37058

Agriculture and Rural Development Discussion Paper 21

The World Bank

# Agriculture, Rural Development, and Pro-poor Growth

## *Country Experiences in the Post-Reform Era*

ARD AGRICULTURE AND RURAL DEVELOPMENT

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# ACKNOWLEDGMENTS

Production of this paper was managed by the Agriculture and Rural Development Department (ARD) of the World Bank. Derek Byerlee and Chris Jackson of the World Bank and Xinshen Diao of the International Food Policy Research Institute (IFPRI) wrote the paper. The authors appreciate the substantial input provided by James Thurlow of IFPRI. The paper is a synthesis of twelve of the fourteen country case studies included in the umbrella project, Operationalizing Pro-Poor Growth, commissioned by a consortium of development agencies - the World Bank, the Department for International Development (DFID), BMZ, the French Development Agency (AFD), and coordinated by Louise Cord in the Poverty Reduction and Economic Management (PREM) Network of the World Bank. The paper, jointly prepared by the ARD staff of the World Bank and the Agricultural team at DFID, draws significantly on additional background background papers, especially Diao et al. (2005) and Timmer (2005).

# EXECUTIVE SUMMARY

## BACKGROUND AND OBJECTIVES

This paper reviews the contribution of agriculture and rural development to pro-poor growth by examining the experience of 12 countries as documented in case studies commissioned for a multi-donor project on *Operationalizing Pro-Poor Growth*. The countries fell into three distinct regional groupings based on national statistics on the importance of agriculture and relative land and labor productivities: five are in Africa (Burkina Faso, Ghana, Senegal, Uganda, Zambia), four in Asia (Bangladesh, India, Indonesia, and Vietnam), and three in Latin America (Bolivia, Brazil, and El Salvador).

The review of the country case studies was guided by a rich literature on the contribution of agriculture to pro-poor growth. While the thinking about the role of agriculture has changed over time, the dominant paradigm from the 1970s has seen agriculture as an "engine of growth" in the early stages of development because of its high share of economic activity and its strong growth linkages with the rest of economy, including the rural nonfarm economy. This growth has been seen as pro-poor if it involves broad-based productivity growth in a sector dominated by small-scale family farmers, and if poor consumers benefit from lower prices of food staples.

The role of agriculture in structural transformation was demonstrated successfully through the green revolution in many countries, especially in Asia, where agriculture now has a declining share in many national economies. Partly because of this success, a growing number of "agro-pessimists" are questioning the role of agriculture in current strategies for pro-poor growth. These questions are brought on by low commodity prices in world markets, the apparent lack of new technological breakthroughs in agriculture, and the growing importance of trade in a globalizing economy.

## THE RECORD OF PRO-POOR GROWTH SINCE 1990 IN THE CASE STUDY COUNTRIES

In the case study countries, agricultural growth since 1990, as expected, has been much lower than nonagricultural growth, which is consistent with the lower income elasticity of demand for agricultural products. However, agricultural value added per worker has grown faster than nonagricultural value added per worker in over half of the countries, reflecting the movement of labor to nonagricultural sectors as part of a successful structural transformation process.

Rural poverty fell in the 1990s in all of the case study countries except Indonesia, which underwent a financial crisis late in the decade. However, rural poverty fell more slowly than urban poverty in all countries except Burkina Faso and Zambia, where urban poverty increased. Those countries with the highest agricultural growth per worker had the fastest pace of rural poverty reduction. Outliers were Brazil and Zambia, which had the highest

initial Gini ratios for rural incomes, and where agricultural growth was concentrated in the commercial sector.

There were important regional variations. The Asian countries have seen steady growth in per capita food and agricultural production and agricultural productivity per worker, along with rapid growth of land productivity over decades, although rural-urban disparities and rural inequality tended to widen in the 1990s. African countries entered the 1990s with a dismal record of growth and poverty reduction. Experience since then has been variable. Low or negative per capita growth in food production per capita in Africa is a continuing concern, although several rural performance indicators and especially the pro-poor growth record in two of the countries, Ghana and Uganda, provide the basis for cautious optimism.

## FINDINGS FROM A THEMATIC REVIEW

The case study countries were further reviewed with respect to five core themes for pro-poor growth: (1) the response of the sector to liberalization and its impacts on pro-poor growth, (2) drivers of agricultural productivity growth, (3) the contribution of the rural nonfarm sector and migration, (4) the effects of initial asset distribution, and (5) management and impacts of shocks.

### Trade and market reforms

The reform programs of the past decade or so have undoubtedly removed much of the urban bias stemming from macroeconomic policy. The overall production response was modest and much lower in agriculture than in the industrial sectors because economic reform in the agricultural sector has seriously lagged reforms in the economy as a whole. In addition, the enabling environment for the private sector to replace government and parastatal roles has not been in place. Producers of export crops have responded fastest and benefited most from trade and market reforms. Small-scale or subsistence-oriented farmers in remote or marginal areas may have been relatively unaffected or, in some cases, they may have lost access to subsidies and price supports. In these situations rural income inequality often worsened, because farmers in more favored areas with better access to markets gained the most.

### Agricultural productivity

The country results confirm the mass of evidence on the central role that increased agricultural productivity plays in promoting pro-poor growth, especially in the early stages of development and when productivity growth results in lower food prices. The results from Africa in the 1990s, when growth in agricultural productivity per worker was comparable to that in other regions, offer some scope for optimism. If the successful record of poverty reduction in Asia is to be repeated in Africa, where household food insecurity is widespread, the major challenge is to stimulate broad-based productivity growth in food staples and sustain overall productivity gains over decades.

### The rural nonfarm sector

The rural nonfarm sector is increasing its role in pro-poor growth, dramatically so in some densely populated countries. A profitable and productive agriculture is the main

stimulus to rural nonfarm growth. In Asia and Latin America, there is evidence of increasing linkages to urban industrialization, though (for example, outsourcing of textile assembly). In many countries and regions, remittances are an important source of rural household income. The poor, lacking access to capital, education, and infrastructure, are often not the main beneficiaries of these growing sources of nonfarm income, however.

### Access to assets

The case studies confirm the importance of secure and equitable access to assets in promoting pro-poor growth. In agriculture, land is the most immediate asset for many of the poor, and secure property rights and efficient land administration systems are critical for pro-poor growth and for facilitating exit from the sector. However, in emerging low- and middle income countries, access to education and capital are now often more important determinants of rural incomes than access to land.

### Management and impacts of shocks

The case studies consistently reinforce the importance of agriculture in creating and managing shocks and vulnerability at both the macro level and household level. An important finding is the contribution of agriculture as a safety net in times of macroeconomic crisis.

The combination of these factors has resulted in uneven growth in the 1990s. Poverty has been reduced most in areas with good natural resources and access to markets, especially in areas that produce export crops. The rural nonfarm sector has also played an important role in pro-poor growth, but again more so in areas with good infrastructure and a better educated labor force. This problem of growing regional inequality is most acute in Latin America but is evident in all regions.

## FIVE PROPOSITIONS ON AGRICULTURE AND PRO-POOR GROWTH

The evidence from the case studies and the wider literature leads to five broad propositions about the contribution of agriculture and rural development to pro-poor growth.

First, agriculture has played an important, and often a lead, role in the early stages of pro-poor growth. Beyond its direct contribution to growth, a number of features specific to the sector enhance its contribution to pro-poor growth, including the concentration of the poor in the sector, the large size of its growth linkages to other sectors, and the positive externalities from assuring food security and reducing food prices.

Second, the contribution of agriculture to growth naturally declines with structural transformation from an agricultural economy to an urban-based nonagricultural economy, although even in economies that are well into middle-income status, agriculture continues to “pull beyond its weight,” as measured by its contribution to GDP, owing to its unique “externalities.”

Third, the role of the rural nonfarm economy increases as a source of growth, initially led by linkages to agricultural growth, but later tied increasingly to urban-industrial development, especially in areas with good infrastructure and high population density.

Fourth, even as the role of agriculture in growth declines with structural transformation, rural development continues to be critical to reducing poverty and inequality. Differences in natural resources and in access to markets and assets often result in uneven growth and growing inequality within the sector, between small and large farms and between regions. Such disparities further widen rural-urban inequality and create "poverty traps" within rural areas, unless poverty-oriented rural development strategies are in place to address these problems.

Fifth, the "agro-pessimists" raise important questions about the future role of agriculture. These questions highlight how the contribution of agriculture to pro-poor growth varies enormously, not only at different stages of development for a given country, but also across and within countries, because of initial conditions. More than ever, the design of public policy for enhancing the contribution of agriculture and rural development to pro-poor growth must be conditioned by local contexts.

## TOWARD PUBLIC POLICY FOR PRO-POOR GROWTH

Given the slow pace of reforms within the agricultural sector, the first order of business is to deepen reform efforts within the sector so that agriculture realizes its growth potential. These efforts should include liberalization of agricultural pricing and marketing policies (including reform of OECD trade and subsidy policies). Market liberalization must be accompanied by increased investment in core public goods (infrastructure, education, and R&D), which provide high payoffs in growth and poverty reduction. This approach will require a sharp shift in public resources toward rural areas, especially in Africa. Reform of price subsidies will also contribute to better utilization of public expenditures. Finally, policy reform and public investments must be complemented by long-term institutional development. Especially in Africa, new and more pro-active roles for the state that involve a variety of institutional innovations and "smart subsidies" are needed to get private markets to work, especially to improve coordination along the value chain.

Public policy must also emphasize areas that can make growth more pro-poor. These include institutional mechanisms (for example, strong producer organizations) to connect small-scale farmers to emerging markets, investment in education and skills of the rural poor to promote their participation in the emerging high-value agricultural subsector and dynamic rural nonfarm sector, mechanisms to manage a massive exit from small farms in Asia, attention to increasing the productivity of food production in Africa, and, in situations of highly unequal land distribution, market-based approaches to land redistribution. A major dilemma is the relative attention that should be given to lagging regions, which are an important source of growing inequality and where extreme poverty is often concentrated. Some lagging regions have substantial growth prospects and offer "win-win" prospects for growth as well as poverty reduction, but many others confront clear tradeoffs between growth and poverty reduction. Finally, an enduring challenge is to increase the voice of the rural poor in national policy dialogue. Widely-owned rural strategies and decentralized programs now offer good prospects for achieving this goal.

# 1. INTRODUCTION

A rich literature, both theoretical and empirical, examines the structural transformation of economies, extending from the least developed economies, in which economic activity is based largely on agriculture, to the high-income economies, in which agriculture typically accounts for less than 5 percent of GDP. The dominant paradigm of structural transformation since the 1970s has seen agriculture as an "engine of growth" in countries in the early stages of development because of agriculture's high share of economic activity and strong growth linkages with the rest of economy. In this paradigm, growth is regarded as pro-poor if it involves broad-based growth in an agricultural sector that is dominated by small-scale, family farmers.

This role of agriculture in structural transformation has been demonstrated in many Asian countries through the green revolution, which began in the 1960s and spread rapidly throughout the region in the 1970s and 1980s, especially in densely populated and irrigated areas. The unprecedented fall in global poverty in Asia in recent decades reflects a large contribution from this successful agricultural transformation (Datt and Ravallion 1998a, 1998b; Ravallion and Chen 2004).

Yet the role of agriculture in current strategies for pro-poor growth is being questioned. The share of agriculture in GDP in East and Southeast Asia has fallen from 35 to 14 percent in the three decades to 2000; in South Asia it has gone down from 45 to 24 percent. With a vibrant nonagricultural sector and rapidly expanding exports of labor-intensive manufactured goods and services, the future role of agriculture in pro-poor growth needs to be re-examined. Does the success of the structural transformation in Asia reduce agriculture's contribution to pro-poor growth? This question is more pressing for the middle-income countries of Latin America, where the share of agriculture in GDP is now only 8 percent. Finally, and most importantly, the agriculture-led transformation of Asia has not been replicated in Africa, where agricultural growth and overall economic growth are well below the averages for the developing world, and subsequent poverty rates are correspondingly higher. The late development of many African countries, combined with declining agricultural commodity prices in world markets, the predominance of rainfed agriculture, and the growing importance of trade in a globalizing economy, have all raised questions about the future role of agriculture in pro-poor growth in Africa.

This paper reviews the contributions of agriculture to pro-poor growth as documented by a number of country case studies commissioned by several development assistance agencies for a project on *Operationalizing Pro-Poor Growth*.[1] The countries were selected based on their geographical coverage, their status as post-structural adjustment countries, and the availability of detailed national household surveys at two points in time in the 1990s. Nonetheless, the selected countries are highly diverse with respect to pro-poor growth performance and to the coverage of agricultural and rural issues in the analysis.[2] In particular, very few of the studies analyzed the role of the rural nonfarm

economy in pro-poor growth, even though recent literature has attributed an expanding role to this sector. For this paper, 12 of the 14 case studies were selected for review: five in Africa (Burkina Faso, Ghana, Senegal, Uganda, and Zambia), four in Asia (Bangladesh, India, Indonesia, and Vietnam), and three in Latin America (Bolivia, Brazil, and El Salvador). The omitted countries were Tunisia and Romania, which each provided a sample of only one country in regions with unique characteristics (West Asia and North Africa, and Eastern Europe, respectively).

This review is necessarily highly selective, given the global coverage and the huge diversity among and within the case study countries. It focuses on analyzing agriculture and rural development within the broader processes of economic development and structural transformation as well as on how to enhance the contribution of agriculture to pro-poor growth in the economy as a whole. Inevitably, however, issues that must be addressed are how to promote pro-poor growth within the agricultural sector itself, a topic that is considered in much more detail in a companion paper (World Bank 2005a).

This review of recent country experiences was carried out against the background of a voluminous literature, spanning the past five decades, on the contribution of agriculture and rural development to growth and poverty reduction. Following a brief summary of this literature, we review some of the recent changes in the global context in which current development strategies must be formulated. These changes have raised questions about the future role of agriculture—what we term "emerging agro-pessimism." The next section reviews the evidence from the country case studies, focusing on experiences in the 1990s. The final section highlights the key public policy issues that must be considered in enhancing the contribution of agriculture to pro-poor growth.

# 2. THE ROLE OF AGRICULTURE IN PRO-POOR GROWTH

### THE ACCEPTED WISDOM IN THE 1970S AND 1980S

Because agriculture forms a large share of national output and employment in the early stages of development, this sector is explicitly treated in most theories of economic development (Timmer 1988). These theories have evolved over time, but generally can be divided between the classical views in the 1950s and 1960s of agriculture as a passive contributor to economic growth, and the agricultural-led industrialization school of the 1970s and 1980s.[3]

**The classical view of agriculture as a passive contributor to economic development**

Classical theorists, led by Arthur Lewis in the 1950s, viewed economic development as a growth process of relocating factors of production, especially labor, from an agricultural sector characterized by low productivity and the use of traditional technology to a modern industrial sector with higher productivity. The contribution of agriculture to

development was passive. Agriculture acted more as a source of food and labor than a source of growth.

Although passive, agricultural growth was still seen as necessary for successful economic transformation for two reasons: (1) to ensure the supply of food and prevent rising food prices and real wages from undermining industrial development; and (2) to utilize a major natural resource—land—as an additional "free" source of growth that would not compete with resources for industrial growth (Lewis 1954).[4] Nonetheless, Lewis' theory was employed to support the industrialization-led strategies adopted by many developing countries during the 1950s and 1960s, which resulted in a pronounced "urban bias" in policy and investment decisions throughout this period (Lipton 1977).[5]

**Agriculture as an "engine of growth"**

Beginning in the 1960s, a major revision in development thinking argued for a central role for agriculture as a driver of growth, especially in the early stages of industrialization (Johnston and Mellor 1961; Schultz 1964). This view of agriculture as having an active role, stimulated in large part by the emerging experience in Asia, was founded on two core contributions. First, it was recognized that traditional agriculture could be transformed rapidly into a modern sector through the adoption of science-based technology, thereby making a large contribution to overall growth. Second, economists now explicitly identified the strong growth linkages and multiplier effects of agricultural growth to the nonagricultural sectors. Agriculture has strong, direct forward linkages to agricultural processing and backward linkages to input-supply industries (Johnston and Mellor 1961). It is known empirically that a large share of manufacturing in the early stages of development is agriculturally related (Pryor and Holt 1999; Gemmell et al. 2000).[6] This multiplier effect is not insignificant. Recent work in Latin America indicates that after accounting for these backward and forward linkages in an input-output framework, agriculture's share of GDP is about 50 percent higher than official statistical estimates (Perry et al. 2005). Although other studies have suggested the linkages are dependent on the particular type of urban economic growth (Ravallion and Datt 1996).

More important, rising incomes of rural households during the early stages of development were seen as vital to providing a market for domestically produced goods and services (Hazell and Roell 1983). In addition, technological change and productivity growth in agriculture were linked to lower food prices, which in turn held down urban wages and stimulated industrialization and structural transformation.[7]

The role of agriculture in rural rather than national development was the primary focus for many economists during the 1980s and 1990s (Hazell and Haggblade 1991; Hazell and Roell 1983). This rural perspective recognized that agricultural productivity growth stimulates rural nonfarm growth, especially where infrastructure and the investment climate are already in place (Barnes and Binswanger 1986; Hazell and Haggblade 1991).

These growth-linkage effects have proven most powerful when agricultural growth is driven by broad-based productivity increases in a rural economy dominated by small farms, as in much of Asia (Mellor 1976). Small- to medium-sized farm households typically have more favorable expenditure patterns for promoting growth of the local nonfarm economy, including rural towns, since they spend higher shares of income on

rural nontraded goods and services, which are also generally more labor intensive (Mellor 1976; King and Byerlee 1978; Hazell and Roell 1983).

Because of these strong growth linkage effects, agricultural growth can lead wider economic growth in many countries, even open economies, during their early stages of industrialization, a strategy later labeled "agricultural-demand-led-industrialization" (ADLI) (Adelman 1984). The ADLI strategy stressed the central role of increased agricultural productivity in achieving industrialization through expanding demand for goods produced by domestic industry.

A large econometric literature supports these propositions (Boxes 1 and 2). Nonagricultural growth is found to have a greater impact on overall growth since other sectors typically have grown faster than agriculture. But, importantly, these high growth rates in the nonagricultural sectors are conditional on a rapidly growing agricultural sector, particularly at the early stages of development.

**Box 1: Agricultural Linkages And Stages Of Development**

Using Social Accounting Matrices for 27 countries, Vogel (1994) examined the strength of the linkages between agriculture and rest of the economy at different development stages. At early stages of development, the backward linkages were very strong, while the forward linkages were much weaker. Rising household incomes represented almost 70 percent of the backward linkages. Along the development path, the forward input-output linkage strengthened due to the greater integration of the sector into the broader economy.

Source: Diao et al. 2005

**Box 2: Agriculture Can Explain More Than Half Of GDP Growth**

Work by Gollin et al. (2002) showed the importance of agriculture in the early stages of development. Analyzing data for 62 developing countries for the period 1960-1990, the authors found that growth in agricultural productivity was quantitatively important in understanding growth in GDP per worker. Both cross-section and panel data analyses showed that countries experiencing increases in agricultural productivity were able to release labor from agriculture into other sectors of the economy. On average, the contribution of agricultural growth, nonagricultural growth, and sectoral shifts were 54, 17, and 29 percent, respectively.

Source: Diao et al. 2005

## Agricultural growth and the poor

The literature has also consistently noted the special role of agricultural growth in poverty reduction, especially in the early stages of structural transformation. Agricultural growth reduces poverty through direct impacts on farm incomes and employment, while indirect impacts are through the growth linkages discussed above, as well as its impacts on food prices. Box 3 discusses how growth in agriculture benefits the poor in both rural and urban areas.

**Box 3: Growth In Agriculture Benefits The Poor In Both Rural And Urban Areas**

Based on 33 household surveys in India from 1951 to 1990, Ravallion and Datt (1996) found that there is strong evidence that the urban-rural composition of growth matters to poverty reduction. While urban growth reduced urban poverty, its effect was not significantly different from zero in explaining the rate of

poverty reduction nationally. On the other hand, rural growth reduced poverty in rural and urban areas and hence had a significantly positive effect on national poverty reduction.

