Boxes

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unfavorable contexts. Consuming most of the food they produce, they participate in markets as buyers of food and as sellers of labor. Membership in these categories is affected not only by asset positions, but also by gender, ethnicity, and social status, as they imply differing abilities to use the same assets and resources in responding to opportunities.

Heterogeneity is found in the rural labor market where there are many low-skill, poorly remunerated agricultural jobs and a small number of high-skill jobs that offer workers pathways out of poverty. It is found in the rural nonfarm economy where low-productivity self- and wage-employment coexists with employment in dynamic enterprises. And it is found in the outcomes of migration, which lifts some of the rural poor out of poverty but takes others to urban slums and continued poverty.

This pervasive heterogeneity in agriculture and rural society has deep implications for public policy. In using agriculture for development, particular policy reforms will likely have gainers and losers. Trade liberalization that raises the price of food hurts net buyers (the largest group of rural poor in countries like Bolivia and Bangladesh) and benefits net sellers (the largest group of rural poor in Cambodia and Vietnam). Policies have to be differentiated according to the status and context of households, taking particular account of prevailing gender norms. Differentiated policies are designed not necessarily to favor one group over the other but to serve all households more cost-effectively, tailoring policies to their conditions and needs, particularly to the poorest. Balancing attention to the favored and less-favored subsectors, regions, and households is one of the toughest policy dilemmas facing poor countries with severe resource constraints.

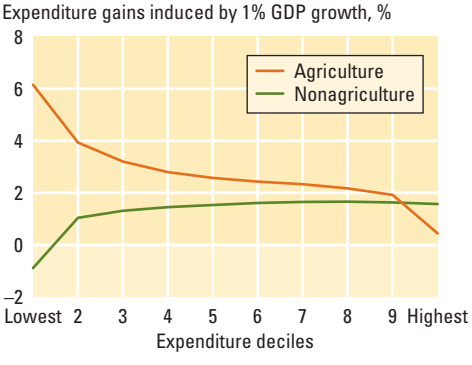
Agriculture has a strong record in development

Agriculture has special powers in reducing poverty. Agricultural growth has special powers in reducing poverty across all country types. Cross-country estimates show that GDP growth originating in agriculture is at least twice as effective in reducing poverty as GDP growth originating outside agriculture (figure 3). For China, aggregate growth originating in agriculture is estimated to have been 3.5 times more effective in reducing poverty than growth outside agriculture—and for Latin America 2.7 times more. Rapid agricultural growth—in India following technological innovations (the diffusion of high yielding varieties) and in China following institutional innovations (the household responsibility system and market liberalization)—was accompanied by major declines in rural poverty. More recently, in Ghana, rural households accounted for a large share of a steep decline in poverty induced in part by agricultural growth.

Agriculture can be the lead sector for overall growth in the agriculture-based countries. Agriculture has a well-established record as an instrument for poverty reduction. But can it also be the leading sector in a growth strategy for the agriculture-based countries? Besides the sheer size of the sector, two arguments, applied to the agriculture-based countries of Sub-Saharan Africa, support the view that it can.

The first is that in many of these countries, food remains imperfectly tradable because of high transaction costs and the prevalence of staple foods that are only lightly traded, such as roots and tubers and local cereals. So, many of these countries

Figure 3 GDP growth originating in agriculture benefits the poorest half of the population substantially more



Source: Ligon and Sadoulet 2007.
Note: Based on data from 42 countries during the period 1981–2003. Gains are significantly different for the lower half of expenditure deciles.

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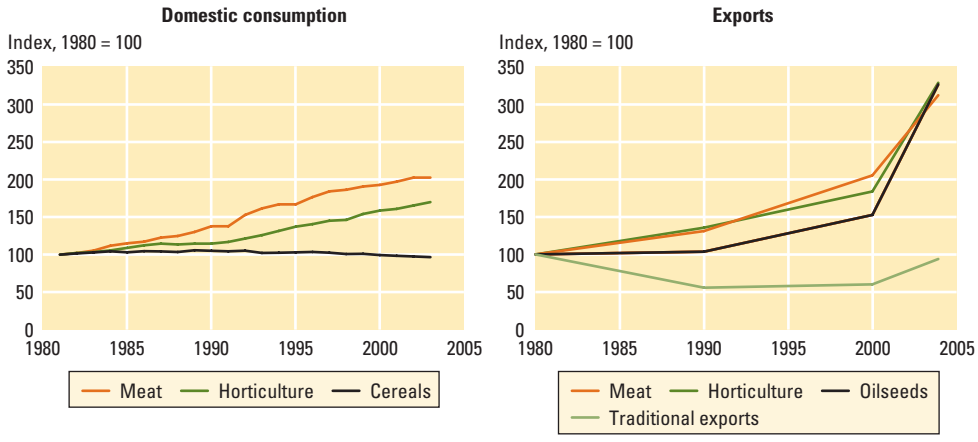
Figure 6 Domestic consumption and exports of high-value products in developing countries are growing rapidly



Source: http://faostat.fao.org, accessed June 2007, and http://comtrade.un.org.

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tural productivity in Sub-Saharan Africa. The renewed interest in fertilizer subsidies needs to focus on sustainable solutions to market failures. "Market-smart" approaches to jump-starting agricultural input markets include targeted vouchers to enable farmers to purchase inputs and stimulate demand in private markets and matching grants to underwrite selected start-up costs of entry of private distributors to input markets.

Like any subsidies, input subsidies must be used with caution because they have high opportunity costs for productive public goods and social expenditures and they risk political capture and irreversibility. But through the judicious use of subsidies, it is possible to underwrite risks of early adoption of new technologies and achieve economies of scale in markets to reduce input prices. Subsidies need to be part of a comprehensive strategy to improve productivity and must have credible exit options.

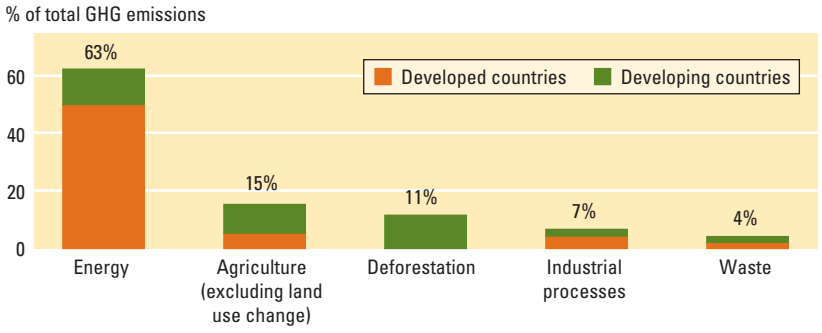
Improve access to financial services and reduce exposure to uninsured risks. Financial constraints in agriculture remain pervasive, and they are costly and inequitably distributed, severely limiting smallholders' ability to compete. Financial constraints originate in the lack of asset ownership to serve as collateral (wealth rationing) and in the reticence to put assets at risk as collateral when they are vital to livelihoods (risk rationing). The demise of special credit lines to agriculture through public programs or state banks has left huge gaps in financial services, still largely unfilled despite numerous institutional innovations.

Rural finance. The microfinance revolution, providing access to credit without formal collateral, has opened access to loans for millions of poor people, especially women, but it has not reached most agricultural activities, except in high-turnover activities such as small livestock and horticulture. However, the range of financial products available to the rural poor has broadened to include savings, money transfers, insurance services, and leasing options. With the rise of integrated supply chains and contract farming, financial intermediation through interlinked agents is becoming more common. Information technologies are reducing transaction costs and making loans less costly in rural areas, for example, using agricultural credit cards to purchase inputs or cellular phones to complete banking transactions. Credit reporting bureaus covering microfinance institutions and the lower tier of commercial banks also help smallholders capitalize on the reputations they establish as microfinance borrowers to access larger and more commercial loans. Many of these innovations are still at the pilot stage, requiring evaluation and scaling up to make a real difference for smallholder competitiveness.

in sub-Saharan Africa, the Himalayan regions, and the Andes. Based on the polluter-pays principle, it is the responsibility of the richer countries to compensate the poor for costs of adaptation. So far, global commitments to existing adaptation funds have been grossly inadequate.

Developing-country agriculture and deforestation are also major sources of greenhouse gas emissions: they contribute an estimated 22 percent and up to 30 percent of total emissions, more than half of which is from deforestation largely caused by agricultural encroachment (13 million hectares of annual deforestation globally) (figure 8).[6] Carbon-trading schemes—especially if their coverage is extended to provide financing for avoided deforestation and soil carbon sequestration (for example, conservation tillage)—offer significant untapped potential to reduce emissions from land-use change in agriculture. Some improvements in land and livestock management practices (for example, conservation tillage and agroforestry) are often win-win situations: after the initial investments, they can result in more productive and sustainable farming systems.

Figure 8 Agriculture and deforestation are heavy contributors to greenhouse gas emissions



Source: WDR 2008 team, based on data from the United Nations Framework Convention on Climate Change, www.unfccc.int.

Biofuels—an opportunity and a challenge. Promising new opportunities for mitigating climate change and creating large new markets for agriculture have emerged through the production of biofuels, stimulated by high energy prices. But few of the current biofuels programs are economically viable, and many pose social (rising food prices) and environmental (deforestation) risks. To date, production in industrial countries has developed behind high protective tariffs on biofuels and with large subsidies. These policies hurt developing countries that are, or could become, efficient producers in profitable new export markets. Poor consumers also pay higher prices for food staples as grain prices rise in world markets directly due to the diversion of grain to biofuels or indirectly due to land conversion away from food production.

Brazil is the world's largest and most efficient producer of biofuels, based on its low-cost production of sugarcane. But few other developing countries are likely to be efficient producers with current technologies. Policy decisions on biofuels need to devise regulations or certification systems to mitigate the potentially large environmental footprint of biofuels production. Increased public and private investment in research is important to develop more efficient and sustainable production processes based on feedstocks other than food staples.

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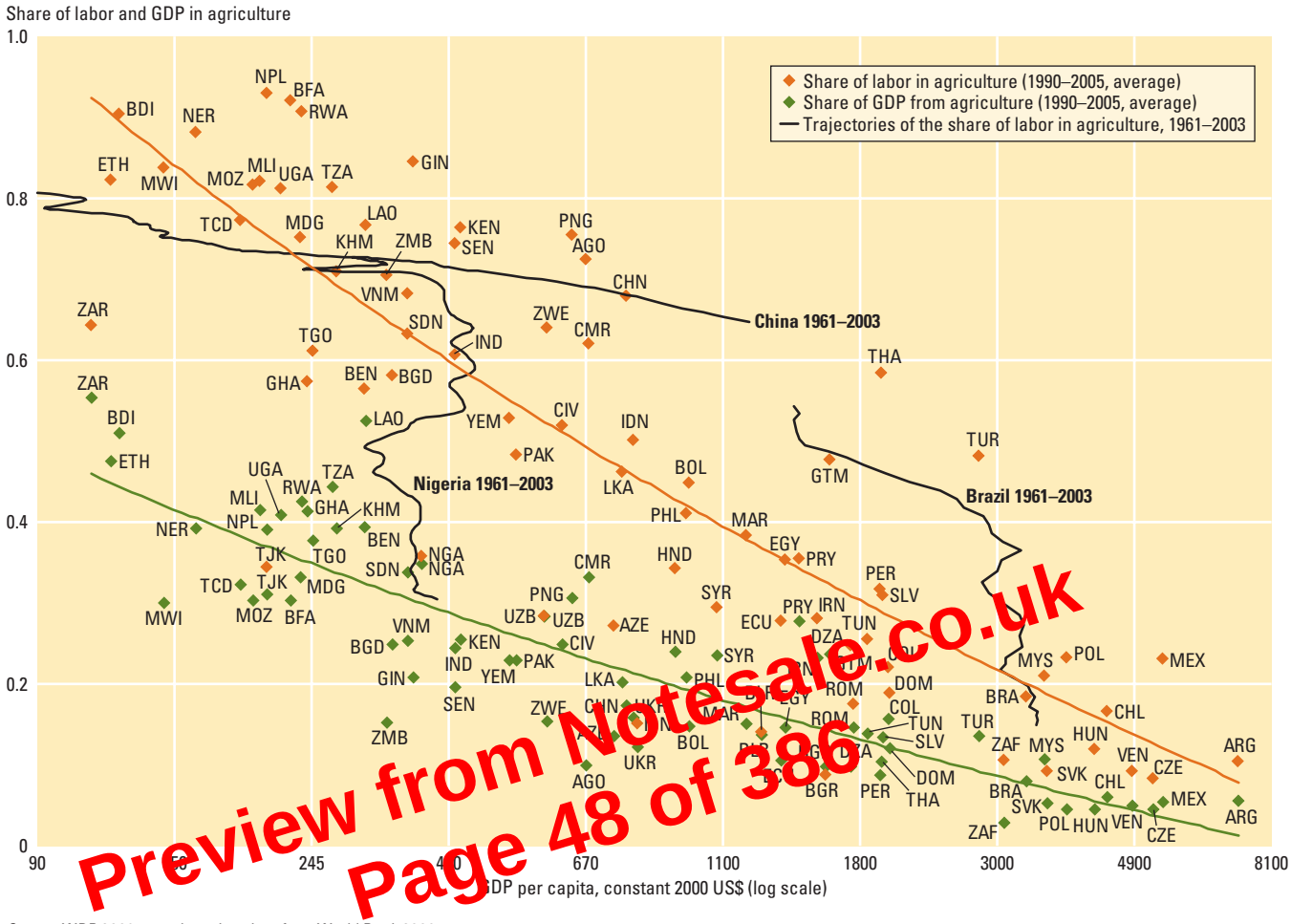
Moving beyond farming: a dynamic rural economy and skills to participate in it

Creating rural employment. With rapid rural population growth and slow expansion in agricultural employment, creating jobs in rural areas is a huge and insufficiently recognized challenge. Between 45 and 60 percent of the rural labor force is engaged in the agricultural labor market and the rural nonfarm economy in Asia and Latin America. Only in Sub-Saharan Africa is self-employment in agriculture still by far the dominant activity for the rural labor force, especially for women. But with rapidly growing rural populations and declining farm sizes, the rural employment problem will need to be addressed there as well.

The rural labor market offers employment possibilities for the rural population in the new agriculture and the rural nonfarm sector. But opportunities are better for those with skills, and women with lower education levels are at a disadvantage.

Figure 1.2 As countries develop, the shares of GDP and labor in agriculture tend to decline, but with many idiosyncrasies



Source: WDR 2008 team, based on data from World Bank 2006y.
Note: The list of 3-letter codes and the countries they represent can be found on page xviii.

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The large share of agriculture in poorer economies suggests that strong growth in agriculture is critical for fostering overall economic growth. As GDP per capita rises, agriculture's share declines, and so does its contribution to economic growth. This happens while agricultural output simultaneously increases in absolute value, because the nonagricultural sectors are growing faster.

Increasingly, agriculture contributes to shaping the environmental sustainability of the growth process, across the development spectrum. It is a major user of scarce natural resources (85 percent of the developing world's fresh water withdrawal and 42 percent of its land) and a largely unrecognized provider of environmental services (sequestering carbon, managing watersheds, and reducing deforestation).

Agriculture's power for poverty reduction

The large and persistent gap between agriculture's shares in GDP and employment suggests that poverty is concentrated in agriculture and rural areas—and that as nonagricultural growth accelerates, many of the rural poor remain poor.

