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What Works in Fighting Diarrheal Diseases in Developing Countries? A Critical Review

Alix Peterson Zwane • Michael Kremer

The Millennium Development Goals call for reducing by half the proportion of people without sustainable access to safe drinking water. This goal was adopted in large part because clean water was seen as critical to fighting diarrheal disease, which kills 2 million children annually. There is compelling evidence that provision of piped water and sanitation can substantially reduce child mortality. However, in dispersed rural settlements, providing complete piped water and sanitation infrastructure to households is expensive. Many poor countries have therefore focused instead on providing community-level water infrastructure, such as wells. Various traditional child health interventions have been shown to be effective in fighting diarrhea. Among environmental interventions, handwashing and point-of-use water treatment both reduce diarrhea, although more needs to be learned about ways to encourage households to take up these behavior changes. In contrast, there is little evidence that providing community-level rural water infrastructure substantially reduces diarrheal disease or that this infrastructure can be effectively maintained. Investments in communal water infrastructure short of piped water may serve other needs, and may reduce diarrhea in particular circumstances, but the case for prioritizing communal infrastructure provision needs to be made rather than assumed. JEL codes: Q56, Q52, O22

The sole quantitative environmental target in the Millennium Development Goals is the call to “reduce by half the proportion of people without sustainable access to safe drinking water.” Providing water has a number of benefits, but a key rationale for this goal is the impact of poor quality water on human health, particularly on diarrheal disease, which kills 2 million children in poor countries each year (WHO 2002; Kosek, Bern, and Guerant 2003).

Providing piped water and sanitation infrastructure can drastically reduce child mortality. In the United States, these interventions were jointly responsible for most of the rapid decline in the child mortality rate in the early 20th century (Cutler and Miller 2005), and more recently for substantial health improvements on Native American reservations (Watson 2006). For this class of interventions, a key outstanding question is what institutional arrangements can best support investment in infrastructure and its maintenance. Galiani, Gertler, and Schargrodsky (2005) find major health gains from privatization of water service in Argentina in the 1990s.

However, it is expensive to provide piped water and sanitation to dispersed rural populations, and many countries find this beyond their means. In much of Africa, rural residents typically live on their farms rather than being concentrated in villages. In such circumstances, policy often focuses on providing improved drinking water sources outside the home, such as communal taps, wells, and protected springs. About 30 percent of people living in rural areas of developing countries (or about 926 Million people) lack a safe and accessible water supply as defined by the World Health Organization (a communal standpipe or borehole well within a reasonable distance) (WHO 2000). Nearly all of the \$5.5 billion, the World Bank invested in rural water and sanitation programs during 1978–2003 focused on improving water supply sources and quality through interventions such as well digging (Iyer and others 2006).

This article critically reviews the research on what works in preventing and treating diarrheal diseases in developing countries. It examines evidence on the medical effectiveness of a series of alternative means of fighting diarrhea and on ways of encouraging the individual or collective behavior necessary for uptake.¹

A series of randomized trials have established that several child health interventions—including exclusive breastfeeding, immunization, oral rehydration therapy, and micronutrient supplementation—are effective in preventing or treating diarrhea. Several interventions that rely on individual behavior change have also been shown to be effective. Researchers have convincingly demonstrated that increased handwashing can significantly reduce diarrhea incidence (Khan 1982; Han and Hlaing 1989; Luby, Agboatwall, Razz and others 2004), and randomized impact evaluations of point-of-use water treatment systems (disinfection of water in the home, for example) suggest that these technologies can reduce diarrhea incidence some 20–30 percent (Quick, Venczal, and others 1999; Reller and others 2003). Identifying successful strategies for promoting adoption is an important next step.

While there is a large body of evidence for the effectiveness of piped water in the reduction of diarrhea incidence, there is much less evidence for the effectiveness of the provision of communal rural water infrastructure and latrines. Although several older prospective studies appear to identify large impacts of this

class of interventions, these works have important methodological shortcomings. They relied on analyses of data from a handful of sites, were conducted in ways that make it difficult to disentangle the impact of provision of improved communal water sources from latrine construction, and were not based on random assignment of communities. More recent work based on randomized trials with large samples does not find substantial health impacts from improved communal water sources (Kremer and others 2006). Moreover, while rural water facilities can be long-lived if properly serviced, they often fall into disrepair quickly due to poor maintenance, and though many different approaches to maintenance have been advocated, there is little evidence on their relative effectiveness.

Because of the lack of evidence on effectiveness and the maintenance challenge, the case has not been made for prioritizing communal rural water infrastructure for fighting diarrheal disease. Investing in piped water and sanitation in areas where that is feasible and expanding the provision of standard child health interventions have both been shown to work. Finding ways to effectively promote handwashing and point-of-use water treatment also seems a priority. In some circumstances, there may be a strong case for investing in rural water infrastructure for other reasons, and in some environments such infrastructure may have important health benefits. But the case for prioritizing communal water infrastructure will need to be made rather than assumed.

This article first provides a brief background on water-related diseases and their transmission and discusses traditional child health interventions that prevent and treat diarrhea. Next, it reviews the evidence on individual behavior change interventions that can prevent diarrhea, including handwashing and point-of-use water treatment systems, and discusses the outstanding question of how to induce people to adopt these methods. It then reviews the evidence on the effectiveness of source water quality improvements and sanitation investments, and discusses the challenge of rural infrastructure maintenance. Finally, it sketches an agenda for further work.

Child Health Interventions

Water destined for human contact that is exposed to the environment is a potential source of diarrheal disease. In developing countries, in particular, surface water is often contaminated with pathogens (including bacteria, viruses, and parasites) due to contact with human and livestock waste. Drinking, handling, cooking, and bathing in such water exposes people, especially young children, to a wide range of health risks, including diarrheal diseases. Moreover, the lack of adequate water of any kind reduces the opportunity to wash people, food, dishes, and clothes and thus contributes to the spread of disease.

Table 1. Transmission Routes of Water-Related Diseases

<i>Classification</i>	<i>Transmission route</i>	<i>Examples of diseases transmitted</i>
Waterborne	Through ingestion of pathogens in drinking water	Diarrheal diseases Enteric fevers, such as typhoid Hepatitis A
Water-washed	Through incidental ingestion of pathogens in the course of other activities; results from having insufficient water for bathing and hygiene	Diarrheal diseases Trachoma Scabies
Water-based	Through an aquatic invertebrate host; results from repeated physical contact with contaminated water	Guinea worm Schistosomiasis
Water-related insect vector	Through an insect vector that breeds in or near water	Malaria (parasite) and yellow fever (virus)

Source: White, Bradley, and others (1972); Cairncross and Valdmanis (2006).

One standard method of classifying the disease burden associated with water summarizes the potential health costs of relying on unsafe water according to pathogen transmission path (table 1). In this taxonomy, diarrheal diseases are spread through fecal–oral transmission and fall into both, the waterborne and water-washed categories (White, Bradley, and White 1972; Cairncross 1996; IIED 2000). The health cost of diseases transmitted in this way is tremendous, and falls disproportionately on young children. Diarrheal illnesses accounted for at least 8 percent of total lost disability-adjusted life years in developing countries in 1990 (Smith, Corvalan, and Kjellstrom 1999) and for some 20 percent of deaths among children under age five (Kosek and others 2003). Acute diarrhea can result in severe dehydration, and persistent diarrhea may predispose children to malnutrition (Briend 1990; Schorling and others 1990; Lancet 1991; Guerrant, Lima, and Davidson 1992), making them more susceptible to other infectious diseases. Prospective (though nonrandomized) community-based fieldwork in Sub-Saharan Africa summarized by the Child Health Research Project (CHR 1998) concludes that diarrhea leads to impaired weight gain, particularly in infants less than 1-year old and those not exclusively breastfed. Malnutrition is in turn associated with increased risk of death from childhood illnesses (Peltier and others 1995).²

Several child health interventions—including breastfeeding, immunization against diarrheal diseases, oral rehydration therapy, and micronutrient supplementation—have been shown to be both effective and cost-effective in treating and preventing diarrhea in a series of randomized trials (for a review see Hill, Kirkwood, and Edmond 2004).

Exclusive breastfeeding is widely accepted as a means of preventing diarrhea in infants up to 6 months of age, and continued breastfeeding also has protective

effects for older children (Perera and others 1999; Raisler, Alexander, and O'Compo 1999; WHO Collaborative Study Team 2000). Weaning foods prepared in unhygienic conditions are frequently heavily contaminated with pathogens, and are thus a cause of diarrhea and associated malnutrition (Motarjemi and others 1993; Hendricks and Badruddin 1994; Monte and others 1997; Lanata 2003). Interventions to improve nutrition during weaning complement interventions that encourage early exclusive breastfeeding and extended breastfeeding.

Rotavirus is a leading cause of severe diarrheal disease and dehydration in infants. It most frequently attacks children 6–24 months and causes 20 percent of all diarrheal deaths among children under age five (Motarjemi and others 1993). In developing countries, rotavirus gastroenteritis is responsible for approximately half a million deaths per year among children under age five (Parashar, Bresee, and Glass 2003). Two new vaccines have shown efficacy against rotavirus gastroenteritis (Ruiz-Palacios and others 2006; Vesikari and others 2006) and are now on the market. The inclusion of these vaccines in national vaccination programs is a promising intervention against diarrheal disease and mortality.

Oral rehydration therapy appears to have been responsible for significant reductions in diarrheal mortality since 1980 (Miller and Hirschhorn 1995; Victora, Olino and others 1996; Victoria, Bryce and others 2000). Micronutrient supplementation, including therapeutic and preventative supplementation with zinc and therapeutic supplementation with vitamin A, has also been found to have positive impacts on diarrheal disease and death (Beaton and others 1993; Black 1998; Ramakrishnan and Martorell 1998; Zinc Investigators' Collaborative Group 1999, 2000; Grotto and others 2003).

As coverage is still incomplete, finding ways to increase access to traditional child health programs in an affordable way remains critical. For example, continuous zinc supplementation can be costly where high levels of home food production make fortification infeasible and households must be induced to adopt micronutrient “sprinkles” sachets (USAID 2004; Zlotkin and others 2005). Similarly, identifying effective mechanisms for encouraging breastfeeding and consistent use of oral rehydration therapy remains a challenge (Sikorski and others 2003).

Individual-Level Behavior Change

Individual choices and investments, such as handwashing and point-of-use water treatment (including improved storage), can break the chain of transmission of fecal–oral diseases. This section reviews the evidence on the health impact of these hygiene behavior modifications, and discusses the need for further work investigating how to increase uptake of these behaviors.

Handwashing

Hands are a common vector for the transmission of fecal–oral diseases (Curtis, Cairncross, and Yonli 2000). Handwashing with soap after defecation, after cleaning children, and before and after food handling can interrupt this diarrheal disease transmission path.

The effectiveness of handwashing as a means of reducing diarrhea has been convincingly established in several settings. Luby, Agboatwall, Razz, and others (2004) report the results of a recent cluster-randomized trial in a large sample of households in Karachi, Pakistan, of a handwashing promotion campaign aimed at mothers. Infants and malnourished children under age five living in treatment households had 39 percent fewer days of diarrhea compared with the control group after 1 year of intervention and observation. Gains roughly doubled after a second year of promotion as relatively poor households increased their compliance (Luby, Agboatwall, Painter, and others 2004).

A recent survey of the literature evaluating the effect of handwashing with soap on diarrhea risk in developing countries (Curtis and Cairncross 2003) identified two other randomized controlled trials with more than two communities in their samples (Khan 1982; Han and Hlaing 1989). Each study had a relatively large sample size randomly divided into treatment and control groups and measured compliance by observing or weighing provided bars of soap as well as by tracking diarrhea cases. The studies report large positive effects of handwashing and soap provision programs on diarrhea incidence. Khan (1982) reports that the provision of either soap and water storage containers or soap alone, along with initial instructions to increase the frequency of handwashing, reduced shigella reinfection by 67 percent in Bangladesh. Han and Hlaing (1989) report a 40 percent reduction in diarrhea incidence among children under age two (though no reduction in incidence for older children) following handwashing education and the provision of soap to a random sample of mothers in Rangoon (Yangon).

Point-of-Use Water Treatment

Point-of-use water treatment and improved water storage practices reduce the microbacteriological contamination of water held in homes. Numerous technologies have been developed, including chemical disinfection, that rely on simple household bleach or other methods such as use of flocculants, adsorption, filtration, boiling, or solar disinfection.

Evidence from randomized evaluations assessing the health impacts of various interventions to improve water quality at the point of use suggests that this is a promising way to reduce diarrheal incidence (Semenza and others 1998; Quick, Venczal, and others 1999; Quick, Kimura, and others 2002; Sobsey, Handzel, and

Venczel 2003; Reller and others 2003; Clasen and others 2004). Randomized impact evaluations of point-of-use water treatment systems observe statistically significant reductions of 20–30 percent in diarrheal incidence at the household level (Quick, Venczal, and others 1999; Reller and others 2003).^{3,4} In at least, one setting this level of reduction was sufficient to generate measurable reductions in mortality from all causes (Crump and others 2005).

Strategies to Promote Individual Behavior Change

The studies reviewed in this section suggest that the effectiveness of handwashing and point-of-use water treatment has been well established, and that attention should now be given to efforts to understand effective promotion strategies and how to sustain behavior change. The health benefits of this class of interventions depend on individual decisions to adopt and consistently adhere to certain behaviors. For both types of behavior, the observed impacts were generated in settings where high uptake (around 70 percent in the case of point-of-use water treatment) was supported by weekly or daily reminders by fieldworkers. Such extremely high-intensity contact with fieldworkers is prohibitively expensive to provide on a large-scale basis.⁵ The challenge of increasing uptake is further complicated by infectious disease externalities: because the private benefits of product use are smaller than the social benefits, to the extent that uptake affects the disease environment, inefficiently low levels of adoption can be expected even at subsidized product prices. Kremer and Miguel (forthcoming) describe such a phenomenon in the case of deworming drug use in western Kenya.

Identifying cost-effective ways to facilitate long-term behavior change and technology adoption requires additional research comparing alternative messages and message delivery avenues in several cultural contexts.⁶ For example, rigorous evaluations are needed that compare health education messages directed toward women emphasizing family health and those emphasizing children's well-being in particular. The comparative usefulness of positive and negative messages should also be explored, as has been done in other campaigns aimed at inducing behavioral changes in developed countries.

There is some evidence that inducing health or hygiene behavioral change may be especially difficult among the poorest groups. For example, Pant and others (1996) divided a random sample of 40,000 children from 75 locations in Nepal into two randomly assigned groups and provided one group with vitamin A supplements and the other with nutrition education. The risk of child mortality declined equally in the two groups, but the education program was more costly to deliver. In addition, education was the least cost-effective when maternal literacy was low. In the handwashing evaluation described above, Luby, Agboatwall, Painter, and others (2004) report that it took longer for the poorest households to

increase their compliance with the program, resulting in lower initial reductions in diarrhea incidence compared with the full effect ultimately demonstrated.

In the case of point-of-use water treatment, another important next step is to examine whether people are willing to permanently adopt or pay for systems that affect the taste of water, slow the rate at which water can be consumed (filtration, for example), or require that traditional storage containers be abandoned (Makutsa and others 2001).

Donors and governments are likely to be especially interested in the impact of price on uptake in the market for point-of-use water treatment products. There is some new evidence on these questions in recent work by Ashraf, Berry, and Shapiro (2006). This randomized evaluation suggests that demand depends on the price for in-home chlorination products in Zambia, with 80 percent of a representative sample of households (in a door-to-door sale) agreeing to purchase a chlorine-based point-of-use water treatment product at a price that is about 60 percent less than the subsidized market price, and about 50 percent willing to purchase the product at the subsidized price available in markets. No information is available about the elasticity of demand at higher prices that would reflect full cost-recovery pricing.

Berry and Shapiro (2006) present evidence, based on random assignment of households, that charging a nonzero price screens out customers who are less likely to use the product. They argue that charging thus avoids waste of the product and so may be optimal even if the only goal is to maximize product use with a given budget. However, higher prices do not help target delivery of the product to families with small children, who benefit the most from cleaner water. Moreover, the observed non-use may reflect saving of the product for later use, perhaps during times of epidemics. Moreover, the waste is likely to be quantitatively much smaller in the context of an ongoing program, because while people may accept a few bottles and never use them, it is unlikely that they would accept bottles month after month that they would never use. It is much more likely that they would build up a small stock of the product, and then not take more free bottles unless they were depleting their existing stock. Thus, the waste potentially avoided by charging a positive price on the basis of screening considerations is likely to be small, unless people develop alternative uses for the product. Waste might be a greater concern for items with a one-time capital cost, like filtration devices, rather than for items with just a flow cost.

In fact, market-based distribution of sodium hypochlorite disinfectants introduces some inefficiency. Because sellers want small bottles with low retail prices and packaging is a large part of total production cost (nearly 67% in Kenya, for example), the unit cost of producing these disinfectants (e.g., WaterGuard or Clorin) is higher than it would be if bulk packaging were used. If alternative distribution channels were used, there would be less need for small bottles and lower

total costs to produce the same amount of disinfectant, because the solution itself is only about 7% of total production cost.

Ashraf, Berry, and Shapiro (2006) designed their study so that they also could test the claim that paying a positive price actually makes people more likely to use technologies like sodium hypochlorite disinfectants. If this were true, it could be a second argument for charging a price for such products. While there is some evidence of this phenomenon in their study, it is not statistically significant.

In some contexts and for some behaviors, households may not be the most cost-effective entry point for message dissemination. Evaluations are needed that examine the relative effectiveness and cost-effectiveness of community-level efforts to stimulate demand for services or hygiene education efforts like the Total Sanitation Campaign, a community-based campaign to encourage sanitary habits, with a special emphasis on eliminating open defecation near villages. Chaudhury and Hammer (2006) are currently evaluating the Total Sanitation Campaign in India, and an evaluation of the program in Bangladesh is also under way. Manandhar and others (2004) demonstrate that community-level education of women's groups can improve birth outcomes. Further work might assess whether such education efforts can influence other hygiene behaviors, and the scalability of this approach.

Other feasible delivery mechanisms for inducing sustained uptake might include programs that work through maternity clinics (potentially providing incentives for women to take up antenatal services) or school-based programs. It is possible, for example, that providing soap, handwashing facilities, and messages about the importance of handwashing after defecation in primary schools might be an effective and cost-effective means of promoting long-term behavior change.

Research is also needed to identify how social learning about hygiene behavior and water treatment occurs. For example, little is known about who the opinion leaders are for water-related matters, and identifying them and encouraging them to adopt treatment systems or hygiene behaviors might be critical to wider community adoption. Research could examine, for example, whether encouraging women's groups to use water treatment systems is a particularly effective means of targeting mothers of young children, and thus increasing uptake among the young when weaning occurs. Such targeted dissemination to women could be compared with targeted dissemination to political leaders (likely men) and wider service provision.

Infrastructure Provision

This section reviews the evidence on the provision of piped water and sanitation and of community-level infrastructure.

Piped Water and Sanitation

There is strong evidence that large-scale investments in water and sanitation infrastructure can have massive impacts on child mortality. Cutler and Miller (2005) use historical variation in the timing and location of water filtration and chlorination technology adoption across U.S. cities to identify the contribution of improved water quality to the epidemiological transition in American cities. They find that clean water was responsible for about half the observed decline in mortality and nearly two-thirds of the reduction in child mortality in cities.

In a rural setting, Watson (2006) exploits the fact that a series of water and sanitation interventions introduced on Native American reservations in the United States during 1960–1998 were likely uncorrelated with other factors affecting infant health and plausibly exogenous to local community characteristics after accounting for county and year fixed effects. This research suggests that a 10 percent increase in the fraction of homes with improved water and sanitation services reduced infant mortality by 4 percent. Infant mortality rates fell among local residents not living on the reservation as well—a result Watson uses as a means to measure the significant positive externalities associated with the program.

An important question is how to deliver piped water and sanitation services in developing countries. There is some evidence that, at least in some settings, allowing private firms to provide piped water service can improve health outcomes. Galiani and others (2005) study a privatization reform that took place for about 30 percent of municipal water companies in Argentina in the 1990s to identify the impact of ownership on child health. They estimate that child mortality overall fell 5–7 percent in areas that privatized their water services because in this context privatization improved service and expanded coverage, and that the effect was largest in the poorest areas, at around 24 percent. While privatization of water supply is associated with significant reductions in deaths from infectious and parasitic diseases, it appears uncorrelated with deaths from causes unrelated to water conditions.

Limited Rural Water and Sanitation Infrastructure

A large body of epidemiological literature investigates the impact of improved rural water supply and sanitation service provision (often as part of a package of interventions that includes hygiene education) on health outcomes (reviews include Blum and Feachem 1983; Esrey, Feachem, and Hughes 1985; Esrey and Habicht 1986; Esrey and others 1991; Rosen and Vincent 1999; Fewtrell and others 2005).

Many of the studies that find health effects for water and sanitation infrastructure improvements short of piped water and sewerage suffer from critical methodological problems. Moreover, more recent research that addresses some of these

problems seems to find little evidence of substantial health impacts from rural water infrastructure.

Some have interpreted the existing literature as suggesting that providing water infrastructure short of pipes is not enough on its own and must be combined with other interventions, such as improved sanitation or hygiene. As discussed in the following section however there does not seem to be much evidence for such complementarity and in fact there is some evidence against it. Even if complementarity exists between communal rural water infrastructure and other interventions at some level of provision, not enough is known about the nature of the complementarity to use this information operationally. Finally, there are not yet adequate models for maintaining small-scale rural infrastructure, as discussed later, although contracting methods deserve further exploration.

Two studies by Esrey and others (1991) and by Esrey (1996) argue that water infrastructure is less effective than sanitation provision and hygiene education in fighting diarrheal disease. These publications are frequently cited as evidence for the relative importance of sanitation investments and hygiene education over the provision of improved water (see, for example, USAID 1996; Vaz and Jha 2001; World Bank 2002). In a review of 25 studies deemed by the authors to be relatively rigorous, Esrey and others (1991) attempt to separate the impacts of water supply, sanitation, and hygiene education interventions on diarrheal illness. They conclude that either sanitation supply or hygiene education provision results in nearly twice the median reduction in diarrheal incidence as an investment in water quality alone or in water quantity and water quality together.

Using multivariate regression analysis of household infrastructure status and diarrhea prevalence from several countries, Esrey (1996) argues that the benefits of improved water quality occur only together with improved sanitation and only when there is a water source within the home. One hypothesis for the relative ineffectiveness of communal water infrastructure is that a high degree of recontamination of water occurs in transport and storage when people fail to wash their hands frequently. A low correlation between source and home water quality has been demonstrated frequently in nonexperimental data (Wright, Gundry, and Conroy 2004). A limited impact of communal water supply would also be consistent with an epidemiological model in which the primary causes of diarrheal disease are water-washed (not waterborne), in which case improvements in water quality are likely to be less effective than interventions that make handwashing less costly, such as providing taps.

Many studies of water and sanitation infrastructure provision in developing countries lack a plausible comparison group and thus, without a credible counterfactual, cannot isolate a causal treatment effect from service provision. In the case of sanitation, for example, several case-control studies that compare health outcomes among children presenting at hospitals or clinics with diarrhea and

children with similar observable characteristics, but presenting with other illnesses (such as upper respiratory infections) have found that access to latrines reduces acute diarrhea incidence (Daniels and others 1990; Meddings and others 2004). However, this research strategy is vulnerable to the same methodological critique as cross-sectional regression analyses: cases that are similar across observable characteristics may differ systematically along dimensions that are difficult to measure, confounding the interpretation of results.

The two early evaluations (Huttly and others 1987; Aziz and others 1990) of infrastructure provision that used a prospective design, albeit in a very low number of communities, appeared to demonstrate that the provision of wells and latrines can be effective. Aziz and others (1990) compare the impact of an intervention in Bangladesh that provided multiple interventions, including water pumps, hygiene education, and latrines, to two villages (820 households) with three control villages (750 households), about 5 km away. The published article does not mention whether the villages were randomly selected. Children 6 months to 5 years of age in the intervention area experienced 25 percent fewer episodes of diarrhea than those in the comparison area.

Huttly and others (1987) and Blum and others (1990) study the impact of the provision of borehole wells with hand-pumps, pit latrines, and health education on dracunculiasis (guinea worm disease), diarrhea, and nutritional status in Nigeria in 1983–1986. The study compared three intervention villages (850 households) and two comparison villages (420 households). Because of implementation difficulties, their results largely reflect the effect of the installation of wells with pumps. The prevalence of wasting (defined as less than 80 percent of desirable weight for height) among children under 3 years of age declined significantly in the intervention villages, though diarrhea incidence did not decline measurably (perhaps because diarrhea is notoriously difficult to measure).

A key shortcoming of these studies is that they examine a very small number of communities, and the statistical hypothesis testing fails to adequately account for the fact that the interventions being evaluated are provided at the community rather than the household level. Because households within a community are likely to resemble each other, this clustered sampling reduces the power of statistical tests to determine the existence and size of the treatment effect, implying that reported confidence intervals are incorrect. To capture the variance in outcome variables across space and time, many localities should be included in both the treatment and comparison groups. Although the exact number of clusters required for a study depends on context-specific estimates of the intracluster correlation of outcome variables, Esrey (1996) suggests that at least 20 clusters should be included in both treatment and comparison samples.

More recent work in this area covers a large enough number of communities to draw statistical inferences, and finds little evidence that communal rural water

infrastructure substantially improves health. Kremer and others (2006) evaluate a spring protection intervention at a sample of 1,200 households in 175 communities using a randomized approach as part of a larger impact evaluation of a series of water and hygiene interventions in western Kenya. They find that spring protection is very effective in improving the quality of water at the source. Among households that collected all of their drinking water from the sample spring at baseline, spring protection is also highly effective in improving household water quality. Nonetheless, preliminary results from a subset of the data suggest that the improvements in water quality do not have substantial effects on diarrhea incidence, child weight, or child height. Consistent with this, revealed preference estimates of willingness to pay for the improved-source water quality decline over time. There is also little evidence of significant spillover benefits of the program on neighboring communities. In related work, initial results from a World Bank financed five-armed randomized trial in Afghanistan indicate that only a combination of hygiene education, provision of wells, and treatment of water with dilute sodium hypochlorite had a significant effect on diarrhea incidence among all age groups (B. Loevinsohn 2007, Personal communication). No effect was found from these interventions, either alone or in combination, on diarrhea incidence among children under five.

Complementarity between Source Water Quality and Other Factors

Some researchers have argued that although improved communal water supply does not reduce diarrhea on its own, it does do so in combination with other interventions, and should therefore be part of a larger package.

Both Kremer and others (2006) and Luby and others (2006) use experimental approaches to directly address complementarity. Kremer and others (2006) estimate that access to sanitation or hygiene knowledge before an improved water supply program does not appear to enable households to better translate quality improvements in source water into either household water quality gains or health improvements in their study region in Kenya. Luby and others (2006) report the result of a clustered randomized control trial in Karachi in which a random sample of households received handwashing promotion and a random sample received point-of-use drinking water technologies. A subset of these households received both interventions. While each of the home-based interventions reduced diarrhea incidence, there was no statistically significant additional benefit from the combined intervention. That is, the interventions function more as substitutes than as complements.

As Luby and others (2006) discuss, their findings are consistent with an epidemiological model in which disease thresholds are qualitatively important. If a large proportion of diarrhea incidence is caused by pathogens that must be

present in large doses to cause disease, substantially reducing the organisms ingested may reduce diarrhea incidence, but further marginal reductions could be much less important.

The results from these two studies suggest that it would be a mistake to assume that improvements in communal water supply will be effective in combination with other interventions. Even if complementarities are present in certain circumstances, without better knowledge of when they are important, this is of limited operational relevance.

The Challenge of Infrastructure Maintenance

To remain effective, water and sanitation infrastructure require management and upkeep. This section reviews the evidence on various infrastructure management schemes, cost-sharing efforts, and the involvement of women in managing public goods provision.

Infrastructure maintenance has historically been a major problem in developing countries, in particular in the rural water sector. For instance, a quarter of India's water infrastructure is believed to be in need of repair (Ray 2004). *World Development Report 2004* (World Bank 2003) estimates that more than a third of rural water infrastructure in South Asia is not functional. Miguel and Gugerty (2005) report that in western Kenya nearly 50 percent of borehole wells dug in the 1980s, and subsequently maintained using a community-based maintenance model, had fallen into disrepair by 2000. Difficulties with maintaining water infrastructure, particularly in rural areas, reduce the cost-effectiveness of these interventions relative to other measures that prevent diarrhea.

Involving women in managing environmental public goods. Some of the sociology literature has predicted that increasing the involvement of women in user committees will improve the management of collectively owned natural resources because women's social networks provide them with prior experience with collective action (Agarwal 2000). In addition, since women are major users of these goods, women's involvement in creating the rules may be especially important for compliance (Zwarteveen and Meizen-Dick 2001).

However, the evidence on the impact of women's involvement in public goods management is limited. Efforts using laboratory experiments to assess whether women supply different levels of public goods than men or are more cooperative (Nowell and Tinkler 1994; Eckel and Grossman 1998; Solow and Kirkwood 2002) seem to be sensitive to the form of the experiment. Much of the field evidence on this question is hampered by concerns about reverse causality (for example, Dollar, Fisman, and Gatti 2001). It is difficult to determine whether the inclusion of women causes a particular outcome to occur, whether the fact that

an outcome occurs encourages the participation and inclusion of women, or whether some other factors are driving these results. This problem affects both retrospective analyses (Prokopy 2004) and case studies (INSTRAW-UN 1990; Wijk-Sijbesma 1998; Gross, van Wijk, and Mukherjee 2001), neither of which is able to establish a causal relationship between women's participation and observed outcomes.

Chattopadhyay and Duflo (2004) identify a causal relationship between women's participation and project outcomes in their study of a randomized policy change in India that increased the role of women in policy decision-making. A 1993 constitutional amendment called for a third of village council leader positions to be reserved for women. Rules ensured random assignment of the leadership reservations. Chattopadhyay and Duflo (2004) show that village councils headed by women were more likely to invest in public infrastructure for drinking water, and, more generally, that councils dominated by one gender were more likely to invest in goods important to that gender. Of course, a finding that women are more likely to invest in water infrastructure does not necessarily imply that they will be more effective in maintaining it.