By disaggregating different types of households in a 1980 Social Accounting Matrix for Indonesia, Thorbecke and Jung (1996) were able to decompose the multiplier effects into distributional and interdependency effects. They found that the agricultural sector contributes the most to overall poverty reduction, followed by the services and informal sectors. The manufacturing sector as a whole contributed the least to poverty reduction, although the food processing and textiles subsectors within manufacturing made relatively large contributions to poverty reduction by employing unskilled workers.

Using data for 1985 to 1996 for China, Fan et al. (2005) estimated an econometric model to compare the relative contributions of rural and urban growth to poverty reduction in rural and urban areas. The authors found that higher growth in agriculture reduced both rural and urban poverty, though the pro-poor effect was largest for rural areas. On the other hand, urban growth contributed only to urban poverty reduction, and its effect on rural poverty was neither positive nor statistically significant.

Based on data from a broad sample of developing countries in the early 1970s and mid-1980s, Bourguignon and Morrison (1998) found that variables which measure agricultural productivity are important in explaining income inequality. Using cross-country regressions for each time period separately and then for the pooled data, the authors found that increasing agricultural productivity was the most effective path for many countries to reduce poverty and inequality.

Source: Diao et al. 2005

Broad-based agricultural productivity growth raises incomes of poor farm households as well as households of landless laborers who primarily depend on agricultural wages. A large body of empirical studies of the green revolution in Asia demonstrated how agricultural growth reached large numbers of small farms, increased demand for rural labor, and lifted enormous numbers of people out of poverty (see, for example, Rosegrant and Hazell 2000).

Increased agricultural productivity also brings strong indirect benefits for the poor. Probably the most important pro-poor linkage is generated by the effects of agricultural productivity growth on food prices (Timmer 1997). The poor typically spend a high share of their income on staple foods, and therefore they benefit from a productivity-induced decline in the real prices of staple foods. Benefits are largest for the urban poor and landless laborers, but even many poor farmers benefit, since they are net food purchasers. Widely shared increases in incomes of farmers and farm workers also reduce poverty by providing a market for labor-intensive consumer goods.[8]

**Table 1: Elasticity Of Poverty Reduction With Respect To A 1 Percent Increase In Crop Yields**

| Region | Percent in poverty | Number in poverty (millions) | Elasticity of number of poor to yield changes |
|---|---|---|---|
| East Asia | 15 | 278 | 0.48 |
| South Asia | 40 | 522 | 0.48 |
| Africa | 46 | 291 | 0.72 |
| Latin America | 16 | 78 | 0.10 |

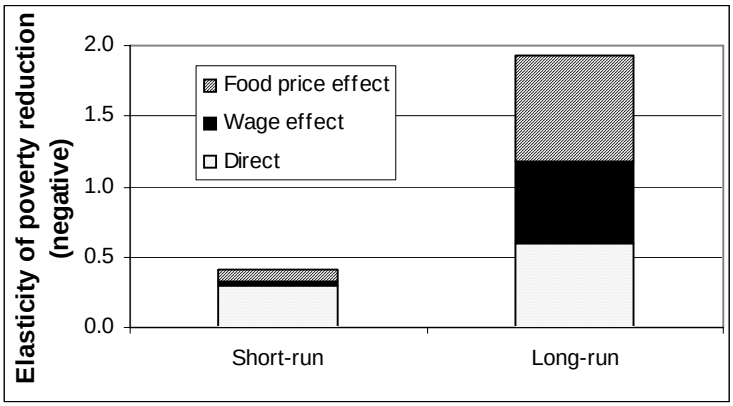
Source: Thirtle et al. 2003

Lipton (2004) nicely summarizes the two key conditions for the interaction of productivity growth, farm incomes, labor employment, and food prices to lead to pro-poor outcomes, as occurred during the green revolution.

- Agricultural productivity per unit of labor must increase to raise farm incomes, but agricultural productivity per unit of land must increase at a faster rate in order to raise employment and rural wages (assuming land scarcity).
- Increased total factor productivity (TFP) in agriculture must result in a decrease in real food prices, but TFP must increase faster than food prices decrease, in order for farm profitability to rise and for poor consumers to benefit.

There is a large econometric literature that uses cross-country or time-series data to estimate sectoral and subsectoral growth-poverty elasticities (see Timmer 1997; Gallup et al. 1998; Ravallion and Datt 1999). These studies generally find high elasticity estimates of poverty reduction with respect to agricultural productivity (Table 2.1), especially in the early stages of development and relative to other sectors. For example, Thirtle et al. (2003), in a cross-country study, estimate that a 1 percent increase in agricultural yields reduces the number of poor people by 0.72 percent in Africa and by 0.48 percent in Asia. Datt and Ravallion (1998a) estimated the elasticity of poverty reduction in India with respect to agricultural value added per hectare at 0.4 percent in the short run through direct impacts on farm incomes, and 1.9 percent in the long run, when the indirect effects of lower food prices and wage earnings are included (Figure 1).[9]

**Figure 1: Elasticity Of Poverty Reduction With Respect To Yield Growth, India**




Source: Datt and Ravillion 1998a

While this literature produces quite consistent conclusions on the positive impacts of agricultural growth on poverty, the magnitude of these effects is, of course, specific to the local context. From our reading of the literature, five key conditions would seem to favor the substantial and broad-based impact of agricultural growth on poverty reduction:

- Agriculture is important to the incomes of the rural poor, as is the case in most countries at the early stages of development.

- Climate and soil resources provide significant potential for agricultural productivity growth (in some cases, unfavorable environments can be overcome through interventions, especially irrigation in dry areas).
- Land ownership is relatively equitable. Inequitable land ownership is probably the major factor explaining variation in poverty effects of agricultural growth among countries. For example, in Latin America, where land ownership is highly unequal, it is estimated that a one percent increase in yields reduces the number of poor by only 0.1 percent; see Thirtle et al. (2003).
- The poor consume nontradable food staples and rural nonfarm goods and services. In the early stages of development, when infrastructure is poor, nontradables tend to dominate rural consumer spending (Mellor 2001).
- Transactions costs and risks are low enough to provide an investment climate conducive to realizing agricultural growth linkages—a condition that is especially important for linking small-scale farmers to markets in a liberalized economy (Dorward et al. 2004).

### Additional "externalities" of agriculture for pro-poor growth

Agriculture makes other important contributions to nutrition, food security, and macroeconomic stability beyond the pro-poor growth linkages discussed above (Timmer 2002). At the micro level, inadequate and irregular access to food reduces labor productivity and decreases investment in human capital (Bliss and Stern 1978; Strauss 1986; Fogel 1994). Drawing on a sample of 97 countries, Nadav (1996) found that nutritional levels had a large and highly significant impact on economic growth. This finding is consistent with Fogel (1991), who reported that increased caloric intake reduced mortality and raised productivity amongst the working poor during the early stages of Western Europe's development. Overcoming hunger and malnutrition is now explicitly recognized in the first Millennium Development Goal.

Macroeconomic stability is especially sensitive to volatility in the agricultural sector (Timmer 2005; Perry et al. 2005). In turn, volatility in the agricultural sector tends to be relatively high because of climatic shocks that reduce domestic production and unstable world prices of agricultural commodities. The implication is that these shocks in the agricultural sector, especially food crises, are often the major source of macroeconomic instability in the early stages of development (Barro and Sala-i-Martin 1995; Dawe 1996; Timmer 1989, 1996). Agricultural growth combined with appropriate policies can mitigate the effects of these shocks, with benefits to the poorest and most vulnerable.

## WHAT HAS CHANGED? EMERGING SCHOOLS OF "AGRO-PESSIMISM"

Changes in the global environment for agricultural growth that began in the 1990s raise questions about the future role of agriculture in pro-poor growth. Here we briefly highlight this emerging "agro-pessimism," which will be examined further in the next section and the conclusions.

### The declining share of agriculture in developing economies

Partly because the agricultural transformation was so successful, the share of agriculture in total GDP has declined in all regions. This trend is especially apparent in East and Southeast Asia, where the share of agricultural GDP is now less than 20 percent, and vibrant nonagricultural sectors have been established in most countries. Even after accounting for the linkage effects to agro-based manufacturing, it is clear that at least mathematically the contribution of agriculture to growth is now much less in these rapidly developing countries. Although in most of these countries the share of poverty in rural areas remains high (over 50 percent), the specific contributions of agricultural growth to the future reduction of poverty need to be revisited.

### Using trade to bypass agricultural growth

The theoretical models of agriculture-led development were based largely on the Asian experience and generally did not explicitly recognize the potential for trade in food products. Those that recognized the potential role of trade emphasized that it was limited by the large size of Asian countries in relation to world markets, especially for the major staple, rice, which was very thinly traded (rice trade was then less than 5 percent of Asian consumption). In large part to avoid macroeconomic and political instability from food price shocks (see above), most countries pursued food self-sufficiency policies.

The opening of economies to international markets has caused the role of trade to be re-examined. For example, many of the least developed countries are rich in mineral and oil resources, and it may be possible for these countries to depend on food imports, perhaps eliminating the need to modernize their agricultural sectors. Countries may even be able to embark directly on labor-intensive manufacturing of exports, using the proceeds to import food. This argument is reinforced by several considerations:

- Prices of agricultural commodity prices, including cereals, the major trade food product, continue their long-term decline, which has been aggravated by high subsidies on exports and barriers to imports of many agricultural products relative to industrial products, especially in rich countries.
- Many of the least developed countries that have yet to undergo an agricultural transformation are perceived to have a harsh natural environment, which may reduce their comparative advantage in food production.
- The much more robust global markets for food, including rice, have sharply reduced the national food security risks of relying on imported food.

Even where agriculture retains a comparative advantage, the liberalization of trade raises questions about the pro-poor effects of agricultural productivity gains through lower food prices, since at least for traded food products in liberalized markets, prices will tend to be determined more by world prices than by domestic productivity.

### Rapid changes in rural household livelihoods

Other schools of agro-pessimism are premised on the fact that rural households are highly heterogeneous in structure, in patterns of economic activity (Ellis and Harris 2004), and

in the degree of integration with markets (Maxwell et al. 2001). First, rural households are increasingly differentiated and diversified, with the primary role of agriculture giving way to nonfarm sources of income, including income from migration and remittances. Second, the future role of small-scale family farmers is questioned in view of the complexity of recent technological changes (for example, genetically modified seed), more stringent quality and safety standards for many food products, and the globalization of commodity chains, which some regard as favoring large-scale farmers and agribusiness. These changes may, it is argued, lead to even more pressure on small-scale farm households to diversify their sources of income away from agriculture.

**Technological stagnation**

The Asian successes were generated by a technological breakthrough in the form of high-yielding varieties of rice and wheat, which provided a historically unprecedented jump in agricultural productivity, especially when farmers also had access to fertilizer and irrigation. While consistent productivity gains have been achieved since then, growth has been much slower, and there are concerns about "yield stagnation." In Africa, although new varieties of food crops have been developed and widely adopted, yield growth has been very low, in part because of continued dependence on rainfed farming and in part because of poor adoption of complementary inputs, especially fertilizer. Biotechnology shows much promise for the future but, driven by private and commercial agricultural interests, it has yet to have impacts on food crops grown by small-scale farmers in the developing world.

**Overcoming the sunk costs of urban bias**

In the 1960s and 1970s governments, influenced by the dominant development paradigm of a passive role for agriculture, thought it was possible to bypass agricultural development through rapid industrialization (Timmer 1988). This strategy resulted in a pronounced urban bias in both public and private investments as well as in government economic and trade policies (Lipton 1977).[10] Although these strategies failed in almost all countries that followed them, they left a legacy of public investment heavily biased to urban areas and "premature" urbanization. As one observer puts it, Africa has been "hollowed out" with the development of major urban centers on the coast, supported by migration from rural areas in the hinterland that have very low levels of infrastructure and other services (Wood 2002). The question now being asked is whether such biases can be reversed, given the "sunk cost" of past investments and the high investment requirements, especially in rural infrastructure. In African countries with low population densities, these costs are especially high. It is argued that this bias, combined with the new recognition of the role of trade discussed above, may lead in some cases to a lack of comparative advantage for agriculturally-led strategies in late-developing countries.

There are, of course, counter-arguments to many of these concerns. For example, on the issue of using trade to bypass agriculture, it can be argued that the liberalization of trade offers new opportunities for developing countries to produce nontraditional commodities for export, such as products of horticulture and aquaculture, which are labor-intensive to produce. As we review experiences with agricultural and rural development in the 1990s in the 12 country case studies, we will re-examine the validity of the question raised by

these emerging schools of pessimism, and we will synthesize the findings in the conclusions.

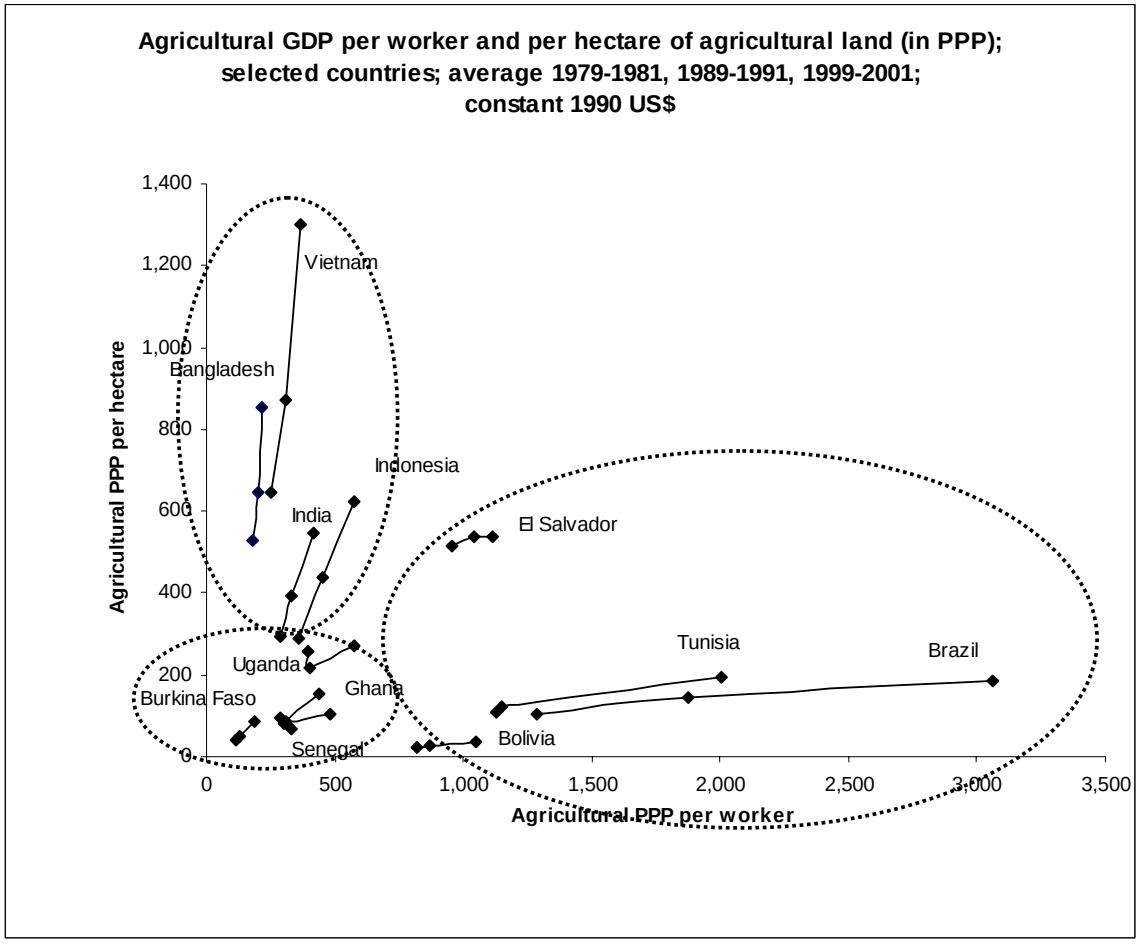
# 3. WHAT DO WE LEARN FROM THE CASE STUDIES?

In this section, 12 country case studies are reviewed in light of the accepted wisdom and the emerging questions about the contribution of agriculture and rural development. The review is divided into two parts. In the first part, the overall performance of the 12 case study countries in the 1990s is summarized in terms of agricultural growth, rural poverty reduction, and inequality, using national statistics for each country. In the second part, we focus on five core themes, using the evidence in the case studies, supplemented where possible from other sources.[11] The thematic review helps to interpret country performance in the 1990s, as well as provide guidance for the key public policy issues for operationalizing pro-poor growth, which are discussed in the final section.

The first theme relates to the response of the agricultural sector to liberalization and its impacts on pro-poor growth—a major theme of the overall *Operationalizing Pro-Poor Growth* study. The next three themes emerge logically from core themes of the literature: drivers of agricultural productivity growth; the contribution of the rural nonfarm sector and migration; and the effects of initial asset distribution. The final theme, vulnerability to shocks, was included because of its prominence in the case studies, although it has been recognized in some of the literature (Timmer 1997).

The 12 countries are highly diverse. The Hayami-Ruttan (1985) typology of growth paths was used to group the countries according to land and labor productivity and changes in productivity from 1980 to 2000 (Figure 2). Note that the longer the distance between points for any one country, the larger were the changes in land or labor productivity.

**Figure 2: Typology Of Countries Based On Agricultural Land And Labor Productivity**




Notes: Zambia not included due to incomplete data. All countries trend towards a north-easterly direction over the three decades (i.e. see consistent rises in land and labor productivity) with the following exceptions: El Salvador (labor productivity increase but land productivity rises then fells), Ghana (labor and land productivity drops then rises), Senegal (land productivity rises but labor productivity falls) and Uganda (labor productivity falls while land productivity falls then rebounds).

Source: Authors' calculations based on FAOSTAT and SIMA.

Using this approach, the countries fall nicely into three groups, corresponding to three regions[12] (Table 2):

- Relatively small low-income countries of Africa, which are still in the early stages of structural transformation, with generally low land and labor productivity (Burkina Faso, Ghana, Senegal, Uganda, and Zambia).[13]
- Large, emerging low-income countries of Asia that are undergoing wide structural transformation, generated by rapid growth in agricultural productivity, especially land productivity (Bangladesh, India, Indonesia, and Vietnam).

- Middle-income countries of Latin America (Bolivia, Brazil, and El Salvador), which are very diverse in size and other aspects but are generally characterized by higher labor productivity. These countries also have highly unequal land distribution and a dualistic agriculture, in which a large-scale commercial sector coexists with small-scale farms that are often concentrated in marginal areas with high levels of poverty.

**Table 2: Median Statistics On Agriculture, Rural Poverty, And Rural Inequality In The Case Study Countries (Appendix 1), Late 1990s**

| *Selected Countries* | **Africa** *Burkina Faso, Ghana, Senegal, Uganda, Zambia* | **Asia** *Bangladesh, India, Indonesia, Vietnam* | **Latin America** *Bolivia, Brazil, El Salvador* |
|---|---|---|---|
| Population size | 10-25 million | > 75 million | Highly diverse |
| Percent GDP from agriculture | 32 | 23 | 9 |
| Percent employed in agriculture | 73 | 55 | 29 |
| Rural poor as a percent of all poor | 79 | 82 | 47 |
| Gini ratio for rural incomes | 0.37 | 0.30 | 0.51 |
| Agricultural productivity per worker (US$ at PPP) | 343 | 390 | 1113 |
| Agricultural productivity per ha (US$ at PPP) | 123 | 739 | 185 |
| Annual change in rural poverty rate (%/yr) | -1.93 | -1.70 | -0.87 |
| Annual change in rural Gini (%) | 0.37 | 2.25 | -0.65 |
| Annual rate of per capita agricultural GDP growth (%) | 0.28 | 1.25 | 0.45 |

Source: Case studies (Appendix 1) and authors' calculations, based on FAOSTAT and SIMA.

## AGRICULTURAL PERFORMANCE AND PRO-POOR GROWTH

In the case study countries and more generally, overall growth accelerated in the 1990s. Growth performance was closely correlated on the one side with poverty reduction and on the other with increasing inequality (World Bank 2005b). Nonagricultural growth has dominated overall growth patterns in most countries, except in Africa. Moreover, there is some evidence that agricultural growth in aggregate did not respond to the structural adjustment reforms (Lopez 2004a), although there were important exceptions (for example, Ghana). In some cases, agriculture did not feature in the adjustment programs and the macroeconomic reforms that benefited all sectors were not sufficiently liberalizing to overcome sector-specific distortions that remained. In others, agricultural adjustment remained largely rhetorical, and the set of incentives faced by farmers hardly changed.