That the incidence of poverty among agricultural and rural households is persistently much higher is confirmed by the micro evidence from numerous country poverty studies by the World Bank (see focus A). Furthermore, where nonagricultural growth has accelerated, rural-urban income disparities widen. For example, in East Asia, the ratio of rural-to-urban poverty increased from about 2:1 to more than 3.5:1 between 1993 and 2002, despite a sub-

Table 1.2 Poverty in three country types, 2002

	Agriculture-based countries	Transforming countries	Urbanized countries
Population (millions)			
Total	494	3,250	888
Rural	335	2,100	251
Poverty ($2.15 a day)			
Total poverty rate (%)	80	60	26
Number of rural poor (millions)	278	1,530	91
Share of rural poor in total poor (%)	70	79	39
Rural poverty rate (%)	83	73	36
Urban poverty rate (%)	73	35	22
Poverty ($1.08 a day)			
Total poverty rate (%)	49	22	8
Number of rural poor (millions)	170	583	32
Share of rural poor in total poor (%)	70	82	45
Rural poverty rate (%)	51	28	13
Urban poverty rate (%)	45	11	6

Source: Ravallion, Chen, and Sangraula 2007.
Note: Averages are weighted and based on 60 countries among those of table 1.1 for which poverty is documented in the source. Poverty lines are defined in 1993 purchasing power parity dollars.

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for export and is often dominated by traditional commodities, but increasingly it also includes new dynamic subsectors of high-value products such as vegetables, flowers, and fish.

The nontradable staple crop sector. Even with globalization, the staple crop sector remains largely nontradable in substantial parts of the agriculture-based countries. Two reasons. First, locally grown staples such as cassava, yams, sorghum, millet, and teff, which are not internationally traded (although sometimes regionally traded), often predominate in the local diets. Second, the domestic food economy remains insulated from global markets by high transport and marketing costs, especially in the rural hinterlands[9] and in landlocked countries. In Ethiopia the price of maize can fluctuate from around $75 per ton (the export parity price) to $225 per ton (the import parity price) without triggering international trade. This nontradable staple crop sector represents 60 percent of agricultural production in Malawi and 70 percent in Zambia and Kenya.[10]

When the staple crop sector is large and nontradable, gains in staple crop productivity increase the aggregate food supply and reduce food prices. That keeps the nominal wages of unskilled workers as well as the prices of all the inputs that have a large labor content at lower levels, thereby helping make the nonfood tradable sector competitive.[11] For major staples in Africa, there is evidence of a negative correlation between per capita production and price for maize in Ethiopia and Ghana; sorghum in Burkina Faso, Mali, and Sudan; cassava in Ghana; and (weakly) millet in Burkina Faso, Mali, and Sudan. Only Kenya, with its significant price intervention, does not follow the pattern. However, this transmission mechanism will be sustained only if the gains from total factor productivity rise faster than the decline in food prices so that farmer profitability is maintained. If not, farmers may abandon the technologies that induced the productivity gains in the first place.

The poverty-reducing effects of enhancing production in the farm sector depend on the net marketing position of the poor and the price elasticity of food demand.[12] Poor net-food-buying households benefit from lower food prices, as long as the gain from reduced spending on food exceeds the loss from reduced wage income. Poor net-food-selling producers, by contrast, gain only if productivity grows faster than prices fall. Given that demand for staple crops is usually price inelastic, producers may well lose. Even so, increasing staple crop productivity usually reduces poverty overall, because in addition to the urban poor, more than half of poor rural households are typically net food buyers, a little appreciated fact (chapter 4).

urban incomes. In China the incidence of urban poverty declined twice as fast as that of rural poverty between 1980 and 2001; in Indonesia, 2.5 times as fast over the same period; and in Thailand 3.7 times as fast between 1970 and 1999.[23]

Nonagricultural sectors now account for most of the economic growth. But the transition of people out of agriculture and rural areas is not keeping pace with the restructuring of economies away from agriculture. In China, longstanding policy impediments to labor mobility[24] kept the rural population behind while urban economies were expanding rapidly. In India, the low level and quality of education of most rural workers is mainly responsible for their inability to find jobs in the booming services economy.

One policy response is facilitating faster absorption of the agricultural labor force in the urban economy through investments in human capital and labor market policies, such as vocational training, transport services, and job matching (see chapter 9). But the time lags in educating people are substantial. Moreover, the same policies used to make migration more attractive, inflating the pool of urban unemployed, leading to urban congestion and the urbanization of poverty. Complementing these policies with those that foster rural income growth and slow migration out of the traditional sector can provide important synergies.[25]

Rural income growth can do much for poverty reduction in the transforming countries (see focus A). For example, 75–80 percent of the dramatic drop in national poverty in China during 1980–2001 was the result of poverty reduction in the rural areas. A similar pattern was observed in Indonesia where the emergence of rural towns ("urbanization without migration") was further emphasized.[26]

Reducing rural poverty through the new agriculture and nonfarm employment. Historically, there have been numerous attempts to reduce rural poverty and address the rising income gap by increasing agricultural protection, often with limited success. The current call for agricultural subsidies in the face of weak fiscal capacity in the transforming countries is also unlikely to provide a sustainable solution to massive rural poverty (box 1.6).

Increasing agricultural productivity, including yields for staple crops, will be critical in countering pressures for agricultural protection. Staple crops are still the largest agricultural subsector (slightly more than a third of agricultural output in China and India, and slightly more than half in Vietnam). In some countries that are large players in international markets, continuing to focus on food staples is also necessary to ensure national food security. But rising incomes shift the composition of food expenditure from basic and unprocessed staple foods to more varied diets with processed foods (chapter 2). So growth in agriculture is increasingly driven by the rapidly expanding demand for livestock products and high-value crops, which are also more labor intensive.[27]

The poverty impact of growth in the agricultural sector will thus depend increasingly on the poor connecting to these new growth processes, either as smallholders or as laborers. Vertically integrated supply

BOX 1.6 *Supporting farmers without a strong fiscal base: lessons from Thailand*

Before the 1960s, Thailand was an agriculture-based country with rice accounting for the bulk of its export earnings. Rice exports were heavily taxed, mainly through a duty levied proportional to export quantities (the rice premium), which hovered around 30 percent until the mid-1970s. This served the dual purpose of raising government revenue for investment and securing cheap food for urban consumers. As GDP per capita doubled and exports from labor-intensive manufacturing increased (40 percent by the end of the 1970s), widening rural-urban disparities pressured politicians to install visible measures supporting farmers.

After some political instability, the Farmers' Aid Fund was established in 1974, based on large rice premium revenues from sharp increases in world rice prices during the world food crisis of 1973–75. The fund undertook several programs to support farmers, including price supports through government rice purchases. Yet the program was soon terminated, largely because rice premium revenues fell with the decline in world rice prices after the food crisis.

This episode epitomizes the dilemma in formulating sustainable policies to address rural-urban disparities. The program was contradictory because it tried to support farmers based on the revenue from taxing them, without a strong fiscal base outside of agriculture. Even if the program had worked, increasing rice prices would have met strong resistance from poor urban consumers.

As Thailand's economy advanced, the rice premium was gradually reduced and then abolished in 1986. New support programs have since been introduced, such as the commodity credit program. Low-interest government loans are given against the pledge of rice, with the pledged rice canceling the debt if rice prices do not meet a target. However, such programs are unlikely to be sustainable or generous enough to close income gaps.

Source: Hayami 2005.

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dramatically thereafter. Total ODA to agriculture in Africa[54] increased somewhat in the 1980s, but it is now back to its 1975 level of about $1.2 billion. This decline in attention to agriculture is all the more striking because it happened in the face of rising rural poverty.

A complex of reasons explains the decline of donor support to agriculture and rural development: (1) falling international commodity prices that made agriculture less profitable in developing countries; (2) increased competition within ODA especially from social sectors; (3) emergency responses to numerous crises; (4) opposition from farmers in some donor countries to supporting agriculture in their major export markets; and (5) opposition from environmental groups that saw agriculture as a contributor to natural resource destruction and environmental pollution.

Failed agricultural development efforts also influenced the expectations of donors. The "agroskepticism" of many donors may well be related to their experience with past unsuccessful interventions in agriculture, such as large state integrated rural development and the training and visit system for extension, which were both promoted heavily by the World Bank.[55] Poor understanding of agrarian dynamics, weak governance, and the tendency for donors to seek one-size-fits-all approaches contributed to the failures. Implementation difficulties are especially challenging in agriculture with weak governance and the spatial dispersion of programs. This experience underlines the need to strengthen donor and country capacity for program design and to invest in governance and institutions for effective implementation (chapter 11).

Since 2001, government and donor interest in agriculture has increased, at least in discourse and modestly in support. This is happening because of a turnaround in the reasons for the decline in support to agriculture, such as higher international commodity prices; higher priority of agriculture to developing-country governments; and new approaches to agricultural development projects based on decentralization, participation, and public-private partnerships, with greater likelihood of success.

The political economy of agricultural policy

While the low-productivity beliefs may be changing under the weight of evidence, and the macroeconomic context has definitely improved, a better understanding of the political economy of agricultural policy making is necessary to address the continuing policy neglect and under- and misinvestment in the sector. This understanding will be used in chapters 4 to 8 to interpret policy outcomes, and in chapters 10 and 11 to design agriculture-for-development agendas that meet the political feasibility criterion.

The process of agricultural policy making

Agricultural policy making can be seen as the outcome of a political bargain between politicians and their citizens.[56] Citizens can be atomistic individuals who demand policy action in exchange for political support (votes) or they can be organized in lobbies that defend special interests.

State objectives and policymaking. Politicians enjoy different degrees of autonomy. They have their own objectives, for example, to be reelected or to maintain legitimacy, to improve the welfare of their constituency, or to pursue some vision for the country. Institutions such as the structure of the bureaucracy, alternative forms of representation, agenda-setting mechanisms, and reward systems condition their preferences and power in the political game. There are many examples of major policy reforms led by a state with considerable autonomy in decision making. The green revolution in Asia, for example, occurred in both democratic and nondemocratic political systems. In India, the driving force of the green revolution was the political will to become food self-sufficient, once the U.S. government decided in the mid-1960s to use food aid as an instrument of foreign policy.[57] Indonesia (under Suharto) is an example of a single-party regime that launched a green revolution.

Authoritarian regimes in Africa apparently had fewer political incentives to sup-

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BOX A.2 *China's unprecedented reduction in rural poverty*

China's poverty reduction in the past 25 years is unprecedented. Estimates by Ravallion and Chen (2007) indicate that poverty fell from 53 percent in 1981 to 8 percent in 2001, pulling about 500 million people out of poverty. Rural poverty fell from 76 percent in 1980 to 12 percent in 2001, accounting for three-quarters of the total. The evolution of poverty has been very uneven over time, however. The sharpest reduction was in the early 1980s, with some reversal in the late 1980s and early 1990s.

The role of institutional change in poverty reduction

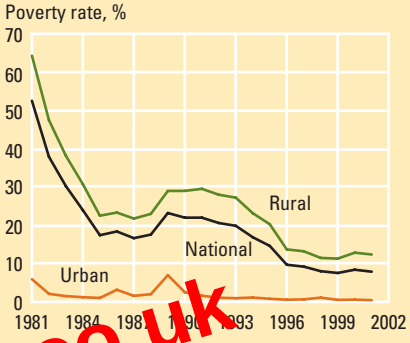
The sharp decline in poverty from 1981 to 1985 was spurred by agricultural reforms that started in 1978. The household responsibility system, which assigned strong user rights for individual plots of land to rural households, the increase in government procurement prices, and a partial price liberalization all had strong positive effects on incentives for individual farmers. In the initial years of the reforms agricultural production and productivity increased dramatically, in part through farmers' adoption of high-yielding hybrid rice varieties (Lin 1992). Rural incomes rose by 15 percent a year between 1978 and 1984 (Von Braun, Gulati, and Fan 2005), and the bulk of national poverty reduction between 1981 and 1985 can be attributed to this set of agrarian reforms.

The role of agricultural growth in poverty reduction remained important in subsequent years, as the reforms created the rural nonfarm sector, which provided employment and income to millions of people whose work was no longer needed on farms. The share of the rural nonfarm sector in GDP went from close to zero in 1952 to more than one-third in 2004 (Von Braun, Gulati, and Fan 2005). Considering the entire period, Ravallion and Chen (2007) concluded that growth in agriculture did more to reduce poverty than did either industry or services.

Rising inequalities

Higher incomes for large parts of the population came at the cost of higher inequality. Unlike most developing countries, China has higher relative income inequality in rural areas than in urban areas (Ravallion and Chen 2007). There are also large regional and sectoral imbalances. Restrictions on internal labor migration, industrial policies that favored China's coastal areas over the poorer inland regions, and service delivery biases that allowed the Chinese rural education and health systems to deteriorate are all examples of policies that contributed to disparities in regional and sectoral economic performances.

Urban and rural poverty in China



Source: Ravallion and Chen 2007.

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BOX A.3 *Reducing rural poverty in India*

The role of technological change in poverty reduction

In the 1960s and 1970s the introduction of semidwarf varieties of wheat and rice—in the green revolution—led to dramatic leaps in agricultural production and raised farmers' incomes, especially in northwest India. Rural poverty fell from 64 percent in 1967 to 50 percent in 1977 and to 34 percent in 1986. A large share of the gains came from an increase in real wages and a decline in grain prices. Growth in the agricultural sector reduced poverty in both urban and rural areas. This was true also of growth in services. But industrial growth did not reduce poverty. Land reform, rural credit, and education policies also played a role in the 1970s and 1980s, even if these programs might have cost some economic growth.

Beginning in 1991 India instituted sweeping macroeconomic and trade reforms that spurred impressive growth in manufacturing and especially in services. Poverty data for 2004, comparable to the 1993 figures, show a continuing decline in poverty rates.

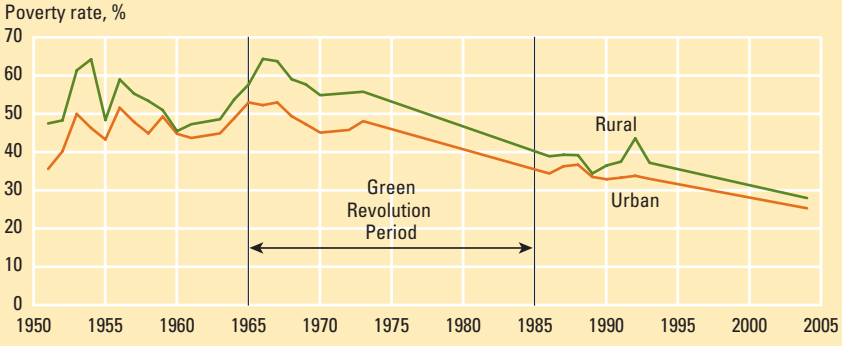
Diverging patterns and a mixed picture of rural welfare

Although there is a consistent poverty-reducing pattern across almost all Indian states, growth has been uneven. From 1980 to 2004 initially poorer states grew more slowly, resulting in income divergence in both absolute and relative terms. The rapid trade liberalization of the 1990s had sharply differentiated regional impacts. Rural districts with a higher concentration of industries hurt by liberalization had slower progress in reducing the incidence and depth of poverty because of the extremely limited mobility of labor across regions and industries.

Urban incomes and expenditures also increased faster than did rural incomes, resulting in a steady increase in the ratio of urban-to-rural mean real consumption from just below 1.4 in 1983 to about 1.7 in 2000. Even then, India had fairly low income inequality. But despite impressive growth and poverty reduction in the 1990s, the picture of overall welfare gains is nuanced, because health outcomes have not improved. India's recent reforms, unlike China's, were not directed at agriculture. Today, there is a renewed policy focus on agriculture in India, because many believe that the full poverty reduction potential of agriculture in India has yet to be unleashed.

