality is an empirical question.

The second issue concerns the program's "targeting performance."<sup>4</sup> A large share of the attention of policy makers has gone into achieving better targeting, in the sense of concentrating benefits on the poor, notably by avoiding leakage to the nonpoor. Various measures of targeting have been used in past work, typically interpreted as measures of a program's performance in "directing benefits toward poorer members of the population" (Coady, Grosh, and Hoddinott 2004a: 81). However, while it is widely agreed in this literature that the objective is to maximize the impact on poverty,<sup>5</sup> it is far from clear that any of the prevailing targeting measures provide a useful indicator of this objective. Indeed, there can be no guarantee that better targeting by these measures enhances a program's impact on poverty.<sup>6</sup> This chapter considers a range of measures found in the literature and explores their relevance to the performance of the *Di Bao* program in eliminating poverty. This chapter summarizes research findings that are reported in greater detail in Chen, Ravallion, and Wang (2006).

The next section describes the data for China's 35 largest cities. The second section outlines the model of program participation. The third section looks for evidence of behavioral responses. The fourth section examines the targeting performance of *Di Bao* and its impact on poverty. The last section concludes that rather than focus future efforts on increasing the impact of the *Di Bao* program on poverty, policy makers should focus on ensuring more complete coverage of the poor.

## Data on China's Largest Cities

The analysis in this chapter is based on data from China's Urban Household Short Survey (UHSS) for 2003/04.<sup>7</sup> The UHSS was conducted by the Urban Household Survey Division of the National Bureau of Statistics (NBS), as a first

step in constructing the (smaller) sample for the regular Urban Household Survey (UHS), which has a much longer questionnaire. The UHSS sample is used for the 35 largest cities, giving a total sample of 76,000, ranging from 450 (in Shenzhen) to 12,000 (in Beijing). For these 35 cities, the definitions of geographic areas in the UHSS coincide with those for the *Di Bao* lines. The entire data set has been cleaned by NBS staff and made available for this research.<sup>8</sup>

Although the UHSS is a short survey, it captures a wide range of household characteristics. The survey measured household income from responses to the single question "What is your household's total income?" (respondents were also asked how much of their income comes from wages). Responses to this question are unlikely to give as accurate a measure of income as the UHS, which builds up its income aggregate from many questions. Measurement errors are therefore to be expected.

Subjective perceptions of welfare were also measured, based on responses to a question on whether the respondent felt that his or her household's income was adequate for its needs and improving over time. Respondents were also asked about *Di Bao* participation and cash transfers received from *Di Bao*.<sup>9</sup>

No municipal cost-of-living indexes were available. The *Di Bao* lines undoubtedly reflect local living costs, but they also reflect other variables, including local fiscal capacity.

## Model of *Di Bao* Participation

In using survey data to assess targeted transfer programs, it is generally assumed that the income measured in the survey is the same income measure used in implementing the program. This is a questionable assumption for three reasons. First, in any survey, there must be a strong presumption that income is measured with error. For this research project, in addition to the usual reporting errors, errors were likely introduced by using a single income question and by conducting the survey after the program was assigned. The survey-based income net of *Di Bao* receipts may therefore differ from the income observed at the time the program was assigned (after the checks made by local authorities).

Second, potential participants face an incentive to misreport their incomes; survey-based incomes may therefore be more accurate. The *Di Bao* program does not rely solely on self-reported incomes. Local authorities and neighborhood committees try to ensure that recipients are genuinely eligible, taking account of other factors, such as financial assets, consumer durables, and housing conditions. There is also a community appeals process, which includes the posting of applicants' names in a public place for two weeks. The national guidelines say that *Di Bao* recipients are expected to work on "community services"; this condition helps screen for the poor, although it is unclear whether work requirements are enforced locally (O'Keefe 2004). Field studies in a few locations reveal some concerns about income misreporting; there are reports from qualitative research in Dalian, for example, that some people deliberately underreported their incomes to obtain assistance (Daoshun and Tuan 2004).

Third, there is more than one way to measure income. One source of differences between survey-based incomes and those used to target the program is the time period over which income is measured. Current income can differ from long-term income; a young, well-educated family may have low current income but be on a rising trajectory with good future prospects.

Anecdotal evidence also suggests that local authorities may not measure current income the same way households report their income. Based on informal interviews with *Di Bao* participants in Liaoning, Hussain (2002) reports that local authorities measure income for *Di Bao* purposes as if the family were receiving all the benefits it was entitled to, ignoring the fact that the family was not actually receiving those benefits.

At the same time, it is also possible that income or other nonincome characteristics of households influence program participation independently of income (even when correctly measured). This can reflect differences in the power of individuals (such as through their local political connections) to affect their *Di Bao* participation, independently of their income.

The upshot of these considerations is that the allocation of *Di Bao* is determined by measured income, the local *Di Bao* line, and a vector of other household characteristics. Defining a dummy variable that takes the value  $D_i = 1$  if household  $i$  receives the program and  $D_i = 0$  if it does not, the probability of participating can be assumed to be given by

$$\Pr(D_i = 1) = F[\alpha\phi(Y_i) + \beta Z_i + \pi X_i], \quad (16.1)$$

where  $F$  is the standard normal distribution function (so that equation 16.1 is estimated as a probit regression);  $\phi(Y_i)$  is a parametric nonlinear function of the observed measure of household income (net of *Di Bao* receipts) per capita,  $Y_i$ ; the local *Di Bao* line is  $Z_i$ ; and  $X_i$  is a vector of other factors. The form of  $\phi(Y_i)$  chosen (based on the goodness-of-fit with the data) is a quadratic function of  $\log Y$ .

The  $X$ 's in equation (16.1) should clearly include geographic effects, because location can influence living standards independently of other household characteristics, including income. The municipality is the obvious geographic unit. A complete set of municipality effects is allowed by including  $m - 1$  dummy variables for the  $m$  municipalities (each with its own *Di Bao* line). However, the *Di Bao* line is constant within municipalities, so the regression coefficient on  $Z$  cannot be identified separately from the geographic effects. The vector  $X$  includes variables related to the dwelling and the observable characteristics of the household.

The probit estimates of equation (16.1) are reported in detail in Chen, Ravallion, and Wang (2006), who show that *Di Bao* participation declined with income over the range of the data, albeit with a diminishing income effect as income rose. Controlling for income, the probit estimates reveal that *Di Bao* participation is more likely for larger households, households living in smaller dwellings, households that do not own their dwelling, households that have an

“old style” toilet, households that are still using coal for cooking, households that have no heating, households that have no computer, households headed by women, households whose head is disabled or sick, households whose head has little schooling or who works in services or social security/welfare, and households whose head is retired, works at home, has been laid off, or is unemployed. *Di Bao* households have lower financial wealth, are more likely to feel that their income is “less than they need to make ends meet,” are more likely to think that their income has improved, receive a smaller share of wages in income, and have more unemployed people or students and fewer retired people in the household. Most cities have significantly lower participation rates than Beijing, controlling for household characteristics. (Chen, Ravallion, and Wang [2006] present detailed estimates for the probits, with and without the net income variable, given concerns about its endogeneity.)

The program appears to be putting heavier weight on certain characteristics, such as poor dwelling attributes and lack of financial wealth, than is implicit in per capita household income from the UHSS. To the extent that these effects reflect measurement errors in incomes or a broader concept of “income” that is motivating the program’s targeting at the local level, it can be argued that the program is doing a better job of reaching the poor than the calculations based solely on the survey-based incomes would suggest.

There are also indications that the program is doing better at reaching the chronically poor than those who may be vulnerable to poverty in the future. This is suggested by the fact that people who feel that they are on a downward trajectory are less likely to get support from *Di Bao*.

It is clear from these results that *Di Bao* participants are a highly selected subsample. Chen, Ravallion, and Wang (2006) give the frequency distribution of the predicted probabilities (“propensity scores”) based on whether the sampled household participated in *Di Bao*. Their results show that the sample of nonparticipants is heavily skewed toward zero probability of participating in *Di Bao*. There are clearly a great many households in the sample that have negligibly low probabilities of participating in the program. Nonetheless, a large number of nonparticipants have propensity scores similar to those of participants. Despite the obvious selectivity of *Di Bao* participants, it is still possible to find nonparticipants who are valid comparators based on their observable characteristics (as weighted in their propensity scores).

## Behavioral Responses

One cannot assess a program’s targeting performance and impacts on poverty without taking a position on the behavioral responses to the program that influence the net income gains. However, assessing behavioral responses to a program such as *Di Bao* without longitudinal (panel) data is difficult.<sup>10</sup> With only a single cross-sectional survey, it is hard to be confident in the results, given the likelihood of omitted variables correlated with both program placement and the behaviors of interest. It is nevertheless worth seeing whether there are indications of behavioral

responses to the program—that is, signs that the program had an impact on the incomes of participants net of the transfers they received.

Two feasible approaches can throw at least some light on behavioral responses. The first is to estimate the benefit withdrawal rate (or “marginal tax rate”), to see if it is high enough to warrant concerns about behavioral impacts. The second is to use a nonexperimental evaluation method, which estimates impacts against a matched comparison group.

### *Benefit Withdrawal Rate*

*Di Bao* was designed so that the benefits received decrease as income rises, so that (in theory at least) participants face a positive marginal tax rate. Indeed, if *Di Bao* exactly fills the gap between current non-*Di Bao* income and the *Di Bao* line (as is the scheme’s aim), participants will face no incentive to work, and earned income net of *Di Bao* will fall to zero (assuming that work yields disutility).

The extent to which this is a problem in practice is unclear. Benefits are unlikely to be withdrawn quickly; at least some local authorities allow *Di Bao* benefits to continue for some period after the participant finds a job (O’Keefe 2004). Observations from field work also indicate that the notion of “imputed income” is used in a number of provinces. This is a notional level of income that reflects the potential income given the household labor force; imputed income is apparently used with the aim of reducing work disincentives (personal communication with Philip O’Keefe). The program also appears to be targeted on the basis of other variables in addition to income, such as disability. This, too, could reduce the marginal tax rate facing participants.

Since panel data are not available, it is not possible to observe what happens when benefits are given or withdrawn. The best that can be done is use the cross-sectional variance to identify the benefit withdrawal rate, by regressing the per capita *Di Bao* payment received on per capita income less *Di Bao* receipts, with a complete set of dummy variables for municipalities (to capture the differences in the generosity of the program). The implied benefit withdrawal rate is very low, at  $-0.0012$  ( $t$ -ratio =  $-17.51$ ,  $N = 76,808$ ). The estimate is also low if one allows for censoring; using a tobit regression, the estimate is  $-0.004$  ( $t = -76.23$ ). Estimating the tobits separately for each municipality yields statistically significant benefit withdrawal rates in all cases, but all are very low, with none higher (in absolute value) than  $-0.001$ .

There must be a presumption of bias in these estimates, as a result of measurement error in incomes. In addition to the measurement error caused by using a single question to determine income, income net of *Di Bao* payments will probably underestimate income in the absence of *Di Bao* if there are behavioral responses.