Although per capita agricultural growth has been much lower than nonagricultural growth in the 1990s, it has averaged at least half the rate of aggregate economic growth in all countries except El Salvador.[14] This finding is consistent with most estimates of an income elasticity of demand for agricultural products of between 0.5 and 0.6. In addition, agricultural value added per worker has grown faster than nonagricultural value added per worker in over half of the countries (Table 3). Thus a significant part of the higher

nonagricultural growth relates to intersectoral movement of labor from agriculture to nonagricultural sectors as part of the structural transformation process. (See Appendix III for full summary statistics by country.)

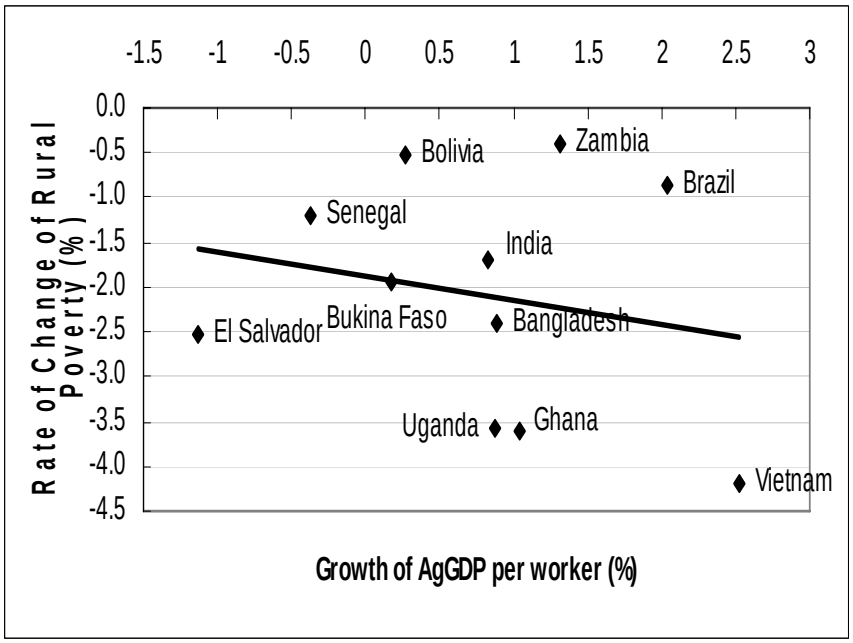
**Table 3: Growth In Labor Productivity In The 1990s**

| | Labor productivity growth rate (%/yr) | |
|---|---|---|
| | Agriculture | Nonagriculture |
| Burkina Faso | 1.33 | 0.13 |
| Ghana | 0.99 | 1.60 |
| Senegal | 0.71 | 0.80 |
| Uganda | 1.78 | 5.35 |
| Zambia | 2.66 | -5.79 |
| Bangladesh | 2.25 | -0.91 |
| India | 1.65 | 3.41 |
| Indonesia | 0.77 | -0.27 |
| Vietnam | 2.88 | 5.73 |
| Bolivia | 0.58 | 0.49 |
| Brazil | 4.82 | 0.11 |
| El Salvador | 0.01 | 0.32 |

Source: Authors' calculations, based on FAOSTAT and SIMA.

Rural poverty fell in the 1990s in all countries except Indonesia, which underwent a financial crisis late in the decade. However, rural poverty fell more slowly than urban poverty in all countries except Burkina Faso and Zambia, where urban poverty actually increased. Those countries with fastest agricultural growth per worker had the fastest pace of rural poverty reduction (Figure 3). Outliers were Brazil and Zambia, which had the highest initial Ginis for rural incomes, and where agricultural growth was concentrated in the commercial sector. El Salvador is also an outlier in the sense that it reduced rural poverty despite poor agricultural performance (see below).

**Figure 3: Agricultural Growth And Rural Poverty Reduction, 1990s**




Note: For the purposes of exposition Indonesia, which suffered an increase of rural poverty of 8 percent over the study period, is excluded. Note that productivity is agricultural GDP as a ratio of the total labor force.

Source: Authors' calculations, based on FAOSTAT and SIMA.

## Latin America: Weak links between agricultural growth and rural poverty reduction

It is difficult to generalize across the three Latin American countries because of their radically different characteristics. The major outlier is El Salvador, where despite weak agricultural growth and negative productivity growth per worker, rural poverty did fall, largely because of increasing nonfarm incomes and remittances (Box 4).

By contrast, Brazil experienced one of the highest agricultural growth rates in the sample and the highest growth in productivity per worker, while nonagricultural growth has been slow. Brazil is the only country in the sample where the absolute number of people employed in agriculture has fallen (by 14 percent in the 1990s). However, rural poverty rates fell only marginally from 0.83 to 0.78 during the 1990s. This happened for two reasons. First, Brazilian agricultural growth is concentrated in a dynamic export-oriented sector, and although only one in four of Brazil's poor are located in rural areas, they are increasingly likely to reside in the marginalized rural Northeast of the country, which benefited little from agricultural growth. Second, inequality is known to be a significant determinant of who shares in aggregate growth, and Brazil has the highest Gini ratio for rural incomes in the sample (0.59 in 2000) and the highest Gini ratio for land distribution (0.85 in 1980). The experience in Bolivia was somewhat similar. Agricultural growth was dominated by expansion of the commercial export-oriented sector, but the rural poor, especially indigenous groups in the highlands, are being left behind by agricultural growth and are unable to avail themselves of opportunities to migrate.

**Box 4: El Salvador: Poor Agricultural Performance, Declining Rural Poverty**

El Salvador entered the 1990s with a dismal growth record. Following the end of civil conflict in 1991, the nonagricultural sector grew at an annual average rate of almost 5 percent. Adjustment had little impact in the agricultural sector. Limited technological improvement and a continued fall in land and labor productivity (agricultural GDP per hectare fell by 0.4 percent per year, and labor productivity fared even worse, dropping by an average of 1.2 percent per year during the 1990s) led to a sharp division between the agricultural and nonagricultural sectors. This set of circumstances had three outcomes:

- First, relatively better prospects in the nonagricultural economy led to rapid urbanization.
- Second, although agricultural land and labor productivity both declined, the influx of remittances was rapid, the exchange rate appreciated, and domestic production was substituted by imports.
- Third, rural households sought to diversify sources of income. The proportion of rural household incomes from agriculture fell from 44 percent in 1995 to 26 percent in 2001, mainly due to a fall in wage-labor opportunities within the sector. To compensate, many rural households have established small enterprises. Remittances (including those from abroad) are increasingly important. Critically, however, such alternatives have not been available to the poorest, who respond by putting more hours into the family farm. However, overall rural poverty rates declined in the 1990s.

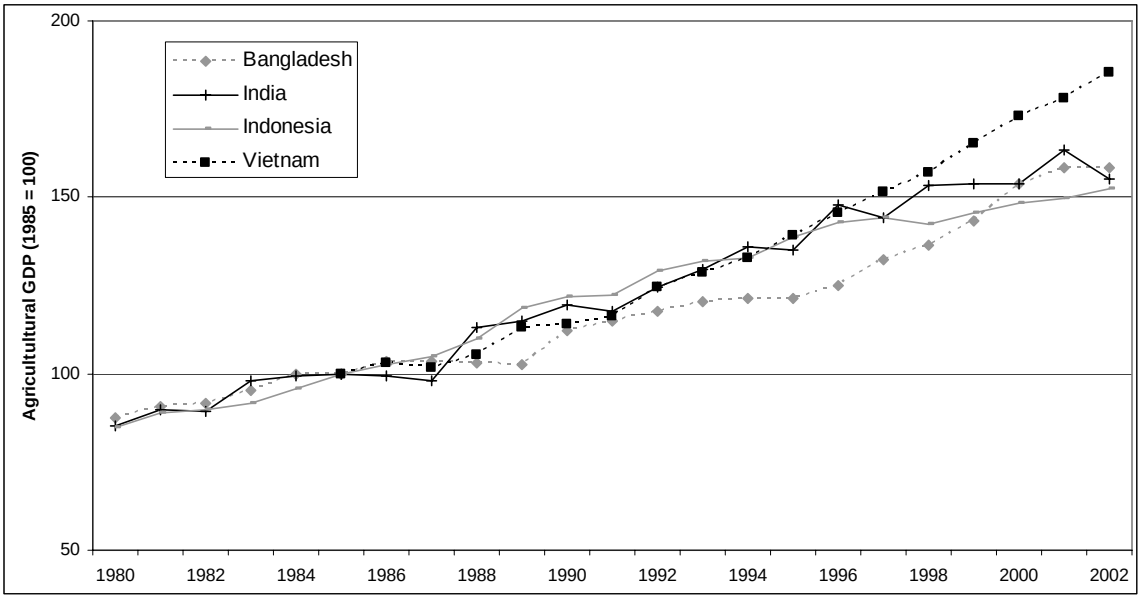
Source: Appendix 1, El Salvador case study

## Asia: A consistent story of agricultural growth and poverty reduction

There is a high degree of consistency in the development trajectories of the four Asian countries, albeit from different initial levels (Figure 4). Agricultural GDP has grown in all countries in a remarkably stable manner. Differences between the experiences of the four Asian countries depend on (1) whether countries started relatively early (India as a whole, although note disparities across states; Indonesia) or later (Bangladesh; particularly Vietnam) in their structural transformation process; and (2) on the impact of the Asian financial crisis (Indonesia).

The green revolution, which accelerated growth from the 1960s, beginning in India and Indonesia, was a major factor reducing poverty in Asia, as documented by numerous studies (see, for example, Rosegrant and Hazell 2000; Timmer 2002; Lipton 2004; Datt and Ravallion 1998a, 1998b). The rapid structural transformation of the Asian economies raises the question of whether agriculture continues to be a lead sector in pro-poor growth. Here the evidence from the case studies is mixed. Indonesia was relatively more advanced in terms of the structural transformation, with significantly higher rates of urbanization, a lower dependence on agriculture for employment and value added, and much lower poverty rates. However, synergistic and parallel evolution of both the agricultural and nonagricultural sectors helped to reduce poverty.[15] Unexpectedly, agricultural growth accounted for much of the poverty reduction up to 1996 (Table 4).

**Figure 4: Trends In Agricultural GDP In Asia**




Note: 1985 = 100.
Source: Authors' calculations, based on SIMA.

**Table 4: The Role Of Agricultural Growth In Poverty Reduction In Indonesia**

| | Urban | Rural | Total |
|---|---|---|---|
| Observed change in poverty (% points) | -22 | -42 | -39 |
| Impact of agricultural growth (% points) | -12 | -31 | -26 |
| Contribution of agricultural growth to poverty reduction (%) | 55 | 74 | 66 |

Source: Sumarto et al. 2003; see also Appendix 1, Indonesia case study.

Ravallion and Datt (1996) attributed a major role to agriculture in poverty reduction in India for the extended period 1957–1991. The India case study (see Appendix 1, Besley et al. 2004) uses slightly different data (1958–1994) and contradicts this earlier finding, concluding that the secondary and tertiary sectors have had the biggest impact on poverty. Does the addition of more recent data lend support to the view (World Bank 2005b) that the 1990s represent a different context for the growth/poverty nexus than previous decades? Perhaps, but it is certain that industrial growth in the early 1990s is likely to have had a stronger poverty impact than previous capital-intensive industrialization episodes (Ravallion and Datt 1996). In fact, we would argue that these results for India are not wholly inconsistent with the structural transformation story: Ravallion and Datt's (1996) results that the primary sector (that is, agriculture) is a driver of poverty reduction across Indian states holds for five states in the Besley et al. (2004) study. These states are characterized as "late starters." Infrastructure, education, and initial conditions in agriculture have played an important part in explaining this divergence among states (Bandyopadhyay 2003; Datt and Ravallion 2002).

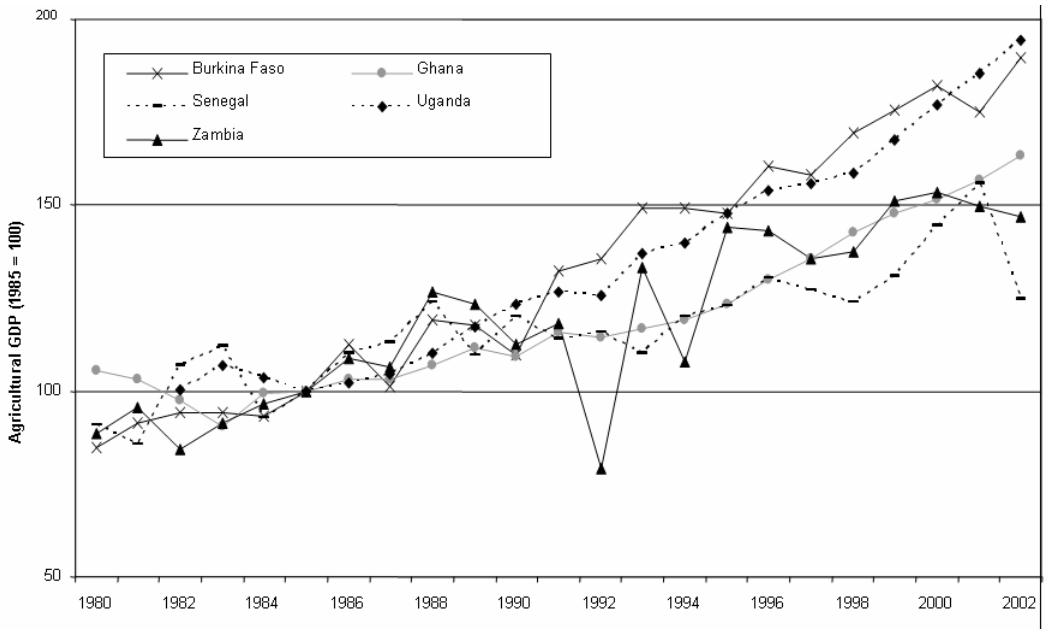
Note also that both Indonesia up to the 1997 financial crisis and India up to 1990 had good records of relatively small rural-urban poverty gaps, and they experienced balanced poverty reduction across rural and urban areas. However, in the 1990s, the rural-urban gap widened sharply in both countries.[16]

Among late starters, in Vietnam rapid agricultural growth played a key role in reducing poverty, especially by generating employment. In the set of Asian countries, Vietnam was the star performer in the 1990s, with the highest growth and largest impact on rural poverty (Figure 2).

**Africa: Still volatile but cautious optimism**

Unlike Asia, Africa entered the 1980s without a solid foundation of long-term and consistent agricultural development. In fact, agricultural growth had been dismal, and "more of the same"—at least in terms of the policy environment—was not an option (Collier and Gunning 1999). In the 1990s policy environment, growth performance still exhibited considerable variability, but there are grounds for cautious optimism, especially given the experiences of Ghana and Uganda. Both managed to reverse negative per capita agricultural growth from the 1980s in response to structural adjustment (Figure 5), but at the end of the decade (2002) agriculture still accounted for 38 percent of GDP in both countries.

**Figure 5: Trends In Agricultural GDP In Africa**




Note: 1985 = 100.
Source: Authors' calculations, based on SIMA.

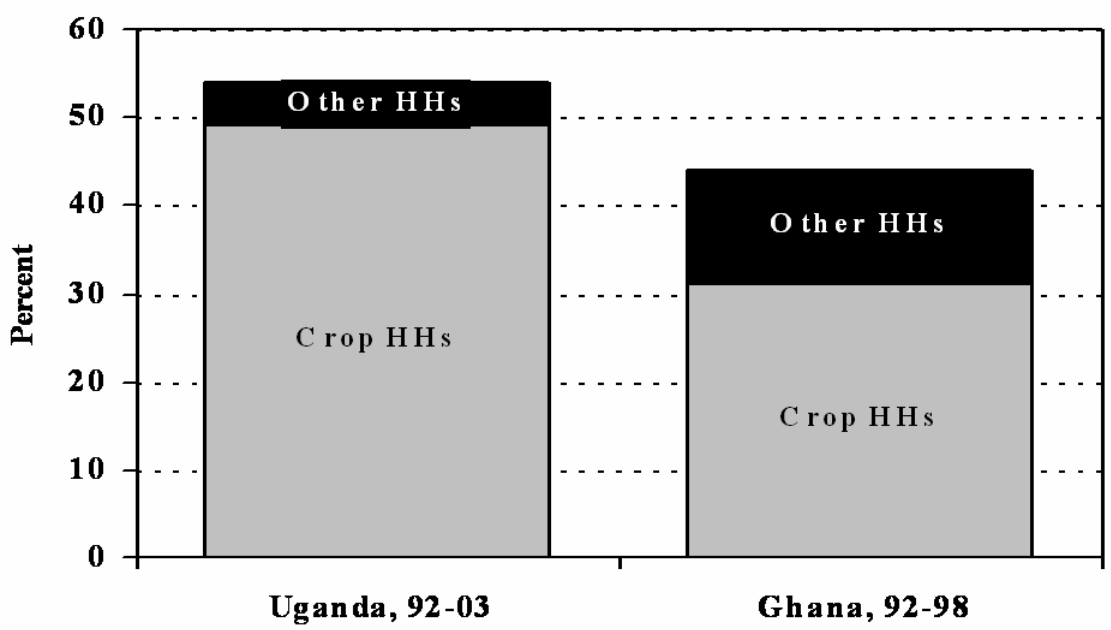
Both countries achieved similar levels of poverty reduction, but Ghana did better relative to aggregate GDP growth rates. In both countries, agricultural households accounted for a large share of national poverty reduction (Figure 6),[17] although rural poverty was highest and affected least by overall growth in their drier and remoter northern regions (Table 5).

**Table 5: Growth And Poverty Reduction In Ghana And Uganda**

| | Ghana | Uganda |
|---|---|---|
| Annual % agricultural GDP growth (1991-2002) | 3.51 | 3.89 |
| Annual % change in rural poverty (1990s) | -3.61 | -3.59 |
| Annual % nonagricultural GDP growth, (1991-2002) | 4.57 | 9.00 |
| Annual change in urban poverty (1990s) | -5.09 | -8.24 |
| Annual % growth in food production index (1991-2002) | 2.23 | -0.74 |
| Annual % growth in nonfood crop index (1991-2002) | 3.01 | 4.63 |

Source: Authors' calculations, based on World Bank Database.

**Figure 6: Contribution Of Agricultural Households To Total Poverty Reduction In African Countries**




Source: Appendix 1, Ghana and Uganda case studies

Zambia's performance demonstrates the importance of agricultural-nonagricultural synergies. With the stop-start reforms and the collapse in copper mining in Zambia, per capita incomes have fallen and the declining urban economy has been a major "demand drag" on pro-poor growth in rural areas, despite a vibrant agricultural export sector.

Burkina Faso and Senegal, both Sahelian countries, had the highest rates of rural poverty and the lowest rates of poverty decline. Indeed, in Burkina Faso urban poverty actually increased as nonagricultural growth barely kept up with population growth, and remittances dried up from Côte d'Ivoire. While exports in Senegal fell, agricultural growth in Burkina Faso was driven by the cotton sector. Both countries also experienced considerable variability in performance because of droughts.

The diversity of the African experience makes a meaningful summary particularly challenging. In the African success stories (Ghana and Uganda), there is evidence of mutually reinforcing growth in both the agricultural and nonagricultural sectors, driven by productivity. Where the nonagricultural sector did not grow (Senegal) or suffered

from major declines (Burkina Faso, Zambia), agriculture maintained some momentum and acted as a "safety net" for the increasing number of urban poor and for economic growth more generally.

Overall there is reason for optimism that agriculture is making and will continue to make an important contribution to poverty reduction in Africa. The performance of agriculture in the 1990s in the five African countries was not significantly different to that in other regions. Agricultural growth is trending upward and is more stable than in the previous decades.[18] The performance of food production per capita was notably worse in the African countries, however (except Ghana), indicating that growth has largely been driven by export crops. It is doubtful that these trends are sustainable without a sharp reversal in food production, the main livelihood of the mass of African farmers.