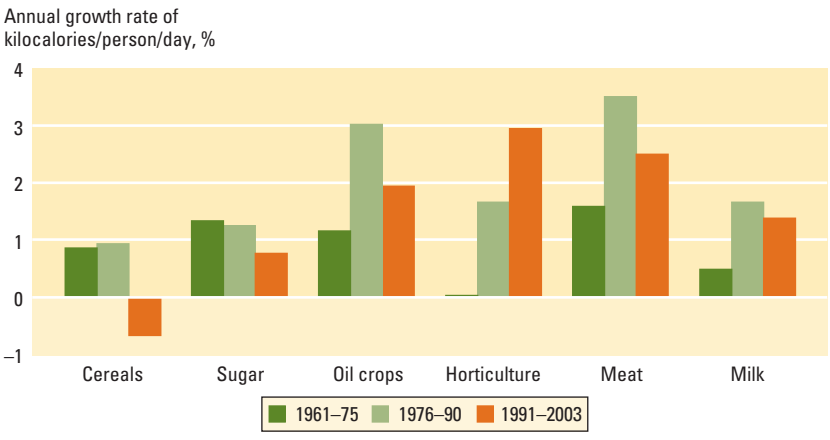
Sources: World Bank 2000b; Burgess and Pande 2005; Chaudhuri and Ravallion 2006; Von Braun, Gulati, and Fan 2005; Topalova 2005; Ravallion and Datt 1996; Datt and Ravallion 1998a.

Urban and rural poverty in India



Source: World Bank 2000b; 2007 National Sample Survey (NSS), Government of India.
Note: Poverty rates based on NSS data and the official poverty line.

Figure 2.6 Per capita food consumption in developing countries is shifting to fruits and vegetables, meat, and oils



Source: FAO 2006a.

the demand for feed grains, including oilseeds. In developing countries, 28 percent of grain consumption was already used for feed in 2005. But the use of cereals for feed is growing more slowly than the increase in meat production because other feedstuffs, such as oilseed meals and cassava, are substituted for cereal grains and the share of poultry in total meat production is growing. (Poultry requires only 2–3 kilograms of feed per kilogram of meat, compared with 10 kilograms for beef.)[37]

Aquaculture is the world's fastest growing food-production sector, increasing at an annual average rate of 10 percent since the mid-1980s. Aquaculture now represents more than 30 percent of total food-fish production.[38] More than 90 percent of aquaculture production occurs in developing countries, and China alone accounts for 67 percent of global production. Aquaculture can provide an important source of livelihood for the rural poor, generating income through direct sales of products and employment in fish production and services, especially in processing. In Asia, more than 12 million people are directly employed in aquaculture. In Bangladesh and Vietnam, more than 50 percent of workers in fish depots and processing plants are women, and although salaries are still quite low, they are significantly higher than wages from agricultural activities.

The livestock and aquaculture revolutions are increasing the supply of protein and providing more diversified diets. But intensive production methods and the growing concentrations of animals near urban and periurban areas of developing countries can increase waste pollution and the incidence of diseases such as tuberculosis and avian flu. The movement of live animals and aquatic products makes the accidental spread of disease more likely. Globalization may further widen the environmental footprint from livestock (box 2.4) and aquaculture, calling for policies to prevent irreversible consequences (chapter 8).

Diversifying through export markets

High-value products also make up a rapidly growing share of international trade in agricultural products. Exports of horticulture, livestock, fish, cut flowers, and organic products now make up 47 percent of all developing-country exports, far more than the 21 percent for traditional tropical products such as coffee, tea, and cotton (figure 2.7). Across a broad range of nontraditional export products, developing countries have been gaining market share—in 2004 they held 43 percent of the world trade in fruit and vegetables (excluding bananas and citrus).

Brazil, Chile, China, and Mexico dominate nontraditional agricultural export markets. But many countries, including some in Sub-Saharan Africa (Kenya, for example), are now gaining shares in selected product markets. The least-developed countries have very limited participation—only Niger is significant, with 2.6 percent of the world's green bean exports by value[39]—but there have been other recent successes, such as cut flowers from Ethiopia. Despite the expansion of nontraditional exports, prices have held up well in real terms. Estimates of the elasticity of export revenues for nontraditional export products indicate there is room for further market expansion.[40]

Even traditional export commodities provide opportunities for entering high-value markets. The markets for premium quality goods such as coffee, organics, and Fair Trade products have grown considerably in the last decade, starting from a low base. The Fair Trade market is most developed in Europe, less so in Japan and the United States. But the market for organic

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ing new challenges to the competitiveness of smallholders. Understanding these challenges is essential in designing public policies that can help rural men and women pull themselves out of poverty. The challenges differ across countries and subnational regions, and thus demand context-specific agendas to reduce rural poverty.

Three complementary pathways out of rural poverty: farming, labor, and migration

Rural poverty rates have declined in many countries (see focus A). But how exactly has this happened? Is it that poor households leave rural areas, or that older, poor generations are replaced by younger, less-poor generations? Have specific households been able to escape poverty by gradually improving the earnings from whatever they do, or has this happened by drastically changing activities? Success stories help illustrate how rural households have exited poverty through the three pathways of farming, labor, and migration.

In Tanzania, those most successful in moving out of poverty were farmers who diversified their farming activities by growing food crops for their own consumption and non-traditional cash crops (vegetables, fruit, vanilla) as well as raising livestock. People who remained in poverty were those who stuck to the more traditional farming systems. In Uganda, escaping from poverty was linked to improving the productivity of land and diversifying into commercial crops. Qualitative evidence for Niger shows that shifts to more sustainable cultivation practices by small-scale farmers led to better soil conservation, increased income from agroforestry, and lower vulnerability.[3]

Some policy reforms have greatly enhanced the capability of smallholder entrepreneurs to lift themselves from poverty. This was clearly a key to China's early agricultural success story (see focus A). In Malawi, reforms reducing differential protection of large estates dramatically shifted the structure of agricultural production. Smallholders rapidly diversified into cash crops and now produce 70 percent of burley tobacco, a major export crop. The expansion helped many households move up the socioeconomic ladder. Others benefited from greater trade in food crops.[4]

In Vietnam, liberalizing agricultural markets induced many subsistence farmers to become more market oriented (table 3.1). Two-thirds of smallholders previously engaged primarily in subsistence farming entered the market. Their poverty rates fell drastically, and their incomes almost doubled, while the production of high-value and industrial crops rose. Agricultural sales increased more for households with larger land endowments and those closer to markets or with nonfarm industries in their communities. Households engaged in subsistence farming that did not enter the market were more likely to diversify their income sources outside of agriculture, with poverty rates in those groups falling as well.

In India, income from the nonagricultural sector—the labor pathway out of poverty—was an important driver of growth in rural areas between 1970 and 2000. Nonagricultural employment also had important indirect effects by increasing agricultural wages. In Indonesia, agricultural households that shifted into the nonfarm economy between 1993 and 2000 were likely to have exited poverty. In Tanzania, too, business and trade provided an important pathway out of poverty, but only for those with networks in well-connected communities. In addition, remittances from both domestic and international migration have reduced rural poverty, as happened in rural China and Nepal.[5] Migration can offer a pathway out of poverty for those who leave and for those who stay behind (chapter 9).

Several pathways often operate at the same time. In Bangladesh and Tanzania, the farm, nonfarm labor, and migration pathways were all successful. In Indonesia, some people moved out of poverty through the farming pathway, others through the nonfarm pathways. And in 35 villages in Andhra Pradesh, diversification of income sources is correlated with moving out of poverty.[6]

These careful studies using longitudinal data have shed light on the strong potential relationships between poverty reduction and each of the pathways. However, establishing causality is difficult, and there is no

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ticipate in agricultural labor markets, in self-employment or wage employment in the rural nonfarm economy, and they might receive transfers from household members who have migrated.

Diversification has several dimensions that should not be confounded. The rural economy is diversified, even if many nonagricultural activities are indirectly linked to agriculture. Within this diversified rural economy, a large part of household income diversification comes from combining incomes from the different household members, each often specializing in one occupation. In Malawi, 32 percent of farm households have two sources of income, and 42 percent have three or more, but among household heads only 27 percent engages in more than one activity. In China, 65 percent of rural households operate in both the farm and nonfarm sectors, while only a third of individuals do so.[10] These patterns imply that household income diversification can fluctuate considerably with households life cycles, and the number of working-age individuals in the household. Further, the returns on many of these activities are low, and the diversity of occupations does not always translate into income diversification: one activity is often the dominant source of income.

To design policies that help households along successful pathways, it is crucial to understand which income strategies they currently pursue and why they chose to pursue them. This allows evaluating whether policies should aim at enhancing their current strategies or at helping them to pursue more remunerative ones. Furthermore, understanding why some households remain poor despite choosing strategies that are optimal, given their assets and constraints, helps to identify policy options.

A typology of rural households

Rural households engage in farming, labor, and migration, but one of these activities usually dominates as a source of income. Five livelihood strategies can be distinguished. Some farm households derive most of their income from actively engaging in agricultural markets *(market-oriented smallholders)*.[11] Others primarily depend on farming for their livelihoods, but use the majority of their produce for home consumption *(subsistence-oriented farmers)*.[12] Still others receive the larger part of their incomes from wage work in agriculture or the rural nonfarm economy, or from nonagricultural self-employment *(labor-oriented households)*. Some households might choose to leave the rural sector entirely, or depend on transfers from members who have migrated *(migration-oriented households)*. Finally, *diversified households* combine income from farming, off-farm labor, and migration.

Income sources can be used to classify rural households according to the five livelihood strategies (table 3.2 and box 3.2). The relative importance of each differs across the three country types: agriculture-based, transforming, and urbanized. It also differs across regions within countries. Farming-led strategies are particularly important in the agriculture-based countries, where farming is the main livelihood for a large share of rural households, as many as 71 percent in Nigeria and 54 percent in Ghana and Madagascar. Many of those households are subsistence oriented.

In the transforming and urbanized countries, the labor- and migration-oriented

BOX 3.1 *Establishing the relative importance of the different pathways*

Moving out of poverty is a process that can take a very long time. Many shocks can occur during that time, and a household's income fluctuations may be similar in magnitude to long-term income changes. So, in the short-term, it is seldom clear whether observed income changes reflect transitory movements in and out of poverty, or long-term trends. Only by interviewing the same households many times over long periods might it be possible to gauge the relative importance of different pathways in a particular context.

Consider trying to capture the full effects of the migration pathway on those who migrated. When people migrate, they typically disappear from surveys, unless one manages to track them down in their new locations, which can be difficult. Moreover, a lot of migration is by young people, before they form independent households. It is thus not possible to know whether they would have been poor had they not migrated (see focus A). This is particularly important because many migrants are more educated than those who stay behind, and they would probably not have been among the poorest.

Nor is it easy to disentangle why households chose a particular strategy from what made the pathway successful. More entrepreneurial households might choose "better" strategies, but they might also be more successful in moving out of poverty independently of the strategies they choose. Some migration studies have addressed this selection issue and established the effects of migration on the poverty of household members left behind. But doing this for the other pathways remains unresolved.

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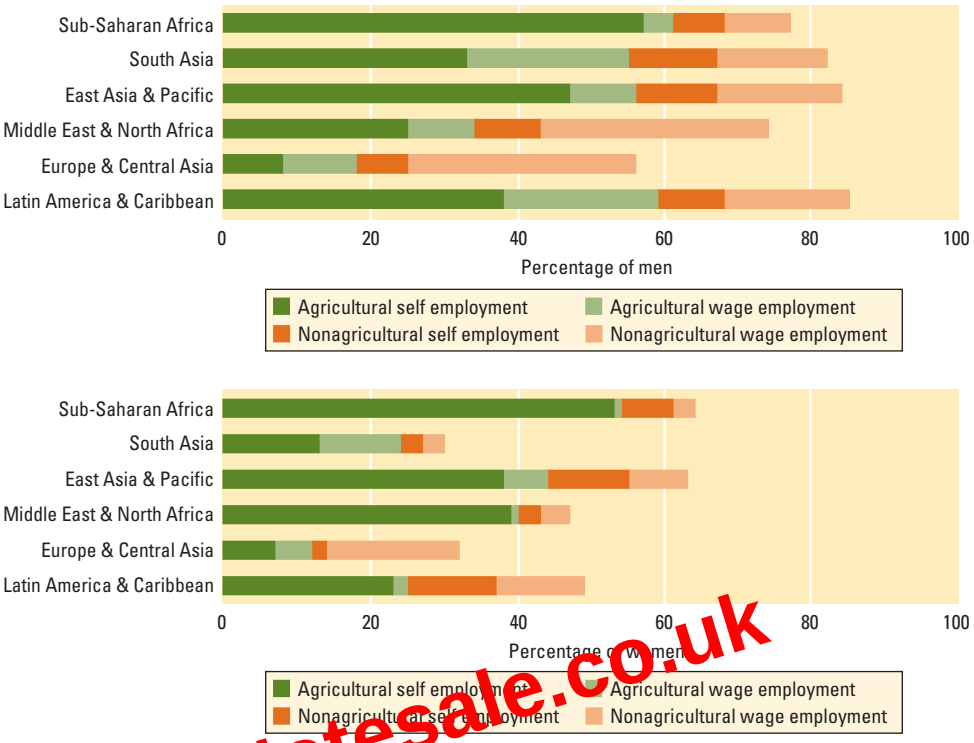
Figure 3.4 Women's reported participation in agricultural self-employment relative to men's varies by region



Source: Regional averages based on nationally representative household surveys for 60 countries (ages 15 to 64).
Note: The omitted group includes individuals out of the labor force and individuals whose economic activity is not defined. Activity refers to the individual's reported principal activity. For a more detailed explanation, please see endnote 19 on page 272. See also WDI 2008 table 2.2.

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Exiting, coping, and acquiring capital through migration

Where access to nonagricultural employment is limited or where the climate (or technology) prevents continual cultivation, seasonal migration can supplement income, smooth consumption, and protect household asset bases during the lean season. Laborers migrate seasonally to other regions in their own country, often attracted to large export crop estates that provide income in the off-season or during emergencies. They also migrate across borders, and a large part of south-south migration is seasonal.[23]

Where migration is more or less permanent, income from migration depends on the success of the migrant and the reason for migration. So migration is not a guaranteed pathway out of poverty (chapter 9). Nor is it available to all. High migration costs often prevent the poorest-of-the-poor from migrating, or limit their migration to nearby areas, where the returns might be low.

Migration responds to income gaps between the origin and the destination. It can occur because people are pushed out of rural areas by negative shocks or a deteriorating resource base—or are pulled out by attractive employment opportunities elsewhere. In Chile, the local unemployment rate is positively correlated with out-migration, but the expansion of agricultural employment and jobs in agroprocessing slowed migration. Cohort analyses with population censuses between 1990 and 2000 for Ecuador, Mexico, Panama, and Sri Lanka suggest that people move out of localities that are more remote, with less infrastructure, and with poorer living conditions. Yet areas with high agricultural potential can also have high out-migration, as in Guatemala. Rural migrants often go abroad or to urban areas that offer better income opportunities. However, many choose to migrate to urban areas that are relatively close by or move to other rural areas (box 3.3).[24]

food availability and prices for most countries (chapter 5). And most countries have diversified their export base, increasing their capacity to import.

However, food availability is still a concern in some agriculture-based countries. Many countries have declining domestic production per capita of food staples.[4] Burundi, Ethiopia, Kenya, Madagascar, Nigeria, Sudan, Tanzania, and Zambia all had negative per capita annual growth rates in staple food of –1.0 to –1.7 percent from 1995–2004. In addition, staple food production in many agriculture-based countries is largely rain fed and experiences large fluctuations caused by climatic variability. In Sudan, for example, the coefficient of variation of domestic staple food production is 25 percent. This means that a shortfall of at least 25 percent of average production occurs every six years. And many other countries have similarly high coefficients: Niger and Malawi at 18 percent; Rwanda at 15 percent; and Burkina Faso, Chad, Kenya, Uganda, and the Republic of Yemen above 10 percent.

Stagnation or decline in domestic production and large fluctuations clearly raise a potential problem of food availability at the national level. Can this problem be addressed through imports? In many countries the answer is yes. In other countries, however, the main staples consumed have a low degree of tradability and are hardly traded internationally (chapter 1). Poor infrastructure imposes high costs for food to reach isolated areas, even when the capital city and coastal cities are well served by international markets.