This concern is addressed using an instrumental variables estimator in which the same set of regressors used in modeling *Di Bao* participation in the previous section are used as instrumental variables to estimate the benefit withdrawal rate. (In this case, the point is to determine the unconditional regression coefficient of

*Di Bao* payments on pre-*Di Bao* income, so the instrumental variables are automatically excluded from the main regression of interest. However, the conditional benefit withdrawal rate is unidentified.) This procedure yields an estimated benefit withdrawal rate of  $-0.0021$  ( $t = -28.33$ ). Repeating these calculations separately for each municipality, using the instrumental variables estimator for the full sample in each municipality, yields significantly negative coefficients for all municipalities, ranging from  $-0.0102$  to  $-0.0001$ .

These calculations suggest that the marginal tax rate facing *Di Bao* participants is very low, even allowing for measurement error in incomes. It thus appears quite unlikely that the program provides any serious disincentive for earning extra income. However, a low benefit withdrawal rate raises concerns about how well the program reaches the poorest and how well it adapts to changes in household needs. These observations reinforce concerns about how well the program is addressing transient poverty.

### *Mean Impacts on Net Income Relative to a Matched Comparison Group*

Another way to test for behavioral responses is by comparing net income for the *Di Bao* subsample with a matched comparison group. There would, of course, be a strong presumption of selection bias if nonparticipants were used as the comparators. To address this concern, propensity score matching was used to select the comparison group from the set of nonparticipants.<sup>11</sup> Predicted values (the propensity scores) from the probit are used for matching.<sup>12</sup> Using a light survey instrument will no doubt leave biases in these estimators.<sup>13</sup>

Given that the program is means tested, it is tempting to include income as a predictor of participation in matching. The problem in doing so is that the outcome variable (income net of *Di Bao*) would then be used as one of the predictors for estimating the impact on the same outcome variable. The results are unbiased only if it is assumed that there are no behavioral effects, which is what one is trying to test. In general, the direction of bias in the impact estimator cannot be determined.<sup>14</sup> To avoid this problem, income should be excluded from the probit (using the regression reported in Chen, Ravallion, and Wang [2006]), though the risk of selection bias based on unobserved variables in the matching then increases.

Excluding income from the probit used to estimate the propensity scores yields a mean income (net of *Di Bao*) of participants that is significantly lower than the income of the matched comparison group of nonparticipants. Income minus *Di Bao* receipts is Y1,417 lower for the *Di Bao* participants (with a bootstrapped standard error of Y270 using 100 replications); mean *Di Bao* receipts are Y270. It is not credible that receiving an extra Y270 would result in a reduction in pretransfer income of Y1,417; indeed, it would not seem plausible that the income loss exceeded Y270 on average. This suggests that sizable selection bias remains in matched comparisons that do not use income as one of the predictors for *Di Bao* participation.



What happens if income minus *Di Bao* is used as a predictor for participation and income net of *Di Bao* between participants and the matched comparison group is compared? Finding such a difference would clearly be inconsistent with the assumption that the gain from the program is simply the transfer received from *Di Bao*.

Performing this test reveals that *Di Bao* participants have slightly higher net income than the matched comparison group (using net income as a predictor for participation). However, the difference is small (the difference in mean income is Y33 per person per year, with a bootstrapped standard error, using 100 replications, of Y64) and not significantly different from zero. The data are thus consistent with the presumption that the income gain is simply the *Di Bao* payment, though this is clearly a weak test given that the matching is strictly valid only under the assumption that there is no impact on net income.

It seems unlikely that single-difference matching is able to deal well with selection bias in this case. Whether a defensible identification strategy for estimating impacts on net income with these data exists remains unclear. However, these observations from the cross-sectional data do not reveal any compelling signs of behavioral responses that would lead one to question whether the income gain is smaller than the transfer payment.

## Targeting and Impacts on Poverty

This section examines the targeting performance of the *Di Bao* program, using the various measures found in the literature, and measures the program's impacts on poverty. Following the results of the previous section, it assumes that income in the absence of *Di Bao* is given by the survey-based total income less the amount received from the program. Alternative welfare indicators that may be less vulnerable to measurement error than the survey-based measures of incomes are also considered.

### Targeting Performance

Various measures of "targeting performance" are found in the literature, though rarely is much critical attention paid to the properties of these measures. The first measure considered here would appear to be the most popular in both the literature and policy discussions. This measure is the share of total *Di Bao* payments going to those with pretransfer income below the *Di Bao* line, as given by

$$SHARE \equiv \frac{T(Y < Z)}{T}, \quad (16.2)$$

where  $T(Y < Z)$  is the total transfer received by those with  $Y < Z$ , and  $T$  is the total transfer.  $SHARE$  is simply an ordinate of the concentration curve,  $C(p)$ , giving the share of transfers going to the poorest  $p$  percent of the population

when ranked by household income per capita net of payments received from the *Di Bao* program.

In the special case of a uniform transfer—in which all recipients receive the same amount—*SHARE* becomes the “targeting rate” (*TR*), that is, the proportion of *Di Bao* recipients with net income below the *Di Bao* line:

$$TR \equiv \frac{N(D=1, Y < Z)}{N(D=1)}, \quad (16.3)$$

where  $N(D=1, Y < Z)$  is the number of people who are both poor and receiving *Di Bao* and  $N(D=1)$  is the number of *Di Bao* participants. The coverage rate can be defined as

$$CR \equiv \frac{N(D=1, Y < Z)}{N(Y < Z)}, \quad (16.4)$$

where  $N(Y < Z)$  is the number of people with  $Y < Z$ . Broader coverage is not normally thought of as better targeting, though it could clearly matter to the impacts on poverty.<sup>15</sup> Another aspect of coverage is also relevant to this program, namely, how well the program performs in filling the *Di Bao* gap. Thus, the aggregate transfer to the *Di Bao* poor as a proportion of the aggregate *Di Bao* gap is also measured.

The second main measure used is the concentration index (*CI*), which is widely used in studying fiscal incidence, among other applications.<sup>16</sup> Instead of focusing on one point on the concentration curve, this index measures the area between the curve and the diagonal (along which everyone receives the same amount); for a continuous concentration curve, *CI*, is given by<sup>17</sup>

$$CI \equiv 2 \int_0^1 C(p) dp - 1. \quad (16.5)$$

The index is bounded above by 1 (at which point the poorest person receives all *Di Bao* payments) and below by  $-1$  (at which point the richest person receives all *Di Bao*).

The third main measure of targeting performance is that used by Coady, Grosh, and Hoddinott (2004a, 2004b), the *CGH* measure. This is simply *SHARE* normalized by  $H \equiv N(Y < Z)/N$ , which is the *Di Bao* poverty rate (headcount index) for a population of size  $N$ . In other words,

$$CGH \equiv \frac{C(H)}{H}. \quad (16.6)$$

Thus, *CGH* measures targeting performance relative to what would be found under a uniform allocation of the budget (in which everyone, poor or not, receives the same amount).

Note that normalizing by  $H$  makes  $CGH$  acquire rather different properties to  $SHARE$  or  $CI$ . To see the difference, consider a transfer scheme operating in two cities and giving all participants the same sum of money. In city A, all the scheme's transfers go to the poorest 20 percent of the population, and the overall poverty rate is 50 percent. In city B, all the transfers go to the poorest 40 percent, and the poverty rate is 10 percent. A far higher share of the transfers goes to the poor in city A ( $SHARE = 100$  percent in A versus 25 percent in B). City A also has the higher concentration index ( $CI = 0.8$  in A versus 0.6 in B). In fact, the concentration curve for A dominates that for B, in that the curve for A is nowhere below that for B; this implies that A is better (or no worse) targeted than B over all possible headcount indices of poverty, when a common headcount index is used for both A and B. By contrast, the  $CGH$  measure indicates that city B does a better job of targeting ( $CGH = 2.5$  for B versus 2.0 for A). This stems from the fact that the  $CGH$  measure normalizes by the local poverty rate; thus the measure tends to suggest better targeting performance in settings with lower poverty incidence at any given concentration curve.

The fourth measure is the targeting differential ( $TD$ ), proposed by Ravallion (2000) and developed by Galasso and Ravallion (2005).  $TD$  is the difference between the *Di Bao* participation rate for the poor and the nonpoor:

$$TD \equiv \frac{N(D=1, Y < Z)}{N(Y < Z)} - \frac{N(D=1, Y \geq Z)}{N(Y \geq Z)}. \quad (16.7)$$

When only the poor receive *Di Bao* and all of them are covered,  $TD = 1$ , the measure's upper bound; when only the nonpoor get the program and all of them do,  $TD = -1$ , its lower bound. (In the example above,  $TD = 0.67$  for city B and 0.40 for city A.) Alternatively,  $TD$  can be defined as the difference between the mean *Di Bao* payment received by the poor (that is, all those with  $Y < Z$ , whether or not they actually receive *Di Bao*) and that received by the nonpoor (all those for whom  $Y \geq Z$ ), where the difference is normalized by the mean transfer payment (over all recipients). This measure can be called  $TD^*$ .<sup>18</sup> When all recipients receive the same transfer,  $TD = TD^*$ . It turns out that the choice between  $TD$  and  $TD^*$  makes little or no difference to the results. Since  $TD$  is easier to interpret, the focus here is on this measure.

Unlike the preceding measures,  $TD$  directly reflects the program's coverage of the target group. In fact, it can readily be shown that:

$$TD = \frac{CR - P}{1 - H}, \quad (16.8)$$

where  $P \equiv N(D = 1)/N$  is the overall participation rate. (The corresponding formula for  $TD^*$  is  $TD^* = (CGH - 1)P/(1 - H)$ .) The targeting differential is the

difference between the coverage rate and the overall participation rate, normalized by the proportion of people who are not poor. When a program is perfectly targeted, the overall participation rate is simply the poverty rate ( $P = H$ ) and all of the poor are covered ( $CR = 1$ ), in which case  $TD = 1$ .

Turning now to the UHSS data, 7.7 percent of the population had net incomes (observed income minus *Di Bao* receipts) below the relevant *Di Bao* line (table 16.1). Participation is thus equivalent to about half of the eligible population, defined as those with income below the *Di Bao* line for the relevant municipality. There is some leakage to ineligible households,<sup>19</sup> with about 40 percent of *Di Bao* recipients ineligible ( $0.43 = 1.69/3.91$ ), yielding  $TR = 0.57$ . Almost three-quarters of those who are eligible are not covered by the program ( $0.71 = 5.48/7.71$ ), that is,  $CR = 0.29$ .

By international standards, the targeting performance of the *Di Bao* program is excellent, with  $SHARE = 64$  percent,  $CI = 0.78$ , and  $CGH = 8.3$ . Coady, Grosh, and Hoddinott (2004a, 2004b) provide estimates of  $CGH$  for 122 programs across 48 developing countries. Argentina's Trabajar program has a  $CGH$  of 4.0, making it the best performer by this measure among all of the programs they surveyed.<sup>20</sup> The median  $CGH$  across the 122 programs was 1.25. By this measure, *Di Bao* is a clear outlier in targeting performance internationally.

Turning to the fourth measure of targeting performance, 29 percent of the poor and just 2 percent of the nonpoor receive *Di Bao* ( $TD = 0.27$ ). The mean *Di Bao* payment across all those with  $Y < Z$  is ¥87.61 per person per year, while the corresponding mean for those with  $Y \geq Z$  is ¥4.15. The overall mean *Di Bao* payment across all recipients is ¥270.33 ( $TD^* = 0.31$ ).