Community-level infrastructure management schemes. A standard model for maintaining donor-funded infrastructure projects in developing countries is to establish user groups responsible for maintenance and management. Giving communities direct control or ownership over key project decisions is intended to improve the quality of public services and increase financial sustainability, thus reducing the need for ongoing donor funding or involvement.⁷

There is little convincing empirical evidence, however, that local user-committee management of local public goods such as improved drinking water sources results in either greater financial sustainability or better quality service than ongoing centralized funding from public budgets. Collective action problems may be difficult to overcome, and voluntary committees tasked with collecting user fees may be difficult to sustain or empower. The rural water sector is characterized both by significant infectious disease externalities, as discussed earlier, and in most poor countries by weak fundraising capabilities because of weak local institutions generally.

In a recent comprehensive review of community-based development projects, Mansuri and Rao (2004) note that existing research examining "successful" community-based projects does not compare these projects with centralized mechanisms for service delivery or infrastructure maintenance (for example, city or state financed). This makes it difficult to determine whether alternative project designs would have had different results. The limited empirical evidence suggests the impact of the community-based development approach on infrastructure maintenance is mixed at best.⁸

Contracting for private maintenance service may be a promising alternative to committee-based management schemes. The evidence from Argentina discussed earlier (Galiani and others 2005) suggests that contracted private provision of service can expand coverage and improve health outcomes at least in certain settings or in middle-income countries. Several other nonrandomized studies in the water sector also provide suggestive evidence that continued support (financial and otherwise) may be necessary for effective infrastructure investments and public service delivery (Katz and Sara 1998; Dayton-Johnson 2000; Kleemeier 2000; Newman and others 2002). In other public health settings, contracting for private service provision has been demonstrated to be effective. Bloom and others (2006) show that government contracting of health services in Cambodia improved service at least for specifically targeted outcomes. Certainly, further research is needed that transparently compares the counterfactual of subsidized public service provision and community-based management schemes.

Conclusion and Recommendations

Randomized controlled trials have established that vaccination, oral rehydration therapy, breastfeeding, and micronutrient supplementation are effective in reducing the burden of diarrhea. Convincing evidence from rigorous evaluations has also demonstrated the effectiveness of point-of-use water treatment and hand-washing. There is evidence that piped water and sanitation infrastructure can improve health and that private management of such services can work well. In contrast, there is little evidence of the effectiveness of communal rural water infrastructure in fighting diarrheal disease. Reviews of older work with retrospective data yield mixed results, but have generally found that sanitation and hygiene are more important than water quality. Two prospective studies indicated gains from communal water infrastructure in particular, but these are methodologically problematic. Recent randomized evaluations provide little evidence for substantial effects of communal water infrastructure on diarrheal disease. Communal water infrastructure may be effective in fighting diarrhea in certain environments, but unless this is demonstrated, other approaches seem a higher priority for reducing the burden of diarrheal disease.

While this review suggests that investments in communal water infrastructure may not be a priority for fighting diarrheal diseases, these projects may be justified on other grounds. Women's time may be freed from water transport duties. In urban and peri-urban areas, improved water supply may also free households of the need to purchase drinking water from vendors (Briscoe 1984; Okun 1988; Varley, Tarvid, and Chao 1998; Meddings and others 2004). Standard cost-benefit techniques can establish whether individual projects are justified on these grounds.

More work is needed to develop and assess alternative strategies for generating sustained uptake of handwashing and point-of-use treatment of water. Where possible, projects should be designed from the outset to accommodate a rigorous evaluation. Projects should also be designed to allow for estimation of the impact of both individual interventions and packages of interventions, so that alternative approaches can be directly compared and issues of complementarity can be more fully assessed.

Notes

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1. For other recent reviews, focusing primarily on medical effectiveness, see Keusch and others (2006), Cairncross and Valdmanis (2006), Fewtrell and others (2005), and Martines and others (1993).

2. Perhaps because of the endogenous relationship between diarrhea and malnutrition, some observational studies also suggest that early childhood diarrhea is correlated with reduced fitness and cognitive performance for children ages 6–9, but have not been able isolate a causal effect (Guerrant and others 1999; Berkman and others 2002; Niehaus and others 2002). Impact evaluations of programs providing food supplements to primary school children generally show a positive relationship with schooling and cognitive outcomes, in addition to nutritional indicators (Chavez and Martinez 1986; Martorell 1993; Pollitt and others 1993).

3. Despite these large reported gains, however, many of the same studies also find that the observed reductions in diarrhea incidence associated with the intervention are concentrated among children under age one and over age five. Surprisingly, the age group with the highest rate of diarrhea incidence, children ages 1–5, may be least affected by this intervention (Quick, Venczal, and others 1999; Reller and others 2003; Sobsey and others 2003). However, in two cases, larger gains from point-of-use water treatment are identified in children under age five. In Uzbekistan, diarrhea incidence in children under five fell by 85 percent after the provision of a chlorine-stock solution and a narrow-necked storage container. In rural Bolivia, Clasen and others (2004) identified reductions in diarrhea incidence of about 83 percent in children under age five with a sample size of 30 children in 50 households. In this case, the treatment system provided to households was a ceramic water filter that left the taste of water unchanged. Uptake appears to have been around 70 percent, suggesting that improved compliance with treatment relative to the studies that supplied disinfectant cannot explain the observed result. It is unclear why the large gains identified in these two studies for the most vulnerable group have not been found in other contexts.

4. Findings from a few randomized trial studies of solar disinfection of water in homes are also consistent with this conclusion. In a Maasai community in Kenya, researchers identified large health benefits for children under six from the exposure of drinking water to sunlight (Conroy and others 1999, 2001).

5. Some follow-up studies several years after soap provision and hygiene behavior change efforts find that the behavior change can persist (Wilson and Chandler 1993; Shordt and Cairncross 2004). However, as the initial interventions studied were not randomized, this finding is somewhat difficult to interpret. A follow-up study, 5 years after a quasi-randomized community-level education intervention in Bangladesh (described in greater detail later in this article), suggests that the hygiene education effort there may have been relatively ineffective as 5 years later treatment households did not exhibit better hygiene than control households (Hoque and others 1996).

6. Low handwashing rates in U.S. elementary schools have prompted interest in the use of instant hand sanitizers (which do not require water) in classrooms as an alternative means of breaking disease transmission. A review of the evidence on the efficacy of sanitizers (Meadows and Le Saux 2004) identified one (clustered) randomized control trial of this technology to date. That trial found that sanitizers can effectively reduce absenteeism as a result of illness (White and others 2001). Based solely on that study, it is unclear whether sanitizers may be suitable for a developing country context, but this may be another avenue for future research.

7. Other goals may also be important. For example, community-based development may be expected to empower poor people or strengthen local governance.

8. In a study of water projects in 44 Indonesian villages, Isham and Kahkonen (1999) find that the existence of local water committees had either no effect or a negative effect on service performance, though greater community participation in the design of community-based water projects did improve water supply and health outcomes somewhat. On the other hand, Khwaja (2003) finds that community-managed projects in Pakistan, including investments in irrigation and drinking water, performed better than projects implemented by the government without community participation. However, he also finds that project-specific factors, such as the quality of the outside facilitator, may have a larger impact on project success than community characteristics.

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Addressing Gender-Based Violence: A Critical Review of Interventions

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This article highlights the progress in building a knowledge base on effective ways to increase access to justice for women who have experienced gender-based violence, offer quality services to survivors, and reduce levels of gender-based violence. While recognizing the limited number of high-quality studies on program effectiveness, this review of the literature highlights emerging good practices. Much progress has recently been made in measuring gender-based violence, most notably through a World Health Organization multicountry study and Demographic and Health Surveys. Even so, country coverage is still limited, and much of the information from other data sources cannot be meaningfully compared because of differences in how intimate partner violence is measured and reported. The dearth of high-quality evaluations means that policy recommendations in the short run must be based on emerging evidence in developing economies (process evaluations, qualitative evaluations, and imperfectly designed impact evaluations) and on more rigorous impact evaluations from developed countries. JEL codes: J16, K42, I18.

The United Nations Declaration on the Elimination of Violence against Women (United Nations General Assembly 1993) defines violence against women as “any act of gender-based violence that results in, or is likely to result in, physical, sexual or psychological harm or suffering to women, including threats of such acts, coercion or arbitrary deprivations of liberty, whether occurring in public or private life.”

Although there is much emerging evidence on the magnitude of gender-based violence, only a small subset of this evidence is comparable across countries. According to a recent UN report, at least one survey had been conducted in 71 countries as of 2005, and in 41 countries, these surveys had been national in scope (United Nations 2006a, cited in United Nations 2006b). The World Health

Organization (WHO) has recently undertaken efforts to generate comparable estimates of the prevalence of violence by intimate partners (a subset of gender-based violence) across 15 sites in 11 countries. In urban areas between 12.9 percent (Japan) and 48.6 percent (Peru) of women have suffered physical violence at some point in their lives. In rural areas, the lifetime prevalence rates for physical violence range from 33.8 percent (Brazil and Thailand) to 61 percent (Peru). For sexual violence by an intimate partner, the rates range from a low of 6.1 percent in urban Japan to a high of 58.6 percent in rural Ethiopia (WHO 2005; Garcia-Moreno and others 2005).¹ ORC Macro, through the Demographic and Health Surveys, has measured the prevalence of intimate partner violence across nine countries, but these estimates are not completely comparable.² Lifetime prevalence rates for physical violence by an intimate partner range from a low of 17.5 percent in Cambodia to a high of 48.4 percent in Zambia. By any reasonable standard, the prevalence rates generated by the WHO and ORC Macro surveys are high.

This article presents an overview of gender-based violence, identifying the risk and protective factors associated with it and summarizing recent research on its socioeconomic costs and health consequences. The main contribution of the article is to identify good practice responses to gender-based violence in the three thematic areas that encompass the principal responses to date to gender-based violence: increasing access to justice for survivors of gender-based violence, providing support to women who have been affected by violence, and preventing gender-based violence.

Gender-Based Violence: Risk Factors and Consequences

This section examines the risk factors associated with gender-based violence and the socioeconomic and health consequences of gender-based violence.

Risk Factors Associated with Gender-Based Violence

Gender-based violence is a complex phenomenon, shaped by forces that operate at different levels. An ecological model that combines factors operating at the individual, relationship, community, and society levels is the appropriate framework for examining the combination of risk factors that increases the likelihood of gender-based violence in a particular setting.³ The risk and protective factors that have been empirically identified for intimate partner violence—the form of gender-based violence for which the most empirical research on risk factors has been undertaken internationally—are shown in table 1.⁴

Table 1. Risk and Protective Factors for Intimate Partner Violence

<i>Individual level^a</i>	<i>Relationship level^b</i>	<i>Community level^c</i>	<i>Societal level^d</i>
<i>Socialization and learning</i>			
Witnessing intimate partner violence as a child (+) ^e		High neighborhood crime rate (+)	Cultural norms that support violence as an accepted way to resolve conflicts or to punish transgressions (+)
Suffering abuse as a child (+)	Association with gang members, delinquent, or patriarchal peers (+)	Absent or maladaptive teaching of alternatives to violence (+)	
<i>Power relations and patriarchal gender norms</i>			
Absent or rejecting father (+)	Male control of household decision making and wealth (+)		Norms that support male dominance over women and that require women's obedience and sexual availability (+)
	Controlling behavior by the husband (+)		
	Multiple partners or wives for the husband; number of unions for the woman (+)		Policies and laws that discriminate against women in social, economic, and political spheres
	Differences in spousal age and education (+)		
<i>Human capital and employment</i>			
Female education level (-)	Economic hardship (+)	Lack of economic opportunities for men (+)	
Male education level (-)			Access and control over economic resources for women (+/--)
Women engaged in income generation activities (+/-)			

Continued

Table 1. Continued

<i>Individual level^a</i>	<i>Relationship level^b</i>	<i>Community level^c</i>	<i>Societal level^d</i>
<i>Life cycle</i>			
Age of woman (–)	Length of relationship (–)		
<i>Triggers</i>			
HIV status of man or woman (+)	Male alcohol and substance abuse (+)		
+ indicates a risk factor; – indicates a protective factor; +/- indicates an ambiguous factor.			
^a Biological and personal history factors of victims and perpetrators.			
^b Proximal social relationships, including relations with friends, peers, and family.			
^c Community context in which social relationships are embedded, including school, workplace, and neighborhood.			
^d Larger societal factors that “create an acceptable climate for violence, reduce inhibitions against violence, create and sustain gaps between segments of society” (WHO 2002, p. 13).			
^e For boys witnessing violence increases the risk of becoming an abuser, whereas for girls it increases the risk for future victimization.			
<i>Source:</i> Gordon and Crehan 1999; Heise 1998; Hindin and Adair 2002; Jewkes 2002; Koenig 2003; Loi and others 1999; Martin and others 2002; WHO 2002; Kishor and Johnson 2004.			

Certain types of risk and protective factors—socialization/learning and human capital/employment opportunities—operate at all levels of the ecological model (individual, relationship, community, and society). The fact that risk and protective factors operate at multiple levels has important implications for the design of interventions to address gender-based violence: to be effective, interventions will generally need to address factors at these different levels.⁵

Kishor and Johnson’s (2004) study is the most comprehensive, cross-country examination of these risk factors. Using Demographic and Health Survey data from nine countries and a logistic regression model, they examine the correlates of intimate partner violence for lifetime violence and for violence suffered in the 12 months before the survey.⁶ The coefficients in the regression explaining violence in the last 12 months are reported here, but the results would not be significantly different were lifetime violence used, with a few important exceptions noted below.

Data from seven countries (Cambodia, Dominican Republic, Egypt, Haiti, India, Nicaragua, and Zambia) are available on intimate partner violence suffered in the 12 months before the survey. Data on lifetime violence are available for these seven countries, plus Colombia and Peru. In most countries, older women are substantially less likely to suffer violence than are younger women. Older age at marriage is a protective factor in only two of the seven countries (India and

Zambia); when lifetime violence is used as the dependent variable, age at marriage matters in a much larger number of countries. This difference may result from the fact that some of the women queried about violence in the previous 12 months are no longer with their first partner; thus, age at first marriage is a less important predictor of current violence than it is of lifetime violence. The number of unions for the woman is a strong predictor of the likelihood of violence; women with more than one union are between 40 percent (Nicaragua) and 66 percent (Cambodia) more likely to have suffered violence in the preceding 12 months, although the effect of multiple unions is not statistically significant in Egypt, Haiti or Zambia. More educated women may be less likely to be victimized by violence. Although this effect is statistically significant in only three of the seven countries, the magnitude of the effect is quite large: women with some secondary education are only 40–70 percent as likely to suffer violence as their less educated peers.

Some characteristics of the male partner seem to matter, whereas others do not. Mirroring the results of many other studies, alcohol abuse by the male partner is strongly associated with violence. Women with male partners who “come home drunk frequently” are four to seven times more likely to suffer violence. The education level of the male partner seems unimportant as a protective factor (with the exception of India), but more relevant when the dependent variable is lifetime violence.

Age and educational differences between partners do not seem particularly important, although women whose male partner is more than 15 years older are at lower risk of suffering violence in three of the seven countries (Dominican Republic, Haiti, and India), a result that contradicts that of several other studies, where age and education gaps are associated with a higher likelihood of violence (see table 1). Marital duration does not seem to matter, with the exception of India, where women who have been married less than four years are less likely to suffer violence.

Women who live in rural areas are less likely to suffer violence in four of the seven countries; in the remaining three countries, rural and urban women are equally likely to suffer violence. This result is surprising, given that the WHO surveys report significantly higher prevalence rates in rural areas than in urban areas. The obvious interpretation is that several of the important risk factors for violence are correlated with rural residence. Once these other factors have been accounted for, rural residence is no longer a risk factor—and in fact becomes a protective factor in a number of countries.

Finally, the relation of income and wealth to violence has been extremely contentious in the literature. Since income and violence clearly have a simultaneous relationship for which it is difficult to find appropriate identifying instruments, Kishor and Johnson (2004) use only measures of household wealth (and not

income) in their regressions. The results are far from conclusive: in two of the seven countries (Egypt and India), women from the poorest quintile are more likely to suffer violence than those in wealthier quintiles. In the remaining countries, greater household wealth does not seem to be a protective factor. In India, parental wealth seems to be positively associated with the risk of a daughter suffering intimate partner violence, perhaps because men may use violence as a way to extract additional resource transfers—in addition to the initial dowry—from the parents of their wives (Bloch and Rao 2002).

Socioeconomic Costs of Gender-Based Violence

Gender-based violence poses significant costs for the economies of developing economies, including lower productivity and incomes, lower rates of accumulation of human and social capital, and the generation of other forms of violence both now and in the future. The most common approach used to calculate the costs of gender-based violence has been an accounting methodology that calculates specific categories of costs and then sums them to reach the total cost to society. The U.S. Centers for Disease Control and Prevention specify two types of costs: direct costs, which are expenditures related to gender-based violence, including healthcare services, judicial services, and social services, and indirect costs, which are the value of lost productivity from both paid work and unpaid work, as well as the forgone value of lifetime earnings for women who have died as a result of gender-based violence (USCDC 2003). A recent estimate of the direct healthcare costs of intimate partner violence against adult women in the United States found costs of more than \$4 billion in 1995, including both mental health and medical care costs (USCDC 2003). Similar methodologies have been employed to estimate costs for other countries.⁷

There are only two direct cost studies for gender-based violence in developing economies of which the authors are aware. Mansingh and Ramphal (1993) estimate that the direct costs of treating victims of intimate partner violence in Kingston Public Hospital, Jamaica, totaled US\$454,000 in 1991 (in 2001 dollars). Sánchez and others (2004) find that the Colombian national government spent approximately 184 billion pesos (US\$73.7 million) in 2003 to prevent, detect, and offer services to survivors of family violence—about 0.6 percent of the national budget.

One of the weaknesses of the accounting approach is that any selection of categories is to some extent arbitrary, and alternative categories can always be selected (Buvinic and Morrison 1999). A more serious weakness is that key categories of costs may be left out, such as the costs to children witnessing or being a victim of family violence.⁸

Direct cost estimates are especially problematic in a developing country context. Lack of services or serious underfunding means that direct costs associated with gender-based violence will be low, giving the impression that the problem is not important when in fact prevalence rates may be quite high.

If estimates of direct costs of gender-based violence are not particularly useful in a developing country context, another option is to concentrate on estimating indirect costs. Indirect cost estimates have focused on forgone earnings due to death and lost productivity (USCDC 2003), job loss and lost productivity of the women who suffer violence, lost productivity of the abuser due to incarceration and mortality (Laurence and Spalter-Roth 1995), loss of tax revenues due to death and incarceration (Greaves and others 1995), and reduced earnings of women (Morrison and Orlando 1999; Sánchez and others 2004). Using equations of the determinants of women's earnings, Morrison and Orlando (1999) estimate that lost wages due to family violence amounted to 1.6 percent of GDP in Nicaragua and 2.0 percent in Chile. With a nonparametric matching methodology on Demographic and Health Survey data from 1995, Sánchez and others (2004) find that earnings are 14 percent lower for Colombian women who suffer physical violence than for women who do not. Using more recent data from 2003, they estimate that the wage loss due to family violence was equivalent to 0.85 percent of 2003 GDP.

Although the indirect cost approach offers more methodological rigor and perhaps better precision in estimating the labor market impacts of violence, it is subject to one of the same criticisms leveled at the accounting approach. Important categories of costs are not examined, although in this case the methodology makes no claim of producing a comprehensive estimate of the costs of gender-based violence.

A final option for estimating the socioeconomic costs associated with gender-based violence—one frequently employed by economists to establish the market value of nonmarket goods—is to estimate the willingness of individuals (and by extension society) to pay for lives free of gender-based violence. This approach produces a comprehensive estimate of the cost of gender-based violence in a specific locale. The approach has been used very infrequently to gauge the welfare loss occasioned by gender-based violence (see Sorenson 2003 for one of the few examples), presumably because of reticence to estimate the willingness to pay for what most consider a human right—the right to live without violence.

In sum, there is no single method for gauging the socioeconomic costs of gender-based violence. All methods have strengths and weaknesses, and the challenge is to choose the appropriate one given data constraints and the intended use for the estimates.

Health Consequences of Gender-Based Violence

A growing body of evidence documents the consequences of gender-based violence for women's health and well-being, ranging from fatal outcomes such as homicide, suicide, and AIDS-related deaths to nonfatal outcomes such as physical injuries, chronic pain syndrome, gastrointestinal disorders, unintended pregnancies, and sexually transmitted infections (Heise and others 1999; Campbell 2002).

Physical and sexual violence has consequences for women's mental health, such as post-traumatic stress syndrome, depression, anxiety, and low self-esteem, as well as behavioral outcomes such as alcohol and drug abuse, sexual risk-taking, and a higher risk of subsequent victimization. It has become increasingly clear that injuries represent only the tip of the iceberg of negative health effects and that violence is more appropriately conceptualized as a risk factor for health problems than as a health condition in itself. (See table 2 for a summary of the health consequences of intimate partner violence and sexual violence.)

A promising approach to estimating the health impacts of gender-based violence is to use the metric of disability-adjusted life years (DALYs) lost. DALYs have the advantage of including years lost due not only to premature mortality, but also to disability or illness. The first such estimate for gender-based violence, by Heise and others (1994), concluded that more than 9 million DALYs are lost by women each year worldwide as a result of rape and family violence, more than that lost by women from all types of cancer and more than twice that lost by women in motor vehicle accidents. More recently, Lozano (1999) estimated that rape and intimate partner violence against women were the third most important cause of DALYs lost in Mexico City—behind diabetes and perinatal conditions, but ahead of auto accidents, congenital anomalies, rheumatoid and osteoarthritis, cardiovascular disease, stroke, and pneumonia.

DALY estimates include the health impacts on women themselves. But gender-based violence also affects the children of women who experience violence. Researchers have documented such negative health outcomes as increased infant and child mortality (Åsling-Monemi and others 2003), emotional and behavioral problems (Jaffe and Sudermann 1995), and in the case of boys increased risk of perpetrating intimate partner violence and sexual violence as adults (Straus and Gelles 1986; Ellsberg and others 1999; Kishor and Johnson 2004).

Initiatives to Prevent and Respond to Gender-Based Violence

This section reviews what is known about the effectiveness of three ways to prevent and respond to gender-based violence: increasing access to justice for survivors of gender-based violence, providing support to women who have been affected by violence, and preventing gender-based violence.⁹ Although the

Table 2. Health Consequences of Intimate Partner Violence and Sexual Violence

<i>Fatal outcomes</i>	<i>Nonfatal outcomes</i>		
	<i>Physical injuries and chronic conditions</i>	<i>Sexual and reproductive outcomes</i>	<i>Psychological and behavioral outcomes</i>
Femicide	Fractures	Gynecological disorders	Depression and anxiety
Suicide	Abdominal or thoracic injuries	Pelvic inflammatory disease	Eating and sleep disorders
AIDS-related mortality	Chronic pain syndrome	Sexually transmitted infections, including HIV	Drug and alcohol abuse
Maternal mortality	Fibromyalgia	Unwanted pregnancy	Phobias and panic disorder
	Permanent disability	Pregnancy complications	Poor self-esteem
	Gastrointestinal disorders	Miscarriage, low birthweight	Post-traumatic stress disorder
	Irritable bowel syndrome	Sexual dysfunction	Psychosomatic disorders
	Lacerations and abrasions	Unsafe abortion	Self-harm
	Ocular damage		Unsafe sexual behavior

Source: Adapted from Heise and others (1999).

emphasis is on good practice approaches that have been evaluated in developing economies, such careful evaluations are in their infancy. Thus, these evaluations are complemented by results from evaluations for developed countries. Even in high-income countries, however, a comprehensive review in 1998 found only 34 among several hundred relevant intervention studies that were methodologically sound (Chalk and King 1998). Although this number has grown since then, the number remains small.

Increasing Access to Justice

Access to justice for women who have experienced gender-based violence has three dimensions. One dimension is offering protection to women from current and potential aggressors by improving laws and policies, mobilizing communities in defense of women's right to a life free of violence, and increasing knowledge of women's rights. A second is providing women with redress by strengthening institutional responses to gender-based violence. A third is raising the cost to men of engaging in gender-based violence by establishing or increasing criminal sanctions and mandating participation in treatment programs in the context of criminal prosecution of batterers. This section focuses on the three approaches for which relatively more information is available on impacts: improving laws and

policies, strengthening institutions in the criminal justice system, and implementing batterer treatment programs.

Improving laws and policies. Efforts to improve laws and policies have focused on international conventions to provide an overarching legal framework to support (or in some cases supersede) national legislation, new specialized legislation on gender-based violence, and reform of national civil and criminal codes.

In the past 25 years, many countries have signed international agreements that specifically mention violence against women. These include the Convention on the Elimination of All Forms of Discrimination against Women (entered into force in 1981), Convention on the Rights of the Child (1990), Vienna Declaration and Program of Action (adopted by the World Conference on Human Rights in 1993), Declaration on the Elimination of Violence against Women (adopted by the UN General Assembly in 1993), the Inter-American Convention on the Prevention, Punishment, and Eradication of Violence against Women (1994), and the Beijing Declaration and Platform for Action (adopted by the Fourth World Conference on Women in 1995). (For more details on these conventions and declarations, see Bott, Ellsberg, and Morrison 2005.)

The Inter-American Convention on the Prevention, Punishment, and Eradication of Violence against Women, frequently known as the Belém do Pará Convention, has been particularly important. To date, 31 countries in the Latin American and Caribbean region have ratified the convention, which obligates signatory governments to pursue policies to prevent, punish, and eradicate violence against women, including the adoption of an appropriate domestic legal framework.

A recent study notes that the Belem do Pará Convention has generated increased awareness that violence against women is a serious human rights violation (IACW 2004). The study, based on government responses to a questionnaire sent by the Inter-American Commission of Women in April 2000, studies by consultants, and interviews with government agencies, government and nongovernmental organizations, and academic experts, also concludes that there has been significant progress implementing some of the policies and programs called for in the convention. Noteworthy is the use of Article 12 of the convention (the right to lodge petitions with the Inter-American Commission on Human Rights) by petitioners and supporting nongovernmental organizations to hold national governments accountable to their commitments under the convention.¹⁰ Although progress has been registered in implementing some provisions of the convention, serious problems remain with respect to countries meeting their commitments on access to justice, data and statistical systems, services and protection for victims, and education and training for women (CLADEM 2004).

At the level of domestic legislation, governments have enacted significant legal reforms related to women's rights and gender-based violence in the past 20 years.

(For a detailed country-by-country review of laws on gender-based violence as of 2000, see CLADEM 2000.) These reforms have typically included modification of the civil and family legal framework to reduce discrimination against women; changes to the criminal code to strengthen sanctions related to family, domestic, and sexual violence; and legislation and public policies regulating criminal procedures and public and private sector responses to survivors of violence (restraining orders, forensic procedures, victim assistance). These legal reforms have considerably advanced efforts to strengthen women's rights and reduce violence against women. A substantial body of research has documented their positive impact on intermediate outcomes such as increasing reporting levels, raising the number of convictions, and improving the quality of police and judicial response (Ellsberg and others 1997), but it is not known whether this legislation has reduced the prevalence of violence.

The main lesson from legislative reform is that changing the law is only the first step in a long process. Much legislation has been implemented poorly or not at all. Common implementation problems include lack of coordination between family courts and criminal courts, reluctance by police or prosecutors to investigate cases or protect women in danger, and unwillingness or inability of the judiciary to enforce the laws—frequently due to lack of resources and specialized knowledge.

Improving institutional response: police, judiciary, forensic medicine, and legal aid. Initiatives to improve the service response to gender-based violence have included training professionals, reorganizing police or courts, and providing a more comprehensive and supportive response to survivors. The most effective appear to be strengthening and reforming the justice sector as a whole and building partnerships between the justice system and other sectors. Evidence suggests that improving survivors' access to judicial services cannot be done without broad reform of the judicial system addressing systemic problems such as corruption, procedural delays, lack of transparency, and the lack of any formal judicial presence in rural or poor urban settings (World Bank 2006).

Costa Rica, Nicaragua, South Africa, and others have tried to improve women's access to justice by increasing collaboration between law enforcement, health, and social services, by coalition building, or by legislative or policy change. In the United States rigorous evaluation has demonstrated that this approach, known as the coordinated community response model, can significantly improve law enforcement outcomes in cases of gender-based violence, such as number of arrests, percentage of cases resulting in prosecution, and the percentage of men ordered to attend batterer treatment programs as part of sentencing (Pence 1995; Shepard 1999; Shepard and Pence 1999). Less is known about the impact of this model in developing economies, but informal assessments suggest the promise of this type of approach (Villanueva 1999).

Although broad judicial system reforms are common in developing economies, only rarely have they explicitly addressed gender-based violence or women's rights. Most developing country efforts to improve the institutional response to gender-based violence have focused on relatively narrow training programs for professionals. Examples include Inter-American Development Bank (IDB) financed initiatives to train the police forces of Suriname and of countries of the English-speaking Caribbean in the area of family violence, as well as the development by the United Nations Latin American Institute for the Prevention of Crime and the Treatment of Offenders (ILANUD) of a procedural manual and accompanying in-service training to improve the Honduran police's ability to deal with family violence (Siloa Cruz 1997). Improving training in police academies has been the focus of a joint Policía Nacional de Nicaragua–GTZ (1998) initiative. ILANUD has also produced a guide for police academy instructors to improve their ability to teach about family violence (Batres and others 1996).

Judicial training typically focuses on interpretation and enforcement of domestic legislation on gender-based violence. It can also cover the application of international human rights agreements such as the Convention on the Elimination of All Forms of Discrimination against Women, Belém do Pará, and other broader human rights legal frameworks. In addition to judicial personnel, training could be offered to prosecutors, social service workers, public defenders, and pathologists (Villanueva 1999).