## A THEMATIC REVIEW OF THE CASE STUDIES

### From taxing agriculture to a level playing field?

Up to the 1980s, agricultural producers were widely taxed by a variety of distortionary policies (Krueger et al. 1991). Macroeconomic policies that overvalued exchange rates and protected import-substituting industries had especially severe negative impacts on the agricultural sector—a sector that produces largely tradable products. Within the sector, widespread intervention through parastatals that taxed export crops and held down food prices in the interests of urban consumers also reduced incentives for farmers.[19] Numerous studies have shown the high costs of these policies to the sector and ultimately to the poor.

From the 1980s, all of the countries implemented stabilization and structural adjustment policies that substantially improved the macroeconomic environment in terms of liberalized imports, a market-based exchange rate, and greater fiscal discipline and reduced inflation. However, their record of liberalization in the agricultural sector itself has been very mixed (Table 6).

**Table 6: Time Of Structural Adjustment Episodes**

| | | | | | |
|---|---|---|---|---|---|
| Burkina Faso | 1993 | Bangladesh | 1987 | Bolivia | 1988 |
| Ghana | 1983 | India | 1991 | Brazil | 1994 |
| Senegal | 1985 | Indonesia | 1998 | El Salvador | 1991 |
| Uganda | 1987 | Vietnam | 1986 | | |
| Zambia | 1991 | | | | |

Source: Lopez 2004a.

Some countries, such as India, have hardly started to liberalize agriculture, and the state continues to control agricultural markets and trade for major agricultural products. Others, such as Uganda, Vietnam, and Bangladesh, have implemented wide-ranging reforms, including dismantling crop marketing parastatals (such as coffee and cotton boards in Uganda), eliminating export taxes and input subsidies, and reducing border protection. While these actions have removed anti-agriculture bias, the supply response has been muted because of the absence of necessary infrastructure; see Morrissey and Rudaheranwa (1998) for the example of Uganda. Other countries, including Ghana,

Indonesia, and Burkina Faso, have maintained parastatals but reduced export taxes or, in the case of Indonesia, actually moved to protect agricultural producers.

The biggest responses have been in the export crop sector, especially in Africa, where devaluation, removal of export taxes, and (in about half of the countries) the closing of parastatal marketing boards have substantially improved the incentives for traditional export crops such as coffee and cotton. Box 5 summarizes successful examples in a number of countries, where a decline in agricultural exports has been sharply reversed as producer prices have been aligned more closely to world prices (Figure 7).

**Box 5: Examples Of Responses Of Export Crops To Liberalization**

Uganda dismantled its coffee, tea, and cotton marketing boards, and the share of farm-gate prices for coffee increased from less than 30 percent to over 80 percent. Since coffee is grown by a large number of households, elimination of the marketing board was a major factor in the rapid decline in rural poverty in Uganda in the 1990s, until world coffee prices fell late in the decade.

In Ghana, devaluation and reduction in export taxes on cocoa stimulated increased cocoa production and a sharp decline in poverty among cocoa farmers—but they make up only 15 percent of farm households and have considerably lower poverty levels than households that grow food crops.

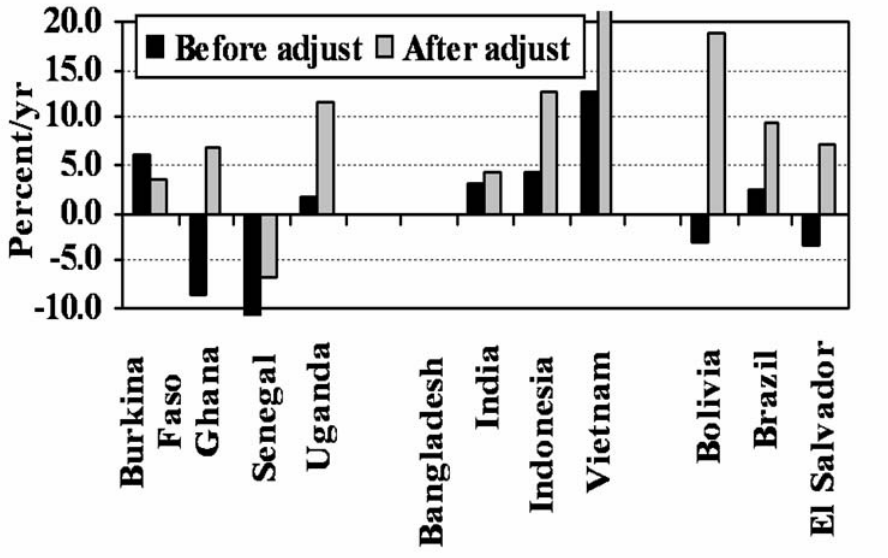
In Burkina Faso, cotton production expanded by 250 percent from 1994 to 2003 in response to devaluation. Poverty among cotton-producing households fell by 25 percentage points, and the share of farmers producing cotton expanded from 11 to 19 percent.

In Zambia, devaluation and liberalization led to a major expansion in cotton exports. However, this expansion was confined largely to areas with reasonable market access and to medium-scale farmers.

In Vietnam, devaluation and removal of price controls on rice resulted in rapid growth of rice exports as well as coffee and other exports. These gains were shared by millions of small-scale farmers, but less so in the more remote uplands.

Source: Appendix 1, case studies for Uganda, Ghana, Burkina Faso, Zambia, and Vietnam

**Figure 7: Growth Rate Of Agricultural Exports Ten Years Before And After Reforms**




Source: Authors' calculations, based on FAOSTAT Database

The macroeconomic reforms have also stimulated new export sectors, both for traditional commodities (for example, coffee in Vietnam and cotton in Zambia) and nontraditional exports, especially horticultural and high value niche products (for example, cut flowers in Uganda, other horticultural crops in Ghana and India, and quinoa in Bolivia).

Not surprisingly, farmers producing export crops experienced the fastest pace of poverty reduction. For example, poverty levels in Ugandan coffee areas declined by 50 percent between 1992 and 1999 (although they rose again with the collapse of coffee prices in recent years). Likewise, poverty rates declined fastest in Ghana in the 1990s in the cocoa belt and in Burkina Faso among cotton-farming households. While these achievements are significant, the effects on pro-poor growth have often been narrowly confined to areas with suitable agroclimatic conditions and/or access to infrastructure (for example, along the railway line in Zambia). They also have often benefited those with larger enterprises, such as the medium-scale farmers in Zambia (Table 7). Vietnam is a special case, in which the main export, rice, is also the main food staple, and rice production and exports clearly responded to the Vietnamese reforms, benefiting the mass of farmers.

**Table 7: Changes In Sources Of Income In Zambia In The 1990s**

| | Small-scale farmers | | Medium-scale farmers | |
|---|---|---|---|---|
| | **1991** | **1998** | **1991** | **1998** |
| Food crops | 77.6 | 40.9 | 75.2 | 18.7 |
| Cash crops | 3.8 | 5.9 | 4.3 | 60.2 |
| Livestock | 3.8 | 6.2 | 8.7 | 4.0 |
| Nonfarm business | 1.5 | 24.2 | 1.2 | 11.1 |
| Wages | 12.7 | 11.0 | 9.6 | 3.1 |
| Other | 1.9 | 11.9 | 1.0 | 2.9 |
| *Total* | *100.0* | *100.0* | *100.0* | *100.0* |

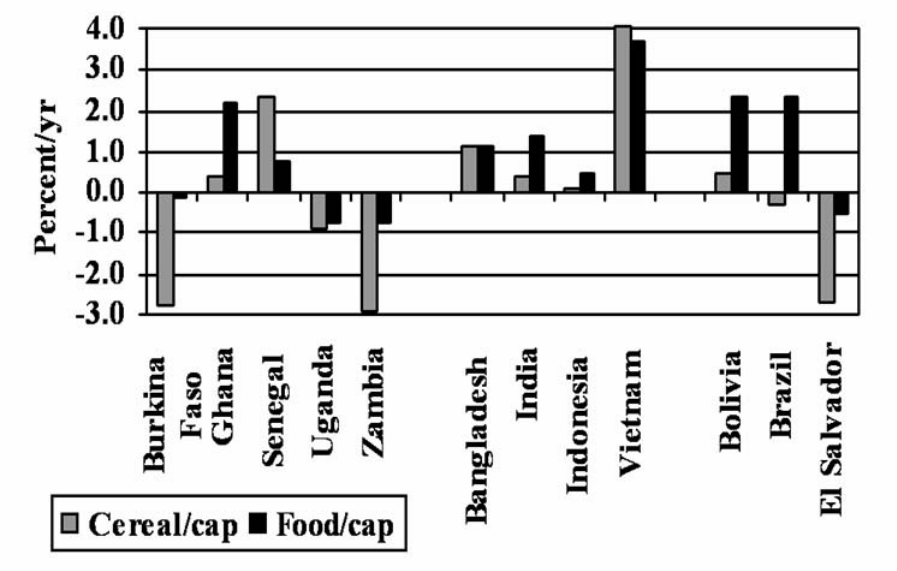
Source: Appendix 1, Zambia case study.

These achievements on the export front are not surprising, especially given the sharp devaluation of exchange rates. The impacts of the reforms might have been even larger, especially in countries that depend on cotton exports, if OECD countries had not subsidized their exports. For example, Minot (2002) estimated that a 40 percent decline in cotton prices increased poverty levels in Benin by 6 to 8 percent, which is probably broadly representative of Burkina Faso, too.

The experience with food crop production is more mixed. In three of the five African countries, food production per capita declined in the 1990s, the exceptions being Ghana with strong growth and Senegal with very low but positive growth (Figure 8). This poor performance followed two decades of generally low or negative growth in African food production. By contrast, food production per capita increased in all four Asian countries. To be sure, there is evidence of a slow-down in India and Indonesia in the 1990s, but it followed several decades of sustained growth in per capita food production in both countries. Finally, in Latin America, both Brazil and Bolivia experienced quite rapid growth in food production per capita in the 1990s, but this growth was achieved mostly in the large-scale commercial sector. In contrast, food production by a large number of

small-scale farmers in more marginal areas (for example, the Bolivian highlands) stagnated or declined.

**Figure 8: Growth Rate Of Per Capita Food Production**




Source: Authors' calculations, based on FAOSTAT Database.

The performance of food crop production represents the combined influence of a number of circumstances specific to each country. First, in some countries in Asia and Latin America, reforms in food crop markets have at best been only partially implemented and in some cases reversed. In India, which provides massive subsidies for inputs such as water, electricity, and fertilizer and has continuously raised minimum support prices, rice and wheat farmers now receive positive effective protection, although larger-scale farmers benefit disproportionately. The continuation and even intensification of outdated interventionist policies has sharply reduced agricultural growth in the original home of the green revolution in northwestern India, owing to lack of incentives to diversify (Box 6). In Indonesia (Box 7), rice has become significantly protected, reflecting the political interests of food crop farmers but hurting the poorest, who are consumers of this staple, and (as in India) acting as a disincentive to diversification (Appendix 1, Timmer 2004). Even in Latin America, which has the longest experience with structural adjustment, import protection of food crops is still high in most countries (although not in two of the case studies, El Salvador and Bolivia), with negative consequence for poor consumers (Perry et al. 2005).

**Box 6: How Subsidies Reduce Growth In The Indian Punjab**

The Indian Punjab led the green revolution in the 1960s and 1970s and became the breadbasket of India. A range of federal and state government incentives supported this growth, including subsidies on fertilizer, water, and electricity, and minimum support prices for wheat. However, these subsidies became not only a huge fiscal burden but ultimately slowed growth, since they favored rice and wheat production and acted as

a disincentive to diversify to higher value crop and livestock products. As a result, agricultural growth slowed to 2.6 percent per year in the 1990s, below the average for all India. Moreover, it is estimated that farms under 2 hectares constitute 35 percent of the farmers (9 percent of the land area) but receive only 7.5 percent of the fertilizer subsidy, 5.5 percent of the electricity subsidy, and 5 percent of the canal water subsidy.

Source: World Bank 2003

**Box 7: Indonesia: From Taxation To Protection**

The Indonesia case study describes the trade-off that the government made between protecting the incomes of its rice farmers and fostering faster growth (as seen in Thailand's more open economy). In Indonesia, tariffs protect the incomes of rice farmers. who make up a large proportion of the rural poor, but they tax consumers. Using household surveys, it is estimated that every 10 percentage points of import tariff on rice pushes an additional one million Indonesians below the poverty line. The cost of this policy is high: efficiency is undermined, since a tariff may hold back the sector's ability to diversify and exploit increasing domestic demand for high-value products generated by income growth. If the higher rice price also has net costs to Indonesian farmers, which now appears likely in view of the evolving production structure, then it is likely to have an unambiguous and unmitigated negative impact on poverty reduction.

Source: Appendix 1, Indonesia case study.

Second, and especially in Africa, where food market reforms were more widely implemented, the reduction of state support to inputs and product marketing negatively affected food staples, at least in the short term. For example, in Zambia, where these subsidies amounted to over 50 percent of the value of production in 1980s, the removal of pan-territorial price supports and input subsidies sharply reduced maize production in remoter areas. However, in Ghana food production has expanded, since the government's direct intervention in food markets was relatively minor before the reforms, and devaluation raised prices of imported food.

Third, it is widely known in the literature that the short-run supply response in agriculture is often low, and it may take a decade or more to reallocate resources and see a significant supply response (Binswanger 1990). Over the longer term, the ability of the bulk of small-scale farmers to benefit from more open markets depends heavily on initial conditions. Where most farmers have good access to infrastructure, the private sector has stepped in with widely shared benefits (for example, Bangladesh and Vietnam). But the withdrawal of the state has often not been compensated by private investment, especially in Africa where infrastructure is less developed and transactions costs are high (for exaxmple, Zambia) (Kydd and Dorward 2001, 2004; Dorward 2001). As a result, the elasticity of transmission of world prices to rural areas is often very low in these situations. For example, it is estimated to be only 0.15 – 0.35 for agricultural products in Ethiopia (Nicita 2005).

This leads us to the fourth and final factor, which is that in some countries, because of fiscal discipline at the macro level, the continuation of subsidies at the sectoral level has crowded out public funding of growth-enhancing investments in public goods, such as infrastructure, agricultural R&D, and education (Fan et al. 2004). Although countries such as Bolivia clearly eliminated huge subsidies under structural adjustment, Lopez (2004b) estimates that about half of sectoral expenditures in Latin America are still allocated to subsidies and private goods that benefit larger farmers. The situation in India

is very similar as we have seen.[20] However, in Africa, the allocation of public expenditures to the agricultural sector has been severely squeezed to very low levels, long before countries were able to build the critical mass of R&D and rural infrastructure essential for growth (Table 8).[21]

Depending on initial conditions in a country, one or more of these factors goes a long way to explain the relatively poor aggregate response of the agricultural sector in the selected countries under the adjustment programs. Nonetheless, the reform programs of the past decade or so have undoubtedly removed much of the urban bias stemming from macroeconomic policy. Producers of export crops have responded fastest and benefited most from these reforms, in some cases by shifting resources from food crop production. In these situations, rural income inequality has often worsened because farmers in more favored areas with better access to markets gained the most. Small-scale and subsistence-oriented farmers in remote or marginal areas may have been relatively unaffected, or in some cases they may have lost access to subsidies and price supports.

**Table 8: Trends In Public Expenditures For Agriculture**

| | **Agricultural expenditures as % agricultural GDP** | | | **Agricultural expenditures as share of total expenditures** | | |
|---|---|---|---|---|---|---|
| | 1980 | 1990 | 2000 | 1980 | 1990 | 2000 |
| Burkina Faso | 2.1 | 2.8 | 4.4 | 5.5 | 5.8 | 7.2 |
| Ghana | 2.3 | 1.2 | 2.0 | 12.2 | 4.1 | 2.5 |
| Uganda | 2.8 | 0.9 | 0.7 | 7.0 | 3.9 | 1.5 |
| Zambia | 60.8 | 4.4 | 6.2 | 23.0 | 2.9 | 5.1 |
| Bangladesh | 1.9 | 4.5 | 6.6 | 13.0 | 6.5 | 12.2 |
| India | 9.9 | 1.20 | 11.2 | 27.8 | 20.7 | 15.2 |
| Indonesia | 9.9 | 7.5 | 3.0 | 10.8 | 8.3 | 2.3 |
| Bolivia | 28.2 | 2.4 | 5.4 | 33.9 | 2.2 | 3.0 |
| El Salvador | 2.6 | 3.5 | 5.7 | 7.3 | 4.0 | 5.4 |
| ***Developing country average*** | 9.6 | 8.0 | 9.0 | 11.8 | 9.8 | 8.3 |

Source: Shenggen Fan (International Food Policy Research Institute, IFPRI), in discussion with authors; Fan and Rao 2003.

## Drivers of agricultural productivity growth

The standard literature on the contribution of agriculture to pro-poor growth attributes a central role to rapid increases in agricultural productivity based on the application of modern science (Hayami and Ruttan 1985; Mellor 1976). Since most of this literature was motivated by the Asian successes in the green revolution, it is not surprising that the evidence from the Asian case studies is unambiguous—all the case study countries have experienced sustained and rapid increases in agricultural productivity over two or more decades, initially centered on food grains. Even in the 1990s in the post-green revolution period for these countries, productivity growth, both per unit of land and labor, generally has been high (Table 9). For cereals, there has been a noticeable slowdown in yield growth in India and Indonesia, but productivity growth has accelerated for other products,

especially livestock and oilseeds. Diversification is also evident in other countries, especially Bangladesh.

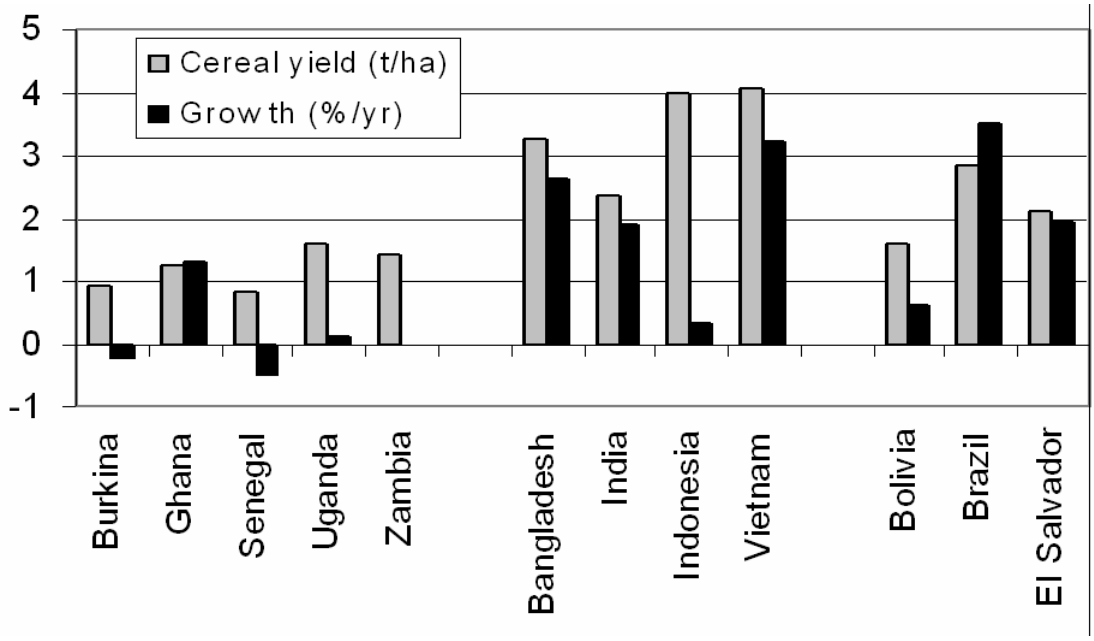
**Table 9: Growth Rate Of Labor And Land Productivity In Agriculture, 1980s and 1990s**

| | Labor productivity growth rate (%/yr) | | Land productivity growth rate (%/yr) | |
|---|---|---|---|---|
| | **1980 – 1990** | **1991 – 2000** | **1980 – 1990** | **1991 – 2000** |
| Burkina Faso | 0.94 | 1.33 | 2.09 | 2.58 |
| Ghana | -1.92 | 0.99 | 0.5 | 2.15 |
| Senegal | 0.72 | 0.71 | 2.71 | 2.76 |
| Uganda | -0.79 | 1.78 | 1.09 | 3.58 |
| Zambia | 0.49 | 2.66 | 3.47 | 4.21 |
| Bangladesh | 0.61 | 2.25 | 1.72 | 3.34 |
| India | 2.12 | 1.65 | 3.02 | 3.03 |
| Indonesia | 1.13 | 0.77 | 1.41 | 1.06 |
| Vietnam | 0.28 | 2.88 | 2.83 | 1.43 |
| Bolivia | 0.09 | 0.58 | 0.94 | 2.24 |
| Brazil | 4.09 | 4.82 | 2.01 | 2.58 |
| El Salvador | -1.23 | 0.01 | -1.68 | -0.41 |

Source: Authors' calculations, based on SIMA.