These calculations indicate that while the program targets the poor very well, it falls well short of perfect targeting ( $TD = 1$ ). Another way to see this is to calculate the total receipts for those with net income below the *Di Bao* line. Only 12.1 percent of the aggregate *Di Bao* gap is filled by the program, indicating that *Di Bao* remains a long way from reaching its aim of bringing everyone up to the *Di Bao* line.

**Table 16.1** Leakage and Coverage of *Di Bao* Program, Based on Observed Incomes (percentage of population)

Item	Net income below Di Bao line		Total
	Yes	No	
Receiving <i>Di Bao</i>	2.22	1.69	3.91
Not receiving <i>Di Bao</i>	5.48	90.60	96.09
Total	7.71	92.29	100.00

Source: Authors' calculations.

Note:  $N = 76,443$ .

### Impacts on Poverty

Despite excellent targeting, the weak coverage of the program—in terms of both coverage of those living below the *Di Bao* line and coverage of the *Di Bao* gap—limits its impact on poverty, as measured by the differences between the poverty measure with and without the program, for both the population as a whole and for participants only (table 16.2).<sup>21</sup> The program is having a sizable impact on poverty among participants: with *Di Bao* transfers, 45 percent of the participant population falls below the *Di Bao*; without the transfers, the figure would have been 57 percent.

The impact on poverty in the population as a whole is much weaker, with the proportion of the population falling below the *Di Bao* lines falling from 7.7 percent to 7.3 percent. Proportionate impacts are slightly higher for the poverty gap than the headcount index and slightly higher again for the squared poverty gap, indicating that the program increased the mean income of those below the *Di Bao* line and reduced inequality among them.

It should not be surprising that the best-targeted program in the developing world has so little impact on poverty. Measures of targeting performance (such as *CI* and *CGH*) say nothing about coverage (in either of the aspects relevant to *Di Bao*), and it is clearly the weak coverage that is reducing impact on poverty.

Chen, Ravallion, and Wang (2006) report detailed results for 35 cities. They show that the program's performance in both targeting and reducing poverty varies greatly across municipalities. However, the cities that are better at targeting *Di Bao* are generally not the ones in which the scheme has had the greatest impact on poverty. A comparison of poverty impacts across China's cities reveals that only one of the various measures of targeting performance found in the literature—namely,

**Table 16.2 Impact of *Di Bao* on Aggregate Poverty Measures for Urban China**

<i>Poverty measure</i>	<i>Di Bao poverty rate (percent)</i>	
	<i>Before Di Bao (income net of Di Bao receipts)</i>	<i>After Di Bao (income including Di Bao receipts)</i>
<i>Participants + nonparticipants</i>		
Headcount index (percent)	7.7	7.3
Poverty gap index (percent)	2.3	2.1
Squared poverty gap index (×100)	1.0	0.9
<i>Participants only</i>		
Headcount index (percent)	56.8	45.5
Poverty gap index (percent)	19.9	14.2
Squared poverty gap index (×100)	10.2	6.4

Source: Authors' calculations.

TD—has significant power in predicting the program's impact on poverty. Measures of targeting performance such as *SHARE*, *CI*, and *CGH* are weak predictors of the program's impacts on poverty at the city level, because they place too high a weight on a program's ability to concentrate benefits on the poor and too little weight on coverage of the poor. These (widely used) measures can be deceptive in assessing a program's impact on poverty.

### *Robustness to Income Measurement Errors*

There are likely to be measurement errors in the survey-based incomes. Two alternative methods of assessing the program's performance are considered to address this concern.

#### IMPLICIT *DI BAO* GAP

Ravallion (forthcoming) proposes a method of testing how robust measures of targeting performance are to income measurement errors. The method assumes that *Di Bao* participation is assigned based on latent income,  $Y^*$ , rather than reported income,  $Y$ . It identifies a counterfactual allocation assuming that unit  $i$  receives the program if and only if  $Y_i^* < Z_i$ . If the model is correct, then the propensity scores can be interpreted as a monotonic increasing function of expected value of the latent (proportionate) *Di Bao* gap,  $E(\ln Z_i / Y_i^*)$ . This "propensity-score test for eligibility" entails a generous allowance (from the point of view of the *Di Bao* program) for measurement error in the survey-based incomes, since eligibility is calibrated to covariates of actual participation. If substantial mistargeting is still indicated using the propensity-score test, then there must be a strong presumption that this is true for the actual (but unobserved) model of program assignment.

As expected, the coverage rate is higher than that based on the survey incomes, with 50 percent of eligible households receiving *Di Bao* (compared with 28 percent based on survey incomes) (table 16.3). The extent of leakage to the nonpoor is slightly higher, however, with 49 percent of those receiving *Di Bao* ineligible based on the propensity-score test (compared with 43 percent based on survey incomes). The eligible population (the highest 3.9 percent of propensity scores) receives 61.5 percent of *Di Bao* payments, implying a *CGH* measure of 15.7. On the basis of these results, it cannot be argued that the extent of leakage and incomplete coverage shown in table 16.1 is due entirely to discrepancies between the latent income measure used by the *Di Bao* program and the reported incomes in the survey data.

#### SUBJECTIVE WELFARE

An alternative indicator of household need for the *Di Bao* program is respondents' own assessments of their economic welfare. To measure this, the question "Is your income adequate to meet your needs?" was added to the survey. The results show

**Table 16.3** Leakage and Coverage Using Propensity Score as an Indicator of *Di Bao* Gap (percentage of population)

Item	Eligible based on propensity score		Total
	Yes (highest 3.91 percent of $\hat{P}$ 's)	No (the rest)	
Receiving <i>Di Bao</i>	1.97	1.92	3.91
Not receiving <i>Di Bao</i>	1.93	93.79	96.09
Total	3.91	95.71	100.00

Source: Author calculations.

Note: Column total include cases in which data for estimating propensity score are missing.

**Table 16.4** Targeting Performance Based on Self-Rated Welfare (percentage of population)

Item	Income is less than adequate for needs	Income is just right	Income is more	Total
			than enough for needs	
Receiving <i>Di Bao</i>	3.16	0.67	0.08	3.91
Not receiving <i>Di Bao</i>	26.36	40.14	29.58	96.09
Total	29.53	40.81	29.66	100.00

Source: Authors' calculations.

Note:  $N = 76,443$ .

that 81 percent of the population living in households receiving *Di Bao* and 30 percent of the population as a whole considered their income to be less than adequate for their needs. Self-assessments of economic welfare thus suggest that the program is even better targeted than do survey-based incomes or the propensity-score test suggest.

However, coverage is even weaker based on self-assessed welfare; indeed, almost 90 percent of those who feel that their income is inadequate do not receive *Di Bao* transfers (table 16.4). Many of these households would not be considered eligible based on Ministry of Civil Affairs objective criteria. However, these calculations suggest that the *Di Bao* program is covering only a small proportion of those who feel that their incomes are inadequate.

Both these alternative methods confirm that the program performs relatively well in avoiding leakage to ineligible households. They also confirm that there is considerable undercoverage of those in need—despite the programs' stated aim of covering all eligible households—although the extent of undercoverage varies greatly depending on the method by which eligibility is assessed.

## Conclusions

In aiming to provide a guaranteed minimum income to all registered families in urban China, the *Di Bao* program naturally raises concerns about behavioral responses; the work disincentives implied by how the scheme operates in theory suggest that counterfactual pretransfer income will exceed observed income minus transfer receipts. Indeed, a strict interpretation of the design of *Di Bao* implies that it would create a virtual poverty trap, because participants face a 100 percent marginal tax rate.

In fact, the survey data used in this study reveal no evidence consistent with this implication, even after adjusting for income measurement errors that could lead to underestimates of the scheme's benefit withdrawal rate. The results confirm qualitative observations from field work suggesting that the way the *Di Bao* program operates in practice attenuates the incentive effects implied by its design. Indeed, when viewed in the light of the literature on the optimal design of targeted programs, the results presented here suggest that the program's rate of benefit withdrawal is probably too low rather than too high.

The results of this study suggest that in considering efforts to increase the impact on poverty of China's *Di Bao* program, policy makers should focus on ensuring more complete coverage of the poor. The program appears to be reasonably good at avoiding leakage to the nonpoor; coverage is the bigger problem. Despite its aims, the survey data indicate that the program is failing to reach about three-quarters of households with incomes below the *Di Bao* line. Moreover, it is covering only about one-eighth of the aggregate income gap relative to the *Di Bao* lines. While in theory, this program should eliminate poverty (based on the *Di Bao* lines), in practice its impact is small, mainly because of weak coverage of the eligible population.

## Notes

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1. On China's progress in reducing poverty since reforms began, around 1980, see Ravallion and Chen (2007).
2. This chapter deals only with urban *Di Bao*; a rural version of the program has been started in some provinces. A useful overview of the *Di Bao* program in the context of overall social assistance policy in China can be found in O'Keefe (2004).
3. "Registered" urban residents are those with an official registration for urban residence. "Nonregistered" urban residents are often recent migrants from rural areas. The fact that the program is confined to households with urban registration is likely to constrain its ability to reduce urban poverty. In testing this hypothesis, one would clearly have to consider the possible incentive effects on migration decisions. This is a topic for future research.
4. These two issues are not, of course, independent: incentives depend on how transfers are targeted. Assessments of targeting need to take account of incentive effects.



5. See, for example, the discussion in Coady, Grosh, and Hoddinott (2004b).
6. See, for example, the empirical results on specific programs in Ravallion and Datt (1995) and Murgai and Ravallion (2005). For broader overviews of the arguments for and against “targeting,” see Besley and Kanbur (1993), Cornia and Stewart (1995), van de Walle (1998), and Ravallion (2005).
7. The UHSS was conducted during 2003 and 2004. The surveys in Beijing, Fujian, and Hainan Provinces and in Kunming (the capital of Yunnan Province) were completed in 2003; all others were completed in 2004.
8. Outside these 35 cities, the local *Di Bao* lines are not coded or use different codes; in many cases, the boundaries used to define the geographic areas differ from those of the UHSS. For this reason, it is not feasible to assign *Di Bao* lines to households outside the 35-city sample. In addition, the NBS had not cleaned the data outside the 35 cities. The authors cleaned the data themselves for incomes and *Di Bao* receipts for the full sample. Selected results appear in Chen, Ravallion, and Wang (2006).
9. Some local governments also provide nonmonetary benefits to *Di Bao* participants, such as health care, schooling entitlements, and discounted utilities (notably in the north). Data on these *Di Bao* benefits were not available.
10. Even with longitudinal data, there can be severe identification problems (see Ravallion 2005).
11. On the theory of propensity score matching, see Rosenbaum and Rubin (1983). For an application to a similar problem, see Jalan and Ravallion (2003).
12. Each treatment household is matched with the five closest propensity scores. No observations had to be dropped from the treatment group. The STATA program, *nnmatch*, was used; results were checked against the program *Psmatch2*.
13. For evidence on this point in the context of estimating behavioral responses to a cash transfer program in Argentina, see Ravallion and others (2005).
14. This estimate understates the income net of *Di Bao* for participants, because they attenuate their labor supply (or receive less transfer income). However, through mismatching, the income of the comparison group is probably also underestimated (since the propensity scores for treatment units are overestimated).
15. Cornia and Stewart (1995) argue that policy discussions have placed excessive emphasis on type 1 targeting errors (incorrectly classifying a person as poor) relative to type 2 errors (incorrectly classifying a person as not poor). This distinction is implicit in assessments of impacts on poverty; see the discussions in Ravallion and Datt (1995) and van de Walle (1998).
16. On the concentration index and its properties, see Kakwani (1980) and Lambert (1993).
17. To ensure that all measures of targeting are aligned in the same direction, the standard definition of the concentration index is multiplied by  $-1$ . The regression-based method outlined in Jenkins (1988) (following Kakwani 1980) is used to calculate *CI* from the micro data.
18. Unlike *TD*, *TD\** can exceed unity, though this appears to be unusual (only one such case was found in the 35 cities in the sample).
19. These are sample means. If cities are weighted by population, the proportion receiving *Di Bao* rises to 4.69 percent, of which 2.64 percent had incomes below the *Di Bao* line.