Evaluations of training initiatives suggest that training is most effective when all levels of personnel receive training (including officials at the highest levels) and when training is linked to changes throughout the institution—in policies, procedures, resources, and monitoring and evaluation (Rashid 2001; Villanueva 1999). These evaluations are commonly based on surveys measuring knowledge, attitudes, and practices (KAP surveys) administered before training, immediately after training is completed, and (ideally) 6 months or more after training is completed.

Another common response has been to create specialized women's police stations. These exist in several Latin American countries, including Argentina, Brazil, Colombia, Costa Rica, Ecuador, Nicaragua, Peru, and Uruguay. Some countries have experimented with special police units for women and children, composed of one or more police officers who work in a regular station but specifically handle cases of family and sexual violence.

Women's police stations, typically staffed by female police, offer services to women survivors of violence and prevention programs targeting the wider community. Some services are provided by police, including taking statements, undertaking investigations, and mediating agreements between a complainant and her assailant.¹¹ Other services are typically offered by various state agencies or non-governmental organizations, including gynecological services, forensic medical

exams, psychological exams, counseling services, and legal services. These services may be provided within the station (a one-stop-shop) or through a network of service providers.

Special police stations or units within police stations appear to increase reporting of abuse and the likelihood that women will receive forensic exams, counseling, emergency contraception, and protection against sexually transmitted infections. Evaluations have demonstrated a number of problems, however. First, female officers have not automatically demonstrated better attitudes toward victims of violence simply by virtue of their sex. Second, special stations have often been severely underfunded: officers have received inadequate training, and stations have lacked equipment, transportation, and other key resources. Third, even when the stations work well, their efforts are often undermined by other parts of the justice system that are unwilling or unable to enforce the law. Finally, women's police stations have been criticized for encouraging regular police stations to abdicate responsibility for crimes against women (Jubb and Izumino 2003; World Bank 2006).

It may be more effective to strengthen law enforcement across the board than to create separate women's police stations. A "whole system" approach, in which all police, male and female, receive pre-service and in-service training on how to treat cases of gender-based violence, though still uncommon, has led to impressive results in Nicaragua, improving the quality of police services for women survivors of violence. El Salvador has also advanced toward a whole system approach in police training (Jubb and Izumino 2003).

A key component of the criminal justice system is the medico-legal system of collecting forensic evidence. In many countries, forensic evidence can be admitted in courts only when collected by certified forensic physicians. These professionals are typically employed by the public sector and are notorious for their poor treatment of survivors and their unwillingness to provide urgent medical care, including emergency contraception and prophylaxis for sexually transmitted infections. The WHO and the Pan American Health Organization have recently developed guidelines for improving the medico-legal response to sexual and domestic violence. In Latin America, promising measures include appointing forensic doctors nominated and trained by women's organizations and allowing general physicians and in some cases nurses to collect forensic specimens (see Velzeboer and others 2003).

Implementing batterer treatment programs. Batterer treatment programs can be voluntary or court-ordered. Although voluntary treatment programs have existed in Latin America for several years (for example, the Men's Collective for Equal Relations in Mexico, Men's Association against Violence in Nicaragua, and the Argentine Association for the Prevention of Family Violence), only in a very few countries (for example, Honduras and Panama) can courts require male batterers

to attend a treatment program. The dearth of court-mandated programs in developing economies reflects both the lack of attention to gender-based violence in judicial systems and the lack of resources for ancillary programs in the judicial sector, even in countries where there is substantial awareness of the problem.

The effectiveness of these programs in developing economies has not been evaluated. What knowledge we do have about their effectiveness comes from developed countries, primarily the United States. Of five randomized trials of court-mandated batterer programs in the United States, three found no effect on the probability of re-offending (Dunford 2000; Feder and Dugan 2002; Labriola and others 2005), one found a lower probability of recidivism (but had a very small sample size; Palmer and others 1992), and one produced ambiguous results (battering was lower among men who went through a program, but since no cognitive changes were produced, it hypothesized that the result was due to court monitoring of offenders; Davis and others 2006). There may be other reasons for funding batterer programs aside from reducing violence, however. Victims may prefer sanctions that do not jeopardize the perpetrator's ability to earn an income, and judges may prefer an intermediate sanction between no action and jail time (Labriola and others 2005).

Support for Survivors of Violence

Over the past 30 years, the number of policies and programs that provide support for women in developing economies who experience violence has grown enormously. This section highlights the policies and programs that are national or sectorwide in scope and interventions that are embedded in specific institutions or communities.

Implementing national plans and policies against gender-based violence. Following the recommendations of the Beijing Plan of Action, many countries have established national plans for addressing gender-based violence. Some countries have established national commissions to improve intersectoral coordination and monitor progress in implementing the plans. One of the earliest, Costa Rica's National Plan for the Elimination of Violence, begun in 1994, coordinates actions among the judicial, health, education, and social welfare sectors of government, as well as with nongovernmental organizations that provide services to survivors of violence. Although there are no rigorous evaluations of the effectiveness of the national plans, qualitative reports suggest that they create political space for dialog between civil society and the state and commit the government to a public discourse that encourages sanctions against violence (Velzeboer and others 2003). Implementation of national plans is frequently problematic, however, whether due to budget constraints or a lack of political will.

Many countries have developed sectoral policies to address the needs of survivors of violence. For example, health services provide a unique opportunity to address the needs of abused women, since most women come into contact with the health system at some point in their lives. However, abundant research has shown that unless specifically asked, women are unlikely to disclose violence to health providers (Ellsberg 2006). For example, a Demographic and Health Survey in Nicaragua found that only 13 percent of women had ever received medical attention for injuries associated with family violence and that even in these cases most women did not disclose the cause of their injuries (INEC 1999).

Many countries have specific legislation and policies spelling out the obligations of the health sector to address violence against women. Adopting such policies, even though they often lack specificity, is a critical step in sensitizing health providers and program managers to violence as an important health issue. A review of the experiences of Central American countries between 2001 and 2003, however, found that the policies had not been widely disseminated and that most health providers were unaware of the policies or their specific contents (Velzeboer and others 2003). In some cases, national legislation has occasioned unforeseen problems for the health sector. For example, several countries, including Guatemala and Panama, require health providers to report suspected cases of family violence to legal authorities. This puts providers in the position of betraying the privacy and confidentiality of their clients and could reduce women's willingness to disclose violence. Providers may also be more reluctant to ask clients about violence for fear of becoming involved in legal cases.

The education sector has lagged far behind the health sector in developing a policy response to violence against women, despite growing evidence that sexual harassment and other forms of gender-based violence are widespread in educational settings (Leach and others 2003; Mirsky 2003; Wellesley Centers for Research on Women 2003). A recent study of violence in Brazilian schools in 14 state capitals found that 8 percent of students in fifth to eighth grades had witnessed sexual violence within the school (Abramovay and Franco 2004). Recent studies in six African countries found that 16–47 percent of girls in primary and secondary schools reported sexual abuse or harassment on the part of both male fellow students and teachers (Leach and others 2003). The Demographic and Health Survey in South Africa, surveying women aged 15–49, found that 38 percent of rape victims identified a teacher or principal as the rapist (Jewkes and others 2002).

Evidence suggests that sexual harassment and other forms of gender-based violence may affect girls' school enrollment in Africa, Asia, and the Middle East (Sathar and Lloyd 1993; Mensch and Lloyd 1998; UNICEF 2004) or may lead to increased rates of school abandonment (Wellesley Centers for Research on Women, 2003). Yet very few countries have enacted programs to prevent sexual abuse in schools or improve schools' response. South Africa and Uganda are

exceptions (see South Africa, National Department of Education 2001). Some evidence suggests that Uganda has had success in reducing tolerance for sexual harassment in schools (Bennel, Hyde, and Swainson 2002), but more research is needed to identify effective approaches.

Improving social services for survivors. Support services for survivors of violence are inadequate in most developing economies. Specialized services for survivors are run mainly by nongovernmental organizations, though many survivors turn to government institutions as well, depending on the setting. Typically, social service interventions aim to expand, improve, and integrate services such as telephone hotlines, emergency shelters, legal assistance, counseling services, psychological care, support groups, income generation programs, and child welfare services.

Most evaluations of social service interventions have been limited to process evaluations, which document numbers of people served, services provided, and types of cases reported (for example, Inter-American Development Bank 2002). Research on effectiveness, quality, and impact is scarce, even in industrial countries. In part, this is because researchers have found it challenging to define and measure reliable indicators of success, without long-term follow-up. Helping survivors escape and recover from violence is a long-term process, and women may experience an increased risk of violence in the short-term as a result of trying to change their situation.

Many programs have used qualitative data collection methods to evaluate the quality and effectiveness of services, relying heavily on the perspectives of survivors (for example, Guedes and others 2002). One of the few quantitative evaluations of integrated services for survivors of intimate partner violence from the United States highlights the challenges. Sullivan and Bybee (1999) conducted a randomized longitudinal study of the impact of advocacy services for women who sought refuge in a shelter. They measured quantitative outcomes such as levels of physical violence, psychological abuse, depression, quality of life, and social support. Women who received these advocacy services were more likely to experience violence in the short run than were controls. Only after 2 years did these women begin to experience less violence than women who did not receive such services. These women also reported a higher quality of life and social support and less difficulty in obtaining community resources. Had researchers followed these women for less time, they might have concluded that the program had failed.

Improving the health service response. In the past two decades, many programs have tried to strengthen the health service response to violence against women in developing economies. Few initiatives have been rigorously evaluated, but several promising interventions have provided insights to guide future programming, including those implemented by the Pan American Health Organization (PAHO),

the IDB, and the International Planned Parenthood Federation/Western Hemisphere Region (see Inter-American Development Bank 2002; Velzeboer and others 2003; Guedes 2004). Unlike many of the programs implemented in industrial countries, most of these programs have a much broader focus than implementing a screening and referral protocol. The PAHO program, for example, includes interventions to improve policy and legislation on gender-based violence, to increase access to services, and to forge multisectoral networks at a community level for violence prevention.

The central lesson of the past 20 years of work is that improving health service response requires a systemwide approach (Heise and others 1999). Examples include strengthening policies, protocols, and norms; upgrading the infrastructure of clinics to ensure privacy and adequate supplies; training all staff, including managers, to respond appropriately to gender-based violence; building referral networks; and ensuring that staff are trained to ask women about violence, provide emotional support and emergency medical treatment, assess a woman's level of danger, provide crisis interventions, document cases, and make referrals.

In recent years, a vigorous debate has emerged over the benefits and risks of having healthcare providers routinely ask women patients whether they have experienced violence (Garcia-Moreno 2002; Ramsay and others 2002). Some argue that in resource-poor settings, universal screening may harm women if providers are unprepared to respond appropriately, if privacy and confidentiality cannot be ensured, or if the community does not have adequate referral services. Others view routine enquiry about gender-based violence as an essential component of quality care for women.

Universal screening is probably not feasible in most developing economies because of the scarcity of resources and time pressures on health personnel. A promising approach is to engage in selective screening of women who show signs of abuse, while screening all women in selected services such as reproductive health, mental health, and emergency services (Heise and others 1999). Most experts would agree, however, that staff who are not prepared to respond appropriately to disclosures of violence against women put survivors at risk. Health programs have an ethical obligation to ensure that they have minimum resources in place to do no harm. Evidence suggests that routine screening should not be done until institutionwide reforms are in place (Bott and others 2004).

Prevention of Gender-Based Violence

Researchers, policymakers, and programmers are just beginning to understand what strategies may reduce gender-based violence in the long run. Some industrial countries have documented declines in certain types of violence against women (although those findings are not uncontroversial), but the reasons for the

declines are unclear—as are the implications for developing country settings (Dunne and others 2003; Rennison 2003). The evidence, however, supports a few general findings.

First, program evaluations suggest that in the short run it is easier to increase awareness and modify attitudes than to change violent behavior. Many theories of behavioral change in the marketing or communications fields identify a step-by-step process that starts with knowledge about a message and ends in behavioral change. Typical of this approach is the steps-to-behavior-change framework, which identifies five major stages of change: knowledge, approval, intention, practice, and advocacy (Piotrow and others 1997). Approval of a message of nonviolence may be a precursor to behavioral change, but they are not the same thing. This is problematic, since many prevention activities cite attitudinal change as their key indicator of success.

Second, substantial evidence suggests that violence prevention requires communitywide interventions. One of the major findings of international research on the causes of gender-based violence is that social and cultural factors at the community level play a large role in determining overall levels of violence, even though individual risk factors such as witnessing violence as a child may increase a specific individual's likelihood to use or experience violence (WHO 2002). In many settings, large numbers of women and men have internalized norms condoning violence. For example, the WHO multicountry study found that 50–90 percent of women in some countries agreed that it is acceptable for a man to beat his wife under one or more of the following circumstances: if she disobeys him, refuses him sex, does not complete housework on time, asks him about other women, or is unfaithful or suspected of being unfaithful (Garcia-Moreno and others 2005).

Organizations (mostly nongovernmental organizations) around the world have used mass media campaigns and community-based education to change community norms and attitudes related to gender-based violence. Typically, these have aimed to promote nonviolent behavior, challenge the underlying beliefs that justify women's subordination and the use of violence for settling conflicts, and encourage women and men to be more supportive of their friends and family members who experience violence. Mass media efforts have included international campaigns (such as the 16 Days of Activism against Gender Violence Campaign) and national campaigns (such as the annual campaigns conducted by the Nicaraguan Network of Women against Violence). These campaigns often appear to raise awareness and increase knowledge—an example is the Puntos de Encuentro's "Violence against Women: A Disaster That We Men Can Prevent" campaign in Nicaragua (Puntos de Encuentro 2000)—but their impact on levels of violence is less clear.

Many initiatives have aimed to prevent gender-based violence by mobilizing communities through outreach campaigns. Following the recommendations from

the PAHO multicountry study of institutional barriers for abused women, both the PAHO and IDB programs in Latin America emphasized the development of community-based networks that, in addition to providing services to victims, were charged with promoting prevention at the community level and decreasing tolerance of violent behavior. Community-based educational activities can challenge the underlying beliefs that justify women's subordination and the use of violence for settling conflicts. Preliminary evidence from two community-based projects in South Africa have shown promising results in reducing levels of violence through community mobilization and economic empowerment projects (Jewkes and others 2006; Guedes 2004).

One promising approach to behavioral change is "edutainment"—the use of radio and television to promote health and social change. The strategy, used in Africa, Asia, and Latin America, has demonstrated effectiveness in changing behaviors related to reproductive health, AIDS education, and the status of women (USCDC 2002; Campbell 2004). Nongovernmental organizations have recently begun to use radio and television edutainment to address violence against women. One well-evaluated example targeting gender relations (including gender-based violence) was the *Sexto Sentido* television program in Nicaragua. A longitudinal study of more than 4,000 young people found significant improvements in attitudes toward violence and gender equity among those who watched the show regularly (Solorzano and others 2006). Because of data constraints, however, researchers have not yet been able to measure the impact of this initiative on levels of violence against women.

A final general finding from the research on gender-based violence prevention is that programs need to focus on changing the attitudes and behaviors of young men. A large body of rigorous research from the United States has found that decades of violence prevention programs among school girls failed to reduce their individual risk of violence. Researchers concluded that programs cannot focus exclusively on equipping victims to protect themselves. Numerous programs in developing economies are currently working to promote nonviolence among men and boys. Several have been rigorously evaluated—such as Program H in Brazil, ReproSalud in Peru, and Men as Partners in South Africa—and they have shown promising results in changing male attitudes and behaviors (Guedes 2004; Pulerwitz and others 2004). One policy-relevant finding is that it appears to be easier to change attitudes and behaviors of boys and younger men than of older adults, highlighting the need to target young people.

Conclusions

This article describes the progress in building a knowledge base about effective ways to increase access to justice for women who have experienced gender-based

violence, offer quality services to survivors, and reduce levels of gender-based violence. While recognizing the limited number of high-quality studies on program effectiveness, this review has attempted to highlight emerging good practices.

The dearth of high-quality evaluations of interventions in developing economies has a practical implication: in the short run, policy recommendations must be based both on emerging evidence in developing economies (process evaluations, qualitative evaluations, and less than perfectly designed impact evaluations) and on more rigorous impact evaluations from developed countries—recognizing that solid evaluations are scarce even in developed countries. A second important conclusion is that no single intervention will address all the risk factors for gender-based violence and reduce gender-based violence in the short run. Multiple interventions at different levels of the ecological model (individual, community, institutional, legal, and policy) are necessary.

Much progress has recently been made in measuring gender-based violence. Most notable are the WHO multicountry study and the Demographic and Health Surveys. Both have contributed substantially to knowledge about the prevalence of intimate partner violence and have enabled important analyses of risk and protective factors. Even so, country coverage is still limited, and much of the information from other data sources cannot be meaningfully compared because of differences in the way intimate partner violence is measured and reported.

More fundamentally, information on other forms of gender-based violence—such as femicide, rape, sexual violence in situations of armed conflict, and trafficking in women and girls—continues to be scarce and incomplete. For these types of gender-based violence, methodologies that permit the collection of high-quality, comparable data across countries must be developed. Policy and program formulation in the absence of solid data is risky.

Notes

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1. Countries in the WHO multicountry study are Bangladesh, Brazil, Ethiopia, Japan, Namibia, Peru, Samoa, Serbia and Montenegro, Tanzania, and Thailand.

2. Countries in which ORC Macro has measured intimate partner violence include Cambodia, Colombia, Dominican Republic, Egypt, Haiti, India, Nicaragua, Peru, and Zambia. The surveys have used two different methods to measure intimate partner violence, so the data may not be completely

comparable across countries. One method was a single question threshold approach: a woman is asked a single question to determine whether she has ever experienced violence. Only if she answers “yes” are more detailed questions about violence administered. The second method, which should lead to less underreporting of violence, administers a series of questions on violence to all women (Kishor and Johnson 2004). There is some evidence, however, that even if a full-scale violence module is employed, large-scale surveys designed primarily for other purposes such as the Demographic and Health Surveys are likely to underestimate the prevalence of violence compared with surveys that focus exclusively on violence. Characteristics of violence-specific surveys such as specialized training of interviewers, greater emphasis on privacy and safety of respondents, and multiple opportunities to disclose violence have been found to have a positive effect on women’s reporting of violence. See Ellsberg and others (2001) and Jansen and others (2004).

3. The term *risk factors* is used, rather than the more common *determinants*, which implies a mechanistic relationship between variables: if a man abuses alcohol, for example, intimate partner violence will result. This is clearly not the case; alcohol abuse increases the likelihood of intimate partner violence, but does not mechanistically indicate the presence of violence.

4. It is important to identify risk factors for particular manifestations of gender-based violence. Although there are certainly common causes across different types of gender-based violence—such as intimate partner violence, rape by nonpartners, and elder abuse, for example—the risk factors may vary somewhat between the different manifestations of abuse, as will the relative importance of specific risk factors.

5. This does not mean that each intervention must occur at multiple levels, but rather that each level should be addressed by some intervention.

6. Violence refers to both physical and sexual violence in the majority of countries (Cambodia, Colombia, Dominican Republic, Haiti, Nicaragua, and Zambia). In the remaining countries, the survey did not specifically enquire about acts of sexual violence (see Kishore and Johnson 2004).

7. These include Australia (Laing and Bobic 2002), Canada (Greaves and others 1995; Health Canada 2002), Holland (Korf and others 1997), Switzerland (Godenzi and Yodanis 1998), and the United Kingdom (Stanko and others 1997), as well as for the states and provinces of Queensland (Blumel and others 1993), Northern Territory (Office of Women’s Policy 1996) and Victoria (VicHealth 2004) in Australia, British Columbia (Kerr and McLean 1996) in Canada, and Washington state in the United States (New and Berliner 2000). Many of these studies are reviewed in Yodanis and others (2000) and WHO (2004).

8. These impacts may include poorer performance in school (Larraín and others 1997); increased probability of delinquency, both as juveniles and as adults (Widom 1989; Dahlberg 1998; Thornberry and others 2001); children leaving abusive homes to live on the street (Hernández Rosete 1998); substance abuse (Molnar and others 2001); attempted suicide (Dube and others 2001); and higher probability of committing family violence as an adult (Strauss and others 1980).

9. This review draws from many published and unpublished sources, using databases such as Popline, Medline, and Current Contents. Many program evaluations from middle- and low-income countries appear only in the gray literature, so this review relies heavily on unpublished source; it also draws heavily on reviews of unpublished evaluations by the IDB (Inter-American Development Bank 2002); the WHO (2002); the Panos Institute (Mirsky 2003); and the United States Agency for International Development (Guedes 2004; White, Greene, and Murphy 2003).

10. Few women are able to bring cases to the Inter-American Commission on Human Rights. Article 12 is more important as a mechanism for civil society to hold governments accountable, rather than as a mechanism for redress of individual cases. The Inter-American Commission on Human Rights has received petitions on forced sterilization, family violence, conjugal visits, and child sexual abuse (CLADEM 2000). A recent decision found the Brazilian government guilty of negligence and recommended that the state pay compensation to a woman it failed to protect from family violence (the case of *María Pehna*, discussed in IACHR 2001). The Inter-American Human Rights Commission, aside from its function as arbiter of cases brought before it, has also made

violence against women more visible through its country reports—which contain a section on the rights of women, including the right to live a life free of violence—and its Special Rapporteurship on the Rights of Women.

11. Out-of-court-mediated settlements typically take the form of agreements between spouses mediated by a police officer and, in Peru, a legal advisor (Jubb and Izumino 2003). Women's movements in Nicaragua and elsewhere have rejected these agreements because they imply immunity from prosecution for human rights violations (Tamayo 2000, cited in Jubb and Izumino 2003).

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From Government to Regulatory Governance: Privatization and the Residual Role of the State

Bernardo Bortolotti • Enrico Perotti

This article reviews the state of thinking on the governance role of public ownership and control. Optimal governance systems depend on the path of institutional development. Nevertheless, the transfer of operational control over productive assets to the private sector often yields a desirable governance system, because it may be more difficult for citizens to constrain political abuse than for governments to regulate private activity. In weak institutional environments, however, the process needs to be structured to avoid capture of the regulatory process. The speed of transfer should be matched to progress in developing a strong regulatory governance system, to which certain residual rights of intervention must be vested. After all, "institutions" are simply governance mechanisms with some degree of autonomy from both political and private interests. The gradual creation of institutions partially shielded from political power must become central to the development of an optimal mode of regulatory governance. The article presents suggestions for establishing accountability in regulatory governance, in particular by creating an internal control system based on a rotating board with representatives of users, producers, and civil society, in a process involving frequent reporting and disclosure. JEL codes: G38, L33, L51

The boundaries of state ownership have moved considerably in modern times, following historical events, business cycles, and the ebbs and flows of economic thinking on the role of the state in the economy.

It is difficult to date precisely the early stages of the development of the state-owned enterprise sector. What is clear is that the economic downturn of the 1930s caused by the "Great Depression" led several European countries to introduce an interventionist strategy as public demand for greater social control over markets followed a series of devastating financial crises (hyperinflation, the 1929

stock market crash, banking crises). The French and Belgian governments established financial institutions that took control of the banking sector. In Germany, from the Weimar Republic to the National Socialist period, several state enterprises were created to foster industrialization. Similarly, in Italy in 1933 the state-owned industrial holding company Istituto per la Ricostruzione Industriale (IRI) was established to recover ailing firms and the national economy during the fascist era. Spain imported the IRI model after the Civil War, creating the Instituto Nacional de Industria (INI), with the aim of strengthening domestic development, fostering import substitution, and accelerating growth in underdeveloped areas. In Portugal the “corporative” ideology became the manifesto of Salazar’s authoritarian regime, which aimed to keep political and economic activity under tight public control.

After World War II decolonization created many new independent states eager to engage in nation building and to promote development through state planning and state enterprises. Most of the new African leaders were ideologically attracted to the “commanding heights” of the economy and were convinced that economic planning was the right policy to address poverty and disease (Nellis 2005). As a consequence, several Sub-Saharan countries established socialist (and sometimes Marxist) regimes and based their industrial policies on large-scale nationalization.

Yet the post-war experience gradually led to a drastic rethinking. Evidence confirmed the inefficiency of state-owned enterprises, questioned the motives of politicians in establishing direct control for regulatory purposes, and challenged the social equity of favoring specific constituencies at high public costs.

In the early 1980s the problem of the inefficiency of state enterprises, which were absorbing an increasing amount of public subsidies, became a priority on the political agendas of most European countries, prompting the surge of privatizations that began in the 1980s and gathered momentum from 1991 onwards after the ratification of the Maastricht Treaty on European Union. The restructuring and privatization of the state enterprise sector became necessary not only for modernizing economies, but also for meeting EU convergence criteria without politically costly tax increases. Privatization in developing countries has been spurred since the 1990s, when the International Monetary Fund and the World Bank began to make their assistance and lending conditional on privatization. In the early period the greatest share of privatization activity came from Latin America. After the peak of activity in 1997 revenues from privatizations declined following the East Asian financial crisis and the Russian debt crisis of 1998. The recent resurgence in privatizations in developing countries results from increased activity in China and several Eastern European countries (Kikeri 2005).

After 20 years of privatizations the borders of state ownership have been dramatically redrawn in many countries. The process has unquestionably been successful overall. The general evidence on privatization is favorable in terms of

improvement in firm performance (Megginson and Netter 2001; Kikeri and Nellis 2004). In Latin America privatization resulted in some (small) increases in inequality in the short run, with the gains in efficiency and access to infrastructure more diffused and long term (Nellis 2000). The experiences in Bulgaria, the Czech Republic, Russia, and other formerly centrally planned economies show how voucher scheme privatization programs aimed at broad ownership among the general public can get high-jacked by insiders. Privatization currently under way in China, Vietnam, and other countries is also expected to have adverse income distribution effects.

Thus the experience with privatization has provoked opposition even among early and committed proponents, who find that privatization in some Latin American and Eastern European countries created specific risks and social costs (Nellis 1999).

To explore the relative merits of state and private ownership the article first reviews the literature on ownership, discusses the main drivers of political decision-making, and draws some conclusions on what role state ownership and public governance more generally does or should play in regulating economic activity. The next section introduces some of the basic tradeoffs between private and public ownership of firms. This is followed by a discussion of the intrinsic limits of state ownership in solving commitment problems and a section addressing the risks of privatization in poorly regulated contexts. Finally, the article develops the concept of regulatory governance, advancing some suggestions about institutional development.

The Costs and Benefits of State Ownership: A Broad Conceptual Framework

State enterprises exhibit significantly lower productive efficiency than comparable privately owned enterprises.¹ The main causes have been traced back to a general absence of accountability,² leading to a lack of managerial and employee incentives toward efficiency, problems of competence or corruption by state authorities, and the use of state enterprises for political purposes, to cater to favored constituencies.

Russia provides a conspicuous example of political abuse and capture of state enterprises by special interest groups. Unlike in Central Europe, the power vacuum left after the collapse of the Soviet Union was not compensated for by identification with the West supported by a realistic prospect of joining the European Union. Weak legitimacy made the Yeltsin government vulnerable to the support of special interests and led to the capture of state decisions, which further

undermined support. A distorted corporate and regulatory governance system, in which each strong interest sought to maximize and secure short-term gains, produced a massive build-up of nonpayment of obligations, tax evasion, and asset theft from state enterprises (Black, Kraakman, and Tarassova 2000).

Although state ownership comes with substantial costs, it has been supported by two arguments in the presence of such market failures as market power and externalities (see, for example, Esfahani, Salehi, and Ardakani 2002). One that can be called the “public commitment problem” concerns the difficulty of a sovereign government to credibly commit to refrain from manipulating taxes and regulations in order to collect quasi-rents on relation-specific and often sunk assets. This discourages private investment and may result in direct government involvement in production as a substitute. For instance, state control of infrastructure may be the result of the unwillingness of private investors to fund large investments whose rewards, once sunk, are subject to political decisions.

The public commitment view is buttressed by considerable evidence showing that the size of the public sector is smaller in countries with better institutions, especially those curbing the risk of arbitrary changes in policies, such as contract repudiation and expropriation by the government (Knack and Keefer 1995). La Porta, Lopez-de-Silanes, and Shleifer (2002) find that government ownership of banks is more pervasive in countries with poorly defined property rights, finding support for Gerschenkron’s (1962) view that in these circumstances only the government can promote financial market development.

The second argument, called the “private commitment problem,” identifies the difficulty for regulators in controlling significant decisions by private owners unless government has direct control over the enterprise (see Shleifer and Vishny 1994; Hart, Shleifer, and Vishny 1997). For instance, state ownership of banks may arise because private banks take advantage of depositors or deposit insurance. Most large Russian private banks became empty boxes ahead of the 1998 crises as their capital fled abroad and liabilities piled up. Depositors and foreign investors took large losses. In the end, the experience led most retail depositors to turn to state-owned Sbarbank.

Both these rationales for state ownership presume that state authorities seek to correct classic market failures such as externalities, natural monopolies, high information costs, or public goods. Yet rather than assuming such a public objective, it seems useful to discuss under what governance forms there will be enough public scrutiny to ensure political attention to public welfare.

In general, commitment problems apply to both private individuals and state authorities under incomplete private contracting and its public sector counterpart, incomplete legislation. The critical difference is that the sovereign state has greater discretion and thus greater scope for abuse.

For example, a typical cost of market contracting is the possibility of “lock-in.” When the transaction extends over a long period of time and is potentially affected by unforeseen contingencies, one party may be exposed to the risk of exploitation when some relation-specific investments must be made. Under incomplete contracting these costs are usually mitigated by assigning ownership rights to the parties most severely exposed to these risks. Under incomplete legislation the greater scope from exploitation and abuse comes from the fact that the government can write rules and enforce them, exposing the private party to an additional “regulatory risk” that was absent under private contracting. Indeed, the government can not only renege on a contract, but it can also modify legislation for its own advantage.

Thus the main argument against state control arises from the combination of broader discretionary powers and the potential for political opportunism. Given that many developing countries have weaker institutions constraining public abuse, the case for state control is particularly difficult precisely in contexts where its need may in principle be the greatest.