Beyond tradeability issues—with adequate infrastructure and internationally traded staples—low foreign exchange availability often limits the capacity to import. Consider the case of Ethiopia that would import on average 8 percent of its staple food consumption (assuming no food aid) to maintain current levels. Additionally, a 9 percent shortfall in production, which occurs on average every six years, could only be compensated by a doubling of imports. But in the absence of food aid, Ethiopia would already be spending 16 percent of its foreign exchange earning on food imports, leaving little scope for the necessary increases in imports.

Almost all the agriculture-based countries are net importers of food staples, importing on average 14 percent of their total consumption over the past 10 years, but reaching high dependency levels of more than 40 percent in Guinea-Bissau, Haiti, and the Republic of Yemen. With such levels of dependency and food imports often representing more than 20 percent of the available foreign exchange, world price fluctuations place additional strain on import capacity and therefore domestic food availability. World price variability remains high, with a coefficient of variation of around 20 percent.

Because of the low price elasticity of demand for food staples and the thinness of markets, problems in food availability (from low domestic production or lack of imports) translate into large spikes in domestic prices and reductions in real incomes of poor consumers (many of whom are farmers). Even in countries that engage in trade, transportation and marketing costs result in a large wedge between import and export parity within which domestic prices can fluctuate without triggering trade. Price variability, which is already high even in capital cities with mostly liberalized markets, is exacerbated in inland and more remote regions.

Food access—having enough to eat

But for most of the malnourished, the lack of access to food is a greater problem than food availability. Nobel laureate Amartya Sen famously wrote that "starvation is a matter of some people not *having* enough food to eat, and not a matter of there *being* not enough food to eat."[5] The irony is that most of the food insecure live in rural areas where food is produced, yet they are net food buyers rather than sellers (chapter 4). Poverty constrains their access to food in the marketplace. According to the UN Hunger Task Force, about half of the hungry are smallholders; a fifth are landless; and a tenth are agropastoralists, fisherfolk, and forest users; the remaining fifth live in urban areas.[6] *Today, agriculture's ability to generate income for the poor, particularly women, is more important for food security than its ability to increase local food supplies.* Women, more than men, spend their income on food. In Guatemala, the amount spent on food in households whose profits from nontraditional agricultural exports were controlled by women was double that of households whose men controlled the profits.[7]

India has moved from food deficits to food surpluses, reducing poverty significantly and reaching a per capita income higher than that in most parts of Sub-Saharan Africa. Yet it remains home to 210 million undernourished people and 39 percent of the world's underweight children.[8] Bangladesh, India, and Nepal occupy three of the top four positions in the global ranking of underweight children. Ethiopia is the fourth, with the same incidence of underweight children as India. Many believe that the inferior status of women in South Asia has to some extent offset the food security benefits of agriculture-led poverty reduction.

Food use—ending hidden hunger

Food use translates food security into nutrition security. Malnutrition has significant economic consequences, leading to estimated individual productivity losses equivalent to 10 percent of lifetime earnings and gross domestic product (GDP) losses of 2 to 3 percent in the worst-affected countries.[9] But malnutrition is not merely a consequence of limited access to calories. Food must not only be available and accessible, but also be of the right quality and diversity (in terms of energy and micronutrients), be safely prepared, and be consumed by a healthy body, as disease hinders the body's ability to turn food consumption into adequate nutrition.

Lack of dietary diversity and poor diet quality lead to micronutrient malnutrition or hidden hunger,[10] even when energy intakes are sufficient. Hidden hunger can cause illness, blindness, and premature death as well as impair the cognitive development of survivors. In the next 12 months, malnutrition will kill 1 million children before the age of five.[11] Iron deficiency among female agricultural workers in Sierra Leone will cost the economy $100 million in the next five years.[12]

Although increased production of horticulture products and livestock has been agriculture's main avenue to improve diet quality, agriculture now offers an additional pathway to address hidden hunger. Biofortification is enhancing staple crop varieties and improving diet quality with higher levels of vitamins and minerals through conventional crop-breeding and biotechnology.

In the future, agriculture will continue to play a central role in tackling the problem of food insecurity. It can maintain and increase global food production, ensuring food availability. It can be the primary means to generate income for the poor, securing their access to food. And through new and improved crop varieties, it can improve diet quality and diversity and foster the link between food security and nutrition security.

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BOX 4.2 *The political economy of agricultural reforms in developed countries*

Agricultural subsidies and tariffs on rice and sugar, aggregated across all countries, are estimated to account for 20 percent and 18 percent, respectively, of the global cost of all agricultural trade policies—the highest of all commodities. Although the equivalent global cost of cotton subsidies and tariffs is much smaller, the absolute cost to developing countries is large, an estimated $283 million a year. For Sub-Saharan Africa, the developed-country cotton subsidies and tariffs account for about 20 percent of the total cost of trade policies on all merchandise goods.

Japanese rice policy reform: bargained compromise to agree on decoupled support

Japan protects rice producers, a traditional source of political support, through a 778 percent *ad valorem* tariff equivalent on rice imports. In 2007 Japan introduced a less-distorting direct payment to farmers linked to farm size, not production. The payment is expected to be bargained against a decline in tariff levels for rice—making payments to farms larger than a certain size to target "principal" rather than "part-time" farmers. The new scheme is viewed as a less-distorting alternative to border protection and as a mechanism to induce larger-scale production.

Why did politicians agree to the proposed scheme despite the apparent risk of undermining their political support from rural areas? Three factors. One is the ever-strengthening voices from nonfarm sections of the economy. A second is media pressure: fearing Japan's increasing isolation in the global economic community for its rice policies. Third is the view that agriculture should be part of the broader economic reforms.

The system of protection of agriculture has been kept in place by a strong pro-agricultural coalition of the Ministry of Agriculture, Forestry, and Fisheries; the ruling Liberal Democratic Party; and the Japan Agricultural Cooperatives, which implements the farm subsidies programs. But the Ministry of Agriculture, Forestry, and Fisheries has gradually shifted to more market-oriented policies. The Liberal Democratic Party has shifted its balance of interest toward urban areas because of growing support from cities in recent elections, an indication that nonagricultural groups are gaining political capital in this policy arena.

While reform seems inevitable, opposition by Japan Agricultural Cooperatives led to a compromise in the coverage of the direct-payment scheme, expanded to include direct payments to small part-time farmers if they organized into a collective farming unit. Although viewed as weakening the efforts at structural change, it seemed necessary to get agreement to a reform program while not undermining, but perhaps slowing, the eventual shift to larger-scale production. Larger-scale farmers are already exiting the Japan Agricultural Cooperatives marketing system, exits expected to accelerate under the direct-payments program, reducing the political power of Japan Agricultural Cooperatives and its resistance to reform.

EU sugar policy reform: compensation and restructuring to complement reform

EU domestic sugar prices—supported by high import tariffs—are three times higher than world market levels, increasing incentives to produce sugar in the EU and depressing the world market price of sugar at the expense of many developing-country exporters. However, some African, Caribbean, and Pacific countries benefit from these higher prices under the Everything But Arms trade agreements.

The European Union agreed to reform its sugar regime in February 2006; reforms began in July 2006 and extend for four years. If fully implemented, the reforms would radically change the sugar regime, in place for almost 40 years. For years, the policy had encountered discontent from the food processing industry, paying three times the world price for sugar. But two main factors led to the initial policy reforms. First, the EU's sugar export subsidy system was ruled noncompliant with agreed commitments under the WTO. Second, the EU's Everything But Arms initiative was introduced in 2001 to open the EU sugar market to duty-free and quota-free imports from the world's 50 Least Developed Countries from 2009 onward. This was expected to lead to a surge in imports and the destabilization of the EU sugar regime unless the sugar price was reduced. Adding to these determinant factors was the campaign of an international nongovernmental organization coalition that emphasized the negative effects of the EU sugar policy for developing countries. The reform became imperative.

While the political equilibrium turned against the sugar producers, measures were put in place to address the expected loss of revenues that the reform will induce and to counter the producers' opposition. Compensation and a restructuring fund (financed partly by producers) to encourage uncompetitive producers to leave the industry were agreed to in February 2006. EU farmers are expected to receive compensation for an average of 62 percent of the price cut phased over four years.

The four-year restructuring fund has three main objectives: to encourage less-competitive producers to leave the industry, to cope with the social and environmental impacts of factory closures, and to help the most affected regions develop new businesses in line with EU structural and rural development funds. Africa, Caribbean, and Pacific countries that received higher-than-world-market prices for their quota of sugar produced for sale in the EU market were eligible for an assistance plan worth €40 million for 2006.

U.S. cotton policy reform: WTO and local media pressure to offset industry lobby power

The United States accounts for 40 percent of world cotton exports and 20 percent of world cotton production. Subsidies have been equivalent in value to about two-thirds of the market value of production over the 2000–05 period. The additional U.S. production prompted by these subsidies is estimated to reduce the world cotton price by 10 to 15 percent, at significant cost to developing countries.

U.S. cotton policy is heavily influenced by a strong interest group, the Cotton Council of America (representing the 24,721 cotton growers, according to the census in 2002, as well as ginners, exporters, bankers, and suppliers). The council is one of the most powerful U.S. commodity lobbies, winning disproportionately higher support relative to other sectors, particularly since the enactment of the 1996 Farm Bill (an average equivalent of $120,000 a year per farmer).

Four West African cotton-producing countries (Benin, Burkina Faso, Chad, and Mali) submitted a joint proposal to the WTO in May 2003, demanding removal of support to the cotton sector by the United States, China, and the EU and compensation for damages until full removal of support. Brazil initiated a comprehensive case against the United States for noncompliance with its WTO obligation on cotton subsidies. In March 2005, the WTO Dispute Settlement Body instructed the United States to bring the offending cotton subsidy measures into compliance with its WTO obligations. The United States made adjustments in response to the WTO decision, but in December 2006 Brazil formally expressed its dissatisfaction with the extent of U.S. policy changes and asked the WTO panel to find the United States "out of compliance" with the original ruling. The compliance phase of the case is now proceeding. While the reduction in U.S. cotton subsidies was a response to the legal case at the WTO, the U.S. media and reform-minded groups also pressured the U.S. Congress to reduce support.

Sources: Anderson, Martin, and van der Mensbrugghe 2006a; Anderson and Valenzuela forthcoming; Masayoshi Honma, Yujiro Hayami, Dan Sumner, Don Mitchell, and John Baffes, all personal communication 2007.

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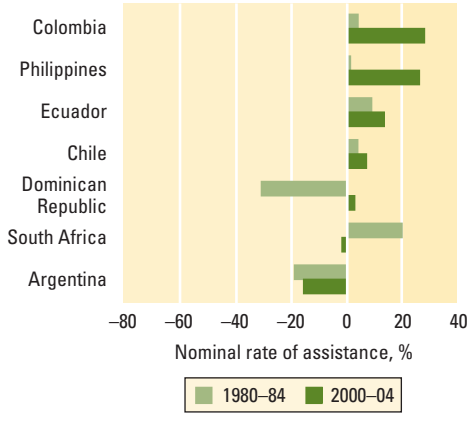
Figure 4.5 For urbanized countries, 6 of 7 either increased protection or reduced taxation



Source: Anderson (Forthcoming).

that exports are still heavily taxed in many countries, while some imports are heavily protected. This suggests room for further welfare gains. Further reforms should be designed in the context of a country's level of development. Many developing countries where agriculture is a large share of gross domestic product (GDP) will need to continue to tax agriculture (although not disproportionately) to provide a surplus for broader development programs (see transitional support section).

Political economy factors matter for further reform

Agricultural reforms in many of these countries, particularly the agriculture-based ones, came after the macroeconomic reforms of the 1980s. They were heavily supported by external donors through policy advice and conditional lending. Other important elements of the reforms, reflecting the political economy in countries (box 4.5), include leadership and exploiting windows of opportunity (as in Uganda), tying the fortunes of local leaders to the success of the local economy, building on local support, using WTO accession (as in China), and bargained complementary policies to support free trade (as in Mexico).

Reforms are not easy, because there will be both gainers and losers. Reducing heavy taxation and protectionist biases in developing countries requires understanding the political economy aspects of reform. The power of outside actors is real, as demonstrated by the impact of WTO accession on protection in transforming and urbanized countries and by the impact of foreign assistance on taxation in agriculture-based countries. However, lasting change occurs only with a strong domestic constituency. Strengthening local constituencies to build coalitions for remaining policy reforms can help—particularly as political systems become more open and competitive.

Simulated gains from trade liberalization

Agricultural policy reform in both developed and developing countries offer significant potential welfare gains, including from trade reforms. The magnitude of the costs of current trade policies and corresponding potential gains from further reforms have been quantified through simulations of global computable general equilibrium models. These models are based on a simplified but consistent representation of production, income, and demand in each country or group of countries and of international markets. While the models require strong assumptions, they remain a powerful tool for analysis of global trade scenarios (box 4.6).

The costs to developing countries of current trade policies are substantial

The global welfare costs of current trade policies fall on both developed and developing countries. Recent estimates show that the global costs of trade tariffs and subsidies would reach about $100 billion to $300 billion a year by 2015.[11] About two-thirds of the costs are estimated to come from agricultural tariffs and subsidies (the remainder from tariffs and subsidies in other sectors), much higher than agriculture and processed food's 6 percent share of global GDP and 9 percent share of international trade. While these costs are a modest share of global GDP for developing countries, they are substantial relative to current aid flows for agricultural development. Developed-country agricultural policies cost developing countries about $17 billion per year—a cost equivalent to about five times the current levels of overseas development assistance to agriculture.[12]

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BOX 4.5 *The political economy of agricultural reforms in developing countries*

Three examples, one from each country category, illustrate the political economy of reform in developing countries. In Uganda (agriculture-based) and China (transforming), net taxation of agriculture declined significantly between 1980–84 and 2000–04, while in Mexico (urbanized) there was a shift to protection over the same period.

Uganda: leadership and a window of opportunity

Uganda's agricultural reforms disbanded the Coffee Marketing Board and the Lint Marketing Board monopolies in 1991 and the Produce Marketing Board in 1993—all had heavily taxed agriculture. Cross-district product movement restrictions were also removed. The reforms significantly increased the share of the border price received by farmers and contributed to the large 1990s decline in the percentage of people below the national poverty line.

The reforms followed a broader set of macroeconomic reforms by the National Resistance Movement government, which came to power in 1986. The macroeconomic reforms (by reducing the overvalued currency) had a greater impact on agricultural export prices than the agricultural reforms, although both were significant. Following the armed struggle to power, popular legitimacy formed the bedrock of the regime, enabling the president to pursue difficult and potentially unpopular reforms, including those in agriculture. Groups with vested interests in the marketing boards lost their political weight in the regime change.

China: tying the success of local leaders to the success of the local economy

China launched a bold but gradual set of reforms in 1978, first raising prices for agricultural commodities; then decollectivizing agricultural production, making the farm household the residual claimant; and finally beginning to slowly but steadily dismantle the state-run procurement and input supply systems. In response, the rural economy took off. Agriculture boomed. Productivity nearly doubled. The number of rural poor fell from more than 300 million to fewer than 50 million.

Why was China able to make these tough decisions when leaders in many other nations falter?

Much of the pressure for reform came from the failed policies and poor performance of agriculture. China's leaders were committed to becoming a secure and independent country. There was also an imperative to worry about equity and provide citizens with a minimum standard of living. Central planning was not proving effective.

The decentralization reforms in China tied the fortunes of local leaders significantly to the success of the local economy. Hence, policy initiatives that tied local revenues, local investment spending, and cadre salaries to the increases in agricultural output and the transformation of the economy toward rural industrialization had local support. That the reforms were introduced in a gradual process of local experimentation and learning reduced the political risks associated with the reform. Moreover, the grassroots pressure built in the process helped the reformers in the Chinese government win the battle with conservative reform critics.