In Africa, as is widely known, few countries have experienced sustained and rapid gains in agricultural productivity. In the case studies, the record from the 1990s is mixed, but in aggregate it is generally encouraging for the five countries studied. All of the countries experienced a positive growth rate in land and labor productivity, which in several cases reversed negative trends prior to 1990. However, the record for growth in cereal yields continued to be poor through the 1990s, with yields of several cereals showing negligible or even negative growth, leaving a widening gap with Asian yields (Figure 9). The difference in performance of cereal and overall agricultural productivity in Africa partly reflects the more diversified food economies of several of the countries (for example, the importance of roots and tubers) and good performance in other sectors, especially export crops and perhaps livestock. Cereals now account for less than 15 percent of agricultural GDP in Kenya and 40 percent in Zambia.

**Figure 9: Average Cereal Yields And Growth Rate, 1991-2000**




Source: Authors' Calculations, based on FAOSTAT Database

Low productivity in cereals in the African country cases is attributed to poor access to capital (mentioned in the cases of Ghana, Uganda, and Zambia), poor access to irrigation (Ghana), labor shortages (Zambia), climatic factors (Burkina Faso, Senegal) and rising input prices (in Zambia after the removal of state subsidies). Following adjustment, the private sector was unable to substitute for the state's involvement in areas such as extension, marketing, and the provision of credit (Zambia). Productivity growth was especially low in the more remote areas where access to markets was poor. In Zambia, the worsening HIV/AIDS pandemic also severely depleted labor inputs for agriculture.

In the Latin American countries, both Bolivia and especially Brazil had relatively good performance in productivity growth overall, but it was confined mostly to the large-scale commercial sectors. In Bolivia, the large number of small-scale farmers in marginal environments may actually have experienced declining yields (refer to Box 8 to understand food prices and trends in poverty).

**Box 8: Food Prices: Key To Understanding Trends In Poverty**

Food prices, especially prices of staple foods important to the poor, are a critical element in understanding changes in poverty, but few of the case studies explicitly analyzed food price trends. The major exception was Indonesia, where the poverty elasticity of growth was significantly and negatively related to trends in rice prices. Thus in the 1990s, when rice prices sharply increased following the 1997 crisis and the implementation of increasingly protectionist policies, Indonesia's long-term decline in poverty reduction was reversed. However Vietnam, with very strong growth and generally pro-poor policies, was able to reduce poverty by allowing rice prices to increase to the level of border prices, since many of the poor in Vietnam were net rice sellers (Ryan 1999).

Part of the difficulty is to disentangle the various effects of policies on food prices. The accepted wisdom is that rapid increases in productivity of staple foods lead to pro-poor effects through declining prices. This productivity effect happened in all of the Asian countries during the green revolution. It was still evident in

Bangladesh in the 1990s, where rice yields increased by 70 percent from 1980 to 2000, and over the same period rice prices declined by 45 percent, a major factor in the rise in rural wages for unskilled labor. In many countries, this productivity effect is now confounded with the effects of market liberalization and trends in world market prices. In several of the countries, especially Brazil (Perry et al. 2005), Ghana (Jayne et al. 1995), and Bolivia, the net effect of these changes seems to have strongly favored consumers. In other cases, the removal of subsidies and price controls, coupled with stagnant productivity, seems to have resulted in a sharp increase in food prices, as in Zambia and Burkina Faso, and was an important factor in increasing urban poverty.

Source: Authors

In those countries with successful productivity increases, public investments in agricultural research and development (R&D) and rural infrastructure were the most important drivers of growth, and there is much evidence of the high payoffs to these investments (Alston et al. 2002). Studies in India, Vietnam, and Uganda have found that public spending in these areas is also strongly pro-poor (Fan et al. 2000; Fan et al. 2004).

The overall results from the case studies largely support the mass of evidence already available on the central role of increasing agricultural productivity on pro-poor growth, especially in the early stages of development, and especially if productivity growth is transmitted to lower food prices. There is some scope for optimism from the results from Africa in the 1990s, but more work is needed to disaggregate the major drivers of growth in terms of food crops that are not cereals, cash crops, and livestock, given the poor record for cereal crops. Given widespread household food insecurity, the major challenge in Africa is how to stimulate broad-based productivity growth in food staples and sustain overall productivity gains over decades, if the Asian record of poverty reduction is to be repeated.

**Growth of the rural nonfarm sector**

Although the rural nonfarm sector accounts for from 25 to 75 percent of rural household incomes (Table 10), the case studies provided little specific evidence on the dynamics of this sector and its role in pro-poor growth. Nonetheless, the available evidence suggests that the growth of this sector and its role in pro-poor growth is strongly related to successful agricultural transformation. Indeed, in Asia it is probably the fastest-growing rural sector. In Indonesia, the production of nontradable goods and services in rural areas provided the economic link between higher incomes from both agriculture and manufacturing wages, pulling people out of underemployment and hence poverty in rural areas.

Bangladesh too has developed a thriving rural nonfarm sector, stimulated initially by growth linkages from a strongly performing agricultural sector but now increasingly linked into the urban industrial and service sectors (World Bank 2004a). The rapid growth in rural nonfarm incomes in the 1990s means that farm income as a share of rural household incomes has fallen from over one-half to about one-third (Figure 10a ). Recent work in India also suggests that rural nonfarm growth is increasingly linked to industrialization rather than to agriculture (Rosenweig and Foster 2004). Rapid diversification to nonfarm incomes is also evident in El Salvador (Figure 10b). There, despite a dismal performance of the agricultural sector, rural income has grown because of micro-enterprises, including clothing assembly. Both the Asian and Latin American

case studies highlight two key elements in realizing the potential of the rural nonfarm sector to contribute to pro-poor growth: access to infrastructure (broadly defined to include roads, communications, water, and electricity), and education and skills.

**Table 10: Share Of Rural Nonfarm Income (RNFI) In Rural Household Incomes**

| | Survey year | Share of RNFI in rural incomes |
|---|---|---|
| Burkina Faso | | |
| Unfavorable | 1981-84 | 37 |
| Favorable | 1981-84 | 40 |
| Sahel | 1982-85 | 52 |
| Ghana | 1991-92 | 43 |
| Senegal | | |
| Northern/unfavorable | 1988-89 | 60 |
| Central | 1988-90 | 24 |
| Southern | 1988-90 | 41 |
| Uganda | 1992 & 1996 | 26 |
| Bangladesh | 2000 – 2001 | 52 |
| China | 1999 | 68 |
| India | 1994 | 34 |
| Vietnam | 1998 | 57 |
| Brazil | 1997 | 39 |
| El Salvador | 1995 | 38 |

Source: Burkina Faso and India (Lanjouw and Lanjouw 1995); Uganda (Newman and Canagarajah 1999); Bangladesh (Hossain 2002); China (Benjamin et al. 2004); Vietnam (Benjamin and Brandt 2002). All other figures for Latin American countries (unless specified) are based on Reardon et al. (2001). Figures for African countries (unless specified) are based on Reardon (1997).

In Africa, rural nonfarm growth has been weak, as shown by the two case studies from Africa that provide an explicit treatment of the sector (Burkina Faso and Ghana). Although the rural nonfarm economy is very important in Africa, it is dominated by traditional activities with low productivity (trading, local construction), and as yet there is little evidence that higher productivity activities linked to a modernizing agriculture are emerging (for example, specialized agricultural processing). Although Ghana had the best agricultural growth performance in Africa, it does not appear to have produced the strong growth linkages to the nonfarm sector seen in Asia, owing to a lack of infrastructure and weak property rights.

**Figure 10: Changes In Sources of Income**

**Figure 10(a): Bangladesh**

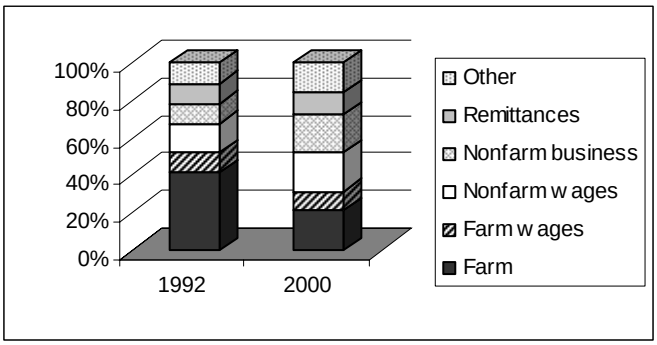
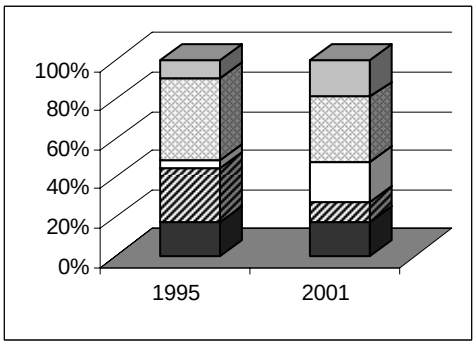



**Figure 10(b): El Salvador**




Source: Appendix 1: Case studies.

The other major source of nonfarm income in many of the country case studies is remittances from domestic and international migrants. In El Salvador, remittances were a major factor in increasing rural incomes in the 1990s (Figure 10b). However, the evidence generally shows that the poorest households with least access to education and other assets benefit less from remittances. Even when the poor are able to migrate either internally or internationally, the motivation for doing so matters for the well-being of migrants. In El Salvador and Ghana, for instance, the worsening livelihood security felt by the rural poor led them to leave disadvantaged rural areas as a coping strategy.

In sum, the rural nonfarm sector, defined broadly to include migration and remittances, is generally increasing its role in pro-poor growth, and dramatically so in some densely populated countries. The accepted wisdom on rural nonfarm growth broadly holds—a profitable and productive agriculture is the main stimulus to rural nonfarm growth, until late in the development process. However, there is already evidence in Asia of increasing linkages to urban industrialization (for example, outsourcing of textile assembly), independent of agricultural growth. In either case, from a public policy viewpoint, investment in infrastructure and education is the key to a vibrant rural nonfarm sector. Finally, in many poor countries and regions, remittances are an important source of nonfarm income, although much work remains to be done to understand their overall contribution to wider rural development and poverty reduction.

## Initial asset distribution and pro-poor growth

The literature has consistently underlined the key role of relatively equitable land distribution and the dominance of small-scale family farming in realizing the potential of pro-poor growth. Among the case studies, the Gini for land distribution varies from over 0.8 in Bolivia and Brazil to less than 0.4 in Vietnam, and the poverty elasticity of agricultural growth reflects these differences. Land distribution is generally more equitable in Asia, an important factor in the pro-poor impacts of the green revolution.

In post-socialist Vietnam (and also in China), the redistribution of land from collective farms and the security of land tenure are associated strongly with poverty reduction and agricultural growth. In other countries, land reform has generally had little impact.

Several of the case study countries (Appendix 1), notably India, Brazil, Bolivia, and El Salvador, attempted to implement land reforms but found it politically difficult, and the overall effects on land redistribution were generally small. "Voluntary" land reforms, based on market-assisted approaches and community involvement, are showing promise in Brazil, but it is not yet clear that they can be scaled up to make a significant impact on land distribution elsewhere (World Bank 2004b).

Even without land reform, secure access to land was often recognized as a necessary part of the enabling environment for pro-poor growth. Well-defined property rights create long-term incentives for farmers to invest in productivity improvements, and they facilitate access to finance with low transactions costs. Likewise, clear property rights and efficient land administration systems can lead to market-based land distribution over the longer term (Mwabu and Thorbecke 2003). In Vietnamese provinces where the issuance of land rights was more advanced, farmers made more long-term investments (in multiyear industrial and fruit crops) and could also devote more labor to nonfarm activities. In India, reform of land laws in the 1960s to provide security to tenants and consolidate farm holdings was noted as an important factor in pro-poor growth. By contrast, insecure property rights and nonexistent land markets in Ghana are a persistent problem and hold back both agricultural growth and investment in small and medium rural enterprises. In some cases, ill-conceived land reform programs may aggravate the insecurity of land rights (for example, El Salvador).

Although land along with labor is the most important asset of the poor in the early stages of growth, access to education and capital becomes more important in a modernizing agriculture and as the rural nonfarm sector develops. In Asia, productivity in post-green revolution agriculture is increased by an average of 4 percent for every one-year increase in formal schooling (Hussain and Byerlee 1995). The case study from Bangladesh shows that access to education and capital is now more important than access to land in determining rural income levels, which are increasingly based on the dynamic subsectors of the rural nonfarm economy. In other cases, education is a key determinant of migration, which in turn is the major source of remittances that support rural households (for example, Ghana). Low levels of education are especially important in creating poverty traps in many of the middle-income countries. In Bolivia, for example, educational levels are extremely low among indigenous groups in the highlands and valleys.

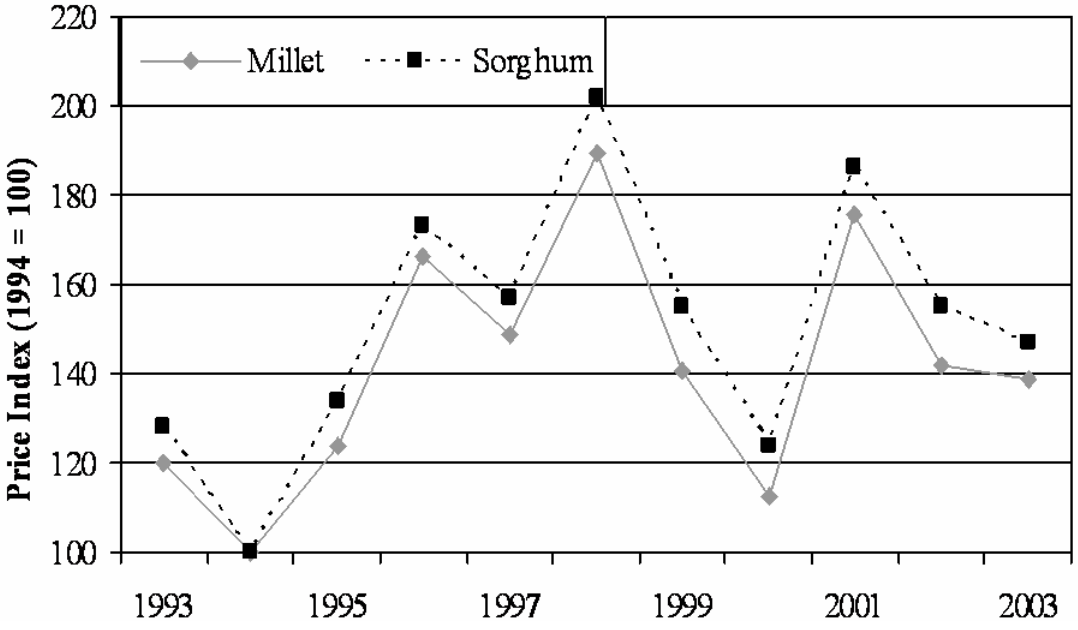
In sum, the case studies (Appendix 1) confirm the importance of secure and equitable access to assets in promoting pro-poor growth. In agriculture, land is the most immediate asset for many of the poor, and access to land is often highly inequitable, especially in Latin America. While land reform may be a worthy goal, it is not clear, given the high political costs and the fact that other assets are growing in importance, whether large-scale land reform is a feasible approach to reducing asset inequality, at least in the middle-income countries.[22] Secure property rights and efficient land administration systems are critical for pro-poor growth, however, and for facilitating exit from the agricultural sector. Agricultural productivity, especially in a modernizing agriculture, rural nonfarm growth, and migration are all stimulated by investment in rural education and access to well-functioning finance markets.

## The special vulnerability to shocks

Agriculture is especially vulnerable to shocks, including local climatic events and unstable world commodity prices, and these shocks in turn are important for macroeconomic performance. Shocks are most important in low-income countries that are not diversified. For example, Senegal and Burkina Faso have experienced considerable volatility in agricultural growth, driven largely by variations in rainfall that have made rural households vulnerable to periods of famine and severe poverty. In Bangladesh, the poorest regions and households suffer from natural disasters such as flooding, although vulnerability has been reduced in the 1990s through investments in infrastructure (including dry-season irrigation) and through trade liberalization for rice (Del Ninno et al. 2003).

Climatic shocks are in turn reflected in sharp fluctuations in food prices, which are especially important for poor producers (when food prices collapse) and poor consumers (when prices suddenly surge), especially where domestic prices are effectively insulated from world prices by high transactions costs, as in Burkina Faso (Figure 11). The closing of food marketing parastatals may have aggravated these effects. Some countries, notably Zambia, have moved to intervene once again in food markets to reduce price instability. In Asia, maintenance of price stability for basic food staples was regarded as a major contribution to both household food security and macroeconomic stability and pro-poor growth (Box 9). However, the two countries that have maintained heavy state intervention, India and Indonesia, are now paying high costs in terms of inefficiency and rent seeking.

**Figure 11: Rising And Unstable Food Prices In Burkina Faso**




Source: Appendix 1, Burkina Faso case study

**Box 9: Price Stabilization In Indonesia**

A parastatal agency, BULOG, successfully stabilized returns to rice farmers and consumers in Indonesia around the long-run mean. The impact of this policy on farm productivity was highly positive. Until the 1990s, the costs of the policy, as implemented by the market-oriented BULOG, were modest. In recent years, the growing gap between domestic prices and world prices, and inefficiencies and rent seeking in BULOG, have reduced the effectiveness of the policy.

Source: Appendix 1, Timmer (2004), Indonesian case study.

Shocks in global commodity prices may have become more important in the 1990s, especially for export crops, with farmers' greater exposure to world prices under liberalization and with the movement away from fixed exchange rate policies. The fall in commodity prices in the late 1990s has reduced agricultural growth in countries heavily dependent on export crops (Uganda and El Salvador for coffee; Burkina Faso for cotton) and led to an increase in poverty among households that specialized in these crops. Although the record of marketing boards was generally dismal, several countries, notably Ghana, Burkina Faso, Indonesia, and India, have maintained marketing boards in efforts to stabilize prices.

Finally, a consistent theme in the case studies is the role of agriculture not only as a source of economic shocks, but also a safety net in periods of national economic crisis. For example, in the wake of economic reforms and the collapse of copper mining in Zambia, there was a sharp reversal of rural-to-urban migration. Agricultural and rural areas played a similar role after the Indonesian financial crisis in 1997, during the economic downturn in Bolivia in the late 1990s, and after hundreds of thousands of migrants were deported to Burkina Faso from Côte d'Ivoire in recent years. Many of the workers laid off by the Doi Moi reforms of state-owned enterprises in Vietnam reverted to the agricultural sector, and the ability to absorb these retrenched workers motivated policy interventions to encourage agricultural growth. The ability of rural households to provide subsistence living and even access to additional land in times of economic crisis has not been sufficiently recognized in the literature on the contribution of agriculture to pro-poor growth.

In sum, the case studies (Appendix 1) consistently reinforce the importance of agriculture in creating and managing shocks and vulnerability at both the macro level and household level. Past views of the contribution of agriculture to pro-poor growth have not given sufficient attention to this "externality." It is not surprising that the "state of the art" of managing these shocks is not well developed, especially in the post-liberalization era, with the removal of interventionists policies such as price and import controls. Finally, an important finding is the contribution of agriculture as a safety net in times of crisis.

## AGRO-PESSIMISM REVISITED IN LIGHT OF THE PERFORMANCE OF THE CASE STUDY COUNTRIES

This review has emphasized the highly variable contributions of agriculture and the rural nonfarm sectors to pro-poor growth. Agricultural and rural households more generally were major contributors to overall poverty reduction in the successful countries of Africa (Uganda and Ghana). In the two countries where overall poverty rates increased (Burkina

Faso and Zambia), the only bright spot was reduced poverty among agricultural households. In Asia, agricultural growth was historically critical in overall growth and poverty reduction, especially during the green revolution years of the 1970s and 1980s (and the 1990s in Vietnam). Agriculture's role has since been reduced by rapid nonagricultural growth, but a dynamic rural nonfarm sector has become an increasing source of growth. In Latin America, the links between overall agricultural growth and poverty reduction appear to be quite weak, owing to high inequality in land distribution and regional differences in performance.