Obviously the balance of costs and benefits of state ownership depends on the particular path of institutional development and will therefore vary with circumstances. However, constraining public abuse may be more difficult than regulating private economic activity. In that case a more desirable governance mode implies the transfer of ownership rights to the private sector combined with open regulation. While privatization is necessary for productive efficiency, open regulation is needed to achieve allocative efficiency. This proposition implies that private ownership creates better incentives to improve firm productivity but firms must be suitably regulated in order to maximize social surplus.

There is a broad consensus that privatization usually fails to deliver much of its potential in poor institutional contexts, when weak regulation leads to either public or private abuse. Yet regulation can also fail, when it leads to regulatory capture or (in the extreme cases) to state capture. Examples are the large privatization programs in Chile in the late 1970s, in Mexico in the 1980s, and in Russia in the mid-1990s. In some early Latin American privatization programs large private investors were grossly favored in the privatization of the large state banks that were sold cheaply and on highly leveraged terms. This enabled these investors to fund the acquisition of control over a number of privatized firms. In all these cases the abuse of bank resources for private purposes led to brutal financial crises, which forced the renationalization of most of these groups (Velasco 1988). Russia’s experience is also instructive on how captured privatization programs can undermine the authority of the state and other institutions (Perotti 2002). In contrast, China’s gradual privatization, favoring entry while retaining control over the process, has limited private capture of the process, although it still leaves some uncertainty about the possibility of a gradual retreat.

Thus the relevant notion of nonprivate governance appears to be *regulatory governance*. Regulation needs to be explicit in order to expose both public policy and private behavior to greater public scrutiny. To function properly in poor institutional contexts, however, regulatory institutions may need to be accompanied by societal institutions that are able to detect or respond to abuse. A grassroots form of governance may be required to create legitimacy and scope for increasing independence from the executive branch of government. But before the mechanics of regulatory governance and its relation with residual state ownership are described more precisely, the following section explores the limits of state ownership and control in pursuing social welfare.

Self-Interested or Benevolent Government?

Sappington and Stiglitz (1987) present the classic case for state ownership and control, which occurs when information, contracting, and bargaining costs limit the government's ability to regulate by *ex ante* design. They also suggest that when the government cannot determine its precise objectives due to lack of experience, it may want to retain direct control to avoid costly contract renegotiation procedures with private parties. To the extent that intervention has large costs, state ownership (or rather, state control) is to be preferred to private ownership (Hart, Shleifer, and Vishny 1997).

Yet the regulation of state enterprises by politicians suffers serious drawbacks. First, it is widely known that temporary powers extended to public institutions tend to become permanent. Thus it may be difficult for dispersed citizens to intervene to reverse state control once its purposes have ceased to exist. Second, it is hard to induce politicians to represent the interest of the electorate over special interests and to avoid conflicts of interest.

When voters are poorly informed or too dispersed to coordinate collective responses, politicians are able to pursue special interests at the cost of the common good. If selfish politicians are prone to corruption and patronage (Shleifer and Vishny 1993), the inefficiency of state enterprises is due not only to weak incentives, but also to deliberate political decisions to transfer resources to supporters (Shleifer and Vishny 1994). Such indirect targeting, distorting productive choices, produces inefficiency (Biais and Perotti 2002), such as excessive employment and wages above marginal productivity.³ For instance, state enterprises may build plants in economically unfavorable but politically attractive regions (Martinelli 1981). Other inefficient political benefits include the production of goods that are not socially desirable.⁴ Politicians may even distort the regulatory framework ahead of a state enterprise sale to reduce

future competition, thus maximizing revenues (or bribes) at the cost of consumer surplus.

Even ignoring the most blatant cases of political abuse, the empirical record of state enterprises solving market failures is quite poor. Externalities such as pollution were not visibly better managed by state enterprises than by private firms, as the environmental situation in Eastern Europe vividly illustrates (Grossman and Krueger 1995). Public monopolies often abuse their market power, not necessarily by charging high prices but by tolerating sheer inefficiency, allowing their employees a Hicksian “quiet life,” or by granting preferential treatment to political constituencies (Kikeri, Nellis, and Shirley 1992). This form of internal capture has led to low rates of investment under state monopoly in many countries. Primary examples are the energy and telecommunications sectors, which often expanded and modernized their infrastructures only after privatization and the resulting increase in competition (Bortolotti and others 2002).

If outright state ownership and control do not yield efficient outcomes, the issue becomes how to establish a credible time path for the retreat of direct state control to the emergence of genuine, more accountable forms of regulation.

Privatization, Regulatory Capture, and Institution Building

Privatization outcomes are heavily affected by the institutional setting in which divestiture takes place. In countries where public regulation cannot control private activity, the speed of privatization should be aligned with the progressive strengthening of institutional foundations. Where the institutional foundations to support or regulate private activities are completely missing, rapid privatization may lead to an unacceptable loss of control over the economic system. Under these circumstances privatization cannot escape capture and may even weaken corporate governance (weak regulatory, bankruptcy, and takeover procedures; corrupt legal enforcement) and lead to a loss of ultimate control over the process and its goals. Major structural reforms can thus fail when their design leads to regulatory capture or (in extreme cases) to state capture.

In a grand political bargain to buy out opposition to privatization most Russian enterprises became controlled by their managers (Shleifer and Treisman 2000). Perhaps there was no other way to securely establish private property in Russia than to “buy in” the potential opposition. Yet it appears that the extent of control transfer to the managers seriously weakened the ability of the state to control the reform process. Many structural reforms, such as bank legislation, the sale of the most valuable resource companies, the public debt market, and the

provision of currency hedges were implemented in a compromise with powerful interests.

A spectacular example of policy capture was the debt for shares deal negotiated on the eve of the 1996 presidential elections. Through a highly dubious secured loan a few influential banks captured control of the best natural resource companies, creating a number of financial–industrial groups. Cash-generating companies in these groups were milked by controlling shareholders, leading to major conflicts with investors and, more recently, with the new Russian government.⁵ The high opportunity cost of cash payments (because of the high appropriability of cash for managers) also fed a massive demonetization of transactions and a shift to barter, an extremely inefficient payment system.⁶

In contrast, in China the state has retained control over privatization and deregulation, and private capture of the reform process is more limited. While success with privatization has been attributed to its gradualism, the critical element may have been privatization by favoring entry rather than rapid transfer of control. Arguably, the Chinese economy had ample underutilized resources, and its industrialization had barely begun, so there were many free resources to deploy. In the former Soviet Union reforms required massive reallocation of resources frozen in inefficient production, and considerable uncertainty remains over the possibility of further retreat.

Privatization can lead to increased efficiency and improved welfare only in settings with enough capacity to ensure protection of property rights, contract enforcement, control of market abuse, fair regulation and open entry, and commercial dispute settlement based on law, not payments.

At the same time, there are enough cases of poor performance of privatization in some contexts to acknowledge some objective limits in private control, due primarily to regulatory inefficiency or outright capture. When the transfer of critical assets to private ownership cannot be managed safely (in the sense of avoiding losing control of the sale and the regulatory process), public ownership (and control) can have a temporary role, while institution building takes place. Indeed, under uncertain public commitment, governments can credibly inspire confidence by selling ownership gradually, signaling a commitment to privatization through the willingness to bear residual risk (Perotti 1995). A parallel argument may be made that the state should keep control over decision rights until proper regulation is in place. In both cases the argument is for temporary, gradually decreasing residual cash flow and control rights. There is evidence that a sustained privatization program contributes over time to resolving uncertainty over political commitment to property rights and leads to financial market development (Laeven and Perotti 2001) and to improvements in measures of corruption and the quality of legal enforcement (Boubakri and Cosset 2006).

Yet to be feasible, the structure and role of this residual ownership form needs to be designed with a temporary purpose from the beginning, however long temporary may be. The suggestion is that without an explicit commitment by the state to release control under some conditions, the process of institution building may not even start.

Thus the state has to be progressively removed from direct involvement in the economy, in order to create some scope for allocating residual regulatory and enforcement rights to new institutions. The emphasis should be on creating increasingly professionalized and autonomous regulatory institutions that draw their legitimacy and right to gain further autonomy from a direct, nonstate form of governance that involves consumers and citizens to a greater extent.

Recent evidence (Djankov and others 2003; Acemoglu and Johnson 2005) suggests that the most important institutions are those that restrain the executive and reinforce its accountability by limiting the abuse of power over those that regulate relationships among individuals. The reason may be that power-restraining institutions also correct political incentives to favor strong private interests, for instance through control of market power, thus undermining the establishment of a level playing field and the process of entry by new producers.⁷

State capture by special interests seriously weakens the credibility of enforcement. While corruption accompanied transition in all countries, its extent in the former Soviet Union led many observers to describe it as state capture, where the corrupting agents hold more power than the corrupted officials. There is evidence that while connected firms benefit, on average, they grow less than do firms in economies less subject to capture (Hellmann, Jones, and Kaufmann 2000). In Russia the private capture of the privatization process weakened the ability of the government to control the behavior of the most powerful private owners (Perotti 2002).

Djankov and others (2003) summarize the case for a further retreat of state ownership even in countries with poor institutions. They argue that the more civic capital a country has, the more it is able to achieve cooperation among its members without coercion. Civic capital, fixed in the short run, is determined by culture, factor endowments, and history. The less civic capital a country has, the less it can “buy” order with extra regulation. Thus less developed countries can achieve less with regulation. Deregulation of competitive markets in less developed countries should then count as a high priority. The presence of relatively high barriers to entry in such countries suggests that regulation is often captured and tends to hinder growth. But just as barriers to entry must be reduced, so too must regulatory institutions be improved. This requires a deliberate policy of greater scrutiny and accountability through a more directly elected form of regulatory governance.

The Mechanics of Regulatory Governance

The reasoning behind this argument is straightforward. Both private agents and the public sector face commitment problems. Since governments are sovereign institutions, they have more difficulty than the private sector in committing to specific decision criteria. Ideally, government should be constrained by private ownership, and the private sector should be constrained by regulation. Thus the critical question shifts to the governance of regulatory institutions.

Regulatory authorities have grown throughout the developed and developing world as a result of privatization, and they exhibit various degrees of autonomy.⁸ But whatever their record, the separation of ownership from regulation tends to generate additional open scrutiny and necessarily improves the governance of the regulatory process, at least as long as it is not captured. One of the most neglected benefits of privatization is the increase in public scrutiny arising from the fact that political control is exercised more at arm's length, or in any case through explicit legislation, so that its goals become more open to public opinion. This is comparable to the case of a firm with dispersed ownership obtaining a public listing, a move that improves the quality of information available for judging its management.

In the language of Pistor and Xu (2002) laws and regulations are necessarily incomplete, just as private contracts are. By default, residual rights to regulate belong to the state. Yet the authority to adjust enforcement under unspecified contingencies could be granted to semiautonomous judicial or regulatory authorities. The role of regulatory agencies is more proactive than that of courts, which may not intervene preventively but may respond only after damaged parties bring legal action. Provided that such regulatory institutions operate under a framework in which they can avoid being captured, granting them progressively increasing residual enforcement rights has several advantages over the assertion of direct state control.

Currently, the degree of regulatory autonomy is politically controlled. In perspective, regulatory governance could instead be made contingent on public approval. As long as the mandate is both explicit and focused, and a reputation can be established (as for central banks), such institutions would have less power and appetite for secondary political goals than do politically controlled institutions. Besley and Coate (2003) argue along similar lines that politically appointed regulators tend to pursue unrelated political goals. They report evidence that U.S. states with elected regulators in place of political appointees choose more pro-consumer policies.

Ensuring that regulators work in an independent and accountable fashion toward their stated goals can be reinforced by a novel approach to governance. Their mandate should be temporary and subject to public review: their governance

should include representatives of consumer and other nongovernmental organizations. Governance in some traditional institutions, such as in mutual banks and administrations of public infrastructure, has included a body of elected representatives of users. This concept should be broadened and further experimented with in other contexts as well.

In short, governance of regulators should take a more democratic, directly elected turn. The logic of the argument is not democratization itself. There are agency and common good problems to this solution as well as to others. The logic of this proposal reflects the sensible economic principle that those who benefit most from proper regulation should be entrusted at least in part with its governance (Hansmann 1996; Besley and Coate 2003). Thus the composition of a regulatory board might include representatives from different constituencies and nongovernmental organizations, elected on a rotational basis from broad lists. The governance assignments of individual organizations might be temporary, and extensions and rotation might be subject to public, rather than political, approval. Regulators should be subject to explicit accountability by the establishment of quantifiable or verifiable goals, with progress to be reported on annually. One task of the external appointees would be to report publicly on their views on the regulatory effort and to contribute to necessary adjustments in the statement of regulatory intents and priorities by increasing public scrutiny.

Conclusions

The issue of public or private governance in circumstances of market failure hinges on the relative ability to commit to fair and efficient allocation. In general the state has greater difficulty in committing, due to its status. State ownership should remain an extreme solution, not advisable except in circumstances when privatization leads to uncertainty over the allocation of ultimate control. This is evident in cases of executive power and public security, as with the army, the police, and prisons.

In countries where private commitment is hindered by poor legal enforcement, a case can be made for some form of state control. Yet because in such cases the environment is also commonly associated with corrupt politicians and unconstrained abuse of power, the public commitment problem is even more serious. The evidence in the recent literature clearly points to institutional development as a precondition for the functioning of both private and public policy. Worse institutions appear to produce worse macroeconomic outcomes, even after policy choices are controlled for.⁹ The conclusion is that in such environments there is too little institutional capacity for proper state-controlled regulation, and thus the balance should tilt in favor of more direct state control.

Of course, this is a static view only. The fact that an institutional framework is too weak to support active state regulation suggests that institutional capacity has to be built up, not forsaken. What are institutions if not governance mechanisms with some degree of autonomy from both political and private interests? The gradual creation of institutions that are partially autonomous from political power becomes central to the development of an optimal mode of regulatory governance.

A residual degree of state control, rather than outright ownership, may have a role when proper institutional mechanisms are not (yet) in place. Yet this role must be progressively reduced by the creation of intermediate, focused regulatory institutions that may offer some weakening of the political grip on decision-making. The shift from government ownership to regulatory governance would include the separation of enterprises from ministries and their corporatization, the creation of independent regulators, and resort to temporary mixed ownership. Such policies should allow a greater exposure to market discipline, better incentives in firms, and an increased accountability toward citizens.

Notes

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1. Good surveys are found in Megginson and Netter (2001), McKenzie and Mookherjee (2003), and Boubakri and Cosset (1999).

2. Accountability to citizens, not investors, is meant here. While state enterprises are incorporated firms, they have no private shareholders. Nor do lenders play a disciplining role, as state enterprise debt is perceived as a public obligation.

3. Even in the United States state entities typically employ 20–30 percent more employees than their private counterparts (Donahue 1989).

4. The development of the Concorde plane is an example (Anastassopoulos 1981).

5. Large financial–industrial groups, common in underdeveloped financial systems, certainly owe their influence to political support, yet may provide governance and an internal capital market to alleviate credit constraints. Empirical research on Russian financial–industrial groups has shown that while group firms were better managed, cash was reallocated from cash-rich group firms on a massive scale and may have been shifted outside the group (Perotti and Gelfer 2001).

6. As evidence that cash-stripping took precedence over productive activity, barter rose with real interest rates and with ruble overvaluation. Ivanova and Wyplosz (1999) find that both higher monetary growth and higher interest rates are correlated with higher barter.

7. Perotti and Volpin (2004) suggest that in a context of poor political accountability, established interests can lobby successfully for regulation and even selective enforcement in their favor.

blocking entry by new firms. Thus, institutions reinforcing political and regulatory accountability are a preliminary step to ensure proper enforcement of relationships among individuals.

8. A common criticism is that regulatory inefficiency is less observable when buried inside a public institution than when it is subject to public scrutiny, as with public regulation of private activity.

9. See Acemoglu and others (2003) on macroeconomic instability in poor institutional environments.

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Financial Development: Maturing and Emerging Policy Issues

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In recent decades, financial development policies in emerging market economies have been shaped by a fundamental shift toward market-based financial systems and the lessons from financial crises. Today, there is consensus that financial development depends on financial stability and convergence toward international standards. While the debate on some issues has matured, policy thinking in other areas is changing, fueled by recent experiences. This article analyzes the evolution of policy thinking on financial development and discusses three areas that are important to achieving deeper financial systems: stock market development, small- and medium-size enterprise financing, and defined-contribution pension systems. The main emerging issues in these areas are illustrated using recent experiences in Latin America. The article concludes that there is a need to take a fresh look at the evidence, improve diagnoses, and revisit expectations.

JEL codes: F36, G15, G18, G20.

Policymakers concerned with financial development in emerging market economies face an increasingly complex and perplexing situation. Despite the many efforts already undertaken to improve the macroeconomic environment and reform the institutions believed to foster financial development, financial markets in most emerging economies remain relatively underdeveloped. The more stable, internationalized, and better regulated financial systems of today do not seem to be contributing to social and economic development as much as expected at the beginning of the reform process. This has left policymakers with no clear guidance on how to move forward on the financial market development process and has brought to the forefront of policymakers' agenda some big emerging issues in critical areas of financial development that have not been adequately addressed in the policy debate. These issues have emerged after other important policy issues have been settled and as experience has started to show

weaknesses in the prevalent policy thinking and holes in the extent of financial development.

The article starts by describing the salient features of current policy thinking on financial development in emerging economies, which has been sharpened by significant theoretical and empirical work and rich lessons from experience. This thinking has generally focused on ensuring financial stability (reducing systemic risk) and improving the enabling environment for financial contracting. This has led to some specific operational prescriptions that tend to be dominated by financial stability concerns, focus on the links between the monetary and financial sectors, and aim at promoting convergence toward best practices codified in international standards and codes.

Next, it describes some important emerging issues on financial development about which there has been less debate and analysis and which warrant more attention to better inform policy. These issues are acquiring high-priority status among policymakers in many emerging market economies and are increasingly exposing some of the limitations of current policy thinking on financial development, pointing to new directions to expand and enrich this thinking. These issues have much less to do with financial stability and the degree of convergence toward international standards and codes, and much more to do with difficulties in completing financial markets under conditions of financial globalization. This basic argument is illustrated by emerging issues in the critical areas of equity markets, small- and medium-size enterprise financing, and defined-contribution pension funds, with examples taken mostly from recent experiences in Latin America.

Two points should be made about the scope of this article. First, although it focuses on the experience of Latin America, the analysis also applies to emerging market economies in other regions. Some topics may even be relevant for developed economies. But applying the analyses and conclusions to countries in different regions requires attention to the intrinsic features of the local institutional environment, as well as to the specific problems and challenges faced by the financial system in each country. Latin American countries were at the forefront of the financial reforms of the last decades. Therefore, their experience can provide valuable insights into how these policies have fared. Second, the focus of this article is on issues related to domestic policies. It thus leaves out discussions of cooperative multilateral policies aimed at improving the international financial architecture for all countries (see Eichengreen 1999).

The next two sections describe the main features of current policy thinking on financial development in emerging economies and the main drivers behind the recent evolution of this thinking. The following section then examines selected emerging issues in financial development that are provoking significant debate. The final section considers the need to improve diagnoses and revisit expectations.

Policy Thinking on Financial Development: Where We Stand

Current policy thinking on financial development in emerging market economies rests on two key tenets: that financial markets, when allowed to work freely within a sound regulatory environment, provide the best mechanism for efficiently mobilizing resources and allocating risks, and that there remains an essential, well-defined role for the government to foster stability and provide an adequate enabling environment. The first tenet highlights the critical function of relative prices under competition—to capture and signal relative scarcities and relative risks—to adequately guide, as if through an invisible hand, myriads of decentralized self-interested decisions toward the collective good. This tenet does not, of course, ignore the potential maladies of finance—such as asset bubbles, herd behavior, self-fulfilling prophecies, contagion, and crises—but it contends that, these maladies notwithstanding, competitive financial markets are superior to all known alternatives.

In part because of these potential maladies, current policy thinking rests on the equally important second tenet that there is an essential and well-defined role for government: to foster systemic stability through sound prudential regulations, appropriate accounting and disclosure practices, and supervision, so as to avert financial crises and mitigate their cost, without increasing moral hazard. The government is also called on to facilitate financial market development by establishing an adequate institutional and informational environment for writing and enforcing financial contracts. Jointly, these two tenets highlight the irreplaceable value added of well-managed and well-regulated financial entities (banks, insurance companies, investment banks, asset managers, broker dealers) that act as intermediaries through financial products (typically loans, bonds, deposits, stocks, derivatives, investment funds, and insurance policies) that channel and embody contractually the allocation of resources and risks.

Innumerable policies have followed from these two basic tenets over the last decades in emerging market economies. These policies share some features that tend to command general acceptance among academics, policymakers, and practitioners. Four of these general policy prescriptions are described here in stark—and, hence, oversimplified—terms.

A first policy prescription is to strive to converge to international standards and codes. A battery of standards has emerged recently as part of initiatives to strengthen the international financial architecture following the financial crises of the second half of the 1990s. These standards codify international best practices regarding the institutional, regulatory, and supervisory environment for financial markets. Assessing country observance has become a major initiative, strongly endorsed by donors and actively embraced by emerging market economies.¹ The underlying conviction is that these standards help identify gaps, set reform

objectives and priorities, and give direction to the reform effort. International standards and codes that are relevant to the functioning of the financial system include Basel Core Principles for Effective Banking Supervision; International Organization of Securities Commissions (IOSCO) Objectives and Principles of Securities Regulation; Committee on Payment and Settlement Systems (CPSS) Core Principles for Systemically Important Payment Systems; CPSS-IOSCO Recommendations for Securities Clearance and Settlement; International Association of Insurance Supervisors (IAIS); Core Principles for Insurance Supervision; International Monetary Fund (IMF) Code of Good Practices and Transparency in Monetary and Financial Policy; Organisation for Economic Co-operation and Development (OECD) Principles of Corporate Governance, Accounting, and Auditing Standards; and World Bank Principles and Guidelines for Effective Insolvency and Creditor Rights Systems.² Over the last decade or so the reform agenda for financial development has become largely equated with convergence toward such international standards.

A second policy prescription is to cautiously allow the international integration of domestic financial markets. While there is still vigorous debate on the sequencing and speed of international financial integration (Kose and others 2006), there is much less disagreement on the general direction, which favors increased integration, at least for a large set of countries. To be sure, it is recognized that financial integration has not always worked as predicted (de la Torre, Levy Yeyati, and Schmukler 2002). For many emerging market economies, the benefits of financial globalization—greater opportunities for consumption smoothing, deepening and diversification of domestic financial markets, noticeable reductions in the cost of capital—have failed to fully materialize. Moreover, financial liberalization and globalization have often exposed economies to capital flow volatility and financial crises. Faced with this evidence, the prevailing policy thinking emphasizes the institutional and regulatory preconditions for financial liberalization and the need to sequence reforms in order to minimize the risks and maximize the benefits of financial globalization, rather than advocating closing domestic financial markets permanently. Most analysts see financial isolationism as undesirable or unfeasible, especially for economies that are already partially open and in the current climate of rapid information technology change and financial product innovation.

A third policy prescription is to move toward inflation targeting with exchange rate flexibility. This prescription reflects a sea change (see Goldstein 2002; Larraín and Velasco 2001; and Mishkin and Savastano 2001). In the late 1990s, hard pegs or dollarization, on the one hand, and full exchange rate flexibility, on the other hand, were seen as equally respectable alternatives open to emerging market economies seeking safe integration into international capital markets (see, for example, Eichengreen and Hausmann 1999; Frankel 1999; Fischer 2001; Calvo and Reinhart 2002). But more recently, exchange rate flexibility coupled

with inflation targeting has come to dominate policy thinking for emerging economies, except for the few countries that can reasonably be considered to meet optimal currency area conditions (Mundell 1961). Following the example of Australia, Canada, Finland, New Zealand, Spain, Sweden, and the United Kingdom in the early 1990s, many emerging market economies have adopted inflation targeting in recent years, including Brazil, Chile, the Czech Republic, Indonesia, Israel, the Republic of Korea, Philippines, Poland, and South Africa. Inflation targeting with exchange rate flexibility is normally underpinned by other policy prescriptions regarding macroeconomic (especially fiscal) and institutional fundamentals, ranging from central bank independence to the rule of law. Without such fundamentals in place, the benefits of actions focused solely on monetary and exchange rate policies would not endure.

Financial globalization is unfolding in an environment in which the major currencies in the “center” float freely against each other, rendering it inadvisable for countries in the “periphery” to peg their currencies unilaterally, and making a flexible exchange rate regime the best alternative for capturing the benefits and coping with the perils of financial globalization. In contrast, the previous wave of financial globalization—from the mid-1800s to 1914—unfolded under a fixed international exchange rate arrangement, the gold standard, protected through a strong mutual commitment by the center, which made it safer for the periphery to adopt pegs (see Bordo, Eichengreen, and Irwin 2000).

A fourth policy prescription is to foster the development of local currency–debt markets. This is increasingly seen as a necessary condition to mitigate the vulnerability associated with unhedged currency mismatches in debtor balance sheets, a vulnerability that played a significant role in the Southeast Asian crisis of 1997–1998 and in recent financial crises in Latin America (Ecuador in 1999, Argentina in 2001, and Uruguay in 2002). This prescription arises partly in response to what is now seen as excessive pessimism in the “original sin” literature and is linked to the third policy prescription on exchange rate flexibility.

The original sin literature focuses on the inability of emerging market economy sovereigns and corporations to issue long-term domestic currency–denominated debt. Initially, it recommended the adoption of formal dollarization for overcoming the original sin and developing domestic financial markets more safely within a financially globalized context (Eichengreen and Hausmann 1999; Calvo and Reinhart 2002). Following the collapse of the Argentine “convertibility” system, however, the original sin literature has come to support exchange rate flexibility while advocating development of markets for domestic currency–denominated debt, with some arguing that this should be achieved before capital accounts are completely opened (Eichengreen and Hausmann 2002; Eichengreen, Hausmann, and Panizza 2005). As strands of thought have converged, there is now a fairly broad consensus on the policy prescription to give priority to the development of

markets for long-term government and private debt securities denominated in local currency (see, for example, ADB 2001; IFC 2001; IMF and World Bank 2001; BIS 2002; IDB 2006).

The four policy prescriptions described earlier aim to link key macroeconomic and microeconomic dimensions of financial development. They seek to achieve three mutually reinforcing goals for safe financial globalization: a flexible exchange rate, to enable efficient shock absorption; a local currency that is intensively used as a store of value for savings, around which financial contracts can be reliably organized; and a sound informational, contractual, and regulatory environment in which the writing and enforcement of financial contracts can flourish.

But what factors are behind the evolution of these policy prescriptions on financial development in emerging economies? Understanding how we got where we are can help us to assess the validity of the dominant policy thinking and its potential limitations and can also guide any reformulation.

Policy Thinking on Financial Development: Where We Came From

The current policy thinking on financial development took form over the past 25 years or so, shaped by two key drivers: one is a paradigm shift toward market-based financial development and the other is the complex process of interpreting and reinterpreting financial crises.

Paradigm Shift Toward Market-Based Financial Development

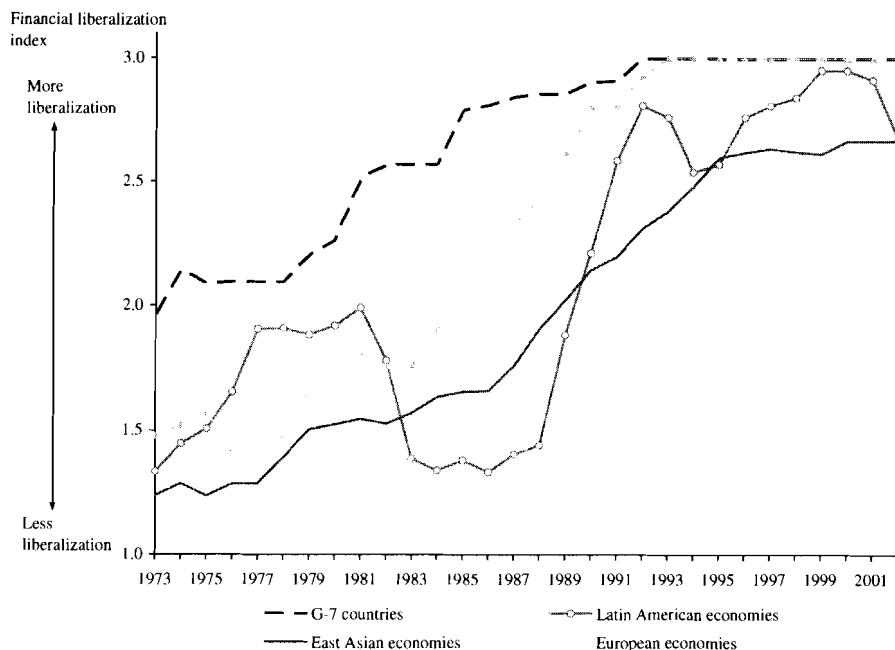
The paradigm shift toward market-based financial development was part of a broader transformation in economic development policy thinking away from the central planning that had prevailed throughout the developing world during the 1960s and 1970s. In the financial sector this shift was in part a reaction to what McKinnon (1973) called “financial repression”—the underdevelopment of financial markets resulting from excessive public sector intervention (see, for example, Barth, Caprio, and Levine 2001; Caprio and Honohan 2001; La Porta, Lopez-de-Silanes, and Shleifer 2002). Accordingly, the main premise of the paradigm shift was that government interference—through directed credit, credit ceilings, public sector banks, administered interest rates, and other tools—is a fountainhead of distortions that repress financial contracting, cause resources to be misallocated, and lead to unsound risk management by exacerbating moral hazard. The new paradigm called for a move from state interventionism toward regulated *laissez-faire* in financial markets.

The initial policy prescription was rather simplistic: liberalize the domestic financial system and the capital account to achieve efficiency through competition. Despite some delays and temporary reversals, financial liberalization advanced through much of the developing world, and systems of directed lending, credit ceilings, and controlled interest rates were dismantled and public banks were privatized. The pace and timing of financial liberalization has differed across regions. Latin America, Argentina, Chile, and Uruguay liberalized their financial systems in the 1970s, but these reforms were reversed in the aftermath of the 1982 debt crisis, and financial systems throughout the region remained repressed during most of the 1980s. A wider wave of liberalization swept Latin America, starting in the late 1980s and early 1990s, and by the late 1990s most countries had reached levels of financial market liberalization comparable to those in the developed world (figure 1; see Kose and others 2006 for a discussion of different measures of the extent of financial liberalization). In East Asia liberalization was more gradual. Some countries started by slowly rationalizing their directed credit programs and liberalizing their interest rates during the 1980s, a process that stretched over more than a decade in many cases.