Mexico: delicate balance between complementary programs to facilitate structural policy reform and protection traps

During the 1990s following the North American Free Trade Agreement, which established the (gradual) elimination of tariff and nontariff barriers to agricultural imports by 2008, the Mexican government implemented wide-ranging agricultural market-oriented policy reforms. The reforms were designed in ways that avoided major political opposition from domestic agricultural producers with significant political power.

The power of farmer organizations in Mexico was evident in 2002 with a horseback incursion into Mexico's congressional building as a way to influence policy. The message, reminiscent of the Mexican Revolution of 1910, paid off with a negotiated Acuerdo Nacional para el Campo (National Agreement for the Countryside), greatly increasing public resources funneled to rural areas.

The 1990s reforms eliminated state trading enterprises in agricultural products and support prices. In exchange, they provided commercial producers with brokerage services and market information for price-risk management, and substituted support prices with compensatory payments based on target incomes. The government complemented market support with decoupled, per-hectare payments to producers of basic grains and oilseeds, under a new program called PROCAMPO. The government strengthened land property rights in rural areas. Major grants and subsidized credit-based programs assisted the agricultural sector's transition toward greater efficiency and global competitiveness, through the Alianza Contigo (Alliance with You). In 2004 roughly 80 percent of the Ministry of Agriculture's $3.7 billion budget was devoted to marketing support, PROCAMPO, and Alianza Contigo, roughly a third of Mexico's public spending on rural development.

The reforms have not eliminated distortions in the allocation of production factors. Market interventions under the new policy regime, while greatly increasing the role of the private sector, have perpetuated or even exacerbated such distortions, hampering the adjustment toward more efficient use of private and public resources. Although interventions were initially established as temporary measures to ease adjustment to a market-based food sector, the economic interests created by these interventions and the export subsidies in developed countries have made it politically infeasible for Mexican policy makers to justify an exit strategy.

Sources: Avalos-Sartorio 2006; Huang, Rozelle, and Rosegrant 1999; Lin 1992; McMillan, Waley, and Zhu 1989; Opolot and Kuteesa 2006; Qian and Weingast 1996; Robinson 2005; Rosenzweig 2003; Rozelle 1996; Swinnen and Rozelle 2006; World Bank 2002a; Yang 1996; Yunez-Naude and Barceinas Paredes 2004; Zahinser 2004.

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Developing countries are estimated to share 30 percent of the welfare costs of current trade policies, whether from agricultural policies or from policies in the other sectors (table 4.2). These lower absolute costs on developing countries translate into a higher percentage of income because of their smaller economies. As a group, the estimated cost by 2015 is 0.8 percent of real GDP—but for some countries it is estimated to be much higher: 5.2 percent for Vietnam and 3.2 percent for Thailand. For agricultural and nonagricultural liberalization alike, half of the costs to developing countries are estimated to come from policies in developed countries, the other half from policies in developing countries as a group (table 4.2).

More than 90 percent of the global costs are estimated to come from market access restrictions through tariffs rather than from export subsidies or domestic support.

Table 4.3 Illustrative poverty effects from agricultural trade reform in developed and developing countries

	Brazil	Thailand	Vietnam	Mexico	Mozambique	Bangladesh
Developed countries liberalize						
Change in:						
Terms of trade (percent)	4.9	1.1	0.3	–0.2	–0.4	–0.5
Welfare (percent)	0.7	0.8	0.2	–0.2	–0.6	–0.2
Poverty (percent)	–1.8	–6.6	0.2	0.3	0.1	–0.1
Developing countries liberalize						
Change in:						
Terms of trade (percent)	0.6	0	–0.4	–0.3	0.6	–0.4
Welfare (percent)	0.1	0.5	1.1	0.1	1.8	0.3
Poverty (percent)	–0.2	–4.6	–1.7	0.6	–1.1	–0.2
Both developed and developing countries liberalize						
Change in:						
Poverty at $1 a day (percent)	–1.9	–11.2	–1.5	0.9	–1.0	–0.3
Poverty at $1 a day (thousands of people)	–445	–133	–23	86	–62	–128

Source: Hertel and others 2007.
Note: Six of the 15 countries are presented in the table above, selected to illustrate the different transmission magnitudes from terms of trade, to welfare, to poverty reduction across countries. Of the 15 countries studied, 2 were estimated to experience an increase in poverty from agricultural trade liberalization in both developed and developing countries.

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terms of trade are estimated to worsen for countries such as Bangladesh (an importer of cotton, wheat, and oilseed) and Mozambique (an importer of wheat and rice and an exporter of seafood, the international price of which is expected to decline with global trade reforms).

The poverty effect of terms-of-trade changes from developed-country agriculture reforms depends on where the poor are, what they do for a living, and what they consume. For example, smaller terms-of-trade changes for Thailand are estimated to lead to larger poverty impacts relative to Brazil. The reason: one-third of the extreme poor (below $1 per day) in Brazil mostly live off transfers and lose from food price increases, which dampen the employment and income gains of the other two-thirds of the extreme poor, mainly unskilled agricultural workers and self-employed. In contrast, the extreme poor in Thailand are predominantly rural households with diversified income sources and are estimated to gain from price increases. In Bangladesh, the estimated terms-of-trade loss translates into lower poverty levels as the poor are heavily reliant on unskilled wage income and benefit from lower food prices.

Developing-country agricultural trade reforms are estimated to have a much smaller impact on their own terms of trade than developed-country policy changes (table 4.3). Removing developing-country import tariffs lowers the price of food for poor consumers and lowers the income of surplus food producers. For example, in Mexico poverty in rural households is estimated to rise from domestic tariff cuts. By contrast, in Vietnam both real agricultural incomes and real wages are estimated to rise following reforms, generating broad-based poverty reductions.

Overall, when developed and developing country agricultural trade reforms are combined, the extent of poverty reduction tends to be enhanced—and the proportion of the population experiencing a poverty rise diminishes.

Gainers and losers among the poor within countries

A particular concern with trade policies for staple foods is their potential welfare impact on the poor. While most poor are net buyers of food, others are net sellers. Any change in price will therefore produce gainers and losers among the poor. Considering only the average poverty effect (as presented in table 4.3) may hide important consequences of policy reform on poverty across households (box 4.7). The distribution of gainers and losers is country specific.

In assessing the impact of food import prices on household welfare, the degree of transmission of international prices to rural households also matters. The degree of transmission varies significantly by coun-

the complexity of trade. A recent World Bank review of regional agreements concluded that agreements most likely to increase national incomes are those with low external "most-favored nation" tariffs, few sectoral and product exemptions, nonrestrictive rule-of-origin tests, measures to facilitate trade, rules governing investment and intellectual property that are appropriate to the development context, and implementation schedules put into effect on time.[43] Implementation has proven difficult in many countries: volumes of formal documents legalize free movement of goods and people across borders, but implementation remains weak. Efforts are needed to ensure policy harmonization, reduce nontariff barriers, reduce border formalities and corruption, address problems of currency transfers, and capitalize on economies of scale in infrastructure.

Transitional support

Transitional support may be needed to facilitate further reforms and sector adjustment. Important issues are the role of transitional protection, the ability to shift to alternative forms of revenue, and the needed public spending to support transitions.

Arguments for and against protection of food staples in developing countries

OECD policies. There have been recent calls by some developing countries for interim import protection in response to current OECD trade policies. The arguments are that OECD protection reduces international prices below the long-term trend, which harms the competitiveness of import-competing food sectors and leads to the decapitalization of agriculture and to rural-urban migration. Therefore, it is argued, import protection is justified to maintain the domestic industry.

But there are several counterarguments. The average distortion in world prices from trade policies is about 5 percent for food staples, as discussed elsewhere in this chapter. This long-term effect is small relative to recent price changes, as reflected by the more than 50-percent world maize price increase over the last two years. Moreover, because of infrastructure and transport costs, the transmission of world food staple prices to domestic producers is very imperfect, especially in agriculture-based countries.[44] In fact, most food staples in most agriculture-based countries are not traded internationally, but only locally and in the region (see focus C). So the overall effect of trade distortions on farm incomes of food staple producers in the poorer developing countries is likely to be small.

In the case of a tradable food staple with high price transmission, a case for protection could be made for modest, short-term protection where there is a high likelihood of reduced protection in world markets in the short to medium term that would cause world prices to rise, and where the domestic industry would be clearly competitive with undistorted prices. But even in these cases, protection would be modest (that is, of a magnitude close to the expected rise in world prices, which for cereal products is about 5–10 percent). The political difficulties of adjusting policy once the trade distortion is removed must be considered. Consequently, credible exit strategies should be specified if protection is introduced.

Food security. Aside from arguments about distorted world prices, the case is sometimes made for protecting domestic food staple industries in the name of food security. This should be considered with caution. First, consumers bear the cost of protection, particularly poor consumers who spend a high share of income on food staples, and many rural poor are net food buyers in many countries (see box 4.7). Second, poverty and insufficient purchasing power rather than lack of food supply is usually the main cause of food insecurity, although there are important exceptions in the agriculture-based countries (focus C). For example, in 2004 Indonesia enacted a temporary import ban on rice—which has now become permanent—to increase domestic production. Two-thirds of the poor are net consumers of rice and are hurt by the rice price increases induced by the ban. The impacts of the ban have been identified as the main cause of the increase

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in poverty headcount from 16 percent in 2005 to 18 percent in 2006.[45]

If an industry is already protected, rapid liberalization for a sector that is a large and tradable part of the economy can generate significant unemployment and hardship in the short term, especially for the poor, who lack the assets or knowledge to take advantage of new opportunities.[46] In this case, it is imperative to include transitional support for vulnerable groups to ensure that they benefit from growth, and to sustain political support for trade reform (see below). For those with productive assets, this transitional support should be provided not only for income support (as in PROCAMPO in Mexico), but also to facilitate transition to competitive activities.

Safeguard policies. Governments that require a safety net to increase their comfort level when they liberalize markets and reduce applied tariffs, may consider price bands to reduce exposure to world price variability, if such safeguard policies are allowed in the new round of WTO negotiations. Price floors implemented through a temporary increase in the import levy may help to prevent extreme hardship to producers in years when world prices are extremely low. Similarly, temporary reductions in tariffs could be implemented when world prices are very high. (It must be recognized, however, that the ability of this mechanism to significantly reduce upward price volatility is limited, unless there is significant initial tariff protection, which is not likely to be either efficient or equitable.) To minimize the economic costs of any such variable levy schemes, and to ensure that they do not become permanent increases in protection, it is important to have clearly defined rules for safeguard interventions that cannot be captured by vested interests, and that temporary tariff increases are infrequent and of short duration.[47] To date, there are few, if any, successful examples of using such safeguards and some examples in which they clearly did not work well.

In sum, trade policy on food staples must recognize that protection of domestic production is often not pro-poor. Nor is protection as efficient in helping farmers as alternative policies such as increasing access to assets and productivity-enhancing investments in research, education, extension, and rural infrastructure. But in recognition of the political sensitivity of these markets and country specificity of trade policy impacts, providing flexibility within trade rules makes sense if it is done in a way that encourages the shift to market liberalization.

Transitioning to alternative forms of taxation

Further reducing the protection of imports and the taxation of agricultural commodity exports can pose a fiscal dilemma for many agriculture-based countries that depend on these revenues for public investment. In Sub-Saharan Africa, trade taxes account for about a quarter of all government revenues; in the developing countries of Asia and the Pacific, they account for about 15 percent.[48] Agriculture remains the dominant sector in most agriculture-based countries and so will have to continue to contribute to national and local government revenues—consistent with their current level of economic development. Four key principles to guide agricultural taxation, highlighted in a previous analysis of Africa, remain valid:[49] they should be nondiscriminatory, minimize efficiency losses, and consider the effectiveness of fiscal capture and capacity to implement.

Agriculture should not be taxed at a higher rate than other sectors, and agricultural taxes should be integrated with general value added, profit, and income taxes. Output and input taxes should be minimized. Land taxes can minimize efficiency losses and induce production, although these do not generally exist in agriculture-based countries. Output taxes can be replaced by consumption taxes (sales or value added taxes) in countries with the administrative capacity to implement them.[50] Capacity to implement new systems will have to be built over many years. In the interim, it may be necessary to rely partly on commodity and input taxes for revenue.

Recent evidence shows a mixed picture in shifting to alternative sources of revenue but provides some lessons on how to deal

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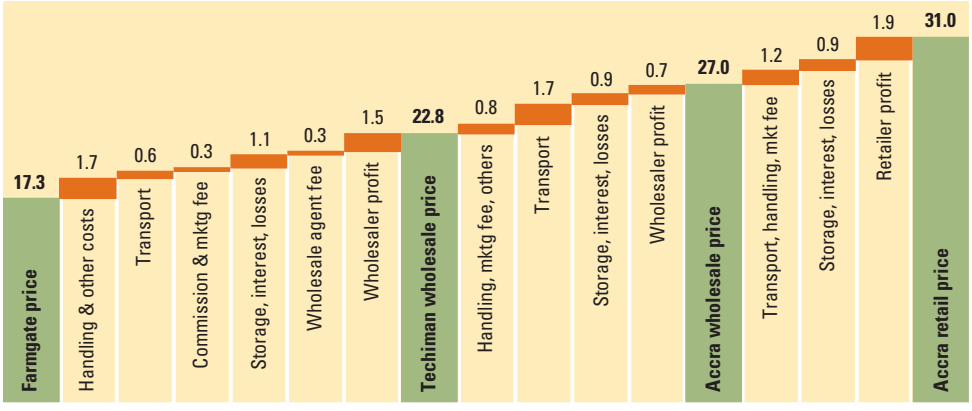
Figure 5.1 Layers of intermediaries characterize Ghana's maize markets

$ per 100 kilograms, 1998



Source: Natural Resources Institute, personal communication 2006.

In agriculture-based and transforming countries, small and medium-size traders and layers of intermediaries are common in the marketing of food staples and other agricultural commodities (figure 5.1). Often one-person businesses dealing in several commodities, the traders and intermediaries are mainly self-funded because of limited access to credit. They maximize the returns on their working capital by rapidly turning over small quantities with little storage. Quality grades are rarely standardized, nor are weights and measures, making personal inspection by buyers essential. This requires that traders travel extensively, increasing transaction costs.

Improving and modernizing the marketing system can increase market efficiency, foster competitiveness with imports, and reduce losses and risks. Market modernization, beyond improving basic transport, includes marketing information systems, commodity exchanges, and price-risk management.

Poor road connections

Inadequate transport infrastructure and services in rural areas push up marketing costs, undermining local markets and exports. This is particularly the case in Africa, where less than 50 percent of the rural population lives close to an all-season road. Trader surveys in Benin, Madagascar, and Malawi find that transport costs account for 50–60 percent of total marketing costs.[1] Improving road connections is thus critical to strengthening the links of farmers and the rural economy to local, regional, and international markets (box 5.1).