- The estimated proportion below the *Di Bao* line falls slightly, to 7.64 percent, of which 5.00 percent were not receiving *Di Bao*.
20. Trabajar is a combination of a workfare program and a social fund, in which participants are offered low-wage work to perform tasks of value to poor communities (see Jalan and Ravallion 2003). Coady, Grosh, and Hoddinott (2004a) calculate *CGH* from Trabajar based on the work of Jalan and Ravallion (2003), who estimate that 80 percent of Trabajar participants come from the poorest 20 percent of the Argentine population ranked by income net of Trabajar receipts (which are roughly constant across recipients). The corresponding *CGH* for the poorest decile is much higher, at about 6.0, though still lower than that for *Di Bao*.
  21. Table 16.2 provides data on three measures of poverty: the headcount index, the poverty gap index, and the squared poverty gap index. The poverty gap index gives the mean distance below the poverty line as a proportion of that line (the mean is taken over the whole population, counting the nonpoor as having zero gap); for the squared poverty gap index, the individual poverty gaps are weighted by the gaps themselves, in order to reflect inequality among the poor (Foster, Greer, and Thorbecke 1984).

## References

- Besley, Timothy, and Ravi Kanbur. 1993. "Principles of Targeting." In *Including the Poor*, ed. Michael Lipton and Jacques van der Gaag. Washington, DC: World Bank.
- Chen, Shaohua, Martin Ravallion, and Youjuan Wang, 2006. "*Di Bao*: A Guaranteed Minimum Income in China's Cities." Policy Research Working Paper 3805, World Bank, Washington DC.
- Coady, David, Margaret Grosh, and John Hoddinott. 2004a. "Targeting Outcomes Redux." *World Bank Research Observer* 19 (1): 61–86.
- . 2004b. *Targeting Transfers in Developing Countries: Review of Lessons and Experience*. Washington, DC: World Bank.
- Cornia, Giovanni A., and Frances Stewart. 1995. "Two Errors of Targeting." In *Public Spending and the Poor*, ed. Dominique van de Walle and Kimberly Nead. Baltimore, MD: Johns Hopkins University Press for the World Bank.
- Daoshun, Ge, and Yang Tuan. 2004. "Minimum Income Schemes for the Unemployed: A Case Study from Dalian, China." *International Social Science Journal* 56 (179): 47–56.
- Foster, James, J. Greer, and Erik Thorbecke. 1984. "A Class of Decomposable Poverty Measures." *Econometrica* 52: 761–65.
- Galasso, Emanuela, and Martin Ravallion. 2005. "Decentralized Targeting of an Anti-Poverty Program." *Journal of Public Economics* 85: 705–27.
- Hussain, Athar. 2002. "Urban Poverty in China: Incidence and Policy Responses." In *World Poverty: New Policies to Defeat an Old Enemy*, ed. P. Townsend and D. Gordon. Bristol, United Kingdom: Policy Press.
- Jalan, Jyotsna, and Martin Ravallion. 2003. "Estimating the Benefit Incidence of an Anti-Poverty Program by Propensity-Score Matching." *Journal of Business and Economic Statistics* 21 (1): 19–30.
- Jenkins, Stephen. 1988. "Calculating Income Distribution Indices from Micro-Data." *National Tax Journal* 41 (1): 139–42.

- Kakwani, Nanak. 1980. *Income Inequality and Poverty: Methods of Estimation and Policy Applications*. Washington, DC: Oxford University Press for the World Bank.
- Kanbur, Ravi, Michael Keen, and Matti Tuomala. 1995. "Labor Supply and Targeting in Poverty-Alleviation Programs." In *Public Spending and the Poor*, ed. Dominique van de Walle and Kimberly Nead. Baltimore, MD: Johns Hopkins University Press for the World Bank.
- Lambert, Peter. 1993. *The Distribution and Redistribution of Income: A Mathematical Analysis*. Manchester: Manchester University Press.
- Murgai, Rinku, and Martin Ravallion. 2005. "Is a Guaranteed Living Wage a Good Anti-Poverty Policy?" Policy Research Working Paper 3640, World Bank, Washington, DC.
- O'Keefe, Philip. 2004. "Social Assistance in China: An Evolving System." World Bank, East Asia Social Protection Unit, Washington, DC.
- Ravallion, Martin. 2000. "Monitoring Targeting Performance When Decentralized Allocations to the Poor Are Unobserved." *World Bank Economic Review* 14 (2): 331–45.
- . 2004. "Who Is Protected from Budget Cuts?" *Journal of Policy Reform* 7 (2): 109–22.
- . 2005. "Poverty Alleviation Programs." In *New Palgrave Dictionary of Economics*, 2nd ed., ed. Larry Blume and Steven Durlauf. London: Palgrave Macmillan.
- . Forthcoming. "Miss-Targeted, or Miss-Measured?" *Economics Letters*.
- Ravallion, Martin, and Shaohua Chen. 2007. "China's (Uneven) Progress against Poverty." *Journal of Development Economics* 82 (1): 1–42.
- Ravallion, Martin, and Gaurav Datt. 1995. "Is Targeting through a Work Requirement Efficient? Some Evidence for Rural India." In *Public Spending and the Poor*, ed. Dominique van de Walle and Kimberly Nead. Baltimore, MD: Johns Hopkins University Press for the World Bank.
- Ravallion, Martin, Emanuela Galasso, Teodoro Lazo, and Ernesto Phili. 2005. "What Can Ex-participants Reveal about a Program's Impact?" *Journal of Human Resources* 40 (Winter): 208–30.
- Rosenbaum, Paul, and Donald Rubin. 1983. "The Central Role of the Propensity Score in Observational Studies for Causal Effects." *Biometrika* 70: 41–55.
- Van de Walle, Dominique. 1998. "Targeting Revisited." *World Bank Research Observer* 13 (2): 231–48.

# Growth, Inequality, and Fiscal Policy from a Historical Perspective: Are There Lessons for China?

17

FRANÇOIS BOURGUIGNON

The relation between growth, inequality, and redistribution through public finance is among the most-debated topics in the economic analysis of development. In the 1950s, Simon Kuznets enunciated his famous law, according to which inequality tends to increase with growth in a first stage and to decrease in a second stage. Indication of a severe increase in inequality at the time of the take-off of growth in the United Kingdom, the United States, and other Western countries could be gathered from scattered evidence patiently put together first by Kuznets and then by a host of other researchers. The clear drop in inequality observed in Western countries after the Great Depression and after World War II may well have reflected the second part of Kuznets' law. But many researchers see redistribution through fiscal policy as an essentially discretionary factor rather than the autonomous force invoked by Kuznets in this evolution.

The experience with growth and inequality of today's developed countries is of relevance for China today. Economic growth in China has averaged an impressive 8 percent per capita for almost 30 years, something unprecedented in modern economic history. At the same time, inequality has increased markedly, with the Gini coefficient (the most widely used indicator of inequality) rising from less than 0.30 at the dawn of the reforms in 1978 to 0.36 in 1985 and 0.42 in 2004 (National Bureau of Statistics 2005a, 2005b). This rise in inequality is of increasing concern to China's economic and political authorities, who see it as a threat to the harmony of Chinese society and continued rapid growth. Accordingly, the 11th Five-Year Plan established the pursuit of a "harmonious society," including better-shared growth, as the policy priority in the coming years.

How should such a goal be achieved? Should the sectoral structure and other patterns of growth be modified, so that its benefits are shared more equally? Should

some kind of fiscal redistribution be sought, or should policy attempt to expand economic opportunities where they are limited, reestablishing the degree of “equity” that prevailed in the past? If such redistribution is pursued, is there a cost in lost economic efficiency and growth of implementing such policies?

This chapter attempts to shed light on the debate arising in China—and the rest of the world—on these difficult questions. It is divided into four sections. The first section provides some basic theory and historical evidence on the relation between growth, inequality, and fiscal policy in development experiences. The second section analyzes how the recent experience of China fits the theory and compares with other successful development experiences in the world. It concludes that the evolution of growth and inequality in China is not atypical and may correspond with the ascending branch of the Kuznets curve. It examines whether China will experience the second stage of the Kuznets curve autonomously or whether some kind of redistribution policy should be put in place. The third section examines whether today’s intensive globalization process invalidates the lessons from previous experiences and demands new and bolder approaches to the issue of growth, inequality, and public finance. The last section makes some tentative policy recommendations.

## **Growth, Inequality, and Public Finance: Theory and Historical Evidence**

Economic growth is more than simply scaling up magnitudes of economic variables. It modifies the structure of prices of goods and factors of production. At all stages of development, growth affects real relative incomes. It may be biased in favor of certain groups of economic agents.

Growth also affects the availability of and demand for public goods, increasing the intervention of the public sector and therefore the role of public finance. As the initial structure of relative incomes and economic opportunities is modified, the demand for various types of redistribution also increases, requiring an enhanced role of the state via public finance. This section briefly describes the theory of the basic mechanisms behind these phenomena and provides historical evidence from industrial economies.

### *The Interaction between Growth and Inequality: A Brief Theoretical Overview*

There are two ways of looking at the relation between growth and inequality. The first is to examine the impact of growth on the inequality of main economic outcomes, in particular income. The second is to look at the impact of inequality in the distribution of resources on the rate of economic growth. Of course, the two questions are tightly interrelated. Growth affects the distribution of resources, which in turn affects the rate and the structure of growth. However, it is convenient to deal with the two issues separately.

## THE EFFECT OF GROWTH ON INEQUALITY: THE KUZNETS CURVE

Economic agents accumulate productive factors at different rates and in different proportions. Depending on the country's factor endowment, the interaction of supply and demand produces changes in factor prices, which, together with changes in endowments and possibly technology, causes changes in the relative income of different groups at the same time as the economy grows.

An important change associated with growth is the weight of different sectors in the economy (agriculture versus manufacturing or services, informal versus formal, private versus public including state-owned enterprises [SOEs]). If markets were perfect, these changes would not have effects on the distribution of income different from those just mentioned. When factor markets are imperfect and factor remunerations do not necessarily equalize across sectors, however, changes do occur. Migration across sectors or regions, for instance, may take a long time to equalize labor earnings at a given level of skill throughout the economy.