Faith in the initial policy prescription to liberalize the domestic financial system and the capital account was subsequently shaken by the modest results of liberalization in increasing financial depth and, especially, by the recurrence of financial crises. Time and again, weak domestic banking systems were found to be ill-prepared to intermediate the surge in capital availability that followed liberalization, leading to credit bubbles and subsequent credit busts.³ As a result, questions arose regarding the speed and sequencing of financial liberalization. The basic policy prescription emerging from this analysis was that prudential oversight, corporate governance, and transparency should be enhanced before financial liberalization and international opening (see, for example, McKinnon 1973; Johnston and Sundararajan 1999). This led to a greater emphasis on improving the enabling environment for financial markets—macroeconomic stability, regulatory institutions, legal frameworks, accounting and disclosure practices, debtor information systems, market infrastructures, safety nets, creditor rights, and contract enforcement (Caprio and Hanson 2001; Caprio and Honohan 2001; Rajan and Zingales 2001; Klapper and Zaidi 2005).

The view in favor of sequencing financial liberalization, while widely held, is still debated. First, some analysts question the expectation that sequencing, even if technically correct, is consistent with sufficient incentives for reform (Rajan and Zingales 2003). They see openness to international competition as a key element for fostering financial sector reform (Kaminsky and Schmukler 2003). Second, while there is general agreement that countries that are still closed should not open too soon or too fast, there is less agreement on the adequate policy for countries that have already opened up their financial systems. Some analysts

Figure 1. Extent of Financial Liberalization across Selected Regions



Note: The financial liberalization index, calculated as the simple average of three indexes (liberalization of the capital account, domestic financial sector, and stock market), ranges from 1 (no liberalization) to 3 (full liberalization). Data are annual averages calculated from monthly figures and are averaged across countries in each region. The data for the Group of Seven (G-7) countries are averages for Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States. The data for Latin American economies are averages for Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. The data for East Asian economies are averages for Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; Philippines; Taiwan, China; and Thailand. The data for European countries are averages for Denmark, Finland, Ireland, Norway, Portugal, Spain, and Sweden.

Source: Kaminsky and Schmukler (2003).

emphasize imperfections and anomalies in international capital markets, such as moral hazard, asymmetric information, asset bubbles, herding behavior, and contagion, arguing that these factors largely explain the financial crises in emerging markets over the last decades.⁴ The resulting policy prescription is to roll back capital market opening and manage financial integration through capital controls and other limitations on international asset trading (see, for example, Stiglitz 1999, 2000; Tobin 2000; Ocampo 2003). Proponents of a softer, and perhaps more widely accepted, version of the sequencing view advocate delaying further liberalization until the regulatory and institutional environments are strengthened.

Even as policy thinking broadened from a narrow focus on financial liberalization to a multidimensional emphasis on institution building, it was guided by the goal of freeing financial markets and making them work better, both at home and across borders. In particular, despite the debates surrounding financial liberalization and sequencing, emerging market economies have continued to open up their capital accounts. Two prominent examples are China and India, which, although still partially closed, have taken steps to open up their financial systems in recent years (see Lane and Schmukler 2006 for a summary of recent developments in financial liberalization and integration in these two countries). The reform agenda aimed at achieving regulated *laissez-faire*, and international financial market integration was also boosted by the program of convergence toward international standards mentioned earlier.

Hermeneutics of Financial Crises

The second driver shaping financial development policy thinking in emerging economies has been the onslaught of recurring financial crises, particularly the policy lessons that emerged from the hermeneutics of financial crises. Three major lessons and associated policy prescriptions that flowed from the process of interpreting and reinterpreting financial crises are discussed here briefly to illustrate this point.

Poor macroeconomic fundamentals are particularly dangerous in open financial systems. This central lesson was conceptually enshrined in the first-generation models of financial crises (Eichengreen, Rose, and Wyplosz 1995; Eichengreen 1999; Krugman 2003). Krugman's (1979) seminal article on balance of payments crises paved the way, followed by an avalanche of theoretical work that clarified the dynamic processes by which fundamental imbalances can set the stage for a sudden attack on the currency or the banking system. This type of attack is deterministic, in the sense that a crisis is inevitable given the policies, even if its exact timing is difficult to predict and is not necessarily associated with appreciable changes in fundamentals (see also Dooley 2000; Aghion, Bacchetta, and Banerjee 2001; Burnside, Eichenbaum, and Rebelo 2001). Subsequent empirical work found that a deterioration in fundamentals preceded financial crises in most countries (see, for example, Kaminsky and Reinhart 1999). This led to efforts to identify early warning signs that could alert policymakers to take countermeasures to avert a financial crisis.

A first and enduring lesson of financial crises was that financial openness dramatically raises the importance of strong liquidity and solvency (fiscal and financial) positions. The associated policy prescription was to avoid bad macroeconomic and financial policies that generate imbalances. In particular, the policy

advice was to closely monitor certain indicators that have been empirically found to precede financial crises—fiscal and external disequilibria, real exchange rate overvaluation, large amounts of short-term debt, rapid printing of money and accelerating inflation, fast credit growth, and real estate price bubbles, among others. Such early detection of problems would have to be followed by the earnest adoption of preventive actions.

Multiple equilibria, self-fulfilling attacks, and contagion are real threats. A second lesson that financial crises drove home was that such phenomena as multiple equilibria, self-fulfilling attacks, and contagion are not just theoretical curiosities. They are real threats, especially as domestic financial markets become exposed to large flows of international capital and to investors who can diversify risk across countries. These phenomena received significant theoretical attention in the second-generation models of financial crises, which consider the occurrence of a crisis to be subject to indeterminacy (Obstfeld 1994, 1996; Ozkan and Sutherland 1998; Wyplosz 1998).

According to these models, fundamentals continue to matter, but whether the crisis occurs will depend not only on the state and trajectory of fundamentals, but also on a complex interplay between market expectations, the government's willingness and capacity to defend the currency or the banking system, and the overall degree of macroeconomic and financial fragility. For instance, where the banking system and public finances are weak, the balance between the potential benefits of mounting a defense (reaffirmed credibility, price stability) and the potential costs (high interest rates, rising public debt, increased moral hazard, economic contraction) is difficult to ascertain, with expectations hard to pin down. Such circumstances create fertile ground for multiple equilibria, as different constellations of interest and exchange rates become compatible with the same fundamentals. The actual outcome depends on expectations about the resolve of the government (and its multilateral supporters) to prevail in a defensive fight. As a result, speculative attacks can become self-fulfilling. This implies that crises are not necessarily the result of irresponsible policies (although these may make a self-fulfilling attack more likely) and may occur suddenly in situations where they are not inevitable.

In these circumstances, policy prescriptions were naturally aimed at counteracting financial market imperfections and avoiding the slide into high-vulnerability zones. Sound macroeconomic and prudential policies gained prominence, with an emphasis on transparency (to reduce information asymmetries) and fiscal and financial sector buffers (to compensate for revenue shortfalls in bad times and to diminish bubbles and cushion bursts in the financial sector). The threat of multiple equilibria also lent support to prescriptions favoring credible pre-commitments—policy actions that tie the government's hands to minimize time-inconsistent behaviors—which led to the temporary popularity of hard pegs.

Major mismatches (maturity, duration, and currency) in debtor balance sheets are “ticking time bombs.” Mismatches were driving factors in many crises, including the East Asian financial crises in the second half of the 1990s and the crises in Ecuador (1999) and Argentina (2001). Subsequent work (Calvo, Izquierdo, and Mejia 2004) found empirical evidence suggesting that liability dollarization increases the probability of a sudden stop in capital inflows. Argentina illustrated the deep drawbacks of a rigid currency pre-commitment, including the troublesome feature that such pre-commitments exacerbate currency mismatches (de la Torre, Levy Yeyati, and Schmukler 2003).

The lessons that emerged from financial crises led to important revisions in policy prescriptions. Following the financial crises of the mid-1990s, it became generally accepted that emerging market economies should move to corner solutions—adopting either full exchange rate flexibility or rigid institutional commitments to fixed exchange rates—and abandon intermediate regimes such as basket pegs, crawling pegs, bands, and adjustable pegs (Council on Foreign Relations 1999; Eichengreen 1999; Minton-Beddoes 1999; Summers 1999; Meltzer 2000. Frankel 2004 presents a critical assessment of this view). Brazil, Indonesia, the Republic of Korea, Mexico, Russia, Thailand, and Turkey, among others, were all forced by speculative attacks to abandon some type of basket peg or band, while Argentina and Hong Kong, China, which had currency boards, seemed to have sailed through relatively unscathed. However, the Argentine crisis of 2001 and Ecuador’s experience with dollarization subsequently undermined the conventional wisdom that countries with firm commitments to fixed exchange rates could import credibility, avoid financial crises, and achieve convergence in interest rates. As a result, policy thinking has swung in favor of exchange rate flexibility as a way to avoid one-sided bets (Goldstein 2002; Mishkin 2003) and discourage liability dollarization (Ize and Levy Yeyati 2003).

Recent crises also prompted the policy recommendation to develop markets for long-term government and private debt securities denominated in local currency, to help avoid currency and maturity mismatches. Following the East Asian financial crisis, many argued that the vulnerability of emerging market economies was linked to the lack of diversification in their financial systems, which relied excessively on bank-based intermediation. In particular, many argued that local currency bond markets, mostly missing in the region before 1997, would have made East Asian economies less vulnerable to financial crises (Greenspan 1999; Batten and Kim 2001; Herring and Chatusripitak 2001; Hausler, Mathieson, and Roldos 2004). Subsequent crises in Argentina, Ecuador, and Uruguay highlighted the contribution of mismatches to financial crises and the need to develop markets for long-term local currency-denominated debt securities, as well the importance of reducing systemic risks that breed mismatches (de la Torre and Schmukler 2004) and of developing prudential regulations to

ensure that banks internalize the risks of lending in foreign currency to local currency earners (Ize and Powell 2005).

Financial Stability and International Benchmarks

The new perspectives of market-based financial development and the hermeneutics of crises have interacted in complex ways over the last decades. Despite sometimes heated debates, opposing sides have usually been united by a strong pro-market orientation. Views on exchange rate policy have focused on reducing risks and maximizing the benefits of integrating into international financial markets. Vigorous efforts have been made to upgrade the regulatory and supervisory frameworks, often to enhance the complementarities between prudential regulation and market discipline.

The shift toward market-based financial development has endured in large part because it has constructively internalized the hard lessons from financial crises. This process has, however, tilted the emphasis of policy thinking in favor of systemic risk management, and priority has consequently been given to achieving financial stability. Other dimensions of financial development—efficiency, depth, diversity, and breadth of access—have not been ignored, but they have moved to the periphery, while some important areas of financial development, such as access to finance, have only recently started to receive more attention (see, for example, Beck and de la Torre 2006; de la Torre, Gozzi, and Schmukler 2006b).

The dominant policy thinking has grown richer to the extent that it has incorporated the crucial role of uncertainty and incentives in markets characterized by asymmetric information and incomplete contracts. This has balanced the confidence in the power of market competition with a growing emphasis on the institutional environment. However, the strengthening of institutions has been seen largely (and increasingly) through the lens of convergence toward international standards. The emergence of numerous international standards and codes, while initially motivated by financial stability concerns, has provided a framework for policymakers to combine stability and development issues in policy formulation. The centrality of stability concerns and the institutional benchmarks set out by international standards have driven policy thinking on financial development over the last decades.

Policy Thinking on Financial Development: Emerging Issues

While the growth in knowledge underpinning the evolution of policy thinking on financial development in emerging market economies has been impressive, some issues that are acquiring high-priority status among policymakers have not been

adequately addressed. Three of these are local equity markets, small- and medium-size enterprise financing, and defined-contribution pension systems. These are described here only in broad brush strokes, as the objective is to point out limitations in the current policy thinking and to suggest new directions. More research is needed before a consensus can be reached on suitable policy packages to address these issues.

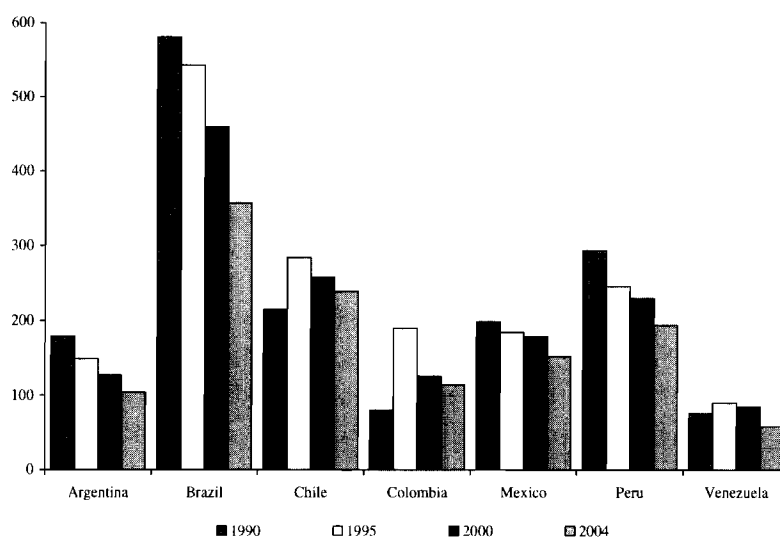
The Future of Domestic Stock Markets in a Globalized Context

A key issue for financial sector reformers in emerging market economies, especially in smaller economies, is the need to revise their vision for the development of local stock markets. Until recently, the implicit view was that domestic financial market development in emerging market economies should be measured against the benchmark of financial markets in industrial countries and that the reform agenda, though difficult, is clear. Growing evidence suggests, however, that the implicit vision of building “mini Wall Streets” at home may need to be revised (Bossone, Honohan, and Long 2002; de la Torre and Schmukler 2006; de la Torre, Gozzi, and Schmukler forthcoming-a).

The conventional wisdom among reformers has been that local equity markets would grow as a result of reforms focused on strengthening the enabling environment, particularly accounting and disclosure standards, minority shareholder protection (and property rights, more generally), corporate governance practices, tax enforcement, trading and securities clearing and settlement infrastructures, and stock market regulations and enforcement. Several relevant standards and codes emerged, giving policymakers clear points of reference for convergence-oriented reform efforts in areas such as securities market regulation, corporate governance, accounting, and auditing. The expectation was that as reforms succeeded and convergence to international standards progressed, domestic capital markets in emerging market economies would increasingly resemble those in developed economies. What actually happened, at least in Latin American and Eastern European countries, has been that the number of stocks listed in local exchanges shrank over the past decade or so (figures 2 and 3).

For Latin America, the reduction in the number of listed firms has been associated with the increasing migration of firms to international financial centers such as New York and London.⁵ An important element of globalization over the last decades has been the internationalization of financial services and the use of international financial intermediaries by issuers and investors from emerging market economies. Latin American firms have actively participated in this process by listing in foreign exchanges and issuing depository receipts (for details on depository receipts, see Levy Yeyati, Schmukler, and van Horen 2006). The internationalization of equity issuance and trading in Latin America is

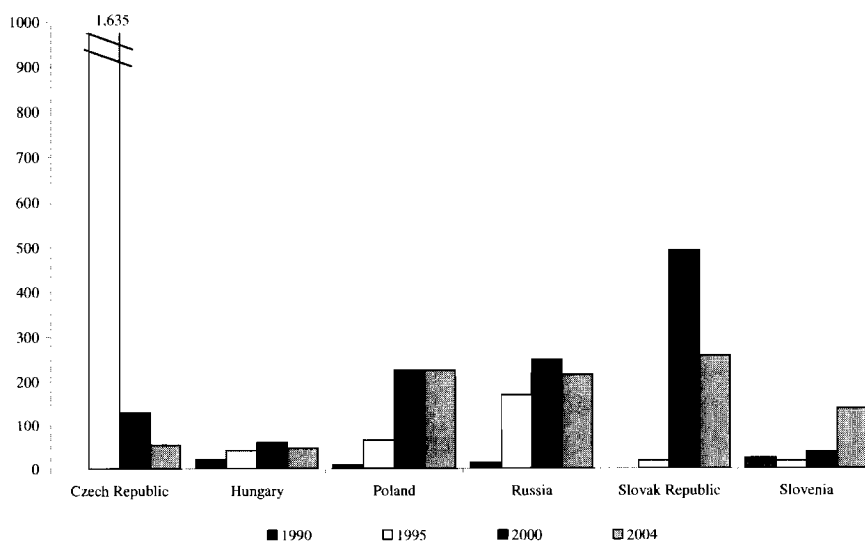
Figure 2. Number of Listed Firms in Domestic Stock Markets in Latin America, Selected Years



Note: Year-end values.

Source: Authors' analysis based on data from Standard & Poor's.

Figure 3. Number of Listed Firms in Domestic Stock Markets in Eastern Europe, Selected Years



Note: Year-end values. The data for Hungary, Poland, Russia, and Slovenia are for 1991 rather than 1990.

Source: Authors' analysis based on data from Standard & Poor's.

significantly higher than in other regions (figure 4), with activity abroad now exceeding activity in local exchanges for many countries.

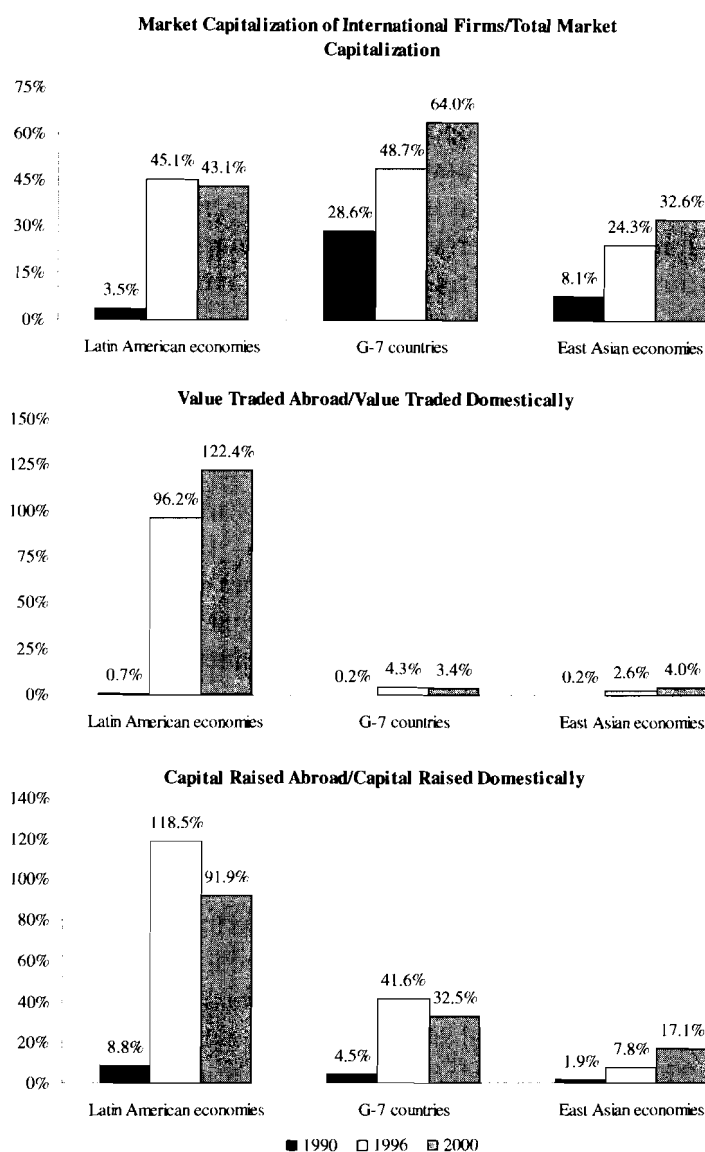
In addition to the growing migration and delistings, domestic equity markets in the region are highly concentrated, with only a few stocks dominating market capitalization and trading. Local markets remain illiquid, in part as a result of very low “float” ratios (a low proportion of listed shares available for trading). Stock markets in Latin America have clearly fallen behind trends in East Asian and the Group of Seven (G-7) countries in recent decades, in both capitalization and trading (figure 5). This divergence in stock market activity is a cause for greater concern in light of the virtual stagnation of credit to the private sector in the region (figure 6) and the lack of development of corporate bond markets, at least until recently (figure 7).

These outcomes stand in sharp contrast to the extent of macroeconomic, institutional, and capital market-related reforms implemented by Latin American countries over the last decades. While these outcomes do not imply that reforms have been ineffective or should not have been undertaken, they do mean that the expectations associated with the reforms should be revised and that the capital market reform agenda needs a fresh look. Securities markets in Latin America, especially for private sector securities, score below what can be expected (according to commonly used measures of size and liquidity) after controlling for per capita income, economic size, macroeconomic policies, and indices of legal and institutional development and reforms (Borensztein, Eichengreen, and Panizza 2006; de la Torre and Schmukler 2006; de la Torre, Gozzi, and Schmukler forthcoming-a). And recent empirical work shows that improvements in macroeconomic and institutional fundamentals, as well as capital market-related reforms, have had a pro-internationalization bias. While these factors appear to have fostered local stock market development, they have spurred even more the internationalization of stock issuance and trading (Claessens, Klingebiel, and Schmukler 2006; de la Torre, Gozzi, and Schmukler forthcoming-b). There is also empirical research suggesting that the disappointing development of local stock markets is not independent of their internationalization. The migration of stock issuance and trading abroad has been found to have had an adverse effect on trading and liquidity in local markets (Levine and Schmukler 2006, forthcoming).⁶

To be sure, the reformers of the 1990s were not dismissive of globalization. Indeed, they supported it. But most of them expected the reforms to attract foreign investors and global liquidity to domestic markets. They did not anticipate the increased tendency for the best equity issuers and issues to move to international markets and, in the process, to adversely affect the liquidity of the domestic stock market.

All this evidence raises important questions that have not been adequately addressed in the policy debate. While much more research is needed, a better

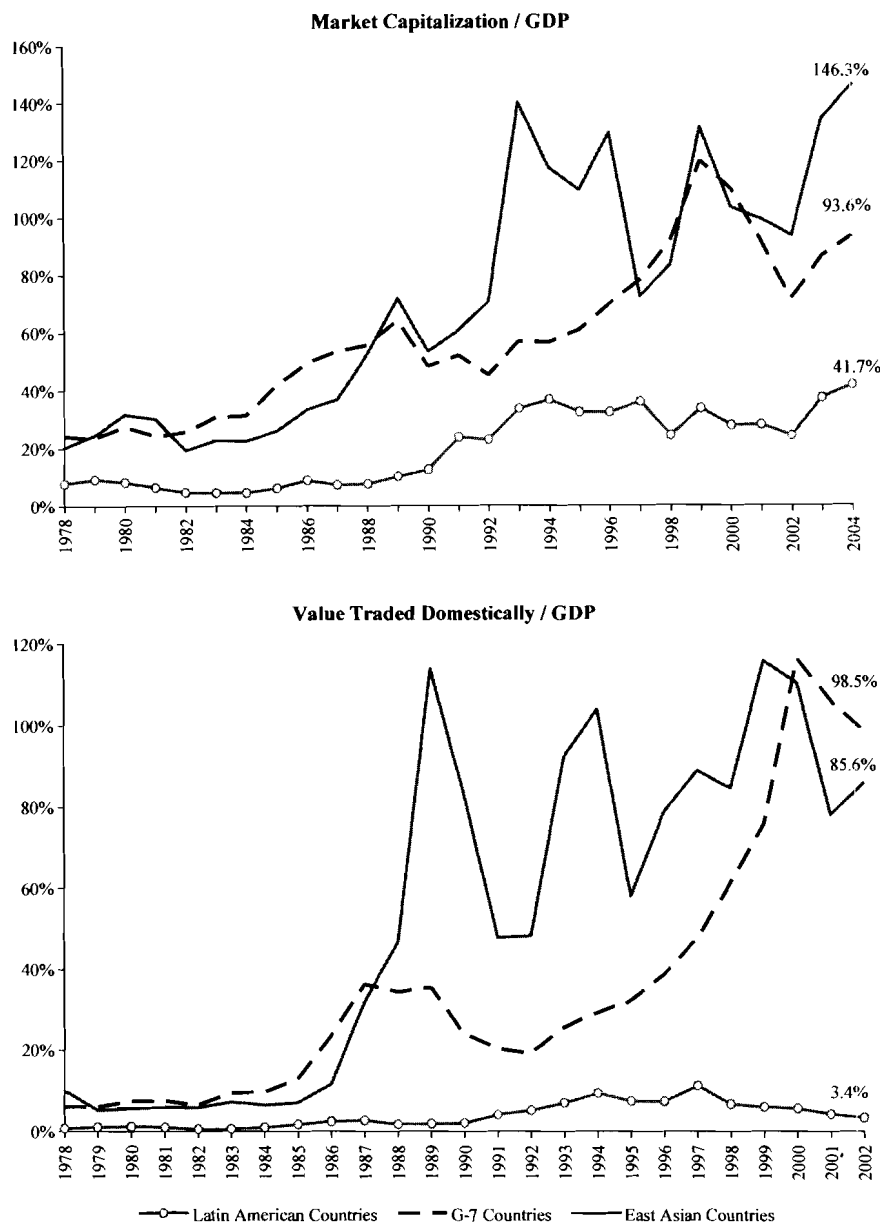
Figure 4. Internationalization of Stock Markets Relative to Domestic Activity



Note: The series are averages across countries. The data for the Group of Seven (G-7) countries are averages for Canada, France, Germany, Italy, and Japan. United Kingdom and United States are not included because they are considered international financial centers. The data for East Asian economies are averages for Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; Philippines; Taiwan, China; and Thailand. The data for Latin American economies are averages for Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. International firms are those having at least one active depositary receipt program at any time in the year, having raised capital in international markets in the current or previous years, or trading in the London Stock Exchange, New York Stock Exchange, or NASDAQ.

Source: de la Torre and Schmukler (2006).

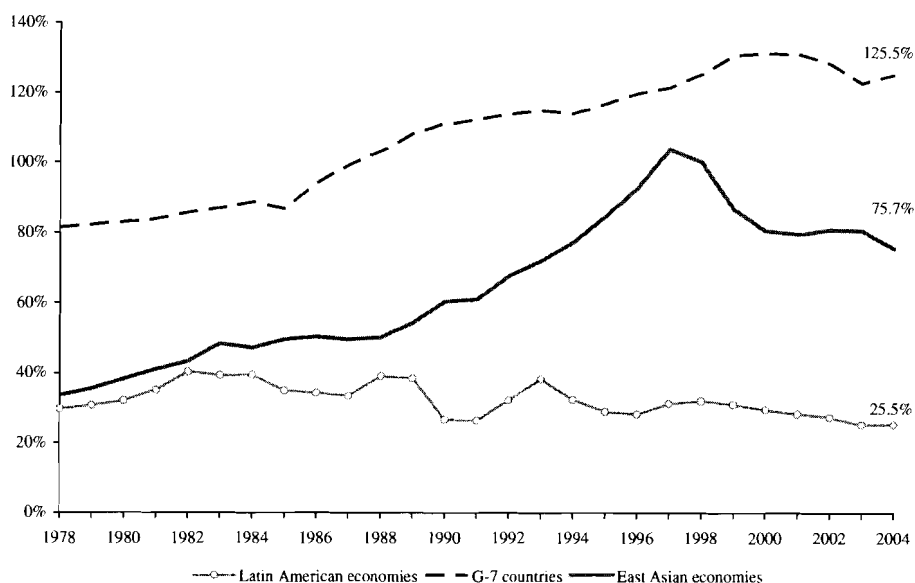
Figure 5. Domestic Stock Market Development



Note: The series are averages across countries. The data for the Group of Seven (G-7) countries are averages for Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States. The data for East Asian economies are averages for Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; Philippines; Taiwan, China; and Thailand. The data for Latin American economies are averages for Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela.

Source: Authors' analysis based on data from Standard & Poor's.

Figure 6. Evolution of Credit to the Private Sector by Financial Institutions (percent of GDP)



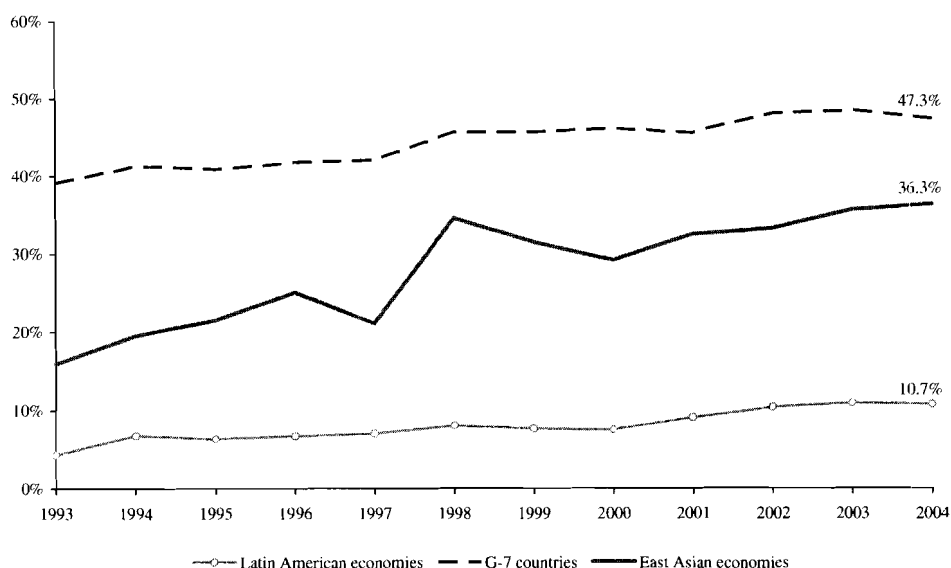
Note: The series are averages across countries. The data for the Group of Seven (G-7) countries are averages for Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States. The data for East Asian economies are averages for Indonesia, the Republic of Korea, Malaysia, Philippines, and Thailand. The data for Latin American economies are averages for Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela.