Market information systems

Market information keeps farmers and traders attuned to the demands and changing preferences of consumers, guiding farming, marketing, and investing. Market information encompasses timely and accurate prices, buyer contacts, distribution channels, buyer and producer trends, import regulations, competitor profiles, grade and standards specifications, post-harvest handling advice, and storage and transport recommendations.[2]

Public market information systems have often been disappointing, with information disseminated too slowly, in the wrong form, or too infrequently to be of real use to market participants.[3] Several innovative approaches are being piloted in different parts of the world, building on advances in communications technology (radio, cell phone, television, Internet) and the liberalization of telecommunications and broadcasting. In India, the Ministry of Agriculture operates AgMark Net, which collects price information from wholesale markets nationwide and disseminates it through the Internet. The private sector in India is investing in telecommunications infrastructure, such as mobile phone networks and Internet-linked rural kiosks, which aid in strengthening

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Burkina Faso), to market zoning (for example, cotton in Ghana), to full market liberalization (cotton in Uganda, and cocoa and coffee in Cameroon and Côte d'Ivoire).[25] Overall the liberalization programs generated immediate benefits: an influx of private capital, management, and marketing expertise; and market competition reducing transaction costs, increasing prices received by farmers and typically leading to prompter payment for crops purchased.[26] One study found that 85 percent of coffee producers in Tanzania were better off as the gains from higher producer prices more than offset the loss from reduced access to credit through public sources.[27]

After liberalizing: addressing second-generation problems

In many countries, the restructuring of the market brought second-generation problems, aptly illustrated by cotton in major producing countries in Africa. The absence of a clear legal and regulatory framework to guide private sector and farmer behavior in the context of free market competition or weak contract enforcement created confusion and allowed some malpractices to persist (box 5.4). To help private traders enforce contracts, Côte d'Ivoire and Zambia adopted zoning arrangements to regulate cotton marketing that have worked reasonably well.[28] However, competition from new buyers in Zimbabwe and Tanzania weakened quality enforcement.[29]

What contributed to these second-generation problems? The weaknesses and lack of credibility of public institutions to enforce appropriate rules of behavior for the private sector is part of it. Public intervention in grades and standards and in contract enforcement is essential to ensure that private markets work. Liberalization also exposed the underdevelopment of rural financial systems, which need to be addressed (chapter 6). The African experience also highlights the potential for associations and professional organizations (farmer groups in Tanzania) to overcome the shortsightedness of individual farmers and buyers.[30] Partial privatization in Burkina Faso has given farmers more ownership, but it led to heavy fiscal outlays (box 5.4).

BOX 5.4 *Zambia and Burkina Faso: contrasting experiences in liberalizing domestic cotton markets*

Zambia—production tripled after some fixes. Zambia's cotton sector continues to evolve after market liberalization, with significant impacts on productivity and quality. In 1995 the government sold the Lint Company of Zambia, the government parastatal, to two private companies, Clark Cotton and Lornho, later acquired by Dunavant. To ensure access by participating farmers to extension services and inputs (on loan), the two companies implemented outgrower schemes, contracting with smallholders. The costs of the inputs were to be paid by farmers upon sale of their seed cotton. But the rapid entry of other buyers created overcapacity in ginning and fierce buyer competition. The outgrower schemes began to fail because of rampant side-selling by farmers to other traders offering high prices without grading and defaults on input loans. As the defaults increased, the cost of credit increased, which led to more defaults or exits from the outgrower program. Production in 2000 was less than half that in 1998.

After 2000 many agents and buyers exited the industry, leaving two dominant companies. Dunavant used distributors to improve credit repayments. Distributors were responsible for identifying farmers, providing inputs and technical advice, and collecting produce on behalf of Dunavant. The distributor's remuneration was directly tied to the amount of credit recovered, on an increasing scale. Dunavant established inspection points in all buying stations to enforce quality standards. National production tripled between 2000 and 2003, and credit repayments improved from about 65 percent to more than 90 percent. There are now more than 300,000 cotton-producing farmers in Zambia.

Burkina Faso—losses of $128 million. The government tried to reduce inefficiencies by changing the structure of ownership of SOFITEX, the cotton parastatal, in 1999. It allowed producers, represented by the *Union Nationale des Producteurs de Coton du Burkina Faso,* to take up 30 percent ownership, empowering farmers to oversee the management of SOFITEX and ensure professional management. But the institutional changes at SOFITEX did not improve its financial position. Supporting and stabilizing domestic cotton prices as world prices declined produced financial losses of $128 million from 2004/05 to 2006/07.

Sources: Bonjean, Combes, and Sturgess 2003; Food Security Research Project (FSRP) 2000; Christopher Gilbert, personal communication, 2007; Tschirley, Zulu, and Shaffer 2004.

Higher-value urban markets: linking producers to modern supply chains

Rising incomes, urbanization, greater female participation in the workforce, wider media penetration—all are driving the demand for higher-value products, semiprocessed and processed products, and convenience foods (figure 5.4). They are also increasing consumer attention to food quality and safety. Diets are globalizing too, with local consumer preferences influenced by international tastes. These trends open new markets for a wide range of higher-value agricultural products and propel the evolution of the marketing system in many developing countries, with the entry and rapid growth of supermarket chains and the food processing and food service industries.

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chain, poor access to roads and electricity, and inadequate infrastructure and services in physical markets add to the transaction costs and cause quality deterioration and high spoilage losses. In India it is estimated that fruit and vegetable postharvest losses amount to about 40 percent of total annual production, equal to a year's consumption in the United Kingdom.[32]

Market infrastructure and facilities in developing countries are often limited and congested, increasing the difficulty of trading perishable goods. A survey of wholesale markets handling fresh produce in four states in India found that 17 percent had no covered shops, about half did not have paved roads in the market yard, about 40 percent of the shops had no electricity, and only 6 percent of the markets had a cold-storage facility.[33] In Tamil Nadu, India, a related study found that wealthier farmers tend to capture a disproportionate share of the benefits of facilities in congested wholesale markets.[34] Nonetheless, investments in market facilities would be pro-poor because sales by poorer farmers would increase proportionally more than those by the wealthier farmers.

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Modern procurement systems

Supermarket growth in most countries follows similar diffusion patterns across space, consumer segments, and product categories.[35] From a base in large cities, supermarkets initially spread to intermediate cities and towns, and later to small towns in rural areas—in response to market competition and saturation. They often first target the upper-income consumer (national and expatriate), followed by the middle class and later the urban lower-income households.

Dominating the supermarket's product selection in the early stages are processed foods (canned, dry, and packaged food items), motivated by economies of scale in procurement and direct relations with processed-food manufacturers. Product selection gradually expands to semiprocessed foods (dairy, meat, and fruit products). The last category to be added is fresh fruits and vegetables, as consumer preference for fresh produce and the proximity and convenience of small produce shops and wet markets offer a competitive alternative. Fresh fruits and vegetables generally account for the lowest share in supermarket sales, and small shops and wet markets will likely remain important marketing channels for these products for years to come.[36]

Significant inefficiencies in the traditional wholesale marketing systems and competition encourage supermarkets, food processors, and food service providers to use supply chains to reduce coordination costs, capture economies of scale, and increase food safety and quality. This is profoundly changing the structure of production and wholesale marketing in many developing countries. Recent studies show that procurement systems change earliest for processed foods, meat, and dairy products, eventually extending to fresh fruits and vegetables.[37]

Procurement takes many forms, varying by supermarket chain, product, and country.[38] It can involve centralized procurement, which shifts from fragmented per-store purchases to operating a distribution center catering to a district (as in China), the whole country (as in Mexico), or whole region (as in Central America). It can also involve shifting from purchases in traditional spot wholesale markets to relying on specialized or dedicated wholesalers and logistics firms (as in Central America and East Asia) or to direct contracting (as in East Asia and Eastern Europe)—to cut transaction, coordination, and search costs and ensure greater control over quality and consistency of supply.[39] China Resources Enterprise estimates that it is saving 40 percent in distribution costs by combining modern logistics with centralized distribution in its two large new centers in southern China.[40]

Modern procurement can also involve contracting with processors and farmers or using preferred-supplier lists. This is often done where farmers or processors are grouped or are individually large (as in the Philippines, Russia, and Thailand).[41] The contracts are incentives for suppliers to stay with the buyer and invest in assets that fit the retailer's specifications for products. The arrangements may include direct or indirect assistance for farmers to invest in training,

management, inputs, and basic equipment.

Modern procurement also often involves private standards and their enforcement—standards that serve two main functions.[42] They help coordinate supply chains by standardizing product requirements for suppliers over many regions or countries, enhancing efficiency and lowering transaction costs. And they help ensure that public food-safety standards are met in all markets served by the retail chain or food-processing firm, distinguishing one's products from competitors through signaling.[43] As these private standards are more widely adopted, there is growing concern about the capacity of small farmers to meet them.

Impact on smallholders and retailers

The modernization of procurement systems affects farmers differently across countries and products. Some recent studies of selected commodities find that the modern procurement systems exclude asset-poor farmers. Supermarket buying agents prefer to source from large and medium-size farmers if they can (for example, for tomatoes in Mexico and potatoes in Indonesia). If large and medium-size farmers have sufficient quantities, smallholders are not included.[44] Where small farms are the dominant structure, supermarkets have no choice but to source their produce from them. Supermarkets may also rely on small farmers to satisfy consumers' demand for specialty or niche products that only small farmers with abundant labor produce. Sometimes supermarkets need an advertising tool to promote sales with socially conscious consumers: "buying local, from smallholders."[45]

The most important determinant of small farmers' participation is not always farm size. Instead, it can be access to physical, human, and social assets: to education, irrigation, transport, roads, and such other physical assets as wells, cold chains, greenhouses, good quality irrigation water (free of contaminants), vehicles, and packing sheds.[46] An effective producer organization—another major asset—can also help small farmers enter the high-value supply chains.

Most farmers lacking these assets are excluded.[47] In Guatemala, lettuce farmers participating in modern supply chains have twice the farm size (two hectares versus one) and 40 percent more education than nonparticipating farmers, and are nearly twice as likely to have irrigation, four times as likely to have a truck, and twice as likely to be close to paved roads and be in a farmer organization. Participating farmers use much more labor-intensive practices because of requirements for field practices, sorting, and packing. Because they are more likely to double-crop over the year, participating farmers hire 2.5 times more labor (typically from local asset-poor households). So even if small farmers do not participate directly, they can benefit through farm employment (chapter 9). Studies of tomato growers in Indonesia and kale growers in Kenya find similar results.

Participation in modern supply chains can increase farmer income by 10 to 100 percent (Guatemala, Indonesia, Kenya).[48] Recent studies of contract farmers show that they have significantly higher incomes than other farmers.[49] Because participating farmers tend to reap substantial benefits, the payoff from assisting farmers to make the necessary "threshold investments" can be high.

Some studies have found that smaller processing firms were left out of the supply chain, with medium-size and large processors preferred for long-term contracts.[50] The number of small retail stores often declined with rising market share for supermarkets—with implications for employment. In urban Argentina, from 1984 to 1993, the most intense period of supermarket takeoff, the number of small food shops declined from 209,000 to 145,000.[51] But the competition is also driving some small retail stores and processors to grow and upgrade their services (as in India).[52]

Helping smallholders keep up with the requirements

The government and the private sector can help smallholders expand and upgrade their range of assets and practices to meet the new requirements of supermarkets and other coordinated supply chains (table 5.1). The options include public good investments to increase farmers' productivity and connectivity to markets, policy changes to facilitate

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as benefits. Compliance can also generate spillover benefits to domestic consumers from greater awareness of food-safety risks and access to safer products.

Empirical work on the impact of more stringent standards on smallholder participation in higher-value supply chains show a mixed picture. In theory, there are economies of scale in product traceability, certification, and testing that tend to provide a competitive advantage to larger production units. Yet there are examples from many countries where, because of limits on land acquisition or other features of the agrarian structure, smallholders remain the dominant suppliers for export firms.[66] Consequently, institutional arrangements have been developed to manage the attendant risks and transaction costs of sourcing exports with exacting standards from smallholders.

Also important is the large increase in off-farm work opportunities with expanded agrofood exports. In Senegal, despite tight export standards that led to the shift from smallholder contract farming to large-scale integrated estate production, the higher horticulture exports increased incomes and reduced regional poverty by about 12 percentage points and extreme poverty by half.[67] Poor households benefited more through labor markets than through product markets (box 5.6).

Looking at the benefits and choices

Developing-country suppliers rarely face all-or-nothing choices when determining the changes and investments to conform to emerging standards. They have a range of choices. One is compliance—adopting measures to meet the standards. Another is voice—seeking to influence the rules of the game. A third is redirection—seeking other markets and countries or changing the mix of products.[68] Suppliers need to weigh the costs and advantages for different product and market segments. In some cases, there

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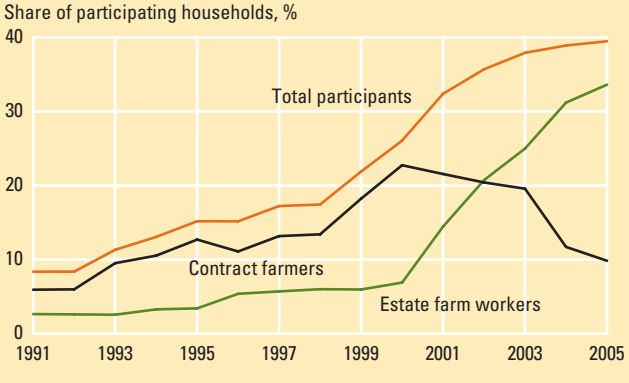
BOX 5.6 *Employment gains and reduced poverty in rural Senegal*

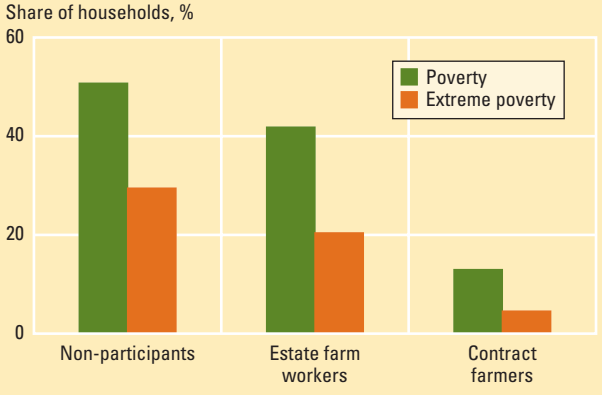
Fresh fruit and vegetable exports from Senegal to the European Union increased significantly in the last 15 years, despite the tightening of SPS standards. Senegal's main export is French beans, which account for 20 percent of fresh fruit and vegetable exports, more than doubling from 3,000 metric tons in 1991 to 7,000 metric tons in 2005. Changing EU SPS standards put pressure on exporters to invest more to meet these standards and to increase vertical coordination with downstream buyers (to ensure markets) and upstream suppliers (to guarantee food safety, quality, and the timing of production). Increased vertical coordination led to the shift from contract farming with smallholders to large-scale estate production in agroindustrial farms.

The incidence of contract farming declined (from 23 percent of participating households to 10 percent), but employment in estate farms increased (from 10 percent of households to 34 percent). While contract farming favored larger farmers, poorer households participated as farm workers. Participation in fresh fruit and vegetable export production, whether as a worker or contract farmer, raised household incomes (figure below). Estate farm workers had incomes 1.2–2.3 million CFA francs higher than nonparticipating households, while contract farmers had incomes between 2.4 million and 4.1 million CFA francs higher.

Household participation in French bean export production in Senegal



Incidence of poverty and extreme poverty among participating households, 2005



Source: Maertens and Swinnen 2006.

Table 5.2 Public and private sector roles to enhance trade-related SPS compliance and quality management capacity

Public sector	Private sector
Policy and regulatory environment Pursue international dialogue; adopt domestic food safety legislation and standards consistent with local conditions and preferences, WTO, and other trade obligations	**Good management practices** Implement appropriate management practices (hazard analysis and critical control point, "good" agricultural practices); obtain formal certification where viable
Risk assessment and management Strengthen national or subnational systems for pest, animal disease, and market surveillance; support research on food safety and agricultural health concerns	**Traceability** Develop systems and procedures to enable traceability of raw materials and intermediate and final products
Awareness building and promoting good practices Support consumer awareness campaigns on food safety; promote good agricultural hygiene, and food processing practices to be integrated into extension programs; invest in appropriate laboratory infrastructure; accredit private laboratories	**Develop training, advisory, and conformity assessment services** Strengthen human capital, physical infrastructure and management systems to supply support services to agriculture, industry, and government related to quality and food-safety management
Infrastructure investments Improve water supply and sanitation and marketing facilities	**Collective action and self-regulation** Self-regulate through adoption and oversight of industry "codes of practice"; alert government to emerging issues; advocate for effective government services

Source: Adapted from World Bank (2007e).