What do we conclude from the case studies with respect to the five major questions raised by the agro-pessimists?

- Agriculture's share in economic growth is declining. This issue is addressed above and certainly changes the priority that should be given to the agricultural sector among rapidly developing and middle-income countries, at least when growth is the sole objective. Such changes in priority are much less warranted when poverty reduction is the major objective and the wider rural economy is considered, however.
- Trade can be used to bypass agriculture, especially where commodity prices are declining. The opening of economies is providing more possibilities to rely on imported food. Even so, this strategy is limited owing to the large size of Asian countries and the fact that many of the poor in low-income countries (especially in Africa) are effectively insulated from world markets by high transport and marketing costs. In addition, low world commodity prices for agricultural products were counteracted in many countries in the 1990s by macroeconomic reforms, especially devaluation of exchange rates, which sharply improved incentives. Finally, a strategy led by nonagricultural growth, especially capital-intensive mining and oil enclaves, often does not generate the strong pro-poor growth linkages that are needed to address the immediate challenges of high rural poverty and hunger.
- Small-scale farmers can no longer compete and must diversify to nonfarm sectors and migration. Evidence from the case studies does support the challenge posed by the heterogeneity and diversification of rural households, especially the rapid diversification of rural incomes in Asia and Latin America. In these areas, the integration of small farms into emerging commodity chains is also a major challenge. However, unlike in Asia where diversification and migration increasingly reflect vibrant nonagricultural sectors, in the low-income countries of Africa and in more remote regions, diversification seems to reflect "diversification and migration of despair," and it is not a long-run strategy for pro-poor growth (Lipton 2004).
- There are no more green revolutions; agricultural technology is stagnating. This is not generally true. In Asia and Latin America, where growth in cereal yields has slowed, other crop and livestock sectors have seen rapid productivity growth, and growth of both land and labor productivity has been maintained through the 1990s at levels similar to the green revolution

decades. In all regions, especially in Africa, the perception that agricultural technology is stagnating also reflects underinvestment in agricultural R&D, although some regions within countries (and even some countries) admittedly have low agricultural potential and limited scope to improve productivity.

- It is too costly to overcome the sunk costs of urban bias. The bulk of the evidence suggests that there are high marginal returns in terms of both growth and poverty reduction to investment in rural areas, although in some regions of low population density and high out-migration, these returns may be low (discussed below).

The broad answer to the agro-pessimists, then, is "Yes, that is true, but in each case there are important counter-arguments." The most important finding from the case study countries that is consistent with the agro-pessimists' view is the rapid diversification of rural incomes in Asia and to some extent Latin America. This finding emphasizes why, in analyzing pro-poor growth, it is so important to look beyond agriculture to consider the wider rural economy.

# 4. PUBLIC POLICY FOR ENHANCING AGRICULTURE AND RURAL DEVELOPMENT'S CONTRIBUTION TO PRO-POOR GROWTH

We now turn to the key public policy issues that will enhance thee contribution of agriculture and rural development to pro-poor growth. The discussion is in two parts. The first part focuses on public policy to promote an enabling environment for accelerating growth in rural areas. Most elements of this enabling environment cut across countries and regions, even at very different stages of development. The second part considers more specific public policy issues and tradeoffs in making growth more pro-poor. These policies are much more specific to local contexts.

### THE ENABLING ENVIRONMENT FOR ACCELERATING RURAL GROWTH

In the early 1990s, the Washington Consensus emerged as the dominant development paradigm. It emphasized growth through trade and market liberalization, with the role of the state reduced to providing the governance and regulatory environment to allow markets to work well, along with investments in core public goods. Market reforms and core public investments continue to be priorities, especially for agricultural and rural development. However, it is now recognized that these are necessary but not sufficient conditions, and that institutional development is a key element in promoting pro-poor growth. Institutional development argues for the state to play a more active role, at least temporarily, as discussed below.

### Reform of agricultural trade and market policies

As noted above, the perceived muted response of agricultural growth to reform efforts has occurred because reforms either excluded the agricultural sector or were implemented only partially. Given the considerable progress in providing a much-improved macroeconomic policy environment, the major outstanding agenda in most countries is to reform the policy, investment, and institutional environment within the agricultural sector itself. A substantial reform agenda remains. Many countries continue to make slow progress in agricultural policy reforms, and several have reversed previously implemented reforms.

Further liberalization of trade in agricultural products generally provides gains to the poor, especially in countries where food staples of poor consumers are now protected. There are of course tradeoffs, especially where a large number of small-scale farmers depend on food production (for example, Indonesia), and innovative safety nets and transitional arrangements may be needed, including incentives for crop diversification or temporary income support not tied to production. In most cases the poorest producers are net food purchasers, so these tradeoffs are often less severe than commonly believed (Jayne et al. 1995).

An issue related to greater openness to trade is the need to review the role and effectiveness of the remaining parastatals for food crops (for example, in India and Indonesia) as well as for export crops (for example, in India, Ghana, and Burkina Faso). The challenge for governments is to manage the transition to free markets. Future reform strategies will need to take account of political sensitivities and the increased vulnerability of the poor to extreme fluctuations in prices, whether they result from local climatic shocks or volatility in global markets.

Finally, although most of the gains from trade liberalization will come from liberalization within developing countries themselves (World Bank 2002), part of the problem lies with the agricultural policies of developed countries. Continued export subsidies and high tariff and nontariff barriers on agricultural products undermine the potential contribution of agriculture to pro-poor growth in developing countries. Here too tradeoffs exist, since global trade liberalization will likely raise prices of basic food staples in food importing countries, including many of the African and Latin American cases reviewed here (for example, Senegal, Bolivia, Zambia, and El Salvador). That said, the net benefits even for these countries from global trade liberalization are likely to be positive, since they would gain from access to markets and higher prices for agricultural exports, such as cotton and horticultural products.

### Core public investments

Part of the enabling environment is to invest in core public goods for the sector, especially R&D and infrastructure and, increasingly, education. With the exception of some Asian economies, most countries have not given agriculture and rural development a high priority in their national development strategies. Under-investment in core public goods has limited countries' ability to respond to opportunities provided by liberalization. For example, expenditures on public agricultural R&D, which is one of the most pro-poor investments, amount to only 0.6 percent of agricultural GDP in the developing world,

compared to 2.6 percent in the developed world (Pardey and Beintema 2001). In Africa, investment in agricultural R&D has actually fallen in about half of the countries in the 1990s (Beintema and Stads 2004).

Distorted investment incentives toward urban areas have also created strikingly different marginal payoffs to investments in urban and rural areas (Fan et al. 2004). The correction of such distortions offers an opportunity for pro-poor growth benefits to the whole economy from higher returns to public investments (Table 11). However, the current inefficient and inequitable use of public expenditures within the sector is an equally important policy issue. Investments in core public goods that would be pro-poor continue to be crowded out by subsidies (for example, fertilizer and irrigation subsidies) or heavy expenditures on what are essentially private goods (for example, many livestock services) that mostly benefit large-scale farmers. Lopez (2004b) estimates that increasing the share of public expenditures allocated to agriculture in Latin America could lead to an increase in the growth rate of agricultural production per capita of 0.23 percent. This increase would only be 0.06 percent under existing allocations.

**Table 11: Marginal Returns And Poverty Impacts Of Public Investments In Rural Uganda, India, and Vietnam**

| Investment type | Uganda | | India | | Vietnam | |
|---|---|---|---|---|---|---|
| | Benefit-cost ratio | Poverty reduction per million shillings | Benefit-cost ratio | Poverty reduction per million rupees | Benefit-cost ratio | Poverty reduction per million dong |
| Agriculture R&D | 12.4 | 58.4 | 13.5 | 84.5 | 11.0 | 246.0 |
| Feeder roads | 7.2 | 33.8 | | | | |
| Tarmac roads | n.s. | 9.7 | | | | |
| All roads | | | 5.3 | 123.8 | 3.5 | 102.0 |
| Education | 2.7 | 12.8 | 1.4 | 41.0 | 5.3 | 165.0 |
| Irrigation | | | 1.4 | 9.7 | 0.8 | 23.0 |
| Health | 0.9 | 4.6 | | | | |
| Telecommunications | | | | | 6.7 | 207.0 |
| Electricity | | | | | 2.5 | 91.0 |

Note: Poverty reduction is measured as the absolute number of poor people removed from poverty.
Source: Fan et al. 2004a.

## Institutional reforms

The third pillar of the enabling environment is institutions for pro-poor rural growth. Like investments in core public goods, institutional development on a range of fronts is especially important in the post-reform era in order to capture the potential growth benefits offered by the new market opportunities and in particular to ensure that the poor participate in these growth processes (Binswanger 2004). These reforms cover a host of areas, but they generally include:

- Improving the efficiency of factor markets, especially (1) the modernization of land administration systems that permit the development of efficient land markets and facilitate exit from agriculture, and (2) the

development of water markets to permit more efficient and equitable allocation of this critically scarce resource.

- Institutional reforms within the public sector to effectively regulate the sector and efficiently provide core public goods, such as research and food safety, either directly or through partnerships with the private sector and civil society.
- Decentralization and empowerment, especially the strengthening of local government and community and producer organizations to influence public services, and to participate more effectively in coordinated market chains.
- Facilitating the emergence of rural financial institutions, including micro-finance, to build capital assets for both farm and nonfarm enterprises.

**Revisiting the role of the state in pro-poor growth**

A recurring tension in the post-reform agenda has been to find the right balance in state interventions beyond "getting prices right" and providing core public good investments. Especially in Africa and in remoter areas of other regions, weak private sector capacity has sometimes slowed the transition from state-led to market-led development in rural areas where transactions costs and risks are often high (Dorward et al. 2004). In particular, in the absence of appropriate institutions, coordination failures along the market chain are often pervasive. In addition, the development of critical input markets, such as fertilizer markets, is constrained by failure to reap economies of size.

In such situations, joint public-private action can reduce poverty directly by supporting institutions that reduce transactions costs and limit the risks of private investment in critical services for smallholder agriculture, especially the costs of financial, input, and output transactions. This kind of investment often includes public support for goods and services that fall outside the standard economic definition of public goods, such as support within a specific marketing chain to build sustainable commercial relationships, or business development services, or facilitating the emergence of insurance markets to limit the risks facing private investors.

Such interventions should aim to build institutional solutions that (1) create the appropriate set of incentives; (2) include some form of "sunset" provision and/or exit strategy; and (3) are designed to ensure (as far as possible) that the private sector can be sustained without public support after the initial phase. As market volume increases and institutional arrangements are strengthened, transactions costs and risks should fall, and the state should withdraw to a regulatory role. If the state persists in providing "transitional" support, its intervention can soon become expensive and distorting.

Both demand and supply must be stimulated at the same time for limited-time public investments to foster lasting private investment and service provision (Joffe and Jones 2004). Because these investments build the demand for, and supply of, support services, they will strengthen market systems and encourage private investment. The dilemma is how to choreograph a coordinated response on both the demand and supply side. The challenge is to identify, target, and implement useful investments in partnership with a range of other actors, and in ways that are nondistorting, support market development, and benefit the poor over the long term (Joffe and Jones 2004).

The scope for using time-limited public interventions includes:

- Making public sector procurement arrangements to outsource the supply of public services, such as extension services, in order to stimulate private markets for services.
- Strengthening smallholders' links to the market by building networks and providing development grants that improve coordination along the marketing chain.
- Piloting innovative financial institutions, such as weather insurance for crops or livestock and commodity risk management programs, to reduce price risks for commodities that are important for smallholders.
- Providing vouchers through public works programs to the poorest and most vulnerable farmers to purchase farm inputs.[23]
- Providing matching grants for on-farm and community investments to promote the introduction of new products, especially to reduce poverty in poor areas.

## MAKING RURAL GROWTH MORE PRO-POOR

Having identified the set of interventions necessary to spur agricultural growth, the second challenge is to ensure that this growth benefits the poor. Trickle-down growth has been discredited; what is needed is a more pro-active policy stance by governments, with the support of development partners, to ensure that the poor can avail themselves of economic opportunities. The pro-poor interventions are generally quite specific to particular countries and areas within countries, although some broad generalizations can be delineated according to our original typology of countries—Africa, Asia, and Latin America (Box 10 and Appendix II).

**Box 10: Broad Regional Differences In Public Policy For Pro-Poor Growth**

In a very simplified view of the world, the "horses for courses" by region would be:

- Africa—go for broad-based growth, beginning with improvement in the productivity of food staples but exploiting local comparative advantages in export crops and livestock. Massively increase investment over the long term in R&D, infrastructure, and skills. In the short- to medium-term, focus efforts on getting markets to work by reducing transport and transactions costs and risks.
- Asia—give priority to diversification, both to high-value agriculture and a dynamic nonfarm sector, increasingly linked to agro- and urban industrialization. Shift emphasis to less-favored areas, which may now provide higher returns in terms of both growth and poverty reduction. Attempt to manage a massive exit from agriculture through investment in skills and education, and by facilitating efficient land markets and consolidation.
- Latin America—provide the enabling environment for private sector investments in industries and regions that increase both growth and employment, especially in high-value and value-added exports, where these have a comparative advantage. Develop poverty-focused programs on a regional basis for marginal areas where there is potential for the development of agriculture and environmental services. Rapidly scale up programs to facilitate exit and safety nets for those left behind.

Source: Authors.

## Connecting the poor to markets

Income growth and urbanization are driving consumer demand for higher value products, such as fruits, vegetables, and livestock, most of which are also labor-intensive to produce and therefore good for employment growth. Rapid globalization of markets for horticultural and other niche products is also providing opportunities for growth in agricultural exports. A major challenge is to connect small-scale farmers to this diversification process, given the rise of coordinated supply chains and potential economies of scale in participating in these chains. New institutional mechanisms and relationships are emerging, including contract farming, vertical integration, and clustering. Strong producer organizations that are inclusive of the poor are an especially promising vehicle for connecting the poor to these new markets.

The other major component of diversification is growth in nonfarm income, which is becoming more important as agricultural diversification presents new opportunities for value-adding and as industrialization creates employment opportunities through small and medium enterprises that spill into rural areas. Investments in skills and infrastructure are critical to realizing the potential for the poor to participate in both on-farm and off-farm diversification.

Nonetheless, in emerging and middle-income countries, small farm sizes, combined with a rapid expansion of nonagricultural employment, means that the agricultural labor force must begin to decline, providing opportunities for farm consolidation but also posing huge challenges in managing the rate of exit of a largely unskilled labor force. This challenge is greatest in Asia, where the size of many farms is now uneconomic and where rapid industrialization is driving nonfarm employment.

## Toward a more equal distribution of assets

In regions where land distribution is highly inequitable, land reform is one possibility to overcome the dualistic nature of agriculture and provide for more equitable growth. However, land reform is politically difficult and has generally not lived up to its promise. New approaches using market-based land reforms should be evaluated carefully for scaling up, but it is likely that at best they will affect land distribution at the margin. In addition, most of rural Latin America and Asia has now reached a stage of development where access to other assets, especially education and skills, is a more important road out of poverty (Perry et al. 2005). Over the long term, efforts to improve access to schooling in rural areas and especially to improve the quality of that education remain the best hope for equipping the rural poor with the skills to participate in growing on-farm and off-farm diversification opportunities, including migration to better paid employment in urban areas.

While access to credit has often dominated the discourse on rural asset acquisition, the increased role of remittances requires a shift in attention towards other products and services offered by the (semi) formal banking system. Retaining and investing nonfarm earnings in rural areas will require a financial system with sufficient rural reach, which offers cheap, secure money transfer services and an appropriate range of financial products, including differentiated savings mechanisms.

**Evaluating growth prospects of lagging regions (and countries)**

One major source of rising inequality is the growing gap between regions in participation in growth processes. An important issue is to what extent development strategies should target more resources to lagging regions with the risk of trading off equity for growth. Many of these regions have considerable potential to be new sources of growth or providers of valuable environmental services, and the growth-poverty tradeoffs may be small. In fact, there is evidence from India and China that the marginal returns to public investments in lagging areas may be higher than in the more favored areas where much of the past investment was concentrated (Fan et al. 1999; Fan et al. 2002). New approaches are emerging that foster regional development through the integration of agriculture, rural nonfarm, and environment services, with an emphasis on social capital, infrastructure, and education.

However, many lagging areas have quite low growth potential because they have very limited suitability for agriculture and low population densities. In these areas there is likely to be a growth-poverty tradeoff, since investment must be motivated by the objective of reducing poverty. In these poorer areas, a view much wider than agriculture is needed: in some areas a growing demand for environmental services and agro-tourism provides an opportunity for diversification. Investment in the necessary infrastructure is often costly, however, because of remoteness and low population density, and even more so where the rural population is already in decline (for example, Brazil).[24] In many areas, exit from agriculture is the only viable long-run strategy, facilitated by investment in education and skills. Migration is generally already high, leaving an aging and frequently female labor force, while safety nets and transfers are needed for the chronically poor.

**Increasing productivity of nontraded food staples**

Rapid growth in productivity in food production and declining prices of food staples has been one of the key drivers of pro-poor growth, especially in Asia. While trade-oriented growth strategies will necessarily reduce the linkage between food production and poverty reduction, they will be confined largely to areas that are well connected to global markets. In much of Africa, where demand for food is projected to double within the next 15 years, growth in food staples to satisfy domestic demand remains a major source of potential growth and poverty reduction, as the case study for Zambia shows. Because of poor market access, these areas are effectively insulated from world markets, either because they produce nontradable foods such as roots and tubers, for which internationally traded cereals are imperfect substitutes, or more commonly because of high transport costs and marketing margins. Production for home consumption and local markets will also remain important to ensure household food security.

Productivity growth for food crops in Africa requires a two-pronged approach. First, investment in R&D to develop technologies tailored for diverse rainfed situations must be sharply increased. Given the low stock of knowledge resulting from past underinvestment, the small size of most countries, and the number of “orphan crops” and “orphan pests,” massive investment is needed at regional, national, and local levels (InterAcademy Council 2004). Second, demand in local markets soon constrains this

source, unless market development and investment in infrastructure connect farmers to wider markets, nationally or globally.

**Reducing instability and vulnerability**

A recurring theme in the case studies (Appendix 1) is the overriding importance of risk and vulnerability to the rural poor, especially shocks induced by natural causes, such as drought, and those caused by price volatility. The poor are especially vulnerable to shocks, which often have long-term effects on their welfare (Carter et al. 2004). In Asia these risks have been sharply reduced by a combination of enormous investment in irrigation and other infrastructure, effective but increasingly costly and unsustainable insulation of producers and consumers from price shocks, and by a growing range of safety nets (for example, food for work programs in India). In Africa, both producers and consumers in many countries remain highly vulnerable to shocks. Increased investment in infrastructure (including irrigation) will reduce the problem over the longer term, but in the short to medium term, there is scope to manage these risks by investing in financial innovations such as warehouse receipt systems, novel insurance schemes such as weather-index based systems, and social safety nets such as vouchers for inputs, all of which are being extensively piloted.

**Improving rural stakeholders' participation in the policy dialogue**

A recurring theme in development policy has been urban bias in setting the development agenda and the lack of participation by the poor in setting public policy. Donor agencies have gradually (although not yet completely) adopted a process in which broad-based consultation and policy dialogue are the basis for deciding how to allocate resources in Poverty Reduction Strategy Papers (PRSPs). However, this shift makes priority setting more dependent on the political economy within countries, in which rural stakeholders are notoriously underrepresented. A survey covering the PRSP process in 32 countries shows that rural stakeholders are often well represented in the preparatory phases when issues are diagnosed and studied, but their involvement in actually setting priorities is much weaker (Word Bank 2004c). For this reason, a critical first step in getting agriculture and rural development into public policy is to strengthen rural stakeholders' voice in national decision-making processes by (1) preparing rural development strategies to develop a common vision and consistent purpose across the sector and (2) strengthening agricultural producer and rural community organizations so that they can represent their interests in policy discussions.

# 5. CONCLUSIONS

The evidence from the case studies and knowledge gained from the wider development literature lead to five broad propositions about the contribution of agriculture and rural development to pro-poor growth.