Source: Authors' analysis based on data from the World Bank.

understanding of the interactions among globalization, local market size, and key features of equity contracts is a good place to start in trying to make sense of the evidence (de la Torre and Schmukler 2006). International financial centers that attract international liquidity are arguably a key factor behind the illiquidity of many local stock markets. Scale economies and network and agglomeration effects help explain why global liquidity is increasingly clustering around a few international financial centers. This is sobering news for many local equity markets that are trying to escape from what appears to be chronic illiquidity. Illiquidity begets illiquidity: by limiting the capacity of investors to unwind their positions without affecting prices, illiquidity discourages the entry of new players, further limiting liquidity. And this fundamentally hinders “price revelation,” a distinctive function of stock markets.⁷

Also potentially fostering the internationalization of stock issuance is the fact that internationalization does not engender balance sheet mismatches. Unlike borrowing in foreign currencies, foreign equity contracts by themselves carry no systemic vulnerability implications, even if the integrating country has a weak currency. Arguably, this increases the incentives for equity issuers to migrate

Figure 7. Evolution of the Amount Outstanding of Private Sector Domestic Bonds in Domestic Markets (percent of GDP)



Note: The series are averages across countries. The data for the Group of Seven (G-7) countries are averages for Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States. The data for East Asian economies are averages for Hong Kong, China; the Republic of Korea; Malaysia; Taiwan, China; and Thailand. The data for Latin American economies are averages for Argentina, Brazil, Chile, Mexico, and Peru.

Source: Authors' analysis based on data from the Bank for International Settlements and the World Bank.

toward the larger, deeper, and immensely more liquid international markets, so long as they can break the size and cost barriers to issuing stocks abroad (for more on these barriers, see Ladekarl and Zervos 2004; Claessens and Schmukler 2006). Reforms and institutional improvements at home may make it easier and more affordable for large local issuers to go abroad by making these issuers more attractive to international investors.

Difficult questions about the future of local stock markets haunt policymakers. Is there a suitable “light” version of domestic securities markets that can complement international financial market integration? What characteristics should such markets have? Should they have lower accounting and disclosure standards, lower listing and transaction costs, and more private equity placements and over-the-counter activity? What could be expected from such markets, which would be structurally illiquid and so would play a very limited price revelation role? What should be done with the costly and underused infrastructure of centralized stock exchanges? Should many countries simply forget about trying to develop deep local stock markets and let their investors and large resident corporations

obtain equity market services in international financial centers? Is there any advantage in pursuing regional stock market integration in place of promoting global integration?

Financing for Small- and Medium-Size Enterprises

Policymakers and entrepreneurs often express concern that the loanable funds available in local markets for the private sector are not flowing in significant amounts to small- and medium-size enterprises, which, at least until very recently, appeared to be squeezed out of the mainstream financing circuit. At one extreme of the corporate lending market are the large, reputable corporations with access to a broad range of products to raise debt or equity capital, from banks or securities markets, in local or international markets. At the other extreme are microenterprises. Although these firms have traditionally lacked access to formal financing, in recent years there has been a vigorous expansion of commercial microfinance, driven by the development of innovative lending techniques, significant technological advances (scoring methods, e-banking), and the growing presence of credit bureaus (see Hardy, Holden, and Prokopenko 2002; CGAP 2003, 2004; Daley-Harris 2003). Accompanying these trends in business lending has been strong growth in consumer credit in emerging market economies (see, for example, BIS 2005; *The Economist* 2006), especially as competition in the lending market for large corporations increased—reflecting financial globalization and the expansion of local bond markets. In the process, the small- and medium-size enterprise segment appears to have been bypassed.

The picture seems to be changing in recent years, as banks in some emerging market economies are increasingly turning to small- and medium-size enterprise financing in search of new business opportunities. However, it remains to be seen whether banks can find a successful business model to serve small- and medium-size enterprises and whether this constitutes a permanent shift.

Financing small- and medium-size enterprises presents several difficulties and requires lending technologies not widely available in many emerging market economies. Given the dearth of empirical research, several hypotheses are submitted to make the point that the problems in small- and medium-size enterprise finance constitute a tough policy nut to crack. While these hypotheses require further analysis and testing, recent anecdotal evidence suggests that some financial institutions are trying to cope with some of the problems described next.

One hypothesis is that individual small- and medium-size enterprises are too small to access capital markets directly and individually. They are not able to issue debt or equity securities in the minimum amounts (roughly \$30–\$50 million) required by institutional investors. Institutional investors do not typically

want to be the only or even the main holder of an issue, and they want an issue with at least a minimum degree of secondary market liquidity to facilitate exit.

A second hypothesis is that pension funds and other institutional investors at home and abroad are not likely to seek individual small- and medium-size enterprise assets as part of their portfolio diversification strategies. The marginal risk reduction achieved by including one more issuer in the portfolio appears to be offset by the marginal cost of screening and monitoring at a much earlier point than commonly believed. The risk-return frontier is thus reached with relatively few assets, which helps to further explain why participation in capital markets is segmented in favor of large issuers and issues, even in countries like Chile and Mexico (figure 8), where corporate bond markets have been growing fast.⁸

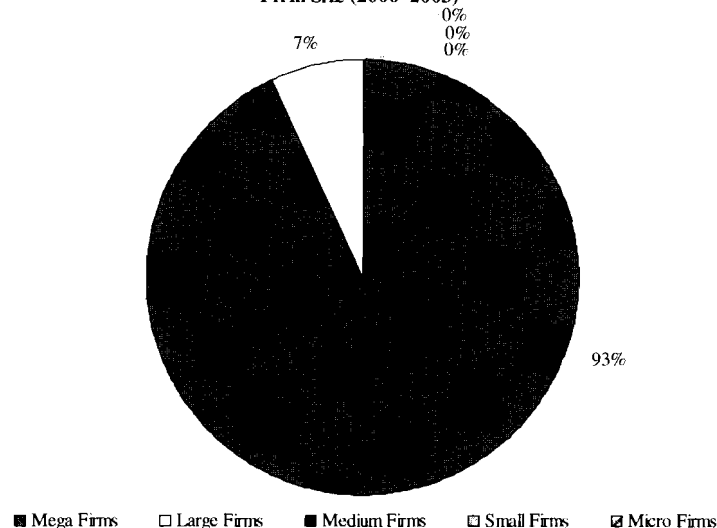
A third reason that may explain why small- and medium-size enterprises have been bypassed is that bank loans to such enterprises are not easily converted into a commodity-like mass-credit product (Mu 2003). Because of the opacity and heterogeneity of risks of different small- and medium-size enterprises, lending technology cannot rely heavily—as microfinance and consumer lending technologies do—on scoring methods. These methods work by analyzing large samples of borrowers to identify the characteristics that predict the likelihood of default and the loss given default. Thus, they are more applicable to homogeneous borrowers and to lending products that can be mass-produced.

The risks of a microloan can be scored with information on the microenterprise owner, since the financial viability of the business is closely tied to that of its owner. This information is relatively easy to gather. The risks of a small- and medium-size enterprise loan are less amenable to scoring techniques, and therefore such lending cannot as easily be converted into a commodity-like mass-credit product. An assessment of a small- and medium-size enterprise, which is likely to be a limited liability company with various owners, generally requires an understanding of the nature of the business, its cash flow projections and operations, and the specifics that underpin the quality of management. These features differ for different enterprises, requiring more individualized lending techniques to sort out and monitor.

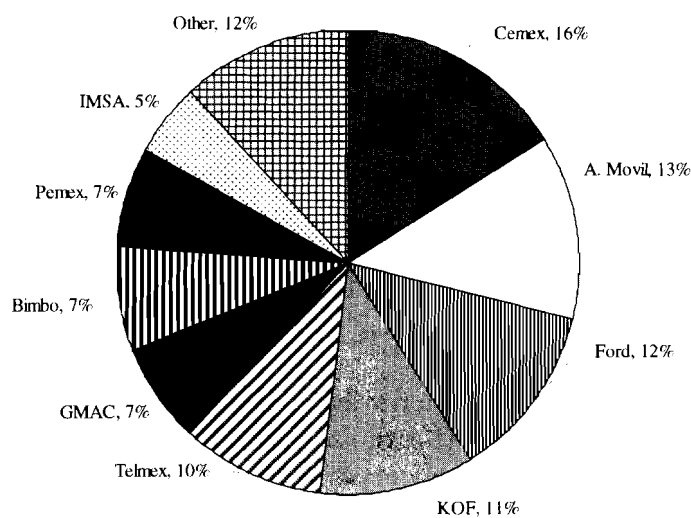
Fourth, except for very short-term loans, small- and medium-size enterprise loan technology makes more intensive use of the local institutional infrastructure for credit contract writing and enforcement than microconsumer loans or credit card loan technologies, which do not normally require collateral and whose post-default procedures consist mainly of writing off the claim and registering the default with the credit bureau. In credit card and microloan technologies, in effect, creditors typically do not expect to pursue post-default recovery through the judicial system, and they price this factor into the interest rate. This helps explain why microcredit and mass consumer credit have grown rapidly even in countries with weak contractual environments.

Figure 8. Segmentation in Access to Domestic Bond Markets: Chile and Mexico

Chile—Cumulative Amount of Corporate Bonds Issued in the Local Market by Firm Size (2000–2003)



Mexico—Amount Outstanding of Corporate Bonds in the Local Market by Issuer (October-2003)



Note: In Chile, mega firms are defined as those with annual sales net of the value-added tax of more than \$17.2 million; large firms have sales of \$2.8–\$17.2 million; medium firms have sales of \$0.7–\$2.8 million; small firms have sales of \$68,688–\$0.7 million; and microfirms have sales below \$68,688. Large and mega firms combined represent 1 percent of firms in the economy, medium firms 2 percent, small firms 15 percent, and microfirms 82 percent.

Source: Authors' analysis based on data from Bolsa Mexicana de Valores and J.P. Morgan: Sirtaine (2006).

In contrast, small- and medium-size enterprise lending technologies cannot avoid a heavy reliance on contract enforcement institutions. Such enterprise lending tends to depend on collateral to mitigate principal-agent problems, and recovery efforts through the courts are the norm in cases of default. As a result, the quality of collateral laws, the clarity of creditor rights in the event of bankruptcy, and the reliability of judicial processes are all highly relevant. Consistent with this argument, Beck, Demirgüç-Kunt, and Maksimovic (2005) find that the extent to which financial, legal, and corruption problems affect firm growth depends on firm size, with smaller firms being most affected (figure 9). Similarly, Chong, Galindo, and Micco (2004) find not only that small- and medium-size enterprises finance a significantly lower share of their investments with bank credit than do large firms, but also that the difference in bank financing is higher in countries with worse creditor protection and less efficient judicial systems. With small- and medium-size enterprises having no access to securities markets,

Figure 9. Impact of Financial and Legal Obstacles on Firm Growth by Size



Note: The reported values are calculated as the mean value of each obstacle for the firm groups multiplied by the coefficients for the firm groups estimated from a regression of firm growth over the previous three years (measured by firm sales) on measures of ownership, industry characteristics, firm size, country-level variables, and interaction terms between dummy variables for the firm groups and the reported obstacles to firm growth. Firms are classified as small if they have 5–50 employees, medium if they have 51–500 employees, and large if they have more than 500 employees. Data on the relevance of obstacles are based on survey responses to questions requiring firms to rate the extent to which financing, legal, and corruption problems present obstacles to the operation and growth of their businesses. Data cover more than 4,200 firms from 54 countries.

Source: Beck, Demirgüç-Kunt, and Maksimovic (2005).

this lower level of bank financing implies that a higher share of their investment has to be financed with retained earnings or supplier credit.

The fifth potential obstacle to expanding small- and medium-size enterprise finance is that Basel Accord and anti-money laundering regulations may be inadvertently discouraging loans to this segment. These regulations may reduce the value for banks of relationship lending based on knowledge of borrowers. For example, regulations that require banks to use information from credit bureaus in loan origination and to supply relevant loan information to such bureaus reduce banks' ability to appropriate the benefits from their own efforts at building individualized knowledge of small- and medium-size enterprises. Similarly, banks' capacity to deal with informal, opaque small- and medium-size enterprises through relationship lending may be undercut by regulations that require loan origination dossiers to include formal financial statements, sophisticated cash flow analysis, and transparency in tax compliance. Likewise, anti-money laundering regulations that require substantial documentation to satisfy the know-your-client requirements may be excluding informal small- and medium-size enterprises that would otherwise have been included.

All of these are hypotheses that require more rigorous exploration, but anecdotal evidence throughout emerging market economies suggests that more analysis could have significant payoffs. Small- and medium-size enterprise finance is an important issue for policymakers concerned with financial development. The topic is complex, and short- or even medium-term solutions are not easy to identify, raising tough questions about what governments can do, other than patiently wait for reforms to result in substantial improvements in the contractual environment. While the search for policy answers must continue, it must also be said that current policy thinking seems to provide little guidance.

Defined-Contribution Pension Funds. Chile's pioneering example in pension reform had a major demonstration effect throughout Latin America, and many countries adopted similar reforms during the 1990s, including Argentina, Bolivia, Colombia, Costa Rica, El Salvador, Mexico, Peru, and Uruguay (Queisser 1998; de Ferranti, Leipziger, and Srinivas 2002; Gill, Packard, and Yermo 2005). Many transition economies, including Hungary, Kazakhstan, Lithuania, Poland, and Slovakia, also adopted Chilean-style pension reforms (Rutkowski 1998, 2002). The reforms consisted of a shift away from government-administered, pay-as-you-go, defined-benefit pension systems toward systems that rely mainly on mandatory, privately administered, defined-contribution pension funds ("second pillar" systems). This type of reform followed the paradigm shift in favor of pro-market financial development and reflected a strategic decision to give markets the predominant role in administering retirement-related savings and providing old-age income security. Many of the associated policy issues are related to financial

development and yet they fail to register on the radar screen of the dominant policy thinking on financial development.

As the Chilean-style pension systems continue to mature, complex issues are emerging. The ability of policymakers to adequately address them is central to enhancing the performance of the reformed systems and ensuring their socio-political sustainability. A better understanding of these issues will also provide valuable insights to countries contemplating similar reforms. While the big emerging issues can be identified, the development of suitable policy answers is still at an early stage.

Arguably, the biggest challenge for pension systems in Latin America and other emerging market economies with large informal sectors is their low coverage (Gill, Packard, and Yermo 2005)—an issue outside the scope of financial development policy and mainly within the scope of social protection policy. Two key issues of the defined-contribution pension system that are of particular concern to financial development policy are how to raise expected replacement rates (the ratio of retirement pension to pre-retirement income) and how to build a sound market for annuities.

Raising expected replacement rates without unduly increasing risk. There is no easy answer to the fundamental question of whether the system of mandatory, defined-contribution pension funds will be able to consistently generate adequate replacement rates in the future, given the current rates of contribution. Adequate replacement rates mean an expected stream of income during retirement that is consistent with life-cycle consumption smoothing and that minimizes the risk of poverty in old age.

One important threat comes from low accumulated balances in pension funds at the time of retirement, because of long unemployment spells or prolonged periods of informal sector employment, for example. But even where accumulated balances are high, maximizing expected replacement rates for a given risk through financial markets has proved more difficult to achieve than envisaged. In particular, the high real returns achieved by the mandatory pension funds in Latin America during the 1990s—on the order of 10 percent a year in several countries—are unlikely to be repeated, and this would automatically lead to lower expected replacement rates for a given risk.

The reasonable assumption that lower average real returns than those in the 1990s are in store for the future puts a premium on policy efforts aimed at increasing net real returns in defined-contribution pension funds without unduly raising risk. Policies thus would need to facilitate the achievement of higher gross returns or lower fees for pension fund administrators. Rocha (2004) reckons that a permanent decrease in fees by 30–40 basis points of assets would lead to a 7–9 percent increase in replacement ratios in the case of Chile, for example.

At first glance, the general direction of policies appears obvious: make pension fund administrators operate in a contestable market while giving them freedom to diversify the portfolios they administer, subject to fulfilling their fiduciary responsibilities. Freedom and competition, the argument goes, will result in lower fees and higher returns for a given risk. Things are not that simple, however, as policy tensions and technical issues complicate matters much more than initially believed.

Consider first the policy objective of enabling higher returns by allowing greater local and international diversification of mandatory pension fund portfolios. In reality, policymakers in Latin America and other emerging market economies that implemented similar reforms have not been free to pursue this objective. Rather, they have felt compelled to balance it against three competing policy objectives.

The first competing objective is fiscal: to facilitate the government's cash flow management in order to finance the pension reform transition. Absent a compensatory fiscal adjustment (Chile was the only reforming country in Latin America able to engineer it, mainly through a major increase in tax revenue), governments have relied on debt financing to meet payments to retirees under the old pay-as-you-go system while no longer receiving contributions from workers who join the new system. The resources in second-pillar pension funds have been tapped for this purpose (and for general government deficit financing needs), often aided through regulations mandating that a high share of pension fund portfolios be allocated to government paper. It is thus not surprising that the portfolios of most mandatory second-pillar pension funds in Latin America are only weakly diversified and are dominated by government debt securities, with Chile and Peru the exceptions (Gill, Packard, and Yermo 2005; de la Torre and Schmukler 2006).

The second competing policy objective has been to harness pension funds' investment power to stimulate the development of local financial markets and the local economy, especially by supplying long-term finance to the private sector, without sacrificing fiduciary duty. This objective has led to a reluctance among policymakers to give pension fund administrators much latitude to diversify fund portfolios through investment in foreign assets. This reluctance has often been reinforced by a nationalistic discourse and concerns that allowing investments in international markets smacks of an official blessing of capital flight. As the growth of pension funds has been outstripping the availability of suitable assets at home, policymakers have been prompted to raise the ceiling on pension fund investments abroad, however gradually and reluctantly. Chile is well ahead of the pack in this regard, currently allowing up to 30 percent of pension fund portfolios to be invested in external assets.

Room to relax pension fund investment regulations has also been constrained by the competing (often implicit) policy objective of limiting the volatility of pension fund returns and replacement rates. This risk aversion in policy is

particularly strong in countries where the second pillar constitutes the core of the national social security scheme. Allowing pension funds to take on more risk in order to raise returns also implies that funds would incur losses from time to time. Such losses would raise greater political sensitivities in countries with second-pillar-dominated national pension systems, where workers bear all the market risk, than in countries where the second pillar is a complement to a core pay-as-you-go system, where workers bear less market risk overall (Rocha 2004). It should not be surprising to find that regulators tend to be more risk averse and more biased in favor of conservative portfolio allocations in countries where the second pillar is the core of the national social security system.

In all, the policy objective of raising expected replacement rates by liberalizing pension fund regulations is caught up in a nontrivial tension with other policy objectives that pull in a different direction. While reasonable people can differ on the relative weight that should be given to each competing policy objective, there is no question that the policy path toward higher replacement rates through freer pension portfolio allocations is fraught with complications that were not fully foreseen at the time of the reform.

Raising expected replacement rates by fostering competition among pension fund administrators on the fees they charge for asset management has also proven to be much more challenging than envisioned, mainly because of complications related to industrial organization features of the pensions industry. These features make it difficult to simultaneously promote competition and ensure the achievement of economies of scale.

Competition seems crucial to bringing down fees. However, increased competition through lower entry barriers and greater freedom for affiliates to move across pension fund administrators can backfire, as Chile's experience in the mid-1990s demonstrated. It can lead to marketing wars between numerous pension fund administrators, blunting the ability of the industry to capture scale economies, resulting in high administrative and selling costs and, thus, high fees. The opposite approach can also backfire. If the regulatory authorities raise entry barriers, promote cartel-like understandings among pension fund administrators, and restrict the ability of affiliates to move from one pension fund administrator to exploit economies of scale, the resulting lack of market contestability will increase the scope for the few incumbent pension fund administrators not to pass the administrative cost reductions on to affiliates and to enjoy abnormally high profits instead.

The appropriate policy to break away from this impasse is neither obvious nor easy to design and implement. Several approaches have been tried to bring down costs and fees, with mixed results. One promising approach is the Swedish model (James, Smalhout, and Vittas 2001; Palmer 2000), which unbundles the basic pension-related services that are subject to economies of scale (contributions

collection, accounts management, payouts to retirees, and so on) and provides them in a centralized manner (through a government institution or a regulated private sector monopoly), while services for which economies of scale are not significant, such as asset management, are left to thrive in highly contestable markets.

The challenge of building a well-regulated, deep, and efficient local market for annuities. A local annuities market is the key complement to defined-contribution pension funds and is crucial to enable pensioners to deal with “longevity risk”—the risk of outliving the savings accumulated during their working life. A well-functioning annuities market allows workers to transfer this risk to life insurance companies, which manage it through pooling and complex asset-liability modeling, passing on to insured individuals the benefits of risk diversification through pooling.

Despite the theoretical advantages of annuitization (Yaari 1965; Davidoff, Brown, and Diamond 2005; Babbel and Merrill 2006), voluntary demand for annuities worldwide is far below what is considered optimal by most economists, and annuity markets remain relatively underdeveloped, even in high-income economies.⁹ Potential contributing factors include adverse selection (which decreases incentives to supply annuities), bequest motives (which decrease incentives to buy annuities), and annuity-provider default risk. Empirical work by James and Vitas (2000) suggests that adverse selection cannot account for the lack of annuities market development. Brown and Poterba (2000) find that the bequest motive is not a significant factor in the decision to forgo annuitization. And Babbel and Merrill (2006) show (theoretically) that annuity purchase decisions can be highly sensitive to the perception of default risk of annuity providers.

The annuities market is highly sophisticated, demanding high-quality risk managers, appropriate institutional and market infrastructures, access to suitable assets, and risk-oriented regulation and supervision. Whether countries across all income levels will be able to develop such markets remains an open, yet crucial question, as does the question of whether, and under what conditions, a global pension fund and annuities industry might be a substitute, or even a superior alternative, to having a local industry.

Final Thoughts

This article has argued that some issues that are rising in priority among policymakers in many emerging market economies have not been adequately addressed by the current policy thinking on financial development. These issues have less to do with financial stability and the principles codified in international standards

and codes, and much more to do with completing markets in the context of increasing globalization. To a large extent, these issues have grown out of the interaction between the reforms adopted in emerging market economies over the past 25 years and developments in global financial markets. They pose technical challenges and political economy dynamics, whose nature and complexity were difficult to anticipate at the time of the reforms. The dominant financial development policy thinking seems to offer limited answers on how to confront these issues. An underlying tension for current policy thinking comes from growing questions among policymakers in many emerging market economies on whether the more stable, internationalized, and better regulated financial systems of today are contributing as much to social and economic development as expected.

The most common financial sector policies, focused on financial system stability and convergence to international standards, do not seem to be creating the broad, deep, and diverse financial services that households and firms require. For example, the markets for small- and medium-size enterprise and small-farmer finance appear only recently to be taking off in some emerging market economies. Affordable housing finance remains underdeveloped in most cases. Only the largest firms in the larger emerging market economies seem to have access to long-duration local currency finance. Much of the population in developing countries do not have access to even basic banking services, let alone to pension or insurance products to hedge risks. Moreover, the segmentation of access to financial services seems to be deepening as local financial systems grow and become better integrated into international markets. Financial globalization is arguably producing major benefits, but these seem to be concentrated among large corporations and higher income households.

The associated policy questions point to new areas for research to enrich and expand the current policy thinking on financial development. What reforms could redirect financial systems to more rapidly and effectively bridge the access gaps? How could countries overcome short-termism in financial contracting? Which financial services should be provided at home and which abroad? Is there a suitable version of domestic stock markets for most countries? Should governments take a more proactive policy role to foster financial development, going beyond the current focus on stability and improving the enabling legal and regulatory environment? For example, should government try to complete markets where there are apparent market failures? If so, what type of activities should governments undertake? Should governments provide financing, guarantees, infrastructure, or simply coordinate the activities of different stakeholders?

These types of questions highlight the limitations of the current policy thinking on financial development. This does not mean, however, that the current policy prescriptions should be abandoned or ignored. By and large, such prescriptions, especially those on financial stability, are based on strong theory and well-digested

lessons from experience. The question going forward is how to modify this thinking to provide fresh answers to the new emerging issues, and what form future financial sector reforms should take. Much more research is clearly needed, along with careful reconsideration of the evidence to develop better diagnoses. And a degree of intellectual modesty will be required to suitably revise the dominant policy thinking and amend expectations.

Notes

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1. The International Monetary Fund and World Bank have a leading role in assessing the degree of observance of international standards and codes, often in connection with the Financial Sector Assessment Program (FSAP). Results are summarized in the Reports on the Observance of Standards and Codes (ROSC). For details, see www1.worldbank.org/finance/html/fsap.html and www.worldbank.org/ifa/rosc.html. See also IMF and World Bank (2005) for an assessment of the standards and codes initiative.

2. Links to full descriptions of these standards and codes are available at www.fsforum.org/compendium/key_standards_for_sound_financial_system.html

3. A pioneering investigation into the links between liberalization and financial crises is by Díaz-Alejandro (1985). More recent theoretical studies show that financial liberalization may be associated with crises (see, for example, McKinnon and Pill 1997; Allen and Gale 2000; Bacchetta and van Wincoop 2000[01]; Calvo and Mendoza 2000). Empirically, several studies find links between domestic financial deregulation, boom-bust cycles, and banking and balance of payments crises (Corsetti, Pesenti, and Roubini 1999; Demirgüç-Kunt and Detragiache 1999; Kaminsky and Reinhart 1999; Tornell and Westermann 2005).

4. In contrast with the literature showing a link between domestic financial liberalization and banking and balance of payments crises, there is little empirical evidence supporting the oft-cited claim that greater exposure to international capital flows through capital account liberalization has resulted in a higher incidence of financial crises (Kose and others 2006; Edwards 2007).

5. Merger and acquisition activity and efforts by majority shareholders to increase their controlling stakes are other possible explanations for stock market delistings in Latin America. In Eastern Europe, delistings have been associated with the way privatization schemes were implemented (Claessens, Djankov, and Klingebiel 2000). In contrast, stock markets in East Asia have recorded strong listings increases. One explanation for this diverging trends is that, unlike the American and European stock markets, stock markets in Tokyo and Hong Kong, China, the natural candidates for migration for firms in Asia, have not done well in recent years (World Bank 2004).

6. See also Karolyi (2004) and Moel (2001) on the relation between stock market development and the use of American Depositary Receipts in emerging market economies.

7. In the absence of reasonable secondary market liquidity, concerns about price integrity cannot be fully dispelled. Illiquidity means that stock valuation takes place through methods that, even when well designed and uniformly applied, are imperfect substitutes for the real thing—an observable and reliable market price. Those methods are blunt in their capacity to capture in real time the changes in the actual and perceived risks and prospects of the issuer. Secondary market illiquidity, by undermining price revelation (even where disclosure standards are high), causes marking-to-market to lose much of its meaning and turns fair value accounting into an inherently tentative task.

8. In Chile, efforts have been under way for some time to enhance risk diversification at home by relaxing regulatory limits on domestic investment by mandatory pension funds and by introducing a system of multiple funds with different risk-return profiles. Results have been disappointing, and the range of corporate issuers represented in the aggregate portfolio of pension funds has remained narrow (Rocha 2004), suggesting the presence of structural factors limiting the diversification of institutional investor portfolios.

9. See Cardinale, Findlater, and Orszag (2002) for an overview of annuities markets in developed countries, and Palacios and Rofman (2001) for an overview in Latin America.

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The Growing Relationship Between China and Sub-Saharan Africa: Macroeconomic, Trade, Investment, and Aid Links

Ali Zafar

China's economic ascendance over the past two decades has generated ripple effects in the world economy. Its search for natural resources to satisfy the demands of industrialization has led it to Sub-Saharan Africa. Trade between China and Africa in 2006 totaled more than \$50 billion, with Chinese companies importing oil from Angola and Sudan, timber from Central Africa, and copper from Zambia. Demand from China has contributed to an upward swing in prices, particularly for oil and metals from Africa, and has given a boost to real GDP in Sub-Saharan Africa. Chinese aid and investment in infrastructure are bringing desperately needed capital to the continent. At the same time, however, strong Chinese demand for oil is contributing to an increase in the import bill for many oil-importing Sub-Saharan African countries, and its exports of low-cost textiles, while benefiting African consumers, is threatening to displace local production. China poses a challenge to good governance and macroeconomic management in Africa because of the potential Dutch disease implications of commodity booms. China presents both an opportunity for Africa to reduce its marginalization from the global economy and a challenge for it to effectively harness the influx of resources to promote poverty-reducing economic development at home. JEL codes: F01, F35, F41, N55, N57, Q33, Q43

"We like Chinese investment because we have one meeting, we discuss what they want to do, and then they just do it. ... There are no benchmarks or preconditions. ..."

Sahr Johnny, Sierra Leone ambassador to Beijing, 2005

"China's move into Africa is displacing traditional Anglo-French and U.S. interests on the continent."

Martyn Davies, director of the Center for Chinese Studies Stellenbosch University, South Africa, 2005

One of the most important economic developments in recent years has been the rapid emergence of China as a world economic power. A combination of sound economic management, policy reforms, and hard work has led to burgeoning economic growth of more than 8 percent a year for the last decade, thrusting China to its current position as the world's fastest growing economy. Fueled by pragmatic business considerations, motivated by a need to supply a growing industrial sector, and eager to find destinations for its cheap goods, Chinese firms have launched a worldwide quest for access to raw materials and markets in Central Asia, Latin America, East Asia, and Sub-Saharan Africa. Through a gradual approach to reform, a carefully managed exchange rate,¹ and a variety of interventionist policies, Chinese policymakers have helped reduce the role of the state sector and lay the foundations for a more dynamic and export-oriented private sector. The Chinese economic boom has had repercussions in the world economy and influenced global trade and finance.