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may be larger and more profitable opportunities to serve the domestic market, a regional market, or industrial-country segments that impose less stringent standards or allow more time to implement them.

Addressing the export challenges of SPS standards requires joint public and private efforts. The public sector should take the lead in policy (standards and food-safety legislation), in research on risk assessment and good management practices, and in disease surveillance (table 5.2). The private sector should take the lead in building awareness, training, and complying with food safety and agricultural-chemical-use requirements, either individually or collectively through trade associations.

There is growing evidence that countries staying abreast of technical and commercial requirements and anticipating future changes have repositioned themselves in more remunerative market segments.[69] To strengthen local capacity to meet these standards, developing countries can draw support from the Standards and Trade Development Facility, a global program aimed at providing financial and technical assistance to countries to enhance their expertise and capacity to analyze and implement SPS standards and improve their human, animal, and plant health situation.[70]

Decommodification in specialty markets

The "decommodification" of some traditional agricultural products opens alternative markets for higher-value products from developing countries. Geographic indications (labeling such as Blue Mountain coffee from Jamaica), which capitalizes on local know-how and special agroecological conditions to establish brand identity, are one example. Organic, Fair Trade, and Rainforest Alliance–certified products are others. Organic products are grown without the use of conventional pesticides, artificial fertilizers, or sewage sludge—and processed without ionizing radiation or food additives.[71] Fair Trade seeks greater equity in international trade and aims to contribute to sustainable development by offering better market conditions and securing the rights of marginal producers and workers.[72] Rainforest Alliance–certified products meet stringent environmental and social standards for production.

Retail sales, mainly to meet the growing demand in high-income countries, and area planted under these products have expanded significantly. The area planted to organic crops reached 31 million hectares in 2005, with retail sales reaching $23.9 billion in the EU, Canada, United States, and Asia in 2006.[73] The biggest developing-country producers of organic products are China and middle-income Latin American countries. Sub-Saharan countries account for a large proportion of organic cotton production, while Asia and Latin America dominate production of organic coffee and cocoa. Retail sales of certified Fair Trade products in high-income countries reached $1.4 billion in 2005. Bananas and coffee are the most traded products of Fair Trade.[74]

BOX 6.5 *Banrural SA: from ill-performing agrarian bank to profitable public-private financial institution*

Banrural SA in Guatemala shows that financial and development goals can be combined and that a large bank can remain highly profitable while offering financial services to poor, rural, and agricultural clients. Banrural was created in 1997, when Guatemala closed Bandesa, its poorly performing public agricultural bank. With 200,000 credit clients, Banrural has a default rate of less than 1.5 percent. With 1 million savings accounts, it facilitates the transfer of more than $1.3 billion in remittances. It works mainly outside of Guatemala City. Half its clients are women, and it provides biometric and multilingual devices to serve illiterate and indigenous clients.

An innovative governance model. Banrural is controlled by private shareholders. The public sector owns less than 30 percent of the equity and provides no direct subsidies. The remaining 70 percent is divided among five types of stock, each represented on the board of directors. The 10 board seats are divided among the public sector (3), unions (mostly agricultural producer unions, not credit unions) (2), Mayan organizations (2), NGOs (1), small and micro enterprises (including microfinance organizations) (1), and the general public and former Bandesa employees (1). Each group elects its own directors and can sell stock only to other members of the group. This unusual governance model has empowered the private stakeholders and balanced goals of profitability and rural development. It is sustainable because the board and equity makeup cannot be altered significantly over time.

A focus on rural areas and poor clients. Banrural's profits come from a high volume of small transactions, mostly in rural areas. Having learned the lessons of the microfinance revolution, it adapts financial technologies to its clientele—loan officers visit all clients, decisions are based on an evaluation of business and household income flows, and use of traditional collateral is limited—without losing its identity as a bank. Its lending portfolio to agriculture has more than doubled since it was privatized. To increase its reach to smallholders and rural microenterprises, Banrural functions as a second-tier bank providing credit lines to more than 200 institutions, such as credit unions and financial NGOs. To build strong community goodwill, it provides health care and scholarships and supports community activities.

Source: Trivelli 2007.

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firm budget constraints and appropriate governance mechanisms can create a public-private institution that meets the needs of rural and agricultural finance (box 6.5). Other reforms of state-sponsored lenders have produced some of the most successful agricultural-oriented finance programs, including Bank Rakyat Indonesia and BAAC Thailand.

Building on existing (but perhaps failed) public banks offers the opportunity of using their branch networks to establish a presence and take advantage of scale and spatial dispersion to reduce costs. The successful restructuring and later privatization of the former agricultural bank of Mongolia (renamed KhanBank in 2006) and of NMB in Tanzania demonstrate the potential of an existing branch bank infrastructure, innovative and independent management and oversight, and strong barriers to political interference to transform financial institutions. But such a transformation is hardly automatic or ensured, because state banks remain vulnerable to political capture. Key elements of reform include those advocated to improve governance and accountability of many state functions: transparency and professionalization. Financial objectives must be promoted by clear incentives for management and staff that tie rewards to the financial performance of branches.

Providing financial services through self-help groups and financial cooperatives. In several Indian states, a separate movement has emerged, based on village-level women self-help groups and their federations at the village, mandal, and district levels. These estimated 2.2 million groups collect savings from their members and either deposit them in rural banks or lend them to members. After demonstrating their capacity to collect on loans over a six-month time period, rural banks will typically leverage a group's savings by a factor of four, providing additional capital that is mostly used for agricultural purposes. It is often easier for self-help groups to obtain loans than it is for larger farmers, many of them poor customers for rural banks. With the self-help groups responsible for all screening, processing, and collection activities, the transaction costs for loans are greatly reduced.

Financial cooperatives and their networks are reemerging as promising institutions in rural finance in many countries, combining the advantages of proximity with modern management tools.[38] Locally based, their transaction costs are typically lower than those of other financial institutions. But because they are members of a larger network, they can offer the variety and volume of financial services that rural customers require, and they can pool risks as well as costs. In Burkina Faso, RCPB, the largest network of financial cooperatives, is establishing rural service points and very small village-based credit unions, managed and supervised by financial cooperatives in larger villages.[39]

Expanding the reach of rural finance. Information technologies offer a broad array

Meeting the promise of weather-indexed insurance

MFIs cannot necessarily address moral hazard or adverse selection, two major obstacles to providing insurance. One innovation that might do so is insurance indexed to an objective indicator of weather, such as rainfall or temperature. Because weather is not affected by individual behavior, indexed insurance can address both monitoring costs and moral hazard. The choice of indicator depends on both the type of coverage and the cost and availability of data for estimating the probability of a payout. Cumulative rainfall or the date of the start of a rainy season is often proposed as the indicator; the number of days with temperatures below or above a cutoff is also in common use.

One concern is basis risk—the correspondence of the indicator and the actual losses incurred by a policyholder. The more specific the indicator, the lower the basis risk and more responsive it will be to farmers' needs. But a diverse range of products—including separate rainfall contracts for planting, growing, and harvesting stages—would make their marketing more difficult because individuals often find it hard to assess the probabilities of any given. Furthermore, addressing individual risks increases monitoring costs. So, index-based insurance may have its greatest potential in addressing broad covariate shocks.

Several approaches are being tried to adapt indexed insurance to diverse conditions. Because they are still in pilot stages, no definitive statement about their sustainability or their impact on credit rationing, input use, and portfolio choice is available. Mexico determines the timing of assistance to small farmers after weather-related shocks on the basis of a weather index. The payment amount is based on proxies for chronic poverty. In 2006, 28 percent of the nonirrigated cultivated area was covered through an insurance contract with the federal and state governments, with the availability of weather stations the main limitation. Mongolia, by contrast, promotes private livestock insurance, with the government addressing reinsurance to share risks among herders, the insurance companies, and the government (box 6.6). In Malawi, weather-indexed insurance covers the loans necessary to finance improved seeds and fertilizer, with insurance payouts going directly to banks to settle farmers' loans. In India, an MFI, BASIX, intermediates between insurance companies and its clients. The entry of private investors and the number of repeat customers for unsubsidized weather insurance indicates the potential for a private market.

BOX 6.6 *Mongolia's index-based livestock insurance*

Since 2005, Mongolia has piloted index-based livestock insurance to share risks among herders, insurance companies, and the government. The project combines self-insurance, market-based insurance, and social insurance. Herders retain small losses that do not affect the viability of their business (self-insurance), while larger losses are transferred to the private insurance industry (market insurance through a base insurance product). This is not a purely commercial program, however. The government bears the final layer of catastrophic losses (social insurance through a disaster-response product).

Herders pay a market premium rate for the base insurance product, which pays out to individual herders whenever the livestock mortality rate in a local region exceeds a threshold. As excess mortality reflects a combination of dry, windy summers and cold, high-snowfall winters, the insurance index is linked not to a weather event, but to historical livestock mortality data. Insurance payments are thus not directly linked to individual herders' livestock losses; payments are instead based on local mortality. This should avoid or reduce moral hazard and adverse selection—and reduce costs.

A key to the approach is having good data to develop the livestock mortality index. Mongolia has a 33-year time series on adult animal mortality for all regions and for the four major species of animals (cattle and yak, horse, sheep, and goat). The mortality index provides the basis for determining the specific mortality rates that would trigger indemnity payments.

Source: World Bank 2005l.

Defining government's role in agricultural insurance

The track record of agricultural insurance directly supplied by governments is not encouraging. In Brazil, costs exceeded premiums by more than 300 percent.[50] However, governments may have a role in inducing insurance services. In Tanzania, what farmers were willing to pay for insurance was less than the actuarial fair cost of providing coverage, particularly among low-income farmers.[51] Indeed, the tendency for wealthier households to purchase more insurance is a general pattern, with implications for income distribution.[52] Targeted subsidies might thus be warranted for variable costs to induce learning, especially when insurance premiums are less costly than ex post assistance. Subsidies can also offset the fixed costs of establishing a market.

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an important role here for public social services and NGOs to help enhance the capacity of weaker members in acquiring skills and achieving voice in the organizations. Important is to put in place more transparent decision-making mechanisms as well as information and communication systems, using media and information technology to empower the newer and weaker members, improve the governance of the organizations, and enforce leaders' accountability toward their members.

Developing managerial capacity for high-value chains. Globalization and integrated supply chains place new demands on the managers of producer organizations. Managers must deal with more sophisticated national and international supply chains, with stringent and changing requirements (chapter 5). They must orchestrate members' supplies to meet the demands of these value chains—achieving scale and timing in delivery; satisfying sanitary and phytosanitary standards; and meeting the specifications demanded by agroprocessors, exporters, and supermarkets.[79]

Here as well, governments and donors have an important role to play in supporting capacity building in a wide variety of areas, including management; market intelligence; technical aspects of production; input procurement and distribution; meeting phytosanitary standards; and engaging in policy analysis, dialogue, and negotiations. Donors have also been involved in strengthening leaders' managerial capacities and putting in place transparent financial management systems.

Participating in high-level negotiations. Producer organizations participating in high-level technical discussions, such as global trade negotiations, need new technical and communication skills.[80] In addition, experts that represent the organizations must remain true to national and local members' interests, a difficult challenge for apex organizations covering a wide range of interests. This requires maintaining open channels of communication with their memberships at the local, regional, and national levels. Governments and donors can enhance the effectiveness of producer organizations' participation in these consultations by helping them gain equal access to information, seek professional advice to better understand the consequences of the policies being discussed, and recruit expertise to prepare their inputs into the policy dialogue.

Dealing with a sometimes-unfavorable external environment. However effective they are internally in meeting the above four challenges, producer organizations cannot successfully promote the interests of smallholders without an enabling legal, regulatory, and policy environment that guarantees the organizations' autonomy. This requires changing the mindset of policy makers and staff in government agencies about the role of the organizations. Organizations must be recognized as full-fledged actors, not as instruments of policies designed and implemented without consulting them, nor as channels for implementing donors' agendas. Public services must be client oriented to partner with the organizations, with mechanisms that allow equitable negotiations between the organizations and other sectors. Governments' interference in cooperatives management must be removed, a difficult process that requires confronting powerful, vested individual and political interests.[81] Donor support to the Indian dairy cooperatives was partly motivated by the objective of improving their efficiency through removing government interference. Although considerable progress was made, the objective was still not completely achieved by the end of two decades of support.[82] Hence, an effective use of producer organizations as part of an agriculture-for-development agenda requires a strong, proactive state setting the conditions for this to successfully happen.

Supporting producer organizations to empower them

Governments and donors have supported producer organizations, often through specialized NGOs. Several producer organizations in industrial countries support

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fallows and maize varieties.[47] In eastern Africa, low-input integrated pest management has been developed by planting *Desmodium* (a nitrogen-fixing leguminous plant that can be used for livestock fodder) between the rows of maize to suppress *Striga*, an especially serious parasitic weed.[48] A similar integrated approach involving improved varieties, biological nitrogen fixation, cover crops, and machinery adapted to zero tillage has been vital to the global competitiveness of Brazilian soybeans.[49] With the rise of value chains, such technologies must also often integrate product quality and agricultural processing.

The need for more suitable technologies

Although R&D on production and resource management has huge potential, success has been mixed, with zero tillage as the outstanding success. Suitable technologies are still badly needed to conserve and efficiently use scarce water, control erosion, and restore soil fertility for smallholders in less-favored areas. However, such complex technologies are often labor or land intensive and may be unattractive to farmers where labor costs are high, land is scarce, or discount rates or future returns are very high or the returns risky. These concerns are especially important to women farmers lacking access to assets and services and who have specific seasonal labor-use patterns. Although the technologies are aimed at poor farmers, the record shows higher adoption levels by wealthier farmers.[50]

Management and systems technologies can require considerable institutional support to be widely adopted (chapter 8). Many of them involve the interaction of several actors—such as collective action among neighboring farmers—as well as technical support, learning, farmer-to-farmer interaction, and knowledge sharing, as with conservation tillage in Brazil. In addition, many technologies have positive impacts on the environment that are not captured in the private benefits for adopting farmers and may require payment for environmental services to encourage their adoption (chapter 8).

BOX 7.2 *Using legumes to improve soil fertility*

The low fertility in much of African soil and the low (and sometimes declining) use of mineral fertilizers have increased farmer interest in agroforestry-based soil fertility systems. The main methods are a rotational fallow or a permanent intercrop of nitrogen-fixing trees. The systems have spread mainly in the southern African subhumid region, where they have more than doubled maize yields and increased net returns on land and labor. In Zambia, the financial benefits to the nearly 80,000 farmers practicing improved fallows were almost $2 million for 2005/06. The technologies often work best in combination with judicious doses of mineral fertilizer.

With 12 million smallholder maize farmers in eastern and southern Africa, rotational fallows and permanent intercropping offer considerable long-term opportunities for integrated soil fertility management to keep African soils productive and healthy.

Source: Consultative Group on International Agricultural Research Science Council (CGIAR) 2006a.

The integrative nature of management and agroecological approaches also affects the way R&D is carried out. Because of location specificity, farmer and community participation in R&D characterizes the major success stories of these technologies. Location specificity also reduces the potential for spillovers of technologies from other regions—so despite substantial investment by the CGIAR, the evidence of impacts is limited.[51]

For these reasons, scaling up management and system technologies will not be easy. Networks of scientists, farmers, private firms, and NGOs take time to develop and become inclusive and effective. They also take time to develop the "ecological literacy" to successfully apply many of these technologies (chapter 8). But advances in geographic information systems and remote sensing by satellites are opening new ways to synthesize complex and diverse spatial data sets, creating new opportunities for collaboration among scientists, policy makers, and farmers.