Kuznets (1955) saw these sectoral changes—in particular, the relative weight of the rural and urban sectors—as the main factor driving inequality along an inverted *U*-shaped (Kuznets) curve over time. Changes in inequality are driven by the intersectoral movements of the population. Initially, when a large majority of the population works in the traditional, low-inequality, agricultural sector, there is little inequality and the average income of the population is low. As development proceeds, the labor force shifts to modern high-productivity sectors, with higher remuneration and higher inequality. Disparities in earnings arise because the shares of people in the low- and high-earning sectors are increasingly of the same order of magnitude and inequity is greater in the non-agricultural sector. As more and more people shift to the modern nonagricultural sector, the weight of the low-earning sector within the population and the intersectoral earnings differential within total inequality falls. Inequality then tends to decrease, as an increasingly large majority of the population is employed in the high-earning sectors. The level of average income rises accordingly. According to this simple theory, the evolution of inequality in a developing economy with sizable differences in income across sectors and limited differences in inequality across sectors moves from little inequality when most people work in the low-income sector to more inequality when the population is more or less equally divided across sectors to less inequality again when most people concentrate in the high-income sector.<sup>1</sup>

Both the Kuznets curve and the preceding justification are hypotheses.<sup>2</sup> Many other factors, including demographic changes, foreign prices, and technical progress, may affect the evolution of inequality over time. Various policies—among them sectoral policies, regulation, taxes, social spending, and the geographical distribution of infrastructure investment—may affect the way distribution changes over time with the development process. It is therefore possible that although the mechanisms described by Kuznets are at work, other factors or policies modify their distributional effect.

### THE EFFECT OF INEQUALITY ON GROWTH

Many factors that affect the structure and pace of growth are only imperfectly known. It has been argued that inequality of wealth could be good for development, because wealthy people tend to save more than poor people (this is the so-called Kaldorian hypothesis). But it has also been argued that too much inequality of wealth may hinder growth if it means that many potential entrepreneurs are unable to undertake profitable projects because of lack of initial wealth and credit market imperfections that prevent people without collateral from borrowing. The same argument holds for education and investments in human capital. Others have argued that an unequal society is bound to generate distributional conflicts that will slow growth however they are resolved. A large body of recent literature examines the various reasons why too much inequality in the distribution of resources could hinder growth.<sup>3</sup>

There is some ambiguity about what kind of inequality is important for growth and how inequality affects growth. The *World Development Report 2006: Equity and Development* (World Bank 2005b) analyzes this issue in detail. It proposes that what matters for growth is the initial degree of equity, which it defines as equality of opportunities. If all people within a society do not have access to the same economic opportunities, those with fewer opportunities cannot realize their full economic potential. Such a society is inefficient and grows at a slower pace than it otherwise would.

The concept of equity differs from the concept of equality of outcome and, in particular, equality of incomes. Equalizing opportunities does not necessarily imply equalizing incomes *ex post*, as through the redistribution system observed in the welfare state, possibly with some negative distortion effect on the economy. It means equalizing access to education, credit, and infrastructure; treating people of different genders, races, and ethnicities fairly in the labor market; involving individuals in public decision making about public goods that may be important for their economic realization; protecting property rights; regulating competition; and so forth.

Some ambiguity may come from the fact that equalizing opportunities may often require increasing public resources in order to cover the cost of reforms, which in turn may reduce economic efficiency and slow growth. Equalizing educational opportunities, for example, may require constructing new schools, training additional teachers, and making the quality of education more uniform. Resources for doing so must come from additional taxes or the diversion of public resources from other uses. Either choice may slow economic growth, although more equity should contribute to an acceleration of growth in the longer run. The ambiguity arises from uncertainty over which effect is more important for growth, the immediate negative effect of equity-enhancing policies or the long-run positive effect of greater equity.

### REDISTRIBUTION POLICIES, PUBLIC FINANCE, AND GROWTH

Growth not only modifies social structures, it also changes the structure of demand, increasing the relative demand for public goods and services. Adolph Wagner first

verified this hypothesis—later known as the Wagner law—empirically in 1890. As economic relations become more complex, demand for the state to exercise its administrative and protective roles grows. Urbanization and concentration of population also require more expenditure to prevent communicable diseases and control crime. Additionally, as populations achieve higher standards of living, the provision of some public services becomes more expensive. An elderly population, for instance, requires more and more-expensive health interventions than a young population. Similarly, secondary and tertiary education are more expensive than primary education. All of these phenomena combine to produce an income elasticity of demand for public services that is greater than one, so that the income share of spending on public goods increases with income. Financing these public goods and services requires increasing the overall taxation rate in the economy, which in turn creates distortions and efficiency losses in the economy and may slow the rate of economic growth.

Of more relevance in connection with inequality is that part of public finance that is aimed at redistributing income across individuals (or possibly across different points of time or states of the world for the same individual, as with pensions or health insurance). Progressive taxation, cash transfers to the poor, unemployment benefits, and minimum pension schemes funded on contributions from labor incomes are examples of this type of income redistribution. All of these instruments share the same objective: reducing the income inequality that would result from the free play of markets.

Progressive income taxation and means-tested cash transfers are unambiguously redistributive. The distributive effect of other components of the so-called redistribution system is less clear. In an actuarially neutral pay-as-you-go pension system, for instance, pensioners receive an expected discounted rent equal to their earlier contributions; there is no real redistribution. There is a clear dimension of saving in any pension system, even a pay-as-you-go system. Only the difference between the payments made by a pension system and this actuarially neutral reference is redistributive. Likewise, health insurance contributions and benefits do not generate any redistribution if contributions and benefits are equal from an actuarial point of view.

As soon as one departs from the strict logic of insurance or saving, redistribution through public finance potentially becomes distorting and leads to efficiency losses—and possibly losses in growth. A progressive income tax, generous means-tested cash benefits, or a nonactuarially neutral pension system that provides a minimum income to elderly people may provide disincentives to work and save. The importance of these effects—and whether they may be compensated for by the change in equity they may generate (by preventing people affected by negative shocks from falling into poverty traps, for instance)—remains to be tested empirically and is still the subject of debate in developed countries.

Policy makers may also attempt to redistribute income in indirect ways, some of which create more deadweight losses to society than others. Less-transparent mechanisms of redistribution (such as regulation of labor markets or the operation



of inefficient SOEs and public banks) are not reflected immediately in the public budget, and their cost is generally difficult to assess. They nevertheless generate inefficiency.

There may be something paradoxical in arguing on the one hand that equality of opportunities is favorable to growth and on the other that redistributing current income from one agent to another, or simply raising revenues through taxes, may generate efficiency losses and slow growth. The point to keep in mind is that two forces work in opposite directions. On one side, raising taxes and making cash transfers creates some deadweight loss and may reduce economic efficiency. On the other side, if revenues are used to expand the economic opportunities of those who are most deprived or to prevent them from falling into poverty traps, the equity gain may have positive effects on long-run growth. Which effect dominates depends on the discount rate used, because the efficiency losses of current increases in taxation or income transfers are felt sooner than the possible (longer-term) gains from the increase in equity.

Increasing and persisting high inequality of current income is also likely to increase future inequality of opportunities, because income inequality is transmitted intergenerationally through inequality of wealth, education, access to credit, and other means. Reducing inequality today therefore improves outcomes in the future.

### *Inequality, Growth, and Public Finance: Historical and International Evidence*

This section briefly presents some evidence on the relation between growth and income distribution, the relation between public finance and income level (Wagner's law), and the potential efficiency loss arising from public intervention in redistributing income or opportunities.

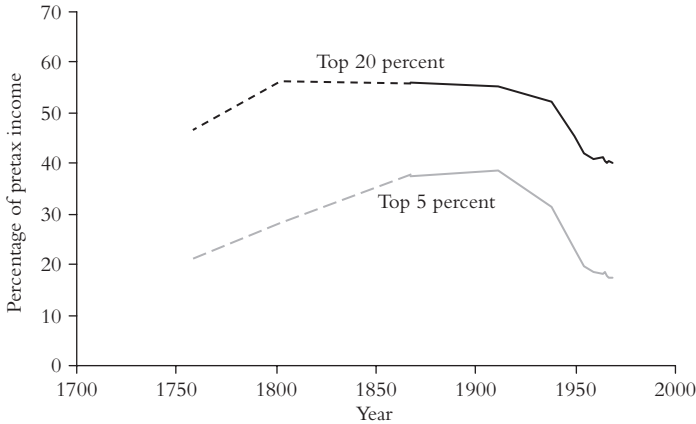
#### HISTORICAL EVIDENCE ON THE KUZNETS CURVE

Historical evidence from Europe and the United States seems to confirm the Kuznets relation. But it also confirms that the basic mechanism is often blurred by other mechanisms affecting the distribution of income.

Lindert (2000) provides evidence of an increase in inequality during the take-off periods of the U.K. and U.S. economies during the 19th century. Income inequality in the United Kingdom rose significantly during the 17th and 18th centuries, peaking about 1910 (figure 17.1). Lindert also estimates the increase in inequality of "real incomes" (after correction for price differences, family size, and longevity). According to his estimates, the Gini coefficient rose from 0.46 in 1759 to 0.56 in 1867, where it more or less remained until 1911.

Several factors seem to have contributed to the increase in inequality of real incomes in the United Kingdom, although the contributions of phenomena of the sectoral shift type alluded to earlier are difficult to measure. Regional disparities, for instance, or the decline in the ratio of land rents in the rural sector to the wages

**Figure 17.1** Share of Pretax Income of Top 5 Percent and Top 20 Percent of Households in the United Kingdom, 1760–1970



Source: Lindert 2000.

Note: Data through 1911 are nominal incomes adjusted by appropriate deflators. Data for early years (dashed line) are for England and Wales; data for later years (solid line) are for the United Kingdom.

of labor in the urban sector seem to have had ambiguous effects overall, although they may have been strong at particular points of time. More persistent seems to have been the effect of changes in the relative prices of food products—an aspect of the sectoral shift story—or changes in fertility.

Changes in equality in the United States have been much debated. There is a consensus that inequality of wealth increased substantially between the American Revolution and the Great Depression. That evolution has not been monotonic, however, and it is unclear when accelerations in the increase of inequality took place. Moreover, the historical data do not permit a clear analysis of the causes for rising inequality.

In Germany the process of industrialization began almost 100 years later than in the United Kingdom, but it was also much more rapid, because it largely involved adaptation and imitation rather than pure innovation. Between 1861 and 1871, the estimated agricultural labor force declined from 56 percent to 31 percent (Tipton 1974). Morrisson (2000) shows a very large increase in inequality in Saxony and Prussia between 1870 and 1900 and a modest decline thereafter. He also documents large increases during the same period in several Nordic countries, including Finland and Norway.

Work by Minami (1998) on Japan indicates that the Gini coefficient there rose from 0.51 in 1923 to 0.54 in 1937, an evolution that is confirmed by Moriguchi and Saez (2005), using a different set of data. This was a period of intense industrialization, during which per capita income almost doubled and the agricultural share of

GDP fell by half. The increase in inequality seems modest in view of such a structural shift in the economy.