- First, agriculture has played an important and often a lead role in the early stages of pro-poor growth. Beyond its direct contribution to growth, a number of features specific to the sector enhance its contribution to pro-poor growth, including the concentration of the poor in the sector, the large size of its growth linkages to other sectors, and the positive externalities from assuring food security and reducing food prices.
- Second, the contribution of agriculture to growth naturally declines with structural transformation from an agricultural economy to an urban-based nonagricultural economy, although even well into middle-income status, agriculture continues to "pull beyond its weight," as measured by its contribution to GDP, because of its unique "externalities."
- Third, the role of the rural nonfarm economy increases as a source of growth, initially led by linkages to agricultural growth, but later tied increasingly to urban-industrial development, especially in areas of good infrastructure and high population density.
- Fourth, even as the role of agriculture in growth declines with structural transformation, rural development continues to be critical to reducing poverty and inequality. Differences in natural resources and access to markets and assets often result in uneven growth and growing inequality within the sector, between small and large farms, and between regions. These differences increase rural-urban inequality and create poverty traps within rural areas, unless they are explicitly addressed through poverty-oriented rural development strategies.
- Fifth, the "agro-pessimists" have raised important questions about the future role of agriculture. These questions highlight how agriculture's contribution to pro-poor growth varies enormously, not only at different stages of development for a given country but also across and within countries, because of initial conditions. More than ever, the design of public policy for enhancing the contribution of agriculture and rural development to pro-poor growth must be conditioned by local contexts.

Despite the general validity of these propositions, the response of the agricultural sector to liberalization in the 1990s, in terms of growth and poverty reduction, was less than it could have been. This was partly because economic reform in the sector seriously lagged reforms in the economy as a whole. It is also due to the lack of an enabling environment

being in place for the private sector to replace government parastatal functions after their demise.

The growth experience in the 1990s has been uneven. Although rural poverty declined in most of the study countries (Appendix1), the rural-urban gap has continued to widen. Within rural areas, poverty has been reduced most in areas with good natural resources and access to markets, and especially among producers of export crops. The rural nonfarm sector has also played an important role in pro-poor growth, but again more so in areas with good infrastructure and a better educated workforce. Although migration and remittances are increasingly important to rural households, the poor generally have benefited less from these sources of income. The combination of these trends has often caused regional inequality to grow, resulting in poverty traps in the poorest and most remote regions. This problem is most acute in Latin America, but it is evident in all regions.

Finally, the impact of climatic and global price shocks on agricultural production and household food insecurity and vulnerability is especially important for the poor, and it requires special efforts to mitigate. Instability and vulnerability have been insufficiently recognized in the past as important sources of poverty—and, all too often, political crisis—as has the role of agriculture as a safety net in times of crisis.

Given the slow pace of reforms within the agricultural sector, the first order of business is to deepen reform efforts within the sector. These efforts should include the liberalization of agricultural pricing and marketing policies to enable the sector to realize its potential for pro-poor growth (including reform of OECD trade and subsidy policies). The reform of price subsidies will also contribute to better utilization of public expenditures to fund core public goods, especially infrastructure, education, and R&D, which tend to be pro-poor in their distribution of benefits. To fund core public goods in Africa adequately will require a major increase in investment, including a sharp shift in public resources toward rural areas. Public investment must be complemented by long-term institutional development. Especially in Africa, new and more pro-active roles for the state are needed to get private markets to work through a variety of institutional innovations and “smart subsidies.”

This review has also highlighted a number of areas where public policy can make growth more pro-poor. These include institutional mechanisms (for example, strong producer organizations) to connect small-scale farmers to emerging markets, investment in education and skills of the rural poor to promote their participation in the emerging high-value agricultural and rural nonfarm sectors, mechanisms to manage a massive exit from small farms in Asia, attention to increasing the productivity of food production in Africa, and in situations of highly unequal land distribution, market-based approaches to land redistribution. One of the major dilemmas is the relative attention that should be given to lagging regions, which are an important source of growing inequality and where extreme poverty is often concentrated. Some lagging regions have substantial growth prospects and offer a “win-win” solution to growth and poverty reduction. Many others confront clear tradeoffs between growth and poverty reduction. Finally, an enduring challenge is to increase the voice of the rural poor in the national policy dialogue. Widely owned rural strategies and decentralized programs now offer good prospects for achieving this goal.

# APPENDIX I: LIST OF CASE STUDIES REVIEWED


Azam, Jean-Paul and Magueye Dia. 2004. “Operationalising Pro-Poor Growth: A Case Study on Senegal”.

Besley, Timothy, Robin Burgess and Berta Esteve-Volart. 2004. “Operationalising Pro-Poor Growth: A Case Study on India”.

Gheorghiu, Radu, Wojciech Paczynski, Artur Radziwill, Agnieszka Sowa, Manuela Stanculescuk, Irena Topinska, Geomina Turlea and Mateusz Walewski. 2004. “Operationalising Pro-Poor Growth: A Case Study on Romania”.

Grimm, Michel and Isabel Gunther. 2004. “Operationalizing Pro-Poor Growth: A Case Study on Burkina Faso”.

Klasen, Stephan, Melanie Grosse, Rainer Thiele, Jann Lay, Julius Spatz, and Manfred Wiebelt. 2004. Operationalizing Pro-Poor Growth: A Case Study on Bolivia“.

Klump, Rainer and Thomas Bonschab. 2004. “Operationalizing Pro-Poor Growth: A Case Study on Vietnam”.

Marques, Jose. 2004. “Operationalising Pro-Poor Growth: A Case Study on El Salvador”.

McKay, Andrew and Ernest Aryeetey. 2004. “Operationalising Pro-Poor Growth: A Case Study on Ghana”.

Menezes-Filho, Naercio, and Ligia Vasconcellos. 2004. “Operationalising Pro-Poor Growth: A Case Study on Brazil”.

Okidi, John A., Sarah Ssewanyana, Lawrence Bategeka, and Fred Muhumuza. 2004. “Operationalizing Pro-Poor Growth: A Case Study on Uganda”.

Sen, Binayak. 2004. “Operationalizing Pro-Poor Growth: A Case Study on Bangladesh”

Thurlow, James and Peter Wobst. 2004. “Operationalizing Pro-Poor Growth: A Case Study on Zambia”.

Timmer, Peter. 2004. “Operationalizing Pro-Poor Growth: A Case Study on Indonesia”.

# APPENDIX II: TAILORING PUBLIC POLICY TO REGIONAL CONTEXTS

### LOW-INCOME COUNTRIES OF AFRICA

For most African countries, and especially for the countries reviewed in this paper, agricultural growth still offers the most promising avenue to pro-poor growth, in line with the accepted wisdom on agricultural-demand-led industrialization (Adelman 1984). While achieving agriculturally-led growth faces several key constraints, many of these constraints (such as poor infrastructure and underdeveloped or dysfunctional markets) are also faced by the economy as a whole. It will be difficult for countries, even those with mineral or oil resources, to find another sector to better employ their existing resource and to create enough job opportunities and pathways out of poverty for the population as a whole.

While most themes of policy reform, institution building, and investments are relevant for Africa, "getting markets to work" is especially important in the post-reform era. The major priority is to raise small-farm profitability by improving access to input and output markets, complemented by better technologies, in particular those that enhance the productivity of labor, as land is often not the main constraint. Getting markets to work involves creating an enabling environment for the private sector to operate and strengthening market infrastructure and institutions to reduce transactions costs and improve market performance (Dorward et al. 2004).

Some 60 percent of the rural population in Africa lives in areas of good agricultural potential but poor market access, while only 23 percent live in areas of good agricultural potential and good market access (Kelley and Byerlee 2003) (Table 12). The remaining 18 percent live in the most difficult environments, with poor agricultural potential and poor market access.

**Table 12: Percentage Distribution Of The Agricultural Population In Sub-Saharan Africa**

| | Low Agricultural Potential | Medium/ High Agricultural Potential | Total |
|---|---|---|---|
| Poor market access | 18 | 60 | *78* |
| Medium/ good market access | 0 | 23 | *23* |
| *Total* | *18* | *83* | *100* |

Source: Kelley and Byerlee 2003.

Clearly, given these statistics, agricultural growth must be generated by the majority of farmers who live in areas with reasonable agricultural potential but poor market access. Growth in these areas must also emphasize food staples to satisfy domestic demand, which is projected to double within the next 15 years. The case studies, especially for Zambia, show that a strategy oriented toward food staples has the best potential to raise farm incomes and contribute to pro-poor growth at the national level. As mentioned in the main section of this paper, poor market access effectively insulates these areas from world markets, either because they produce nontradable foods such as roots and tubers, for which internationally traded cereals are imperfect substitutes, or more commonly because of high transport costs and marketing margins. Production for home consumption and local markets will remain important to ensure household food security for the masses of small-scale farmers who have poor market access. However, demand in local markets soon constrains this source, unless market development and investment in infrastructure eventually connect farmers to wider markets, nationally or globally.

As the productivity of food crop production increases, priorities should shift toward enabling diversification to relatively low-volume, higher value, nonperishable crop and livestock products by improving linkages to market outlets (for example, investment in roads and market infrastructure). Diversification also presents opportunities for development of the nonfarm economy through further value-adding (and thus off-farm incomes and exit).

In areas with better market access, growth strategies already focus on exports of traditional and nontraditional commodities. While the decline in world prices for Africa's traditional export commodities is often used to explain its poor performance in agricultural exports, the bigger issue is Africa's high transport and marketing costs. For example, African coffee producers receive a farm-gate price that is 30 percent lower than that faced by Vietnamese farmers, who dramatically expanded their share of world markets in the 1990s (Diao et al. 2005). If Africa is to exploit its comparative advantage in agricultural exports, public investment in infrastructure will have to increase dramatically.

Production of many nontraditional export commodities, such as horticultural crops, is much more labor intensive than traditional agriculture and is a potential future source of pro-poor growth in the areas with the best market access. One example is the emerging horticultural export and cut flower industries near the capital city airports of Zambia and Uganda. It is unrealistic, however, to believe that such opportunities can become the principle engine of growth and poverty reduction for most countries over the next decade or more (as occurred in Chile—see below).

In marginal areas with poor agro-climatic potential and poor market access, the avenues for pro-poor growth are more difficult to identify and more diverse. These environments dominate in some 12 countries in Africa with about 10 percent of the population (Diao et al. 2005), and they also characterize areas of growing and increasingly concentrated poverty within case study countries (for example, the northern regions of Uganda and Ghana). The natural resource base in such areas often cannot support the current population, leading to a classical poverty trap and high food security risks (both systemic and seasonal food shortages). While the outlook for agriculture-led growth is bleak, the alternatives are not obvious, beyond migration, which is necessarily a long-term prospect,

given the limited development of alternative sources of employment. International migration from these areas will undoubtedly increase, with remittances forming a growing share of incomes (Pritchard 2004).

In the short to medium term, strategies for improving livelihoods in these areas should aim to enhance food security, conserve natural resources, and, where possible, enter markets for selected products in which these areas have a comparative advantage (for example, arid zone fruits and nuts, spices, honey, herbs, agro-forestry, and small animals). Where feasible, improvements of the asset base, through for example, small-scale irrigation and sustainable utilization of common property resources, can transform livelihoods. A combination of household-level safety nets and transitional support in a variety of forms will also be critical elements of this strategy.

In sum, agricultural and rural development can provide the "engine" of pro-poor growth and structural transformation in most African countries, even in the changing global context of the 21st century. It cannot do so, however, without a long-term commitment by the development assistance community and African governments to redress past urban biases and invest heavily in rural areas (Commission on Agriculture 2005). Major priorities are:

- Massive investments in physical infrastructure for improved market linkages. In most areas, investment in feeder roads is the first priority, but small-scale irrigation has much potential in drier and riskier areas. In countries with low population density, infrastructural investments may have to be geographically concentrated, in efforts to reduce costs and create agro-industrial growth poles (See Box 11 for specific case of Africa).
- Institutional innovations and smart subsidies for market development, such as redressing coordination failures along the market chain, matching grants for development of agri-business, and targeted input vouchers to develop input markets.
- Investment in R&D to develop technologies tailored for diverse rainfed situations. Given the low stock of knowledge resulting from past underinvestment, the small size of most countries, and the number of "orphan crops" and "orphan pests," massive investment is needed at regional, national, and local levels (InterAcademy Council 2004).
- Improve natural resource management to reverse depleted soil fertility, which is the major constraint on productivity gains, especially since fertilizer use has declined in many areas after liberalization and the elimination of subsidies.
- Management of production and price risks by investment in financial innovations such as warehouse receipts systems, novel insurance schemes such as weather-index based systems, and social safety nets.
- Development of poverty-focused programs for the poorest marginal areas, combining elements of household food security and safety nets, mitigation of risks, exploitation of specific products where there is a comparative advantage, and management of community natural resources.

**Box 11: Africa: The Challenge of Rural Infrastructure**

The availability of transport, energy, water supply, sanitation, and telecommunications services remains especially limiting in Africa, relative even to the early stages of post-independence development in India (see inset table). A massive program of investments in infrastructure over many decades, especially for rural roads and irrigation systems, will be needed to close the gap.

**Road Density in Africa in the 1990s and India at Independence**

| | Road density (km/1000 sq. km), early 1990s | Required density to match India in 1950 |
|---|---|---|
| Benin | 36 | 291 |
| Cameroon | 38 | 168 |
| Côte d'Ivoire | 94 | 258 |
| Ghana | 17 | 429 |
| Mozambique | 17 | 135 |
| Nigeria | 97 | 718 |
| Sierra Leone | 80 | 391 |
| Tanzania | 66 | 181 |
| Zambia | 36 | 110 |
| Madagascar | 67 | 137 |

Source: Spencer 1994.

## EMERGING LOW-INCOME COUNTRIES OF ASIA

Agricultural growth and rural development will continue to be critical for poverty reduction in Asia, although overall economic growth is now largely dominated by growth in the nonfarm sector. Rapid industrialization and urbanization mean that agriculture now has to compete more directly for labor, land, and water. Moreover, the linkages between agricultural growth and poverty reduction may be weaker now, as mechanization reduces employment and liberalized trade policies have greater influence on food prices than domestic productivity growth. Therefore a more diversified strategy is needed to realize the potential for pro-poor rural growth.

In the intensively farmed irrigated areas of Asia, a three-pronged approach is needed. First, although growth in the demand for food staples has slowed significantly, the feasibility of importing large volumes of food from world markets, without substantially increasing world prices, remains limited in large Asian countries. Efforts to improve the productivity and profitability of food staple production must therefore continue, and the yield plateaus increasingly observed require increased public investment in R&D to extend the yield frontier. Such investments will be pro-poor, given the continuing importance of food staples to poor producers and consumers.[25]

The second and most important element of a strategy for pro-poor growth is to promote diversification of both on-farm and off-farm income, and the management of exit from agriculture. Rapid income growth and urbanization are driving consumer demand for higher value products, such as fruits, vegetables, and livestock, most of which are also labor-intensive to produce and therefore good for employment growth. As in the other regions, rapid globalization of horticultural markets and other niche products also provides opportunities for growth in exports. The first priority is to complete policy

reforms to remove disincentives for diversification, especially import protection and subsidies to food staples. A second challenge is to connect small-scale farmers to this diversification process, given the rise of coordinated supply chains and the potential economies of scale in participating in these chains. New institutional mechanisms and relationships are emerging, including contract farming, vertical integration, and clustering, in which producer organizations are likely to play an important role.

The other major component of diversification is nonfarm income, which is already important but will become more important as agricultural diversification presents new opportunities for value-adding, and as industrialization creates employment opportunities through small and medium enterprises that spill into rural areas. Investments in skills and infrastructure are critical to realizing the potential of both on-farm and off-farm diversification.

Very small farm sizes, with many farmers cultivating less than 1 hectare, combined with a rapid expansion of nonagricultural employment, mean that the agricultural labor force will soon begin to decline, providing opportunities for farm consolidation but posing huge challenges in managing the rate of exit of a largely unskilled labor force.

Finally, relative poverty, although not usually the absolute number of poor, is highest in the more remote and marginal environments. Rapid growth in the more favored areas has widened this disparity. Less favored areas require specifically targeted programs. However, growth-versus-equity tradeoffs may be small, and in fact there is evidence from India and China that the marginal returns to public investments in these areas may be higher than in the more favored areas, where much of the past investment was concentrated (Fan et al. 1999; Fan et al. 2002).

In sum, the key public policy issues for a pro-poor contribution of agriculture and rural development are:

- Support R&D to ensure moderate productivity gains in cereals and diversification to higher value products.
- Provide the macro environment and institutional environment for agricultural diversification, paying particular attention to how small-scale farmers can participate in rapidly expanding market opportunities.
- Foster regional development approaches that diversify rural nonfarm incomes by facilitating rural industrialization, with an emphasis on infrastructure, skills, and education.
- Focus more support on “backward regions,” many of which have considerable potential to be new sources of growth or to provide valuable environmental services.
- Invest in education and labor market reforms to facilitate exit from agriculture to both the rural and urban nonfarm sectors.
- Expand safety nets and transfers for the chronically poor.

### MIDDLE-INCOME COUNTRIES OF LATIN AMERICA

The relatively low and declining share of agriculture in the economies of Latin America implies that agriculture will make a smaller contribution to overall growth than it has in the past. Even when the share of agriculture is adjusted for its growth linkages to food

processing and input industries, it increases from 8 percent to only 12 percent (Perry et al. 2005). Nonetheless, many countries in Latin America have a comparative advantage in agriculture, with huge potential in world markets. The question is whether agricultural growth will benefit the poor. In Brazil for example, agriculture, led by exports, has grown faster than industry since 1990, but the large-scale mechanized technology employed means that the contribution to pro-poor growth has been much less. The extreme poor in Brazil, Bolivia, and many other countries are increasingly concentrated in remote and marginal environments with extremely weak connections to the dynamic agricultural sector.

Large-scale commercial agriculture does have potential to be pro-poor where it is labor intensive, notably in the horticultural industries (for example, cut flowers). The boom in horticultural and other high-value agricultural exports from Chile since the 1970s, when it opened its economy, has made a major contribution to growth and poverty reduction in Chile (Valdes and Foster 2003). Direct employment in production, and especially in post-harvest operations of grading, cleaning, and packing, has expanded rapidly, driving up wages for unskilled workers, especially women. Similar developments are found in parts of Mexico and other countries of the region. A stable macroeconomic policy conducive to private sector investment, combined with investment in infrastructure and skills, are the key public policy issues for promoting the competitiveness of this sector.

Most countries, however, still face tradeoffs between growth driven by commercial agriculture and efforts to address poverty in more marginal environments where the extreme poor are concentrated. As the Bolivia case shows, unless more resources are allocated to more marginal areas, rural inequality and the rural-urban gap will increase. In contrast to Asia, in most of these areas the low agroclimatic potential will not allow rapid growth, so investment must be motivated by the objective of reducing poverty.

In these poorer areas, a view much wider than agriculture is needed. Rural incomes are already highly diversified, and in some areas a growing demand for environmental services and agro-tourism provides an opportunity for further diversification. Investments in education, social capital, and infrastructure are essential elements in realizing this potential. Investment in infrastructure is often costly in these comparatively remote and less populous areas, particularly if the rural population is already in decline (for example, Brazil).[26] In many areas, exit from agriculture is the only viable long-run strategy, facilitated by investment in education and skills. Migration is generally already high, leaving behind an aging and often largely female labor force. Safety nets and transfers are needed to assist the chronically poor.

Land reform is one possibility to overcome the dualistic nature of agriculture and provide for more equitable growth. However, land reform is politically difficult, and it has generally not lived up to its promise. Although initial experiences with new market-based approaches for redistributing land locally are encouraging, most of rural Latin America has now reached a stage of development where access to other assets, especially education and skills, is a more important road out of poverty (Perry et al. 2005).

In sum, the key public policy issues for agriculture and rural development to contribute to pro-poor growth are:

- Provide the macro environment for continued agricultural commercialization, and at the same time remove constraints to well-functioning factor markets, including labor.
- Support the small-farm sector in areas with potential for agriculture and environmental services, with a focus on poverty reduction rather than growth, through investments in technology, infrastructure, and market development, many of which can be community led.
- Foster regional development approaches that integrate agriculture, rural nonfarm, and environmental services, with an emphasis on social capital, infrastructure, and education.
- In areas of little economic potential, low population density, and declining population, invest in education and labor market reforms to facilitate exit from agriculture.
- Provide safety nets and transfers for the chronically poor, especially in areas with low economic potential.