This article surveys the main trade, investment, and aid links between China and Sub-Saharan Africa and assesses the principal dynamics of the relationship. It also examines the indirect macroeconomic effects of China's policies on Africa, particularly in relation to global output, savings, and commodity prices. Using trade and commodity price data, the article seeks to understand the nature of the Sino-African trade relationship and focuses on two important sectors—oil and textiles. It concludes by briefly examining the potential positive and negative effects of Chinese trade and investment in Africa.

China's Africa Policy and the Beijing Consensus

The empirics of China's growth and expansion are impressive. China has been one of the world's fastest growing economies in the last decade and has recently surpassed Italy to become the world's sixth largest economy after the United States, Japan, Germany, France, and the United Kingdom and is slowly moving toward fourth place. According to official figures from China's National Bureau of Statistics, China's GDP reached almost 18.2 trillion yuan (\$2.25 trillion) in 2005,² and China is accounting for an increasing share of global output. China's export performance has become formidable, as exports have increased dramatically over the last 5 years. And China has doubled the supply of global labor by adding more than 100 million workers to the global market. Thus, China is contributing to significant changes in the world economy.

The novelty of China's recent foray into Sub-Saharan Africa has caught the attention of journalists, but has generally escaped more rigorous analysis by researchers and policymakers. While China's impact on the United States or a Latin American economy is hotly debated, there has been little systematic

reflection on its impact on Africa. Nevertheless, there is a nascent literature combining both quantitative and qualitative work. A detailed study by four experts at the Development Center of the Organization for Economic Co-operation and Development in Paris examines the impact on Africa of Chinese and Indian ascendance with the goal of formulating strategies for poor countries to maximize the benefits and minimize the costs of engagement with these Asian powers (Goldstein, Pinaud, Reisen, and Chen 2006). Jenkins and Edwards (2005) recently concluded a study for the UK's Department for International Development (DFID) that investigates the effect of China and India's growth and trade liberalization on poverty in Africa using macro-micro linkages and analyzes the impact on Africa's imports, exports, third-country markets, and foreign direct investment. Finally, the World Bank conducted a study on Africa-Asia trade and investment linkages, using firm-level data (World Bank 2004). This article will contribute by providing a focused and empirical analysis of China's impact on the continent.

The signs of China's economic expansion are becoming increasingly manifest in Sub-Saharan Africa. Over the last decade, China has built a network of trade, aid, and investment links with close to 50 African countries, and there has been a rush to buy up concessions to Africa's natural resources. Chinese companies are mining oil in Angola and Sudan, building roads in Ethiopia, working with the electricity sector in Kenya, building infrastructure and developing the tourism industry in Sierra Leone, and servicing mobile phone networks in Kenya and Nigeria. Throughout Sub-Saharan Africa, Chinese companies are building vital infrastructure, including dams, ports, and roads, and helping to renovate government offices and other buildings. China's foreign policy is being increasingly driven by its domestic development strategy and the need for resources (Zweig and Jianhai 2005). However, the interest is not confined solely to natural resources, as Chinese firms have ventured into the light manufacturing and services sectors and entered into agroprocessing, apparel, and telecommunications. Meanwhile, Africa is increasingly awash with low-cost Chinese motorcycles, electronic goods, and T-shirts, benefiting the consumers in the continent.

Over the last several years, China has intensified diplomatic links with Africa. Under the auspices of the China-Africa Cooperation Forum of 2000, comprising 46 of 53 African countries, bilateral trade and economic cooperation have entered a new realm. In a symbolic gesture that carries much hidden weight, the Chinese foreign minister has maintained a policy of making his first official overseas trip each year to Africa. In January 2006, the Chinese government issued its official Africa policy, calling itself the world's largest developing country and seeking the establishment of a new strategic partnership with Africa marked by an intensification of dialogue on the political front combined with closer economic cooperation (China Ministry of Foreign Affairs 2006).³ In November 2006,

a very high-level China–Africa summit, with the participation of more than 40 African heads of state, was held in Beijing to cement trade and investment relations between the world’s fastest growing economy and the world’s poorest continent. China’s economic size in 2005, measured in purchasing power parity terms, is more than five times that of Sub-Saharan Africa, while its physical size is much smaller (IMF 2006). According to the World Bank’s Atlas method, GNI per capita in 2005 was \$745 in Sub-Saharan Africa, contrasted with \$1,740 in China. However, there is a large convergence of interest based on economic complementarities and strong possibilities for mutual gain.⁴

As a rising power, China is altering some of the prevailing practices and parameters in development assistance. One analyst, Joshua Cooper Ramo, has termed the Chinese approach the “Beijing Consensus,” with the development of new attitudes toward politics, development, and the global balance of power (Ramo 2004). China’s distinctive approach involves a combination of aggressive diplomacy and the cultivation of friendly ties with a “no-strings attached” financial and technical assistance package. The only real prerequisite for Chinese assistance is support for Beijing’s one-China policy (in relation to Taiwan, China). China’s pledge of noninterference in countries’ internal affairs and lack of lending conditions on governance or fiscal management have elicited positive reactions from several governments.⁵

However, China’s lack of attention to governance, democracy, and human rights issues in Africa, as testified by its support of pariah regimes in Sudan and Zimbabwe and its delinking of aid from political reform, has raised concerns that the flow of Chinese aid may cause African governments to delay reforms that promote openness and accountability. Given the propensity for corruption in the management of natural resources, China’s lack of attention to matters of resource transparency and mechanisms of oversight among its African partners has been a cause for concern. Moreover, the tendency of Chinese companies to import labor from China, coupled with allegations of poor labor practices and unfair competition against local enterprises, has generated an anti-Chinese backlash in several African countries, notably South Africa and Zambia. Finally, the disregard for environmental impact assessments risks derailing the progress that has been made on that front over the last two decades. In sum, there are fears that this neglect of governance and proper standards may be detrimental to many countries’ overall development efforts.

Analytical Framework and Dutch Disease

An interesting paradox in development economics is the “resource curse,” the poor growth performance of many countries with rich natural resources,

especially in Sub-Saharan Africa. Historical experience shows that rich endowments of oil and metals may weaken a government's incentives for diversification and promote wasteful expenditure. Both theoretical analysis and empirical evidence show that capital-intensive natural resource abundance creates opportunities for rent-seeking behavior and that this is an important factor in determining a country's level of corruption (Leite and Weidmann 1999). With this in mind, China's impact on natural resources and global commodity markets needs to be analyzed carefully.

To systematically examine these issues, this article analyses the channels of transmission between China and Sub-Saharan Africa—global macroeconomics, trade flows, and foreign direct investment and aid. Jenkins and Edwards (2005) identify several direct impact channels: growth of African exports to China (complementarity effect), increased competition from China in third-country markets (competitive effect), increased competition of China in African country markets (competitive effect), and effects of foreign direct investment (competitive or complementarity effects). Besides the direct impacts, China can exert an indirect impact by pushing up prices of primary commodities, even if the country does not export directly to China. Increased Chinese demand will affect global demand, which will also influence Sub-Saharan economies. While the direct impacts are easier to measure, the indirect impacts are less obvious and require more disaggregated data, although both impacts can have a positive effect on commodity prices. This article integrates the various transmission channels to obtain a unified perspective on China's impact.

The general analytical framework for examining China's impact on African economies and assessing the potential Dutch disease implications is based on the classic model of a small open economy developed by Corden and Neary (1983). It divides the economy into three sectors: a nontraded good sector (which includes services), a booming tradables sector (usually the extraction of oil or metals), and a lagging tradables sector (including other manufacturing and agriculture). Of the three goods produced, two are traded at exogenously given international prices and a third is a nontraded good whose price is determined by domestic supply and demand. The standard model assumes no distortions in commodity and factor markets.

Under this framework, a natural resource windfall (for example, due to a China-induced increase in world prices) will have two major consequences. First, the resource movement effect will result from the increased demand for labor and capital in the booming tradables sector (extractive industries) and away from the lagging nontradables sector. Second, the spending effect will occur as the booming export sector increases the demand for and prices of services in the nontradables sector, generating upward pressure on the real effective exchange rate and further weakening the lagging sector. In the Dutch disease scenario, the

natural resources boom will lead to an increase in national income, but will paradoxically lead to deindustrialization (and “deagriculturalization”) and have an adverse effect on the competitiveness of the country’s other exports. As a consequence, natural resource economies will tend to have larger service sectors and smaller manufacturing sectors than resource-poor economies.

With regard to the impact of China on Sub-Saharan African countries, the model’s longer run predictions will depend on each country’s factor endowment and comparative advantage. After a commodity boom, resource-abundant countries will tend to become more intensive in resource-based exports and less intensive in lower end, labor-intensive manufactures. Moreover, resource-rich countries will tend to finance inefficient economic policies by selling their resources on the market. However, following Sachs and Warner (1999), there is either a possible “big push” potential of commodity booms if the nontradables sector generates increasing returns or a risk of further deindustrialization if the tradables sector is the one that generates increasing returns. By contrast, in the case of resource-poor economies (which have only one tradables sector and one nontradables sector), a China-induced negative terms of trade shock will cause a contraction of the tradables sector coupled with an adverse effect on the nontradables sector. In sum, the impact of China on Sub-Saharan economies will depend critically on the country’s factor endowments.

Global Macroeconomics

China, through the effects of its financial and trade policies on the international macroeconomic environment, exerts an indirect effect on economic management in Africa. As a global price-setter, its actions have major repercussions on world interest rates, output, and inflation. The Chinese have directly contributed to macroeconomic management in Sub-Saharan Africa by helping create the large commodity booms that have resulted in the inflows of capital into the continent. Moreover, by playing a key role in financing the large U.S. current account deficits through the accumulation of large foreign exchange reserves (which reached more than \$850 billion in 2006), China has influenced the global macroeconomy. Strong export performance has given China the capital to bankroll these global imbalances. The acquisition by China’s official sector of large amounts of foreign assets has raised the country’s global importance, and China can be regarded as a very important force in world goods and financial markets (Reisen, Grandes, and Pinaud 2005). In the analysis of some experts China is providing “cheap savings” (together with cheap goods) for the world economy, and the U.S. current account deficit will be happily financed by Asian central banks for at least another decade (Dooley, Folkerts-Landau, and Garber 2003a, b). However,

Goldstein and Lardy (2005) argue that China's maintenance of an inflexible currency regime is actually the cause of global imbalances and may be a precursor of future macroeconomic instability. Moreover, while helping to hold down interest rates in rich economies, China may have indirectly created a global liquidity bubble (*The Economist* 2005).

Whatever the merits of the debate, China's large dollar reserves mean that a sale of U.S. Treasury bonds by the Chinese central bank could result in a fall in the dollar that would erode the price competitiveness for many African economies, which are not pegged to the dollar (unlike many Asian economies). The economies that would be most affected by a plummeting dollar would be the 14 Francophone economies of the CFA Franc zone, which are currently pegged to the euro and which would see a deterioration in their trade balances. Already since 2000 the strong euro has had an adverse effect on the real effective exchange rates of the two CFA zones and has hurt their competitiveness (Zafar 2005). The oil-exporting countries of Africa—Angola, Gabon, Nigeria—and most commodity producers on the continent could be negatively affected, because their export revenues are priced in dollars, and the cost of imports, mostly of European origin, are in euros. Central bankers in many African economies, particularly in the rand zone, will have to make exchange rate adjustments in the case of a fall in the value of the dollar.

A second potential channel of Chinese influence on Africa is through China's effects on global prices, interest rates, and commodity prices. First, China has helped to maintain low interest rates and bond yields through its financing of the U.S. deficit. There is some empirical evidence that high commodity prices are influenced by low real interest rates (Frankel 2006). Second, by contrast, supply-side factors in China are creating downward price pressures in a number of industrial sectors globally, including light manufactures like textiles and clothing, and high technology products (IMF 2003).⁶

Commodity Prices and Terms of Trade

One of the key variables through which China has affected the rest of the world economy is the impact on commodity prices and the resulting terms of trade effects. China has become a key driver of price dynamics in the metals market (IMF 2006). It is the world's largest consumer of steel, copper, coal, platinum, and cement, and it is responsible for much of the rise in *The Economist's* commodity-price index in recent years (*The Economist* 2004). Offsetting its downward impact on prices of global manufactures, rising prices for steel, soybeans, copper, oil, and platinum due to China's large appetite are affecting countries' terms of trade. Countries like Argentina, Australia, and Canada are seeing significant gains from commodity exports to China. Among the five basic food, energy,

and industrial commodities—grain, meat, oil, coal, and steel—consumption in China has eclipsed that of the United States in all but oil.⁷

While prices are still below what they were 50 years ago, the recent commodity boom, induced partly by low global inventories, has helped create an unprecedented bull market since 2001 with the result that global investment funds are diversifying portfolios away from lower valued stocks and bonds and into commodities. Hedge funds have become increasingly active on commodity futures exchanges, as investors sense that large profits can be made from commodity speculation. Commodities, in particular gold, are rapidly becoming hedges against inflation. Furthermore, since most commodities are priced in dollars, the recent decline in the dollar has helped fuel foreign commodity demand, thereby boosting commodity price levels.

The impact of China's growing demand has been particularly strong in Sub-Saharan Africa, where more than three-quarters of export revenues come from commodities. In 2004, real GDP in Sub-Saharan Africa accelerated to 5.1 percent, the highest in almost a decade, underpinned by the strength of the global economy and, even more, by oil and commodity prices (IMF 2005b). In 2005, economic growth reached 5.2 percent, with metal prices jumping more than 15 percent. The surge in prices due to China has generated rents for resource-rich countries as well as windfalls for companies in the extractive industries. While commodity markets are notoriously volatile, characterized by frequent boom–bust cycles, the rise of China and other large emerging markets may have led to a fundamental change in long-term price trends, and the world may be entering a period of sustained high prices, particularly of metals (IMF 2006). While metal prices are expected to retreat over the medium term as new capacity comes online, they will most likely not fall to earlier levels, in part because of the increase in production costs due to higher energy prices (IMF 2006).

To assess China's impact on terms of trade in Sub-Saharan Africa, a quantitative analysis was conducted for 2000–2005 using commodity price data from the World Bank and IMF, commodity production and export statistics from the Food and Agriculture Organization, terms of trade indices from the IMF, and data on China and world exports of commodities from the United Nations Commodity Trade Statistics (Comtrade) at the four- and two-digit Harmonized Classification (HS) level.⁸ The goal was to calculate the relative contribution of China to the growth in global demand and consumption growth for African export commodities from 2000 to 2005, and then, based on an analysis of the commodity composition of exports and imports, assess China's overall impact on the terms of trade for each country, measured as the ratio of export prices to import prices (table 1). Countries were classified as winners, mixed winners–losers, and losers based on a qualitative assessment of the general effect of China on their terms of trade (figure 1). China's effect on oil and metal prices was considered a positive

Table 1. African Commodity Prices, Terms of Trade, and Chinese Demand, 2000–2005

Country	Export commodities	International price change, 2000–2005 (%)	China effect ^d (%)	Terms of trade index ^b				Change, 2002–2005 (%)
				2002	2003	2004	2005	
Angola	Oil	89.1	18.4	85.9	75.6	93.6	108.7	26.5
Benin	Cotton	–6.5	78.1	94.2	97.5	115.1	94.4	0.2
Botswana	Diamonds	38.6	–50.9 ^c	83.3	85.5	68.5	83.9	0.7
Burkina Faso	Cotton	–6.5	78.1	84.5	77.0	74.7	60.3	–28.6
Burundi	Coffee	30.2	0.0	79.3	79.6	99.8	114.3	44.1
Cameroon	Oil	89.1	18.4	100.2	99.3	96.3	109.8	9.6
Central African Republic	Cotton	–6.5	78.1	82.8	84.9	70.9	66.4	–19.8
Chad	Oil	89.1	18.4	126.2	172.9	228.8	229.0	81.5
Congo, Dem Rep	Diamonds	38.6	–50.9 ^c	107.8	124.6	129.1	131.1	21.6
Congo, Rep of	Oil	89.1	18.4	104.0	114.0	120.3	128.9	23.9
Côte d'Ivoire	Cocoa	69.8	1.0	135.1	119.1	100.5	109.5	–18.9
Equatorial Guinea	Oil	89.1	18.4	43.0	61.7	67.8	83.3	93.7
Ethiopia	Coffee	30.2	0.0	86.4	77.8	71.9	81.2	–6.0
Gabon	Oil	89.1	18.4	88.1	109.8	111.6	131.9	49.7
Ghana	Cocoa, gold	69.8, 59.4	1, 0	110.8	127.2	108.1	101.5	–8.4
Guinea-Bissau	Cashew nuts	–30.2	0.0	66.7	75.9	60.5	57.5	–13.8
Kenya	Tea	–27.2	0.0	101.6	83.9	77.8	71.5	–29.6
Lesotho	Cotton textiles	NA	0.0	104.7	85.3	72.7	67.0	–36.0
Madagascar	Vanilla	51.5	0.0	107.3	118.0	116.0	73.2	–31.8
Malawi	Tobacco	–7.1	5.5	82.7	80.7	79.7	71	–14.1
Mali	Gold, cotton	59.4, –6.5	0, 78.1	97.4	96.5	99.9	87.6	–10.1
Mauritius	Sugar	19.9	4.4	104.6	107.9	109.6	102.8	–1.7
Mozambique	Aluminum	22.5	23.3	93.8	91.8	103.4	107.7	14.8
Niger	Uranium	275.0	0	111.6	108.7	103.5	103.4	–7.3
Nigeria	Oil	89.1	18.4	89.1	91.3	110	148.8	67.0
Rwanda	Coffee	30.2	0	83.1	69.8	93	69.7	–16.1
Senegal	Fish	10.2	26.7	99.4	95.7	95.1	93	–6.4
Sierra Leone	Diamonds	38.6	–50.9	102.3	100.4	95.7	98	–4.2
South Africa	Gold, platinum	59.4, 160.2	0, –6.6 ^c	103.2	105.2	105.2	102.5	–0.7
Sudan	Oil	89.1	18.4	97.8	105.8	120.9	116.1	18.7
Tanzania	Gold	59.4	0	92	86.8	79.6	78.9	–14.2
Togo	Cotton	–6.5	78.1	105.7	118.7	122.6	114.0	7.9
Uganda	Coffee	30.2	0	70.3	70.6	77.8	69.3	–1.4
Zambia	Copper	102.9	47.6	92.5	96.2	114.5	114.1	23.4
Zimbabwe	Tobacco	–7.1	5.5	96.5	90.9	84.6	79.1	–18.0

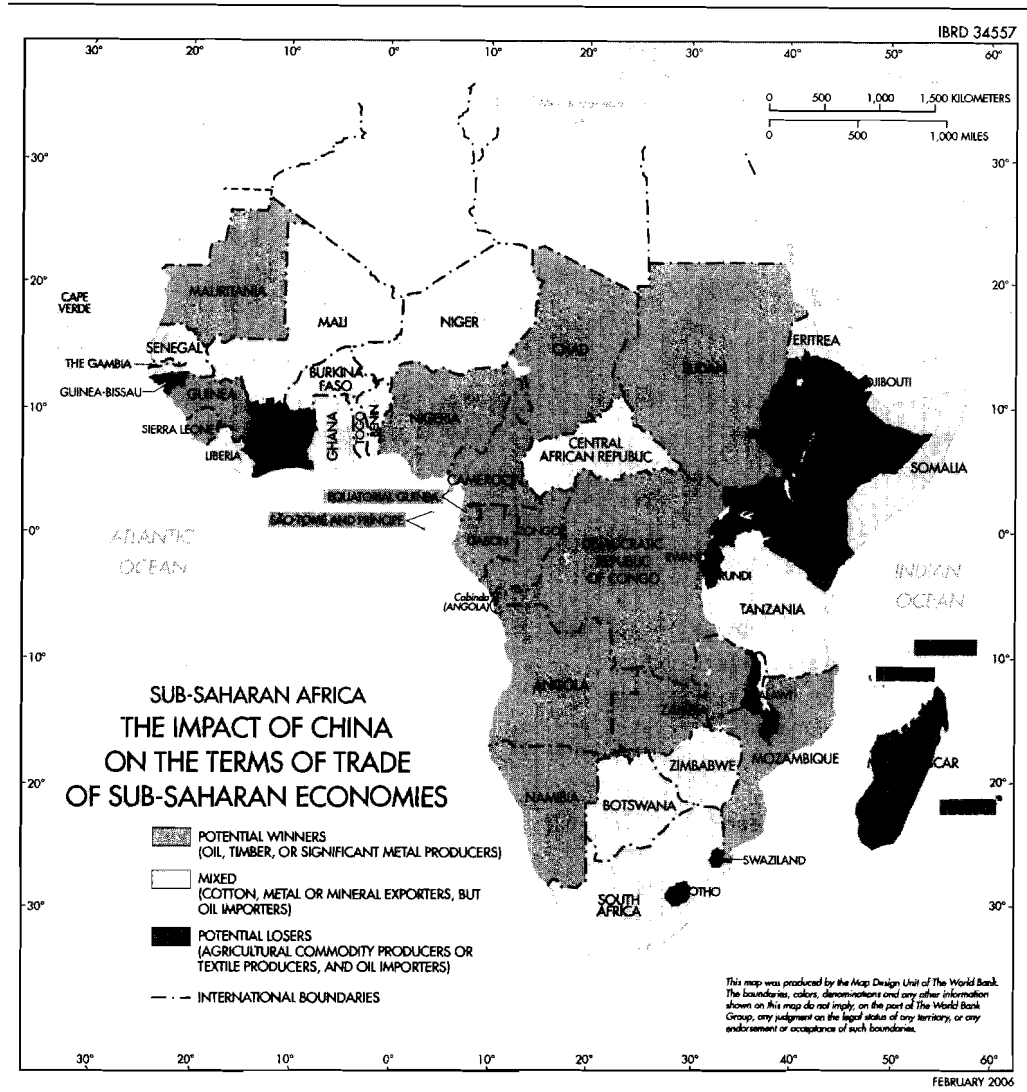
^aThe change in Chinese demand over 2000–2004 divided by the change in world demand over 2000–2004.

^bThe signs for gold and platinum are negative, because the large increase in Chinese imports could not compensate for a reduction in world supply.

^cExport prices divided by import prices.

Source: Terms of trade and main export commodity data from IMF databases; commodity data from FAO statistics; commodity price data from World Bank Development Prospects Group; China and world import data from UN Comtrade; and price data for select commodities from industry websites.

Figure 1.



shock, while its downward effect on the prices of global manufactures, especially textiles and apparel, was considered a negative shock. The analysis seeks to isolate the effect of China from the effects of other countries on these economies. A measurement of the development and potential poverty-reducing impact is beyond the scope of the study.

- **Winners.** Oil exporters and resource-rich countries, like Angola, Gabon, and Sudan, and base metal exporters, such as Mauritania (iron ore), Mozambique (aluminum), South Africa (platinum), and Zambia (copper) have been

positively affected by the surge in international prices for oil, wood, and metals, due partly to increased China's import demand. From 2000 to 2005, international oil prices increased 89 percent, and China accounted for 18 percent of the growth in world demand for oil. Partly because of China's demand, world production capacity has been at its peak, and oil prices are unlikely to return to \$20 a barrel. Similarly, aluminum prices went up by more than 20 percent, and copper prices have more than doubled between 2000 and 2005, and China is responsible for a significant increase in world consumption for both. Angola's terms of trade index rose from 86 in 2002 to 109 in 2005, and Zambia registered a parallel gain from 93 to 114. Finally, while gold prices increased by close to 60 percent in the last 5 years, Chinese demand plays a small but rising role for Africa's gold producers of Ghana, Mali, South Africa, and Tanzania.

- *Mixed.* For some resource-rich but oil-importing countries like Botswana and the Central African Republic, the effects of China have been ambiguous, since the upward pressure on metal prices has been partially offset by the higher oil import bill, with the impact on the smaller economies particularly strong. Since these countries do not export aluminum, copper, steel, or zinc, the China effect on their metal exports has been more modest. Cotton exporters (Benin, Burkina, and Mali) are benefiting from the slight turnaround in international cotton prices since 2004 due to increases in China's import demand, but suffer because of the higher cost of oil imports. China has long been the world's largest cotton producer and consumer, but in recent years its soaring economy and global textile demand have driven its cotton imports far beyond that of any other market's (USDA 2006).
- *Losers.* Oil-importing countries that are also textile exporters, like Madagascar and Mauritius, will suffer from negative terms of trade shocks resulting from the added costs of oil imports and the competition of China's textile imports, resulting in job losses and shrinkage in domestic manufacturing. Due to increased Chinese competition in third-country markets, these countries will lose world market share. Moreover, countries that are both coffee producers (Burundi, Ethiopia, Rwanda, and Uganda) and exporters of other agricultural commodities (Côte d'Ivoire, Kenya, Malawi, Tanzania, and Zimbabwe) as well as oil importers will be hurt, because agricultural prices have not increased over the last several years. China currently accounts for less than 1 percent of global coffee and cocoa consumption, and excess supply in world markets has already caused price collapses over the last few years. Moreover, these African countries do not have a strong comparative advantage in the production of any of China's main agricultural imports—wheat, corn, beef, and soybeans. As a result, these countries will most likely face a worsening of their trade balances.

China has had asymmetric effects on Sub-Saharan African economies and has contributed to widening the differential in the terms of trade indices of resource-rich and resource-poor economies. The impact of China on a country's terms of trade is a direct function of five key variables: the commodity composition of the country's trade (especially the percentage of oil or metals in its export basket), the importance of textiles in its overall trade, the relationship between world supply and world demand for the commodity, the dependence on imported oil, and the percentage of the increase in world demand for the commodity that is accounted for by China. China's effect on commodity prices has influenced macroeconomic performance and growth in these countries.

Policy Responses to Potential Dutch Disease

China's ascent poses a major challenge to macroeconomic management in Sub-Saharan Africa. To prevent a Dutch disease-induced deindustrialization, resource-rich countries need policies that will prepare them for a time when commodity prices may fall again. In the past, difficulty in predicting the likely duration of price shocks has limited the ability of African policymakers to manage commodity booms and slumps (Cashin and Pattillo 2000). But even with such uncertainty, the experience of several countries demonstrates that there is a set of key policies that will help these countries improve the management of their assets and escape the resource curse.

First, countries need to maintain fiscal prudence and avoid wasteful public expenditure by using windfalls to accumulate foreign exchange reserves. The use of savings or stabilization funds should also be encouraged, as Chad has done, although implementation problems remain. Second, countries need to use monetary policy to contain the inflationary tendencies that result from commodity booms. In some cases, a regional approach may facilitate the task. One of the major successes in the macroeconomic management of oil windfalls has been in the oil-rich Central African CFA zone, where regional integration and associated membership in the trade and monetary union has locked countries into macroeconomic policy reform and provided the framework for the regional central bank to use prudent monetary policy to maintain price stability (Zafar and Kubota 2003).

Moreover, countries need to use commodity windfalls to finance productivity-enhancing investments in the nontradables sector, especially through import-financed infrastructure and human capital development, and to prevent appreciation of the real effective exchange rate. These investments would be most effective in a nontradables sector with increasing returns and learning-by-doing

effects and could provide the micro-foundations for diversification in the services and manufacturing sectors. The successful experience of Botswana in managing revenue windfalls from diamonds suggests that strong economic performance can result from a combination of self-disciplinary fiscal rules under which mining revenue is used to finance investment expenditure coupled with solid institutional structure and effective anticorruption policies (Iimi 2006).

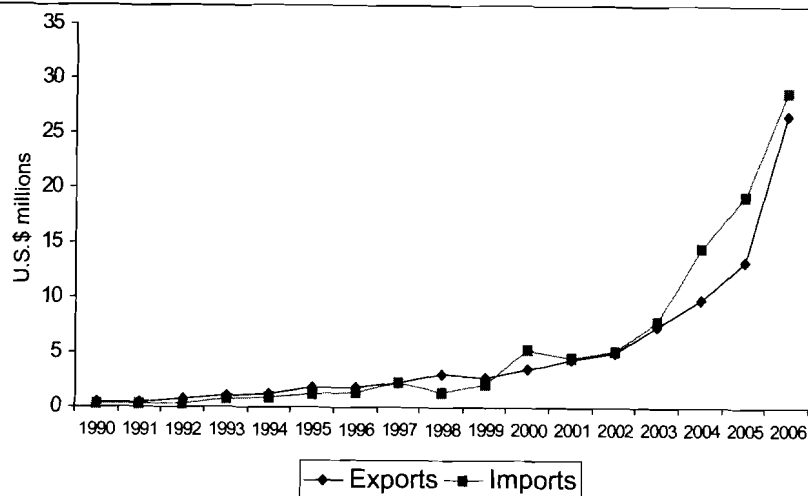
Finally, governance structures need to be established to have a transparent accounting of windfalls. The 2002 UK-sponsored Extractive Industries Transparency Initiative seeks to improve the transparency of company payments and government revenues in resource-rich countries. Representing a positive effort in the direction of improved governance, the initiative was endorsed by more than 10 Sub-Saharan African countries.

Trade

In the last decade, China has increased its integration with the world trading system and become the world's manufacturing hub as well as the largest recipient of foreign direct investment. Shielded from international competition for years through an edifice of protectionism, China has undertaken significant trade liberalization, partly in the context of the WTO accession. A system involving physical planning of foreign trade, which dominated China's trade until the 1980s and resulted in an irrational pattern of exports, has been replaced by a decentralized and market-determined trading system (Lardy 2003). Chinese ties with the world economy are seen in its rising trade with the African continent as state-owned Chinese companies search for raw materials for industrial expansion.