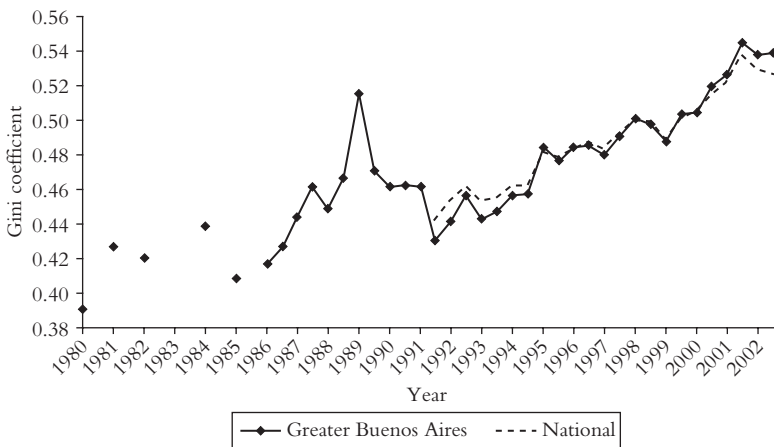
In sum, there are many historical examples of growth accelerations accompanied by increases in income or wealth inequality. This evidence must be interpreted with care, however. It certainly does not imply that inequality necessarily rises in periods of accelerated economic growth or that it cannot rise without accelerated economic growth. Argentina provides a vivid example of a country in which inequality rose despite a lack of growth. Its Gini coefficient increased more or less continuously between 1991 and 2002, from 0.44 to 0.53, a period that saw virtually no economic growth (figure 17.2).

The Republic of Korea is an example of an economy in which the basic Kuznets mechanisms failed to produce any sizable increase in inequality over the past 50 years or so despite very vigorous growth and a major shift from agriculture to industry. One explanation for the stability of income inequality there is the fluidity of factor markets, in particular the labor market (see Fields 2000; Fields and Yoo 2000).

DECLINING INEQUALITY AND THE ROLE OF PUBLIC FINANCE

If there is some evidence that rapid economic growth has been accompanied by an increase in inequality in today’s developed countries, the evidence of declining inequality in a second stage of the development process is overwhelming. Inequality fell very sharply in most European countries, Japan, and the United States in the

**Figure 17.2 Gini Coefficient of Household per Capita Income in Argentina, 1980–2002**



Source: World Bank 2005.

Note: Because of limited data availability between 1980 and 1986, the data points are not connected.

Data from the third quarter are shown for each year.

period preceding and just following World War II. In Japan the Gini coefficient fell from 0.54 in 1937 to 0.35 in 1960 (Minami 1998; Lindert 2000; Morrisson 2000). In the Netherlands the share of the top decile in total income fell from 50 percent in 1915 to 33 percent in 1955. In the United Kingdom the Gini coefficient fell from 0.42 in 1938 to 0.33 in the 1960s. In the United States it fell from 0.49 in 1929 to 0.40 in 1947 (Lindert 2000).

These dramatic drops in inequality partly reflect the Kuznets mechanism, because they took place at a time when people left low-paying jobs in agriculture.<sup>4</sup> More important, they reflect the strong social pressure for redistribution observed in the second third of the 20th century in most developed countries, which led in particular to the extension of social insurance after the Great Depression and World War II, which the elites could not ward off. This was the beginning of the welfare state in Western industrial countries.

The U.S. Social Security Act of 1935, the Beveridge Report in the United Kingdom in 1941, and social security laws in continental Europe after World War II marked the beginning of the golden age of social insurance. In most cases, these major advances in social insurance programs were achieved through more-progressive taxation and increasing social expenditure. In Europe the expansion of social insurance programs took place simultaneously with unprecedented growth during the so-called “30 Glorious Years” that followed World War II, which facilitated the absorption of the cost of redistribution.

This process came under pressure in all countries during the 1980s, when growth slowed, leading many countries to reconsider the appropriate size of the government and the welfare state. Some countries slightly reduced the extent of redistribution and reformed the provision of social insurance. In other countries, expansion of the welfare state was overshadowed by the mounting pressures of unemployment and aging on public spending.

If this description accurately describes most Western countries, there are exceptions in other parts of the world. In Japan the dramatic drop in inequality that took place after World War II was the result of drastic institutional reforms, including sweeping land reform, the dismantling of various major industrial conglomerates (revamped a few years later), the introduction of collective bargaining, major public investments, and the expansion of access to education. These reforms may be interpreted more as promoting equality of opportunities than standard current income redistribution or social insurance, which remain less developed in Japan than in other developed countries. The dramatic industrial development in Japan in the postwar period may have very much to do with these equity-oriented institutional reforms, an experience that was later to be shared by other Asian tigers.

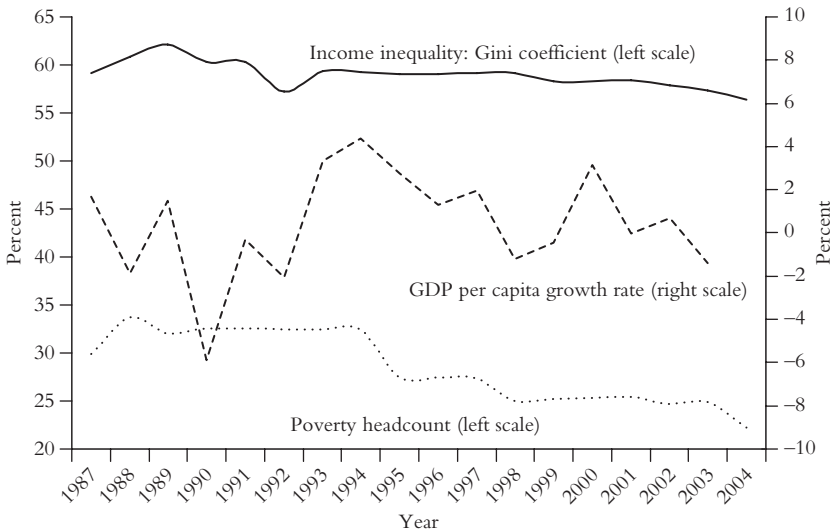
In Latin America there is a growing consensus that a persistently high level of inequality of both opportunities and outcomes has been a severe hindrance to economic growth. The high level of concentration of land inherited from colonial times has been transformed into strong inequality of opportunities in education and into institutions that give little voice to the poorest segments of the population. The capture of political power by the elite has long prevented ambitious redistribution policies to develop that would expand the economic opportunities

of the population and pull the poorest of them out of poverty traps. Even in countries where the average taxation rate is highest (such as Brazil, where the rate is 33 percent), a large percentage of revenues is actually used to benefit the elite, in particular to cover pensions in the formal sector.

Innovative and ambitious policies have nevertheless been adopted in the region that seek to reduce poverty and provide incentives for human capital accumulation among the poorest. Innovative successful cash transfer programs (programs that transfer cash to poor families conditionally on actions like sending kids to school) such as Bolsa Familia in Brazil and Oportunidades in Mexico have helped redistribute both income and opportunities.

Policies and programs have shaped the way poverty, inequality, and growth have evolved in Brazil since 1987 (figure 17.3). Following the shift from an era of hyperinflation to one of stable macroeconomic policy in 1994, the poverty headcount fell from 33 to 22 percent in 10 years—a record reduction of 1 percentage point a year. Over this period, growth permitted by the improvement in macroeconomic policy accounted for around two-thirds of the decline in poverty and falling inequality, for one-third. Over the past few years, the contribution of reduced inequality has risen, to nearly three-quarters. The expansion of the well-designed and well-targeted Bolsa Familia conditional cash transfer program, as well as policies that have reduced differences between rural/urban and leading/lagging regions, played an important role in the decline in inequality.

**Figure 17.3** Gini Coefficient of Gross Monthly Household per Capita Income in Brazil, 1980–2004



Source: Ferreira, Leite, and Litchfield 2006. Household-level microeconomic data from the Pesquisa Nacional por Amostra de Domicílios (PNAD), which is compiled by the Instituto Brasileiro de Geografia e Estatística (IBGE), were used to create this figure.

## THE SIZE OF THE PUBLIC SECTOR IN DEVELOPED COUNTRIES

The public sector represents a sizable share of GDP in most developed countries. Including taxation, contributions to social security and health insurance, the public sector share of GDP exceeds 50 percent in Nordic countries. This share is 45 percent in Germany and France, 35 percent in the United Kingdom, and 30 percent in the United States.

Attempts to “roll back the welfare state” over the past two decades have met with little success, in part because of the pressure of demographic phenomena, particularly aging. Pension payments in almost all members of the Organisation for Economic Co-operation and Development (OECD), for example, increased substantially more rapidly than GDP. Average spending on pensions rose from 5.4 percent of GDP in 1980 to 7.0 percent in 2003, with much larger increases in some countries (table 17.1).

How can this evolution be reconciled with the view that redistribution and taxation impede growth? Historically, the surge in social public spending has apparently not been an obstacle to growth. Indeed, as Lindert (2005) forcefully notes, many countries were able to develop rapidly while increasing the size of their public sectors. One possible explanation for this phenomenon is that by enhancing equity these expenditures favored growth, in accordance with the argument presented above. Another explanation is that the development of the welfare state was made possible precisely by the exceptional growth rates enjoyed during the 30 years after World War II. Since then, growth has slowed and redistribution is increasingly considered an obstacle to reaccelerating growth. According to this line of reasoning, the distorting effects of public finance were present ever since the public sector began to grow, but they were hidden by autonomous forces of growth. It is also possible that the deceleration of growth in countries in which the welfare state grew more rapidly was caused by very different causes.

**Table 17.1** Dependency Rate and Public Old-Age Spending in Selected OECD Countries, 1980 and 2003

Country	Dependency ratio <sup>a</sup> (percent)		Old-age social expenditure (percentage of GDP)	
	1980	2003	1980	2003
France	21.9	25.4	7.7	8.6
Greece	20.5	26.2	5.1	7.8
Portugal	16.4	24.9	3.0	6.1
Spain	17.0	24.0	4.6	7.9
United Kingdom	23.5	24.2	5.5	8.0
United States	16.9	18.4	5.3	5.5
Average OECD	18.9	22.3	5.4	7.0

Source: OECD Social Expenditure Database 2007.

a. Number of people 55 and older as percentage of number of people 15–64.

The insufficiency of evidence—and the fact that some of it even appears contradictory—means that the debate over the role of social public spending is far from over. For some analysts, a quick comparison of continental Europe with the United Kingdom and the United States is consistent with the view that an oversized public sector is detrimental to growth and economic dynamism. However, there are other differences between the two groups of countries than the size of the public sector. In effect, some countries, in particular the Nordic countries, in which public social spending is high, have exhibited very sound growth over several decades.

Generalizations across countries thus seem very difficult. Progress in understanding the role of the public sector and the redistribution of current income or opportunities is to come from in-depth analysis of particular national experiences. But in this area as in many others, the past may not always provide the best evidence for setting up a strategy for the future. In particular, it may be the case that the forces of globalization are modifying the relation between redistribution, social insurance, and growth—an issue addressed in the last section of this chapter.

## The Relevance of International Evidence on Growth, Inequality, and Redistribution for China

China's recent growth experience is fully consistent with the first part of the Kuznets story. While it was growing at an average rate of 8 percent a year, China witnessed a very strong and almost continuous increase in income inequality, except for a few years between 1995 and 1999, with the overall Gini coefficient rising from 0.30 in the early 1980s to 0.42 in 2002 (after correction for regional price differences) (National Bureau of Statistics 2005b). Urban-rural, intrarural, intraurban, and coastal-inland inequalities have all been on the rise since the 1990s. Between 1990 and 2003, the ratio of per capita GDP of the richest to the poorest province rose from 7.3 to 13.0; urban and rural incomes differ by a factor of more than three in almost all provinces.