# APPENDIX III: STATISTICAL APPENDIX

| | Growth Rate, Agricultural employment | | Growth Rate, GDP (constant 1995 US$) * | | Growth Rate, Agriculture, value added (constant 1995 US$) * | | Growth Rate, Non-Agricultural GDP (constant 1995 US$) | | Growth Rate, Agriculture Value added/Agricultural employment * | | Growth Rate, Non-Agricultural GDP/ Non-Agricultural workforce * | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1980-1990 | 1991-2001 | 1980-1990 | 1991-2002 | 1980-1990 | 1991-2002 | 1980-1990 | 1991-2002 | 1980-1990 | 1991-2001 | 1980-1990 | 1991-2001 |
| Bangladesh | 1.468 | 0.960 | 3.607 | 4.857 | 2.079 | 3.213 | 4.283 | 5.437 | 0.610 | 2.248 | -0.265 | -0.912 |
| India | 0.956 | 1.348 | 5.551 | 5.830 | 3.075 | 2.671 | 6.756 | 6.868 | 2.119 | 1.653 | 3.106 | 3.410 |
| Indonesia | 2.396 | 1.086 | 5.901 | 3.019 | 3.525 | 1.790 | 6.705 | 3.300 | 1.129 | 0.771 | 3.136 | -0.272 |
| Vietnam | 2.456 | 1.306 | 4.820 | 7.316 | 2.768 | 4.160 | 5.923 | 8.481 | 0.284 | 2.885 | 1.654 | 5.732 |
| *Asia* | *1.293* | *1.271* | *5.895* | *4.982* | *3.956* | *2.564* | *7.093* | *5.703* | *2.703* | *1.523* | *3.457* | *1.987* |
| Burkina Faso | 2.096 | 1.750 | 3.505 | 3.885 | 3.040 | 3.099 | 3.701 | 4.246 | 0.943 | 1.327 | 3.893 | 0.129 |
| Ghana | 2.904 | 2.473 | 2.913 | 4.148 | 0.980 | 3.507 | 4.664 | 4.574 | -1.924 | 0.993 | 1.017 | 1.600 |
| Senegal | 2.014 | 2.057 | 3.038 | 4.154 | 2.732 | 2.085 | 3.123 | 4.612 | 0.718 | 0.713 | -1.373 | 0.799 |
| Uganda | 2.812 | 2.022 | 2.869 | 6.720 | 2.096 | 3.894 | 3.807 | 8.996 | -0.786 | 1.784 | -0.023 | 5.347 |
| Zambia | 3.026 | 1.548 | 0.990 | 1.259 | 3.516 | 3.712 | 0.668 | 0.930 | 0.491 | 2.661 | -1.251 | -5.783 |
| *SSA* | *2.610* | *2.008* | *3.573* | *4.300* | *3.002* | *3.436* | *4.023* | *4.694* | *0.397* | *1.484* | *0.655* | *0.859* |
| Bolivia | 1.395 | 2.018 | -0.245 | 3.498 | 1.489 | 2.502 | -0.542 | 3.672 | 0.093 | 0.577 | -4.316 | 0.487 |
| Brazil | -1.338 | -1.513 | 2.712 | 2.714 | 2.747 | 3.460 | 2.711 | 2.649 | 4.086 | 4.823 | -2.376 | 0.113 |
| El Salvador | 0.114 | 1.010 | 0.222 | 3.983 | -1.116 | 0.847 | 0.510 | 4.479 | -1.230 | 0.014 | -2.912 | 0.320 |
| *LAC* | *-1.112* | *-1.092* | *3.005* | *2.738* | *2.244* | *3.387* | *1.978* | *2.680* | *3.908* | *4.338* | *-2.739* | *0.084* |
| *Total 12 c/s* | *1.236* | *1.219* | *4.147* | *3.796* | *3.437* | *2.825* | *3.707* | *3.972* | *2.256* | *1.724* | *-0.147* | *0.482* |

* data for Vietnam available only from 1984; Uganda from 1982

** first available data for Vietnam is 1985

Source: Authors' calculations, based on FAOSTAT and SIMA

| | Growth Rate, Agricultural GDP per Agricultural Ha * | | Share of Agricultural employment in total labor force | | | Agriculture, value added (% of GDP) ** | | | Year of survey | | Rural poverty rate, P0 | | Urban poverty rate, P0 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1980-1990 | 1991-2001 | 1980 | 1990 | 2001 | 1980 | 1990 | 2002 | Early 90s | Late 90s | Early 90s | Late 90s | Early 90s | Late 90s |
| Bangladesh | 1.719 | 3.345 | 0.750 | 0.688 | 0.551 | 0.328 | 0.291 | 0.234 | 1992 | 2000 | 0.529 | 0.436 | 0.336 | 0.264 |
| India | 3.022 | 3.027 | 0.697 | 0.637 | 0.580 | 0.365 | 0.291 | 0.201 | 1993 | 2000 | 0.410 | 0.364 | 0.312 | 0.252 |
| Indonesia | 1.414 | 1.058 | 0.594 | 0.565 | 0.490 | 0.285 | 0.220 | 0.170 | 1996 | 2002 | 0.202 | 0.339 | 0.072 | 0.163 |
| Vietnam | 2.832 | 1.430 | 0.732 | 0.712 | 0.678 | 0.366 | 0.330 | 0.226 | 1993 | 2002 | 0.664 | 0.455 | 0.251 | 0.092 |
| *Asia* | *3.483* | *2.587* | *0.690* | *0.636* | *0.569* | *0.338* | *0.271* | *0.196* | | | *0.469* | *0.400* | *0.282* | *0.208* |
| Burkina Faso | 2.094 | 2.581 | 0.903 | 0.921 | 0.910 | 0.304 | 0.284 | 0.302 | 1994 | 2003 | 0.634 | 0.533 | 0.147 | 0.203 |
| Ghana | 0.504 | 2.149 | 0.601 | 0.588 | 0.582 | 0.507 | 0.423 | 0.381 | 1992 | 1999 | 0.636 | 0.494 | 0.277 | 0.194 |
| Senegal | 2.707 | 2.760 | 0.807 | 0.765 | 0.732 | 0.219 | 0.213 | 0.148 | 1994 | 2001 | 0.709 | 0.652 | 0.630 | 0.457 |
| Uganda | 1.094 | 3.583 | 0.849 | 0.840 | 0.795 | 0.563 | 0.530 | 0.388 | 1992 | 2002 | 0.597 | 0.417 | 0.278 | 0.122 |
| Zambia | 3.475 | 4.206 | 0.799 | 0.813 | 0.717 | 0.103 | 0.118 | 0.133 | 1991 | 1998 | 0.880 | 0.856 | 0.460 | 0.583 |
| *SSA* | *2.676* | *3.169* | *0.785* | *0.775* | *0.739* | *0.297* | *0.327* | *0.295* | | | *0.636* | *0.533* | *0.278* | *0.203* |
| Bolivia | 0.940 | 2.242 | 0.528 | 0.468 | 0.434 | 0.138 | 0.153 | 0.141 | 1989 | 2002 | 0.897 | 0.838 | 0.672 | 0.551 |
| Brazil | 2.014 | 2.582 | 0.367 | 0.233 | 0.161 | 0.069 | 0.076 | 0.086 | 1993 | 2001 | 0.832 | 0.776 | 0.567 | 0.470 |
| El Salvador | -1.680 | -0.411 | 0.449 | 0.370 | 0.286 | 0.187 | 0.168 | 0.113 | 1991 | 2000 | 0.695 | 0.553 | 0.587 | 0.285 |
| *LAC* | *1.448* | *2.561* | *0.376* | *0.246* | *0.176* | *0.071* | *0.078* | *0.087* | | | *0.832* | *0.776* | *0.587* | *0.470* |
| *Total 12 c/s* | *2.834* | *2.493* | *0.661* | *0.598* | *0.534* | *0.160* | *0.163* | *0.144* | | | *0.650* | *0.514* | *0.324* | *0.258* |

* data for Vietnam available only from 1984; Uganda from 1982

** first available data for Vietnam is 1985

Source: Authors' calculations based on FAOSTAT and SIMA

| | Rate of change of rural poverty | Rate of change of urban poverty | Ratio of rural poverty to urban | | Percent population rural | | Percent of poor that are rural | | Rural gini | | Rate of PPG | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 90s | 90s | Early 90s | Late 90s | Early 90s | Late 90s | Early 90s | Late 90s | Early 90s | Late 90s | Rural | Urban |
| Bangladesh | -2.417 | -3.015 | 1.574 | 1.652 | 0.795 | 0.768 | 0.860 | 0.845 | 0.255 | 0.297 | 0.850 | 0.470 |
| India | -1.698 | -3.040 | 1.313 | 1.442 | 0.738 | 0.723 | 0.787 | 0.790 | 0.269 | 0.000 | 3.260 | 4.570 |
| Indonesia | 8.644 | 13.672 | 2.809 | 2.078 | 0.632 | 0.557 | 0.828 | 0.723 | 0.202 | 0.231 | 2.710 | 2.320 |
| Vietnam | -4.200 | -11.152 | 2.645 | 4.946 | 0.786 | 0.747 | 0.907 | 0.936 | 0.280 | 0.360 | 3.890 | 5.870 |
| *Asia* | *-2.058* | *-3.027* | *2.110* | *1.865* | *0.762* | *0.735* | *0.844* | *0.818* | *0.262* | *0.264* | *2.985* | *3.445* |
| Burkina Faso | -1.928 | 3.586 | 4.313 | 2.626 | 0.852 | 0.822 | 0.961 | 0.924 | 0.390 | 0.390 | 1.000 | -1.600 |
| Ghana | -3.609 | -5.088 | 2.296 | 2.546 | 0.621 | 0.568 | 0.790 | 0.770 | 0.342 | 0.369 | 2.200 | 1.800 |
| Senegal | -1.205 | -4.575 | 1.126 | 1.426 | 0.563 | 0.511 | 0.592 | 0.599 | 0.293 | 0.301 | 1.530 | 3.100 |
| Uganda | -3.588 | -8.236 | 2.147 | 3.418 | 0.887 | 0.878 | 0.944 | 0.961 | 0.330 | 0.360 | 2.570 | 3.450 |
| Zambia | -0.395 | 3.385 | 1.913 | 1.468 | 0.610 | 0.640 | 0.750 | 0.723 | 0.620 | 0.480 | 4.000 | -1.800 |
| *SSA* | *-1.928* | *-4.575* | *2.147* | *2.546* | *0.621* | *0.640* | *0.790* | *0.770* | *0.342* | *0.369* | *2.200* | *1.800* |
| Bolivia | -0.523 | -1.527 | 1.335 | 1.521 | 0.454 | 0.371 | 0.526 | 0.473 | 0.475 | ns | 1.860 | 0.480 |
| Brazil | -0.870 | -2.345 | 1.468 | 1.652 | 0.234 | 0.182 | 0.310 | 0.269 | 0.592 | 0.584 | 2.450 | 2.510 |
| El Salvador | -2.537 | -8.044 | 1.184 | 1.944 | 0.489 | 0.416 | 0.531 | 0.581 | 0.476 | 0.449 | 1.330 | 5.050 |
| *LAC* | *-0.870* | *-2.345* | *1.335* | *1.652* | *0.454* | *0.371* | *0.526* | *0.473* | *0.476* | *0.517* | *1.860* | *2.510* |
| *Total 12 c/s* | *-1.813* | *-3.027* | *1.744* | *1.798* | *0.626* | *0.604* | *0.789* | *0.747* | *0.336* | *0.360* | *2.325* | *2.415* |

* data for Vietnam available only from 1984; Uganda from 1982

** first available data for Vietnam is 1985

Source: Authors' calculations based on FAOSTAT and SIMA

| | Total population growth rate | | Total Agric population growth rate | Growth rate of AgGDP/cap | | Growth rate of AgGDP per cap agriculture pop | Growth rate agric index/cap | Growth rate cereals index/cap | Growth rate crops index/cap | Growth rate livestock index/cap | Growth rate food index/cap | Growth rate nonfood index/cap | Cereal yield | Cereal yield growth |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1980-1990 | 1991-2000 | 1991-2000 | 1980-1991 | 1991-2000 | 1997-2000 | 1991-2000 | 1991-2001 | 1991-2002 | 1991-2003 | 1991-2001 | 1991-2002 | 1999-2001 | 91-2000 |
| Bangladesh | 2.560 | 2.330 | 0.710 | -0.481 | 0.883 | 2.503 | 0.900 | 1.150 | 0.820 | 1.430 | 1.130 | -3.560 | 3.260 | 2.620 |
| India | 2.090 | 1.840 | 1.010 | 0.985 | 0.831 | 1.661 | 1.270 | 0.380 | 0.840 | 2.410 | 1.370 | -0.470 | 2.350 | 1.880 |
| Indonesia | 1.950 | 1.490 | 0.030 | 1.575 | 0.300 | 1.760 | 0.470 | 0.060 | 0.630 | -0.730 | 0.470 | 0.570 | 3.990 | 0.320 |
| Vietnam | 2.240 | 1.630 | 1.050 | 0.528 | 2.530 | 3.110 | 4.150 | 4.040 | 4.290 | 4.700 | 3.670 | 14.950 | 4.080 | 3.230 |
| *Asia* | *2.165* | *1.735* | *0.860* | *0.756* | *0.857* | *2.131* | *1.085* | *0.765* | *0.830* | *1.920* | *1.250* | *0.050* | *3.625* | *2.250* |
| Burkina Faso | 2.730 | 2.930 | 2.900 | 0.310 | 0.169 | 0.199 | 0.670 | -2.750 | 0.440 | 1.190 | -0.110 | 5.790 | 0.910 | -0.230 |
| Ghana | 3.340 | 2.470 | 2.030 | -2.360 | 1.037 | 1.477 | 2.240 | 0.350 | 2.550 | -1.630 | 2.230 | 3.010 | 1.260 | 1.310 |
| Senegal | 2.870 | 2.460 | 2.040 | -0.138 | -0.375 | 0.045 | 0.440 | 2.310 | 0.300 | 0.600 | 0.780 | -15.300 | 0.840 | -0.470 |
| Uganda | 3.390 | 3.020 | 2.430 | -1.294 | 0.874 | 1.464 | -0.440 | -0.930 | -0.430 | -1.090 | -0.740 | 4.630 | 1.600 | 0.100 |
| Zambia | 3.220 | 2.400 | 1.650 | 0.296 | 1.312 | 2.062 | -0.200 | -2.920 | -0.200 | -0.180 | -0.720 | 6.280 | 1.420 | -0.020 |
| *SSA* | *3.220* | *2.470* | *2.040* | *-0.138* | *0.874* | *1.464* | *0.440* | *-0.930* | *0.300* | *-0.180* | *-0.110* | *4.630* | *1.260* | *-0.020* |
| Bolivia | 2.210 | 2.230 | 1.610 | -0.721 | 0.272 | 0.892 | 2.370 | 0.500 | 3.100 | 1.520 | 2.370 | 2.400 | 1.580 | 0.630 |
| Brazil | 2.040 | 1.420 | -1.930 | 0.707 | 2.040 | 5.390 | 2.130 | -0.290 | 1.170 | 2.970 | 2.310 | -0.550 | 2.840 | 3.520 |
| El Salvador | 1.020 | 1.980 | -0.170 | -2.136 | -1.133 | 1.017 | -1.230 | -2.700 | -2.300 | 1.050 | -0.500 | -4.640 | 2.110 | 1.950 |
| *LAC* | *2.040* | *1.980* | *-0.170* | *-0.721* | *0.272* | *1.017* | *2.130* | *-0.290* | *1.170* | *1.520* | *2.310* | *-0.550* | *2.110* | *1.950* |
| *Total 12 c/s* | *2.400* | *2.280* | *1.330* | *0.079* | *0.853* | *1.569* | *0.785* | *0.205* | *0.725* | *1.120* | *0.955* | *1.485* | *1.855* | *0.970* |

* data for Vietnam available only from 1984; Uganda from 1982

** first available data for Vietnam is 1985

Source: Authors' calculations based on FAOSTAT and SIMA

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[1] The full list of case studies is given in Appendix 1.

[2] The terms of reference for all case study authors required them to examine the role of agriculture in pro-poor growth.

[3] This section is drawn extensively from the work of Diao et al. (2005).

[4] The classicist also recognized the contribution of labor to industrial development, but the prevailing view held that there was surplus labor in agriculture.

[5] In this paper "urban bias" refers to conscious efforts to foster urban-based industrialization through trade and exchange policies, and public investments and subsidies.

[6] Gemmell et al. (2000) augment the two-sector model of Feder (1982) into a three-sector model, which includes services as well as agriculture and manufacturing.

[7] These models argued that agricultural growth had stronger links to the rest of the economy than nonagricultural growth (especially industrial growth). For example, Thirtle et al. (2003) estimated an elasticity of nonagricultural growth to agricultural growth of between 0.3 and 0.9 percent. There was no significant reverse effect, because inputs into agricultural production are less import-intensive than those in industrial production, and because rural consumer demand (unlike urban demand) is usually satisfied by domestically produced goods (Mellor 1976; King and Byerlee 1978).

[8] The elasticity of agricultural employment growth with respect to agricultural output is typically 0.3 to 0.6 percent, and the elasticity of employment growth outside of agriculture with respect to agricultural output growth is around 0.9 (Mellor 2001).

[9] These elasticities refer to the squared poverty gap index. Long-run impacts also significantly exceed short-run effects for the poverty headcount index and the poverty gap, although the elasticities are somewhat lower. See Table 4 in Datt and Ravallion (1998a).

[10] There are two broad interpretations of "urban bias." We use the term to characterize explicit industrialization strategies that favor urban areas. A second interpretation based in the political economy literature holds that the lower costs of political mobilization in urban versus rural agents results in more effective political demands by the urban electorate. Governments respond, resulting in a skewed redistributive mechanism in which urban voters are favored at the expense of the rural population. As well as Lipton (1977), see also Lal and Myint (1996) and Bates (1988).

[11] Unless otherwise indicated, the evidence presented in this section is drawn from the case studies listed in Appendix I.

[12] The omitted countries, Tunisia and Romania, also fall into this group and are included in Figure 3.1, but they are not included in the review.

[13] Data were not available to compute the purchasing power parity agricultural GDP growth rate for Zambia. However, based on agricultural GDP at official exchange rates, Zambia clearly belongs in the Africa group.

[14] The omitted countries, Romania and Tunisia, also fall into this category.
[15] The simple correlation in GDP growth rates for the two sectors is 0.31 and 0.50 for the 1980s and 1990s, respectively.

[16] There is considerable debate about the official data on poverty reduction in India in the 1990s. However, the best estimates are that the rural-urban poverty gap widened sharply in the 1990s (Datt and Ravallion 2002).

[17] Note that other sources of income, such as rural nonfarm incomes and remittances, are also likely to be contributing to poverty reduction, even though the households that rely on these sources of income are classified as agricultural households.

[18] The standard deviation of growth in agricultural GDP for all the countries is lower in the 1990s compared to the 1980s in all countries except Zambia.

[19] This was the result of urban bias of a political-economy nature. See endnote 10.

[20] Input suppliers have also been shown to benefit from subsidies in India (Keefer and Khemani 2004).

[21] It remains a question for future empirical research as to how much of these meager allocations actually makes it to the prospective beneficiaries. Public expenditure tracking surveys undertaken in other sectors have shown this proportion to be very small indeed (Dehn et al. 2003).

[22] A stronger case can be made for orderly land reform programs in some countries of southern Africa with a bimodal distribution of land.

[23] For more information, refer to:
http://www.ifdc.org/Programs_Projects/Economics_PolicyReform_MarketDev/malawi.html

[24] Nearly half of Brazil's *municipios* (districts) experienced a loss of population in the 1990s.

[25] Most large Asian countries are close to self-sufficiency in their major food staples, so that within a wide band between import-parity prices and export-parity prices, food staples are essentially nontradables, and consumers will reap part of the benefits of productivity gains.

[26] Nearly half of Brazil's municipios (districts) experienced a loss of population in the 1990s.