The stylized facts reveal an interesting story about changing trade patterns. First, there has been a dramatic increase in direct trade between China and Sub-Saharan Africa in the last few years, especially since 2001, resulting in trebling of trade volumes from close to \$10 billion in 2002 to more than \$40 billion in 2005 and more than \$50 billion in 2006 (figure 2). Second, over the last 3 years, the relationship has been evolving in the direction of growing Chinese trade deficits with Sub-Saharan Africa. Third, China tends to import mineral fuels and metals from Africa and export cheap consumer and capital goods, and there is little trade in intermediate goods. Fourth, China's imports are concentrated among a small number of natural resource economies lacking product diversification in their export structure. More than 75 percent of China's trade takes place with four countries—South Africa, Sudan, Angola, and Nigeria (figure 3). Noncommodity exports from Africa to China are not significant, accounting for less than 10 percent of African exports and include textiles and apparel, processed

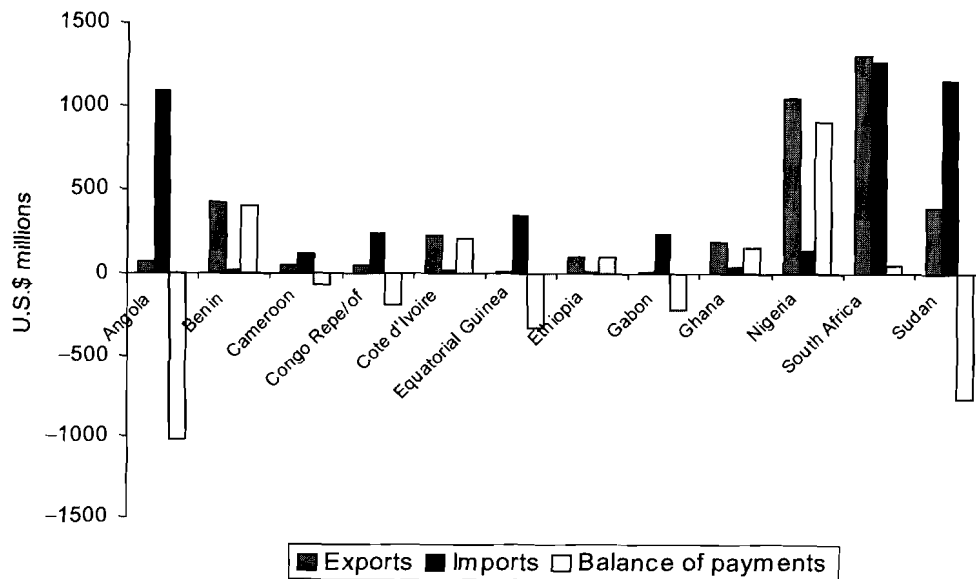
Figure 2. China's Trade with Sub-Saharan Africa, 1990–2006



Source: UN Comtrade data 2006.

food, and small manufactures. These exports tend to be technologically simple and are either finished consumer goods or intermediate inputs in the case of textiles. Finally, the dispersion of China's trade with Africa shows that resource endowments trump geographic proximity as an explanatory variable for trade flows.

Figure 3. China's Trade with the Top 12 Sub-Saharan African Countries in 2004



Source: UN Comtrade data 2005.

While China has an overall current account deficit with Sub-Saharan Africa, the aggregate numbers mask differences among countries (see figure 3). The largest bilateral deficits are with the oil producers, Angola and Sudan, while flows with South Africa, the continent's largest economy, tend to be more balanced. On the other hand, with countries like Nigeria, and to a lesser extent Benin and Ghana, China continues to maintain significant current account surpluses. One striking pattern is the redirection of Sub-Saharan African trade away from its traditional Western markets toward the rising Asian economies. While Europe and the United States represented more than two-thirds of African exports in 2003/2004, Asia's share has been rising progressively, while Europe's has been stagnating or even declining. China has become Sub-Saharan Africa's third largest trade partner after the United States and France, and it has increased its share of the African market from 5.8 percent in 2002 to more than 10 percent in 2004.

Trade flows between Sub-Saharan Africa and China closely follow what would be expected from comparative advantage and the predictions of the Heckscher–Ohlin model, with China exporting labor-intensive manufactures and high-technology products and Africa exporting raw materials and mineral fuels (table 2). While during the 1980s and 1990s, China exported mostly clothing, footwear, and light manufactured goods, during the first 5 years of the twenty-first century, there has been a shift toward higher technology exports, like electronic goods and machinery, which account for close to 50 percent of China's exports. One important factor is the absence of agricultural exports from Sub-Saharan Africa to China (excluding raw cotton), explained largely by the strong comparative advantages in agriculture of commodity-producing exporters like Argentina, Canada, and Chile.

The growing trade between China and Africa has benefited considerably from trade reforms in both regions. While regional trade agreements in Africa have helped reduce barriers and liberalize trade in the last two decades, under China's strategy of economic development average tariff rates have been reduced from 40 percent in 1986 to 10 percent in 2005 and average tariffs on industrial goods have been lowered from close to 25 percent in 1997 to less than 10 percent in 2005. Tariffs on agricultural goods have been reduced from under 47 percent in 1992 to 17 percent in 2004 (Hong 2005). Since 2005, China has provided zero import tariffs and exemptions on more than 180 products lines from 28 of the least developed African economies, commodities whose average most favored nation tariff rate in 2004 was 9.8 percent. However, tariff escalations and peaks persist on certain African exports, such as raw cotton, which had a tariff of 27 percent in 2005. Finally, China is in the process of ending its system of discriminatory licensing and import bans for bulk commodities, which may be beneficial for African exporters.

Table 2. China's Imports and Exports from and to Sub-Saharan Africa, 2004 (billions of U.S. dollars)

<i>Merchandise imports</i>		<i>Merchandise exports</i>	
<i>Good</i>	<i>Value</i>	<i>Good</i>	<i>Value</i>
Mineral fuels, oils and products	9.49	Electrical machinery equipment parts	1.40
Ores, slag and ash	1.37	Nuclear reactors, boilers, machinery	0.90
Natural and cultured pearls, precious stone	0.74	Vehicles other than railway/tramway rolling stock	0.77
Cotton	0.65	Cotton textiles	0.73
Wood and articles of wood	0.47	Footwear and the like	0.49
Iron and steel	0.37	Articles of iron or steel	0.48
Copper and copper articles	0.19	Articles of apparel and clothing	0.42
Tobacco and manufactured tobacco	0.12	Articles of apparel and clothing	0.37
Aluminum and aluminum articles	0.11	Synthetic filaments	0.33
Organic chemicals	0.07	Synthetic staple fibers	0.31
Nuclear reactors, boilers, machinery	0.05	Special woven fabric, tufted textile fabric	0.23
Other base metals, cements	0.04	Rubber and rubber articles	0.20
Inorganic chemicals, compounds of precious metals	0.04	Plastics and plastic articles	0.19
Pulp of wood and of other fibrous goods	0.03	Furniture, bedding, mattress	0.16
Oil seed, oleaginous fruits, miscellaneous	0.03	Articles of leather, saddlery and harnesses	0.14

Source: UN Comtrade 2005.

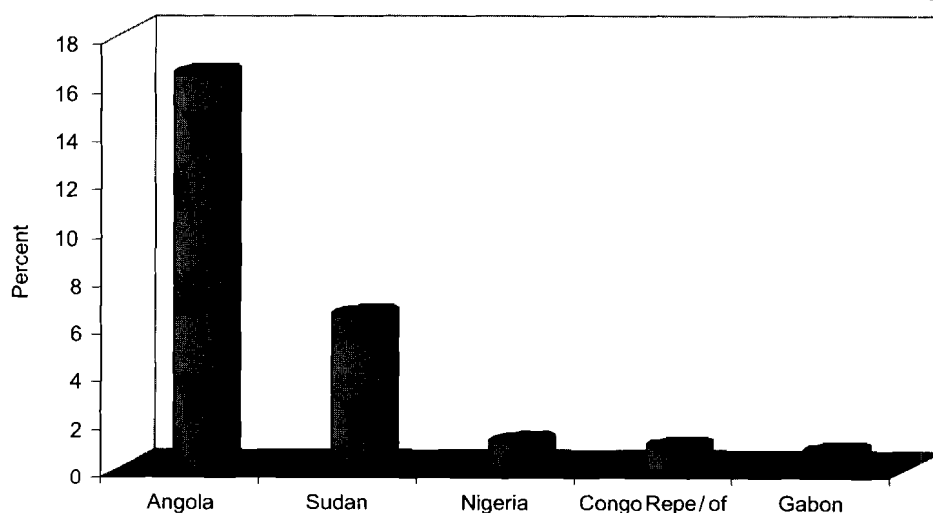
The Quest for Oil

China's growing demand to fuel large economic expansion amid an increasing shortage of raw materials and the needs of growing large- and small-scale industry have led it to intensify its search for oil, notably in the Middle East, Russia, and Africa. While historically China has met most of its energy needs by burning coal, a combination of environmental and financial reasons has led it to diversify. China's quest for oil is becoming an integral part of its foreign policy. As part of a global effort to gain energy security, China is spending billions of dollars on the promising African oil market, which has long been dominated by U.S. and European petroleum interests.

China's quest for oil has altered the world oil market and the supply and demand balance. Between 2003 and 2004, China's petroleum imports increased by more than 40 percent and accounted for more than 30 percent of incremental global oil demand (EIA 2005). By 2004, China had become the world's second largest consumer of petroleum products, surpassing Japan with total demand of close to 6.5 million barrels per day. Over the last several years, China's imports of African crude have increased exponentially, reaching more than 25 percent of total Chinese oil imports. In Sudan and the Gulf of Guinea, the sight of Chinese oil tankers has become commonplace, and as part of its global quest China is engaging nations shunned by the West.

The major beneficiaries of the Chinese boom have been Angola and Sudan (figure 4). Angola, currently Africa's second largest oil producer after Nigeria, is China's top supplier, providing more than 400,000 barrels per day, or close to 15 percent of China's oil imports, comparable to U.S. oil imports from Angola. Plagued by decades of war, burdened by reconstruction costs, and castigated by international development institutions for lack of transparency in oil revenue management, the Angolans have welcomed China's interest. In return for concessions and oil contracts, the Chinese are providing financial incentives. A \$2 billion line of credit (1.5 percent interest over 17 years) by the EximBank of China has helped finance vital infrastructure in this post-conflict economy, and an additional \$2 billion loan was granted in 2006. In Angola, Chinese workers

Figure 4. China's Imports of African Oil by Country as Share of China's Total Oil Imports, 2005



Source: IEA 2005, 2006.

are constructing office buildings, housing developments of up to 5,000 units, sections of railway damaged and neglected during the country's quarter-century civil war, a fiberoptic network stretching more than 100 miles, and hospitals, schools, and hundreds of miles of roads (Donnelly 2005). However, projects financed by Chinese money are obliged to contract only 30 percent of the work to domestic firms.

Sudan, Africa's largest country, accounts for 5 percent of China's oil imports. The Government of China has its largest overseas oil project there and has built a \$700 million oil refinery. The state-owned China National Petroleum Corporation (CNPC) has invested more than \$15 billion in Sudanese oil and helped the government capture more than \$2 billion in oil windfalls in 2004. Half of China's overseas oil comes from Sudan, and 10,000 Chinese workers have been deployed to build a 900-mile pipeline linking the Heglig oilfield in Kordofan Province with Port Sudan on the Red Sea (Blair 2005). This has given the poor country a possible transit corridor to the greater shipping lanes of the Middle East and made Sudan one of the fastest growing economies in Africa. In 2005, China purchased half of Sudan's oil exports.

In January 2006, the state-owned Chinese energy company CNOOC Ltd announced the purchase of a 45 percent stake in an offshore Nigerian oilfield for \$2.3 billion. Moreover, the Chinese have committed to build a rail system connecting Lagos with Abuja, the capital of Nigeria, and to install telephone services in rural areas of Nigeria using Chinese government loans of more than \$200 million. Thus, in all these countries, and to a lesser extent in Gabon and the Republic of Congo, China has created lucrative partnerships.

China's aid for oil strategy has been to combine financial assistance and funding of construction projects to build influence in exchange for oil and create a network of reliable allies and suppliers. This strategy seems to be dictated by China's desire to avoid buying all its crude oil in the open market and to reduce its exposure to price risks by investing in exploration and development in countries that have oil fields but lack the capital or technology to develop them (Forney 2004). The Chinese government assists the national oil companies to purchase upstream assets through the provision of cheap capital and state-directed lending through the China Development Bank and the China Export Import Bank, one of the world's largest export credit agencies (Evans and Downs 2006). While there are some concerns that the use of public funds and below market finance to purchase assets may distort market-based competition, from the perspective of Chinese policymakers, China is a late-comer in the sector, and the security of these long-term energy supplies is essential to protect the country from price volatility as well as from rival buyers.

The impact of Chinese investment in the African oil sector has been mixed. Most importantly, the Chinese have contributed to financing infrastructure in

several poor, war-torn post-conflict countries. This focus on providing the infrastructural foundations for economic development in low-income economies is important for helping these countries emerge from poverty. However, China has not been actively involved in the public financial management of the windfall gains and has not linked its loans to these countries to social expenditure. The employment impact in this highly capital-intensive industry has been minimal, partly due to the large inflow of Chinese labor. There is a risk that this new relationship between developing countries will be one of resource extraction and that human capital development may be neglected. Finally, the concern among many Western policymakers is that China will undermine efforts by bilateral donors and international financial institutions to regulate revenue management and reduce corruption.

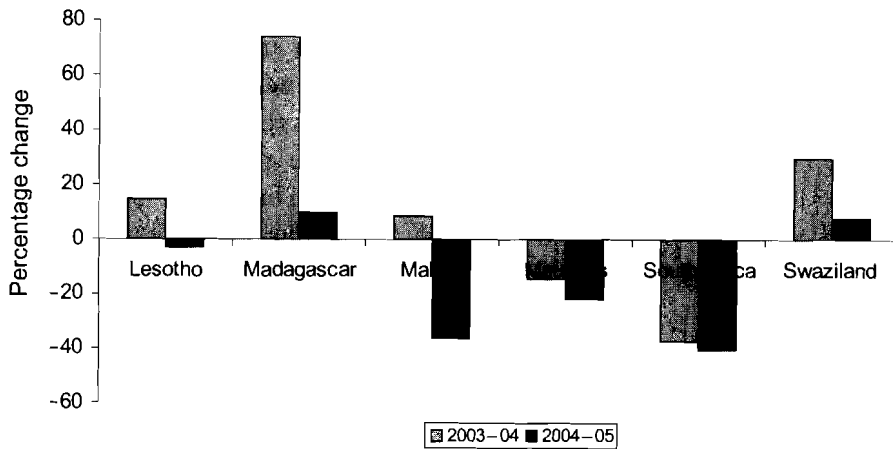
Textiles and Clothing

One of the main sectors with growing Chinese influence is clothing and textiles. Historically well protected, the textile industry has experienced major changes with globalization. The ending of the Multifiber Arrangement/Agreement on Textiles and Clothing on January 1, 2005, which had governed trade in textiles and clothing through quantitative restrictions and bilateral quotas for close to three decades, has become a contentious issue as it is causing a global realignment of the industry on the basis of competitiveness, and has intensified competition among developing countries seeking to find export markets.

The removal of quotas has reduced the competitiveness of African exports in the U.S. and Western European markets, which account for three-fourths of African overseas exports. African countries have been hurt by Asian competition despite the Africa Growth and Opportunity Act (AGOA), which allows duty-free access to U.S. markets for selected African exports provided the countries respect human rights and the rule of law. The removal of quotas, coupled with the erosion of preferences, has led to a decline in African textile exports, especially to the United States (figure 5). Since African exports are concentrated in formerly quota-restrained products, such as basic trousers, T-shirts, and sweaters, the end of quotas will significantly affect these products, with other developing countries expected to increase their market share (IMF 2005a). Initial studies suggest that China and India will dominate 80 percent of the global textile market following the phase out of quotas.⁹

The competition from growing Chinese imports in Africa, due to lower production costs and better technology, has also hurt the textile sectors in a number of African economies, notably Botswana, Kenya, Lesotho, Madagascar, Mauritius, South Africa, and Swaziland. While Africa's overall share in world textiles is

Figure 5. The U.S. Imports of Textiles and Clothing from Selected Sub-Saharan African Countries, 2003–2005



Source: IMF 2005a.

small, the share in output and employment in these countries is significant, and the effects of the end of the Agreement on Textiles and Clothing will vary by country. In recent years, there has been a contraction in the garment sectors in many of these countries, and projections suggest that the problem may worsen.¹⁰ Chinese factories in several African countries, which had been set up to take advantage of easy African access to the U.S. market under AGOA, have departed overnight. Moreover, since most workers in the textile industry tend to be women, this has had negative implications for gender issues. There is a growing body of empirical evidence documenting job losses. Complaints are increasing from the South African textile industry, saying that cheap imports from China are threatening to wipe out local industry, where 60,000 jobs have been lost since 2002 (Thakalekoala 2005). In Mauritius, more than 10,000 people have lost their jobs, as dozens of textile factories have closed. In Lesotho and Swaziland, two poor, landlocked economies heavily dependent on textile production, more than 25,000 workers have been laid off in the last two years, although there has been some recent rehiring in specialized and niche activities.

Throughout textile-producing African economies, the increase in China's imports has met with concern by both government leaders and industry representatives. Possible new safeguard mechanisms under WTO provisions providing for import controls in the presence of market-disruptive activities may give some relief to African industry, and African firms may invoke antidumping clauses. However, these options can last only until the beginning of 2008. China would

still be allowed to increase its textile exports to the United States and Europe during that period by 7.5 percent a year, and even if China loses some exports through controls, African countries would still face competition from other Asian economies, like India and Pakistan. The recent enactment in December 2006 of the AGOA Investment Incentive Act in the United States, which extends until 2012 the exemption that allows African producers (excluding Mauritius and South Africa) to use fabric from third countries to manufacture clothing and still obtain duty-free access to the U.S. market, will help temporarily protect African industry. However, over the longer term growing international competition in textile production will require appropriate policy responses by African governments to boost competitiveness.

Chinese Investment in Sub-Saharan Africa

In parallel with the surge in trade, Chinese investment and aid on the continent have also increased dramatically, driven in part by market considerations. From \$20 million a year in the early 1990s, Chinese foreign direct investment (FDI) in Africa jumped to close to \$100 million in 2000 to close to \$400 million by 2005 and reached more than \$1 billion in 2006, a growth rate higher than Chinese FDI to any other part of the world.

Historically, of the Chinese-owned investment projects in Africa from 1979 to 2000, in value terms manufacturing (especially spinning and weaving textiles and agroprocessing) accounted for 64 percent, while resource-based industries (oil, timber, and mining) accounted for 28 percent (World Bank 2004). However, the volume and share of Chinese FDI in resource extraction in the mining and petroleum sectors has surged in the last few years in parallel with the country's resource needs. Another growing sector for Chinese investment is construction and infrastructure, where Chinese firms have developed a reputation for low-cost and reasonable-quality roads. The country location of Chinese FDI in Sub-Saharan Africa is highly diversified, with South Africa, Zambia, and Sudan being important destinations. Chinese enterprises currently number more than 700, operate in 50 countries and employ close to 80,000 Chinese workers.¹¹ In contrast, African FDI in China is small, with the exception of several prominent South African companies in the services and mining sectors, including SAB Miller, which operates China's largest brewery, and Sasol, the energy giant, which is expanding its activities in China's coal mining sector.

In recent years, Chinese firms have emerged as competitors to U.S. and European firms, with Africa viewed as a potentially lucrative market for their lower cost exports. Chinese firms, while still representing a small fraction of Sub-Saharan output and employment, have attracted attention because of growing

visibility in key sectors and have frequently outbid Western companies on projects. From being primarily a host country for multinational enterprises, China has evolved into an exporter of capital. In a recent survey of Chinese firms that made outbound investments focusing on 150 domestic enterprises in eight Chinese cities, 85 percent of enterprises reported goals ranging from market seeking and resource seeking to gaining access to strategic assets (Yao and He 2005). One journalist described the range of Chinese FDI in this way:

Zambia's Chambezi copper mines are being worked again, and supposedly exhausted oil reserves in Gabon are being explored. ... Of the thousands of projects under way, 500 are being exclusively directed by the China Road and Bridge Corporation, a state enterprise, helping to place 43 Chinese companies among the 225 global leaders in the area. In Ethiopia China is involved in telecommunications; in the Democratic Republic of Congo it has done work for Gecamine, the state-owned mining company; in Kenya it has repaired the road linking Mombasa and Nairobi; and it has launched Nigeria's first space satellite. ... (Servant 2005, p. 1).

Chinese FDI flows and business practices have several distinguishing characteristics. While there are important networks of private Chinese traders and retailers, many Chinese firms investing in Africa are state-owned enterprises that acquired minority or majority stakes in foreign companies and are heavily subsidized, with low capital costs and low profitability margins. Chinese firms tend either to own equity in the resource or to pursue long-term supply contracts and to have different risk profiles from other companies. Lyman (2005) sees China's time horizon as a challenge to the way that the U.S. firms have operated and argues that China's investments through state-owned companies whose individual investments do not have to be profitable if they serve overall Chinese objectives of winning long-term access represent a new approach to business. Chinese firms in Africa tend to be explicitly encouraged by the government to invest abroad, especially in resource-intensive activities or in areas where there is a technological edge and manifest comparative advantage, such as textiles and apparel.

Moreover, Chinese firms in Africa frequently operate in enclave and extractive industries, excluding those in garments and textiles, and tend not to have many linkages with local firms, especially in global production chains. The driving force behind Chinese FDI in Africa has been the growing domestic demand for raw materials (UNCTAD 2006). In the case of textiles, it is the continuation of liberal rules of origin allowing Sub-Saharan African countries to import inputs from cheap suppliers outside AGOA, which will help them participate in global networks. Chinese firms tend to rely on their own low-cost labor and do not invest heavily in the training and education of African workers. The lack of Chinese

investment in indigenous manufacturing, coupled with low production of intermediate goods in Africa, has generated fears of deindustrialization. As a result, the potential demonstration and spillover effects from FDI, prevalent in many parts of the world, are minimized in Sub-Saharan Africa.

China is rapidly becoming an important aid donor to Africa, and its role is beginning to overshadow that of many traditional Western donors, although precise figures on the magnitude and terms of the Chinese loans are not easily available.¹² Aid is being used principally to facilitate trade and improve access to natural resources. In a recent Sino-African summit in 2006, Chinese President Hu Jiantao promised to double Chinese aid by 2009 and to provide \$5 billion in preferential loans and export credits to Sub-Saharan Africa over 2006–2009. He also pledged to set up a \$5 billion China–Africa development fund. In a recent tour of eight African countries, President Hu promised billions in no-interest loans, prompting concerns among Western aid donors that China’s lending may be generating new debt in many economies that have recently been granted debt relief from official creditors. However, the initial evidence suggests that some of China’s lending is in grant form. Moreover, in 2004, China cancelled close to \$1.2 billion in debt for 31 African countries, and new debt relief has been promised. China is upscaling humanitarian and health assistance by sending medical workers and agricultural experts to a range of post-conflict countries, from Rwanda to Sierra Leone, and has pledged to increase aid to Africa for HIV/AIDS and malaria prevention and treatment. Finally, more than 10,000 African students will visit China in 2006 and 2007 for professional training.

Conclusions

China’s economic ascendance represents a shift in the international economy and a change in some of the parameters that have been guiding the world trading system. The implications of China’s rise will be felt increasingly over the next decades, and the Sino-African relationship will only intensify in coming decades in line with China’s resource requirements. Chinese aid and investment in Africa will grow exponentially in parallel with the trade surge and will remain unaffected by any slowdown in economic growth in China.

For Sub-Saharan Africa, China’s economic boom has been a mixed blessing. On the positive side, China has helped accelerate economic growth in Africa by contributing to a strong commodity boom due to the upward swing in the prices of oil and metals exported by many African economies. Second, it has deepened trade and investment on a continent that has been marginalized from flows of international trade and global capital, and China is investing significantly in Africa’s transport and education infrastructure. Third, it has given many Africans

access to low-cost consumer goods. Fourth, China's low-transactions-cost way of doing business and its noninterference in countries' internal affairs—eschewing political conditionalities on loans provided that countries adhere to its one-China policy—has won it some support in the developing world. Fifth, China's ascent has created more competition in the aid market and increased countries' bargaining power with donors. China may contribute to the continent's economic development and act as a force for change in Africa.

On the minus side are several important challenges and risks. First, there is some concern that Chinese investment in Africa will be based on capital-intensive natural resource extraction and will not contribute to local employment generation and the continent's long-term economic development. Second, China's influence on global energy demand and on oil markets will lead to increased energy prices for net oil importers in Africa and a worsening of their terms of trade. Third, the supply shock to world manufacturing, particularly in textiles, and the growing imports of cheap Chinese goods in Africa, coupled with increasing competition between Chinese and African textiles in third-country markets, threaten to hinder economic diversification in Africa and contribute to deindustrialization. In this context, a growing backlash against Chinese investment in the continent, amid allegations of improper labor and human rights standards, may gather momentum. Fourth, important issues like corruption and governance, which had moved to the forefront of the development agenda, may slide back down again. There may be some slippage in the progress that has been made in the development agenda with regard to transparency and civil society participation.

The ascent of China will influence the dynamics of Western aid to the continent and alter the landscape of development assistance. New working mechanisms between the lenders will have to be crafted. Moreover, the traditional donors and international financial institutions will have to work creatively to bring the Chinese into the broader development platform. Overall, China represents a great opportunity and challenge for Africa, and only history will give its verdict a half-century from now.

Notes

Ali Zafar is a macroeconomist in the Africa Region of the World Bank. His email address is azafar@worldbank.org. He would like to thank three anonymous referees for their valuable comments and suggestions on an earlier draft of this paper. He would like to thank the participants of a seminar where many of the ideas of the paper were discussed, as well as Bruno Bonansea for his help in preparing the map exhibited in the paper. This paper is part of a broader analytical effort in the Africa Region to understand the impact of Asia on sub-Saharan Africa.

1. The appropriateness of China's exchange rate policy and the magnitude of the yuan's undervaluation occasion considerable debate in the international macroeconomics literature. In several papers Dooley, Folkerts-Landau, and Garber (2003a, b) conclude that China's policy of maintaining a fixed,

undervalued exchange rate to the dollar is motivated by a reasonable need to promote manufacturing exports and growth and that this represents a credible economic policy regime that is maintaining global stability in a post-Bretton Woods world. Lau and Stiglitz (2005) argue that there is no credible evidence that the yuan is undervalued since China does not have a huge multilateral trade surplus and high inflation, two symptoms of undervaluation, and that it is U.S. fiscal policy and low savings, rather than Chinese exchange rate policy, that are the source of global imbalances. By contrast, Goldstein and Lardy (2005) find that the real trade-weighted value of the yuan is undervalued by 20–25 percent and that there are significant economic costs to China's maintenance of an undervalued currency, especially in relation to global balances, and that a revaluation is urgently needed. Prasad, Rumbaugh, and Wang (2005) argue that irrespective of the yuan's undervaluation, China needs greater exchange rate flexibility to provide a buffer against both external and domestic shocks.

2. There were serious retroactive revisions in China's GDP in 2004. New economywide data show that the service sector has been grossly underreported and that the Chinese economy was actually 17 percent bigger than previously estimated. The new figures show that the economy is not as dependent on investment as had been thought.

3. The foundation of China's Africa policy was laid in 1996 when Chinese President Jiang Zemin visited Africa and pledged to establish a long-term cooperative relationship. These ties were strengthened in 2003 when President Hu Jintao visited the continent. His repeated recent visits to Africa are also of important political significance.

4. China is a large and emerging economy with strong exports, large domestic demand, abundant capital, and excess savings (a domestic savings/GDP ratio of 50 percent), while Sub-Saharan Africa is a poorer region with low exports, weak domestic demand, scarce capital, and a savings rate of less than 20 percent of GDP.

5. At a recent China-Africa Partnership seminar held in August 2006 in Beijing, the United Nations advisor Jeffrey Sachs argued that China gives fewer lectures and more practical help than other development partners in the aid business and that lessons from the antipoverty experience in China, particularly on the use of high-yielding seed varieties and irrigation, could potentially be used to alleviate poverty in Africa.

6. In the medium term China can also indirectly affect African labor markets through its effects on global labor supply and the downward pressure on global wages. Richard Freeman of Harvard estimates that the entry of China, India, and the former Soviet bloc countries into the global economy will double the global labor supply and cut the global capital/labor ratio by 55–60 percent of what it otherwise would have been, thus shifting the balance of power in markets away from wages paid to workers and toward capital (Freeman 2005).

7. In 2004, China consumed 382 million tons of grain compared with 278 million tons in the United States, 258 million tons of steel compared with 104 million tons in the United States, and lagged behind only in oil consumption, with 6.5 million barrels per day compared with 20.4 million in the United States (Brown 2006).

8. The exercise is intended to give broad estimates, not precise magnitudes of change. In the absence of comprehensive sector by sector and commodity by commodity data, duration of terms of trade shock, and elasticity of world supply to world price, the numbers are approximate. A more precise micro-level analysis using disaggregated numbers at the six-digit HS level will be needed to understand the impacts at the sectoral levels.

9. MacDonald and Vollrath (2005) provide a comprehensive look at the changes in the world textile and clothing trade and in cotton consumption following the abolition of the Agreement on Textiles and Clothing. They show the changes that will occur in the geography of world production. Spinanger (2005) also provides a good quantitative analysis of the winners and losers from the phaseout. Appelbaum, Bonacich, and Quan (2005) discuss the impact on the global textile industry of the rise of giant retailers and East Asian transnational contractors and identify policies poorer countries can enact to adjust to a world without quotas.

10. Mattoo, Roy, and Subramanian (2002) find that under current AGOA rules of origin, African

countries will be increasingly exposed to competition from other developing countries and that apparel exports may drop as much as 30 percent. Had AGOA provided unlimited access, the negative impact of the dismantling of the Agreement on Textiles and Clothing could have been fully offset.

11. The lack of precise sector by sector data precludes a more comprehensive understanding of the economic, distributional, and employment effects of Chinese FDI. Also, since rising wages in China are making it more difficult to find Chinese workers for expatriate jobs, this may mean that Chinese firms will start hiring more African workers, given the surplus labor on the continent.

12. China does not provide official statistics on its aid disbursements to Africa, and it is the Ministry of Commerce which supervises and manages the country's foreign aid portfolio. China Export-Import Bank, which helps to promote exports through the provision of export credit, is an integral part of China's aid machinery, but the reporting and disclosures have not been transparent. Also, since China gives aid to countries and sectors where Western capital flows are low, it is harder to have an official inventory of the aid transfers. China has not joined the donor platforms of the various global aid organizations, although its discussions with the Bretton Woods organizations in relation to aid are increasing.

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