Rapid growth and a rise in inequality have thus gone hand in hand with the development course in China. At the same time, the sectoral shift story seems to fit Chinese recent economic history well. China's *hukou*-based urban population grew from 23 percent in the mid-1980s to 43 percent in 2005. If 140 million unregistered migrant workers are included, the figure rises to 52.5 percent (National Bureau of Statistics 2005b). According to the simplest model behind the Kuznets curve—that of the population shifting from an egalitarian low-income rural sector to a less egalitarian but richer urban sector—China might be approaching the top of the curve.

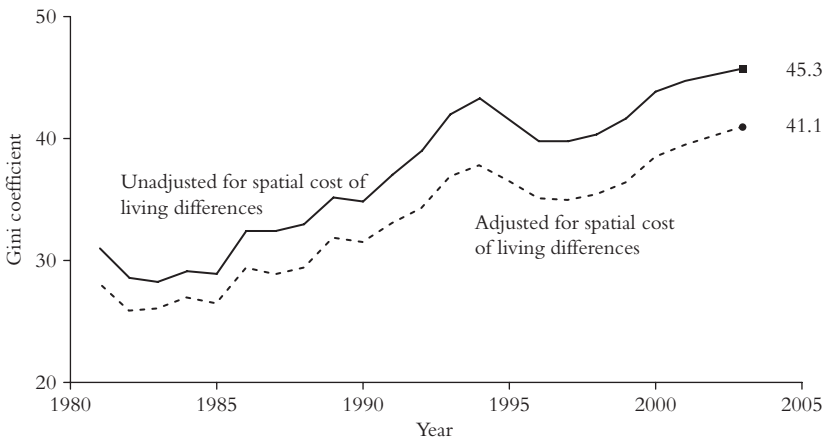
In many respects, China's development experience is thus similar to that of the Western nations in their initial growth stages. It is also more complex because China has simultaneously been going through another transition, namely, the gradual shift from a fully planned and closed economy to an open market economy. By progressively creating market opportunities for individuals endowed with the

appropriate skills (technical, professional, linguistic) and allowing them to be rewarded at their marginal revenue product, this institutional shift has also contributed to an increase in inequality.

Another reason why observed inequality has risen in China is that some of the inequality that is measured today was not registered in the old system, under which some remuneration was received in kind (in the form of housing and sometimes cars) and therefore unaccounted for. The evolution toward a market economy and the progressive loss of weight of SOEs transformed implicit inequalities into explicit ones, while transforming individual incentives to pursue material improvements for themselves and their families, a key to China's growth.

The evolution toward more inequality of observed incomes is not incompatible with the equity initially observed in China and the positive role of equity in development observed there (and in several other East Asian countries). Under the former *gongfenzhi* system (the system of labor remuneration on collectively farmed land), wages of all farmers were virtually identical, regardless of effort; farmers thus had few incentives to work. Equality in outcomes was achieved at the expense of large efficiency losses: everyone was almost equally poor. Equality of opportunities was also achieved at a very low level of opportunity. The partial freeing of agricultural markets from the planning system, the enormous expansion of township and village enterprises, and the opening to international trade and inward foreign investment considerably expanded economic opportunities but more or less in the same proportion to all. The change initially favored the rural population, with initial reforms in agriculture actually reducing income inequality. After urban reforms took off in the mid-1980s, inequality rose (figure 17.4).

**Figure 17.4** Income Inequality in China, 1980–2002



Source: Ravallion and Chen 2004; Chaudhuri 2005.

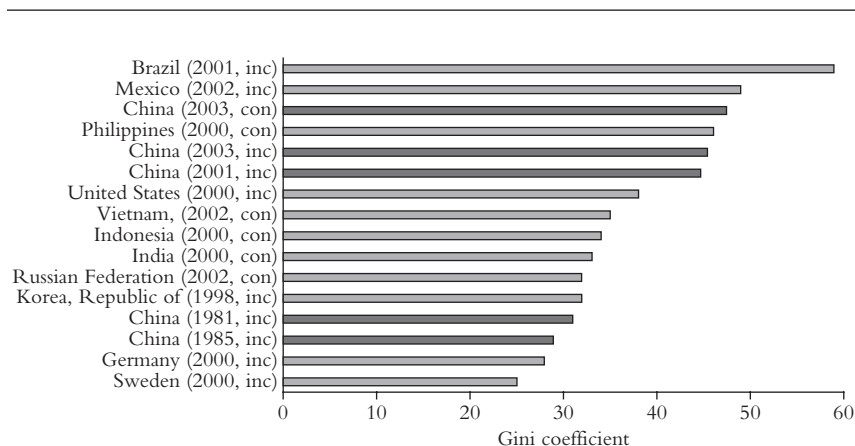


At the same time, it may have been precisely because individuals were facing a comparable but expanded set of opportunities that economic growth was so rapid. When runners do not start on the same starting line, those who start behind have no incentive to run quickly and the average speed of all runners is low. In contrast, if all runners start on the same line, they know they all have a chance to win and therefore run as fast as they can. Something like this may have occurred in China and in all East Asian countries that started their development process with relative equality of opportunities.

As a result of this evolution, inequality in China has reached a high level by international standards. In 2004 it was higher than in the least egalitarian developed country (the United States) and comparable to the world's most inequalitarian countries, in Latin America and Africa (figure 17.5). By contrast, it was comparable in the early 1990s to the most egalitarian countries in continental or Northern Europe. The change is considerable, especially compared with some other transition economies, such as the Baltic states, the Czech Republic, and Hungary, which shifted from planning to market without major changes in inequality.<sup>5</sup>

Inequality may keep increasing in China without immediate effects on the rate of economic growth, although policy makers may find the trend socially unacceptable. There is also a risk that a further increase in inequality could be detrimental to equity in the long run—through intergenerational mechanisms, for instance—and slow growth. Will economic mechanisms of the type suggested by Kuznets autonomously generate a drop in inequality in the future, or will some redistribution policy similar to those introduced some 60–70 years ago in today's developed countries have to be implemented?

**Figure 17.5** Income Inequality in China Relative to Selected Countries, 1981–2003



Source: Chaudhuri 2005; World Bank 2007a.

Note: Income (inc) and consumption (con) by the country name refer to the basis for calculating the Gini coefficients from household survey information.

The answer depends very much on whether economic mechanisms and policies observed or implemented in the past by today's developed countries are still relevant and effective today. Globalization is imposing increasingly severe constraints on national economic policies. It may also be modifying basic economic development mechanisms observed in the past.

## The Limits Imposed by Globalization

China is not the only country in which inequality is increasing. Inequality is rising in many countries, including some, such as the United Kingdom and the United States, that moved through the declining part of Kuznets' curve 50 years ago. Reducing inequality is not necessarily at the center of the public debate in those countries. To the contrary: the debate is often about rolling back the welfare state and the fact that excessive social protection is an obstacle to competitiveness in a global economy.

Has globalization made the historical experience of growth and inequality in today's developed countries irrelevant? Some observers argue that globalization cannot be controlled, that it yields huge benefits if a country is successful, and that the fact that it may increase inequality is regrettable but may be inherent. Hence, doing anything about inequality would prevent countries from competing at the global level and reaping the aggregate benefits of globalization. But for the moment, most of the population in EU countries, and to a lesser degree the United States, is resisting this line of reasoning. If the apparent negative consequences of globalization are not slowed, how long will it be before policy makers in these countries retreat to protectionist practices—something that would have disastrous consequences for both these countries and the rest of the world?

The Nordic countries may provide a useful guide for extracting the most benefits from globalization while preventing any large increase in income or social inequality. These countries have very effective and generous social protection systems. They also have progressive taxes that prevent people from falling into poverty and redistribute income from rich to poor while retaining incentives to work. At the same time, their economies are extremely flexible and very business-friendly, as documented in the World Bank's *Doing Business in 2006* (World Bank and IFC 2005). The labor market is flexible, opening or closing a business is easy and inexpensive, regulations are reasonable and implemented by enlightened civil servants, and so forth. Nordic economies are all extremely open—as is natural for small countries—and are thus quite sensitive to globalization. Because their social protection systems are not incompatible with market incentives, however, these countries have been able to remain competitive and to open new niches in global markets. They seem to show that equity and equality, maintained through efficient and ambitious social policies, are consistent with successful global competition.

Globalization has been and continues to be an important driver of growth in China. But there is an important distinction between the period that began in the late 1970s and the period since the mid-1990s. During China's early reform period,

globalization was one among many growth factors. The main driver came from the expanded set of opportunities available to households, opportunities that were distributed relatively evenly across households and regions. Income inequality increased in this period, but it was associated both with an expanded opportunity set and more-standard sectoral shift factors. Since roughly the mid-1990s, globalization has been a more powerful driver of growth, with much higher and increasing income inequality that is associated not only with the expansion of individual economic opportunities or sectoral movement of the population as before but also with increasingly concentrated wealth and a larger gap between highly skilled, skilled, and unskilled workers. Globalization seems to have modified the relation between growth and inequality once experienced by today's rich countries. Controlling inequality and preserving equity require policies adapted to this new situation.

The early experience of Nordic countries—as well as the difficulties observed today in some other European countries, such as France and Germany, which are struggling to reform their labor market-based social protection systems—suggests that China should probably not try to imitate the welfare system as it developed historically in rich countries in the West before and after World War II. It should combat the increase in inequality and inequity with weapons closer to those used by the Nordic countries than those used by Western Europe. It should also explore innovative policies appropriate to its own context.

The *Di Bao* system (urban minimum living standard guarantee) is an interesting starting point for a social insurance system divorced from market mechanisms and thus preserving market incentives. But income redistribution of this type should be only part of the overall strategy. Social protection has many other dimensions. China should also try to protect as much as possible the level of equity, or equality of opportunities, which helped so much at the beginning of its development.

## Policy Options

China's rapid growth and rising inequality raise important questions. Will the second part of the Kuznets mechanism likely be triggered in the near future? Or should China prevent inequality from growing by adopting income-equalizing policies of the Western type—that is, welfare state-type redistribution policies? Alternatively, should China limit itself to preventing the growing inequality of incomes from transforming in the future into inequality of opportunities, thereby jeopardizing future growth opportunities or creating risks of social instability? What should be the role of fiscal policy in this process?

The 11th Five-Year Plan insists on the need for promoting a harmonious society with limited inequality in standards of living. One way of ensuring such a result is to create enough employment in the urban growth poles to absorb a large proportion of the rural population. The question is whether this can be achieved. A recent characteristic of the Chinese economy is its declining elasticity of urban employment and poverty with respect to growth. According to the Asian Development Bank's 2006 book *Labor Markets in Asia: Issues and Perspectives*, a 3 percent

increase in GDP generated a 1 percent increase in (modern) employment in the 1980s. Estimates suggest that it would have taken 8 percent GDP growth to achieve the same result in the 1990s. Ravallion and Chen (2004) note that poverty fell far less during the 1990s for a comparable growth rate of mean consumption per capita than it did in the 1980s. If this is confirmed, or if no policy is set up to reverse this trend, it is possible that the second part of the Kuznets mechanism will not be triggered and inequality in China will continue to rise—despite strong growth. Without freer labor migration, the increase in productivity in nonagricultural activities relative to productivity in the rest of the economy will deepen the rural–urban divide and accentuate inequality.

A second danger is that a rise in inequality may cause irreversible changes. Wealth, education, and social relations are transmissible from one generation to the next; more inequality of incomes today may mean much less equality of opportunity tomorrow. Such a decline in equity and broad-based opportunity could progressively stifle and slow growth. Moreover, if inequality persists, it may create an economic elite that can control important parts of the economy and, at some stage, local political power.

What can be done? How is it possible to trigger the second part of the Kuznets mechanism? If nothing can be done to do so, what remedial actions can be taken?

### *Ease Restrictions on Migration*

Market imperfections that prevent people from moving from low-paid occupations—or no job at all—in rural areas to decent jobs in cities are partly responsible for increasing inequality. More-flexible labor markets would progressively eliminate large earning differentials between cities and rural areas and possibly across occupations within urban centers. Migration has been eased lately; this process should be reinforced, along with investment in adequate social and physical infrastructure to absorb migrants and manage the environmental consequences.

An alternative to massive migration toward existing cities would be a better transport network, which would permit more-rapid development of economic agglomerations in less-developed areas. A better transport infrastructure would also make the economy more flexible and prevent geographic concentration of economic activity.

### *Support Rural Development*

If it is not possible to bring people to urban jobs, rural development, in both the farm and nonfarm sectors, should be favored (World Bank 2007b). Such a policy would be a means of reestablishing some equality in economic opportunities. In the agricultural sector, support for rural development might involve phasing out restrictions on rural interest rates; expanding farmers' access to credit; and facilitating the titling of rural land, which would increase efficiency in the market for land, increase agricultural labor productivity, and facilitate labor mobility. For both the

agricultural and the nonagricultural sectors, the objective could be to invest heavily in the infrastructure that will facilitate communications with the rest of the country and possibly permit the development of intermediate development poles in lagging regions or at their borders.

Equalizing opportunities may also mean revisiting public services such as education and health care, so that children born in rural areas are not handicapped when migrating and competing in the labor market. Equalizing the quality and the quantity of social services is part of a policy that will eventually stop, and possibly reverse, the evolution of inequality and will promote economic growth.

### *Increase the Progressivity of the Tax System and Reallocate Spending*

Pure redistribution policies proved very effective in reducing inequality in developed countries in the middle of the 20th century. Introducing more progressivity in the tax system, which might simply consist of expanding the income tax in a first stage, is one option. But improving tax progressivity very much depends on the administrative ability of the government to assess individual incomes. On the spending side, a goal could be to increase the benefits of public services and transfers going to the poorest.

A clear distinction must be made between contributory benefits, which go to people who contributed to a program, and noncontributory benefits, which are granted without previous contributions by the beneficiary. Health care and pensions belong to the first group. Means-tested cash transfers of the *Di Bao* type belong to the second group (and can therefore be considered part of the redistribution system). Noncontributory benefits represent a much smaller part of GDP in China (2.1 percent) than in most developed countries (4 percent in the United States, 4.0–6.5 percent in Europe).<sup>6</sup>

Extending the *Di Bao* system to the rural sector raises obvious administrative problems of measuring the income and the occupation of people. However, this has been done in countries such as Brazil and Mexico, where programs are well targeted and provide adequate incentives for investing in the human capital of children.

Another redistribution channel that China could borrow from other middle-income countries would be minimum pensions paid to pensionless rural people. This redistribution channel has worked well in Brazil and South Africa, and many countries are considering implementing it as a complement to reform of the formal pension system (Barrientos and Lloyd-Sherlock 2003). The cost of such programs is not very high, and their effect on rural poverty may be substantial. Moreover, these transfers have had positive effects on the welfare of other household members (see Bertrand, Mullainathan, and Miller 2003; Dufflo 2003).

The use of these or comparable instruments to fight increases in inequality and maintain the level of equity on which development depends requires increasing

tax revenues in order to cover additional public spending. Total revenue collection in China represented over 18 percent of GDP in 2002 (Dabla-Norris 2005). In addition, the government raises 2.0–2.5 percent of GDP in social security contributions and about 3 percent of GDP in other extrabudgetary revenues. Together these resources provide a fiscal spending envelope of about 23 percent of GDP, which is sizable but low by international standards.

The other solution is to maintain the overall rate of taxation constant and to redistribute existing spending (reallocating spending from infrastructure to social spending and social assistance, for example). This is the opposite of what is being sought by many developing countries today. But current public spending in China is heavily biased toward investment, predominantly in infrastructure, which consumes the equivalent of 9 percent of GDP. Examining tradeoffs across policy alternatives in light of what is known from international experience about the mechanisms for effectively reducing inequality should rank high in the priorities for reflection in economic policy in China.

Designing and launching such inequality- and equity-oriented policies is a major challenge in China at a time when globalization may become a less secure source of future growth and forces working to reduce income inequality may not be very strong. “We’re not in Kansas any more,” laments Dorothy in the Land of Oz. This certainly would not be a Chinese reaction in the face of uncertainty about where to go. Since they invented the compass in the fourth century BC, the Chinese have always found their way around. No doubt they will succeed again, with the experience of other countries helping to guide them.

## Notes

1. The same kind of evolution may occur when people are differentiated by another characteristic. An inverted-*U* curve would be observed as the population shifts from an uneducated majority to an educated one or as female workers increasingly shift from unpaid family work to wage work.
2. There is a voluminous literature on the Kuznets curve. For a general treatment of the effects of growth on social structures, see Bourguignon (2006). For a discussion of the Kuznets curve, see Kanbur (2000).
3. For a general treatment of the effect of inequality on growth, see the survey paper by Aghion, Caroli, and Garica-Penalosa (1999); Bertola (2000); and the *Handbook of Economic Growth* (Aghion and Durlauf 2006).
4. Bourguignon and Morrisson (1984) show that the declining weight of the agricultural sector in the labor force between the 1960s and the 1980s explains most of the drop in inequality in pretax and benefit household incomes that took place in France.
5. This argument does not apply to transition economies such as the Russian Federation, where large increases in inequality were observed.
6. Japan is unusual because firms there may be responsible for antipoverty transfers.

## References

- Aghion, Philippe, Eve Caroli, and Cecilia Garcia-Penalosa. 1999. "Inequality and Economic Growth: The Perspective of the New Growth Theories." *Journal of Economic Literature* 37 (4): 1615–60.
- Aghion, Philippe, and Steven N. Durlauf, eds. 2006. *Handbook of Economic Growth*. Amsterdam: Elsevier Science.
- Asian Development Bank. 2006. *Labor Markets in Asia: Issues and Perspectives*. Manila: Asian Development Bank.
- Barrientos, Armando, and Peter Lloyd-Sherlock. 2003. *Non-Contributory Pensions and Poverty Prevention: A Comparative Study of Brazil and South Africa*. Manchester, United Kingdom: IDPM and HelpAge International.
- Bertola, Giuseppe. 2000. "Macroeconomics of Distribution and Growth." In *Handbook of Income Distribution*, vol. 1, ed. Anthony B. Atkinson and François Bourguignon, 477–540. Amsterdam: Elsevier Science.
- Bertrand, Marianne, Sendhil Mullainathan, and Douglas Miller. 2003. "Public Policy and Extended Families: Evidence from Pensions in South Africa." *World Bank Economic Review* 17 (1): 27–50.
- Bourguignon, François. 2006. "The Effect of Economic Growth on Social Structures." In *Handbook of Economic Growth*, ed. Philippe Aghion and Steven N. Durlauf, 1701–47. Amsterdam: Elsevier Science.
- Bourguignon, François, and Christian Morrisson. 1984. "La mobilité des salaires sur le cycle de vie: Un échantillon de cadres français sur 30 ans." *Revue Economique* 35 (5): 929–70.
- Chaudhuri, Shubham. 2005. "The Extent and Sources of Inequality in China Today." Paper presented at the China Poverty Assessment Workshop, November.
- Dabla-Norris, Era. 2005. "Issues in Intergovernmental Fiscal Relations in China." IMF Working Papers 05/30, International Monetary Fund, Washington, DC.
- Duflo, Esther. 2003. "Grandmothers and Granddaughters: Old-Age Pensions and Intrahousehold Allocation in South Africa." *World Bank Economic Review* 17 (1): 1–25.
- Felipe, Jesus, and Rana Hasan, eds. 2006. *Labor Markets in Asia: Issues and Perspectives*. New York: Palgrave Macmillan.
- Ferreira, Francisco, Phillippe Leite, and Julie Litchfield. 2006. "The Rise and Fall of Brazilian Inequality: 1981–2004." World Bank Policy Research Working Paper 3867, Washington, DC.
- Fields, Gary S. 2000. "The Employment Problem in the Republic of Korea." *Journal of the Korean Economy* 1 (2): 207–27.
- Fields, Gary S., and Gyeongjoon Yoo. 2000. "Falling Labor Income Inequality in Korea's Economic Growth: Patterns and Underlying Causes." *Review of Income and Wealth* 46 (2): 139–59.
- Kanbur, Ravi. 2000. "Income Distribution and Development." In *Handbook of Income Distribution*, vol. 1, ed. Anthony B. Atkinson and François Bourguignon, 791–841. Amsterdam: Elsevier Science.

- Kuznets, Simon. 1955. "Economic Growth and Income Inequality." *American Economic Review* 45 (1): 1–28.
- Lewis, W. Arthur. 1955. *The Theory of Economic Growth*. London: Allen and Unwin.
- Lindert, Peter H. 2000. "Three Centuries of Inequality in Britain and America." In *Handbook of Income Distribution*, vol. 1, ed. Anthony B. Atkinson and François Bourguignon, 167–216. Amsterdam: Elsevier Science.
- . 2005. *Growing Public: Social Spending and Economic Growth since the Eighteenth Century*. Cambridge: Cambridge University Press.
- Minami, Ryoshin. 1998. "Economic Development and Income Distribution in Japan: an Assessment of the Kuznets Hypothesis." *Cambridge Journal of Economics* 22 (1): 39–58.
- Moriguchi, Chiaki, and Emmanuel Saez. 2005. "The Evolution of Income Concentration in Japan, 1885–2002: Evidence from Income Tax Statistics." Working Paper, Department of Economics, University of California, Berkeley.
- Morrison, Christian. 2000. "Historical Perspective on Income Distribution: The Case of Europe." *Handbook of Income Distribution*, vol. 1, ed. Anthony B. Atkinson and François Bourguignon, 217–60. Amsterdam: Elsevier Science.
- National Bureau of Statistics. 2005a. *China Rural/Urban Household Survey Yearbook*. Beijing: China Statistics Press.
- . 2005b. *China Statistical Yearbook*. Beijing: China Statistics Press.
- OECD (Organisation for Economic Co-operation and Development). 2007. Social Expenditure Database, SOCX1980–2003. Paris [www.oecd.org/els/social/expenditure].
- Ravallion, Martin, and Shaohua Chen. 2004. "China's (Uneven) Progress against Poverty." World Bank Policy Research Working Paper 3408, Washington, DC.
- Tipton, F. 1974. "Farm Labor and Power Politics: Germany, 1850–1914." *Journal of Economic History* 34 (4): 951–79.
- World Bank. 2005a. *Argentina: Seeking Sustained Growth and Social Equity*. Washington, DC: World Bank.
- . 2005b. *World Development Report 2006: Equity and Development*. Washington, DC: World Bank.
- . 2007a. *World Development Indicators*. Washington, DC: World Bank.
- . 2007b. *World Development Report 2008: Agriculture for Development*. Washington, DC: World Bank.
- World Bank and IFC (International Finance Corporation). 2005. *Doing Business in 2006: Creating Jobs*. Washington, DC: World Bank.





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