Investing more in R&D

Agricultural productivity improvements have been closely linked to investments in agricultural R&D (chapter 2).[52] Published estimates of nearly 700 rates of return on R&D and extension investments in the developing world average 43 percent a year.[53] Returns are high in all regions, including Sub-Saharan Africa (figure 7.2). Even discounting for selection bias in evaluation studies and other methodological

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technologies and management practices or reduces their technical efficiency when adopted. Hence the recent emphasis is on new approaches to demand-led extension and to the application of new information and communications technologies (ICTs) to reduce these gaps.

New demand-led approaches to extension

Agricultural extension helps farmers learn how to augment their productivity, raise their incomes, and collaborate with one another and with agribusiness and agricultural research. Accordingly, extension programs are shifting from prescribing technological practices (delivery model) to focusing more on building capacity among rural people to identify and take advantage of available opportunities, both technical and economic (empowerment model). To perform such a wide-ranging role, extensionists must be trained in areas beyond technical agriculture to build skills in mobilizing farmers, tapping market intelligence, and managing farm and nonfarm businesses (see focus G).

Public services have dominated extension. Public spending for extension exceeds that for agricultural research in most developing countries. But public financing and provision face profound problems of incentives of civil servants for accountability to their clients, weak political commitments to extension and to agriculture more generally, extension workers not being abreast of relevant emerging technological and other developments, a severe lack of fiscal sustainability in many countries, and weak evidence of impact.

One of the most influential efforts to "fix" public extension was the training and visit (T&V) model of organizing extension, promoted by the World Bank from 1975 to 1995 in more than 70 countries. The T&V approach aimed to improve performance of extension systems by strengthening their management and formulating specific regular extension messages. But the T&V system exacerbated other weaknesses, especially fiscal sustainability and lack of real accountability. The result: widespread collapse of the structures introduced.[78]

BOX 7.8 *Adding value to a poor farmers' crop: cassava in Colombia and Ghana*

Cassava, traditionally viewed as a subsistence crop of the poor, is emerging as a strategic link in industrial value chains in Colombia, Ghana, and many other countries. Private-public farmer partnerships facilitated this transformation through greater coordination along the value chain—and through R&D within a broader context of new products and markets and greater competitiveness.

In Ghana, the Sustainable Uptake of Cassava as an Industrial Commodity Project established systems linking farmers, especially women, to new markets for cassava products, such as flour, baking products, and plywood adhesives. The local Food Research Institute and industrial users collaborated to organize more than 100 stakeholders into a value chain of cassava production and drying in rural areas, grinding and milling in central facilities, and distribution to industrial processors.

In Colombia, the International Center for Tropical Agriculture structured its early cassava research around dried cassava chips for the animal feed industry. Between 1980 and 1993, 101 cooperative and 37 private processing plants were built. By 1993 these facilities produced 35,000 tons of dried cassava, with an estimated value of $6.2 million.

Since 2004 the Ministry of Agricultural and Rural Development has explicitly included cassava in competitive calls for R&D projects to stimulate further innovation and maintain competitiveness in value chains. High-value clones with enhanced nutritional quality, novel starch mutations, and sugary cassava have been identified and integrated into value chains for the animal feed, starch, and ethanol industries, respectively.

Source: World Bank (2006h).

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From centralized to decentralized. In the 1990s many governments moved away from centralized systems and transferred to local governments the responsibility for delivering extension and, in some cases, financing it, in line with wider efforts to decentralize government (chapter 11). The expected advantages are to improve access to local information and better mobilize social capital for collective action. It should also improve accountability, as agents report to local stakeholders or become employees of local government, which—if democratically elected—would be keen on receiving positive feedback on the service from the client-voter. Although these are good reasons to decentralize extension, general difficulties in decentralization, as well as local political capture, have in some cases compromised progress in delivering more effective advisory services.[79]

A promising additional element, increasingly adopted, is to involve farmers in decentralized governance. Since 2000, both the Agricultural Technology Management Agencies (ATMAs) in India and the National Agricultural and Livestock Program in Kenya have set up stakeholder forums from national to district and subdistrict levels to plan and set priorities for

extension activities. Both promote farmer interest groups around specific crop and livestock activities, farmer-to-farmer learning and knowledge sharing, and marketing partnerships with the private sector. Based on favorable evaluations of the first phase (including an estimated 25 percent increase in farmer incomes in most ATMA districts, far more than the 5 percent in most neighboring districts), the two programs are being scaled up to the national level, and similar initiatives are under way in many other countries, such as Tanzania.[80]

Mixing public and private. Other new approaches recognize the significant private-good attributes of many extension services, such as technical advice delivered by processors and wholesalers to farmers producing high-value crop and livestock products under contract (chapter 5). Mixed public-private systems involve farmer organizations, NGOs, and public agencies contracting out extension services. The various approaches are now often found alongside each other, in a shift from a "best practice" or "one-size-fits-all" to a "best fit" approach to particular social and market conditions. For example, approaches based on public funding but with involvement of the local government, private sector, NGOs, and producer organizations in extension delivery may be most relevant to subsistence-oriented farmers (table 7.3). With agricultural commercialization, various forms of private cofinancing are appropriate, through to full privatization for some services. In all these efforts to make agricultural innovation systems more demand driven, there is a need to pay attention to how women's demands can be better represented, accommodating their time constraints (in, say, participating in farmer organizations), and employing them in advisory services to increase effectiveness of service delivery.[81]

As in research, building demand is part of successful extension. Management may become the responsibility of farmer or agribusiness organizations rather than local governments. Extension can still be publicly funded, but funds can flow through farmer organizations that have a controlling interest in fund allocation (figure 7.3). Farmer organizations, in turn, may contract out extension services to private providers and NGOs, as in Uganda's National Agricultural Advisory Services, viewed by farmers as working well.[82] Another approach is to have a private company and the state extension system jointly finance and provide advisory services, especially for agrochemical inputs, as in Madhya Pradesh, India.[83]

Farmer to farmer. Extension methods have also become more diverse, including farmer-to-farmer extension. Informal networks among farmers have always been powerful channels for exchanging information and seeds. Several programs are formalizing and linking such networks for

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Table 7.3 Ways of providing and financing agricultural advisory services

	Source of finance for the service				
Provider of the service	**Public sector**	**Farmers**	**Private firms**	**NGOs**	**Producer organizations (POs)**
Public sector	Public sector advisory services with decentralization	Fee-based services	..	NGOs contract staff from public extension services	POs contract staff from public extension services
Private firms	Publicly funded contracts to service providers	Fee-based services or by input dealers	Information provided with input sales or marketing of products	..	POs contract staff from private service providers
NGOs	Publicly funded contracts to service providers	Fee-based services	..	NGOs hire staff and provide services	..
Producer organizations	Public funds managed by farmer organizations	..	..	..	POs hire extension staff to provide services to members

Source: Birner and others (2006).
n.a. = not applicable.
.. = negligible in practice.

may also restrict competition in seed markets and reduce options for farmers, because public research organizations and national seed companies may not be able to pay the high cost of regulatory clearance (estimated at more than $1 million for the first Bt cotton varieties in India).

In setting the regulatory standards, decision makers must weigh public risk perceptions and degrees of risk tolerance, which differ among societies. Despite the absence of proven risks, the precautionary approach calls for a broad assessment of the technology's potential risks and benefits in the wider food and ecological system. Risk assessment must also consider the consequences and risks of *not* using transgenics.[26] For example, transgenics offer a powerful tool for nutritional enhancement that may save lives (Golden Rice) or help farmers adapt to climate change through faster integration of genes for drought- and flood-tolerance.

Countries and societies ultimately must assess the benefits and risks for themselves and make their own decisions. The international development community should stand ready to respond to countries calling for access to modern technologies, as in the recent declaration of the African Union.[27] It should be prepared to meet requests to fund the development of safe transgenics with pro-poor traits and to underwrite the high initial costs for their testing and release. If a new wave of safe and pro-poor technologies is developed and accepted, the regulatory costs should fall sharply.

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Land degradation and deforestation in less-favored areas reduce agricultural productivity and cause the loss of other valuable ecosystem services, including biodiversity habitats. Land degradation is most severe in such hotspots as the foothills of the Himalayas; sloping areas in the Andes, southern China, and Southeast Asia; rangelands in Africa and Central and West Asia; and the arid lands of the Sahel. Most land degradation is the result of wind and water erosion.[54] Soil-nutrient mining resulting from shortening of fallows and very low use of fertilizer is endemic across much of Sub-Saharan Africa. Overgrazing and degradation of pastoral areas are widespread in much of the steppe of North Africa, the Middle East and Central Asia, and the Sahel.

Estimates of the global extent of soil degradation and its productivity impact are scarce and debated. In Sub-Saharan Africa, estimates of productivity losses are generally in the range of 1 percent a year or less,[55] but in extensive areas in Kenya, Ethiopia, and Uganda, they are higher. According to near-infrared spectrometry data, about 56 percent of the land is moderately to severely degraded in the Nyando River Basin in Kenya.[56] On a national scale, costs of land degradation in Kenya and Zambia into losses of 3.8 percent of gross domestic product (GDP).[57] Soil degradation tends to be a greater problem in upper watershed areas with steep slopes. Intensive grazing has led to gully erosion and the loss of 5 percent of productive area in Lesotho over the course of about 30 years,[58] and in Turkey's Eastern Anatolia region, erosion affects more than 70 percent of cultivated land area and pastures.

Soil erosion in upper watersheds causes downstream sedimentation and secondary salinization (through salts in irrigation water) in many irrigated areas. For example, in the Tigray region of Ethiopia, soil erosion in upper catchments halved the storage capacity of reservoirs within five years of construction. In Morocco, soil erosion reduced storage capacity of 34 large reservoirs by about 0.5 percent per year. According to one set of estimates, the replacement cost of the storage capacity lost from sedimentation globally could reach $13 billion a year.[59]

The expanding agricultural frontier is the leading cause of deforestation, even though not all conversion and degradation of forest cover is associated with extensive agriculture. Deforestation is occurring most rapidly in the remaining tropical moist forests of the Amazon, West Africa, and parts of Southeast Asia (map 8.2). Deforestation in mosaic lands[60] (where small clumps of forest are embedded in otherwise intensively cultivated agricultural systems, often in close proximity to urban centers) is a small contribution to the overall forest loss, but these forests are important biodiversity habitats and biological corridors.[61]

Because more than half of all species exist primarily in agricultural landscapes outside protected areas, biodiversity can be preserved only through initiatives with and by farmers. This dependence of biodiversity on agricultural landscapes is explicitly recognized in the concept of ecoagriculture (an integrated approach to agriculture, conservation, and rural livelihoods within a landscape or ecosystem context).[62]

In many less-favored regions, population growth is placing enormous pressure on the natural resource base. Until a few decades ago, natural resources were commonly abundant and, once used, could recover through fallows and shifting cultivation. Many of the more fragile lands were not farmed at all or were grazed by nomadic herders. Sparsely settled forests provided hunting and gathering livelihoods for tribal peoples. Today, many of these lands support moderate to high population densities, providing food, fuelwood, water, and housing. Without adequate increases in land or animal productivity to secure their livelihoods, farmers expand their crop areas by shortening fallows and clearing new land—much of which is environmentally fragile and easily degraded—and add livestock to already-overstocked pastoral areas. Sometimes intensification can help reduce this pressure (box 8.5). In transforming and urbanized countries, out-migration is an important livelihood option, but two consequences are an increase in women farmers and a general aging of the farm workforce in many of these areas (chapter 3).

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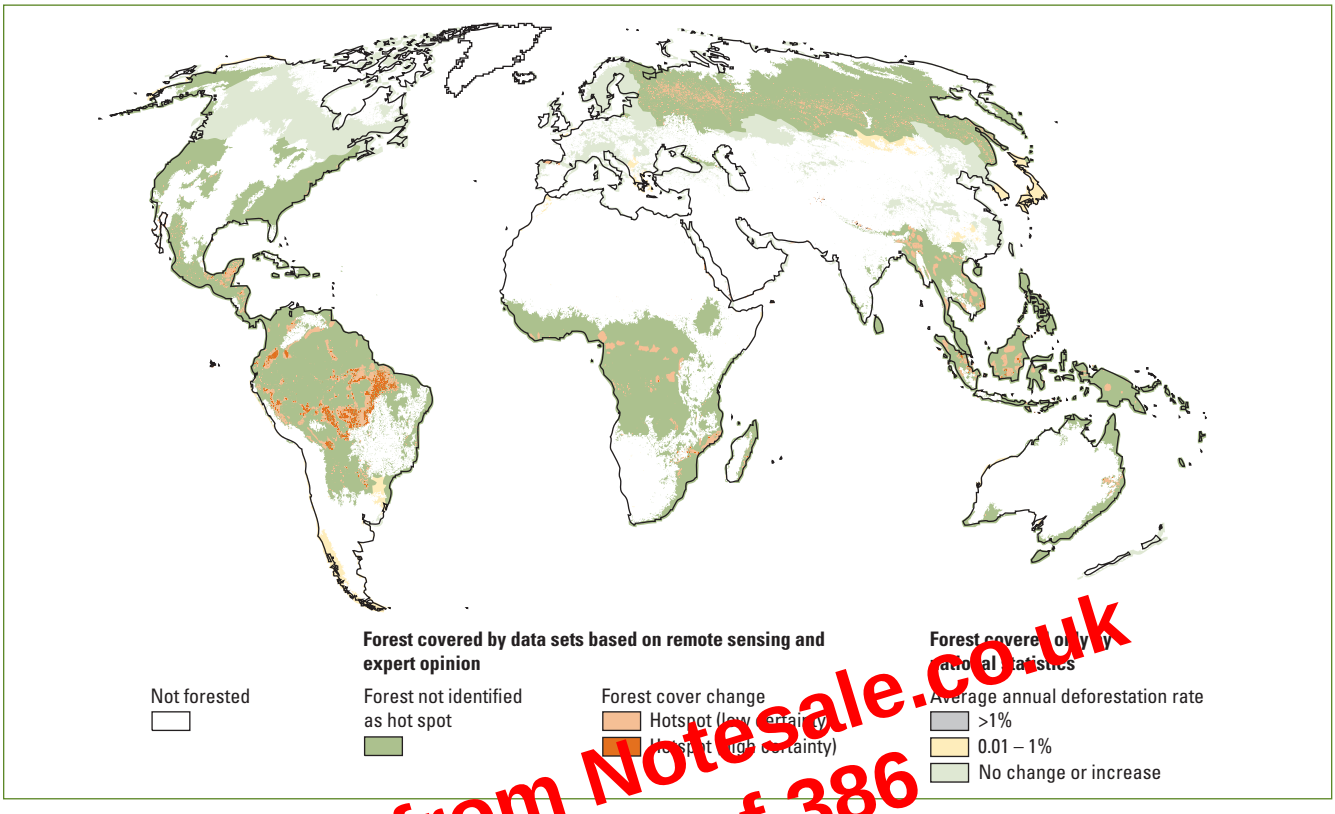
Map 8.2 Many deforestation hotspots are in tropical areas



Source: Lepers and others 2005. Reprinted with permission, © American Institute of Biological Sciences.
Note: Areas are defined as hotspots when deforestation rates exceed threshold values, as estimated from either available deforestation data or from expert opinion.

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Strategies for less-favored areas

Public policy interventions to reduce poverty and preserve the environment are warranted in many less-favored regions. Many such interventions have been neglected because of the perception that rates of return on public investments are better in high-potential areas—as was true during the early phases of the green revolution in Asia and as may be true in Africa today. But public investments in roads, education, irrigation, and some types of research and development (R&D) can produce competitive rates of return[63] and positive outcomes for poverty and the environment in less-favored areas. However, some policy interventions aimed at reducing poverty can result in important tradeoffs between poverty and the environment—new road development is a major cause of deforestation.[64]

The form of policy interventions should depend on the type of less-favored region targeted and on the national economic context. The diversity on both counts is considerable. Options include encouraging more out-migration, promoting income diversification into nonfarm activities, increasing recurrent expenditure on safety nets, supporting more intensive agricultural development where it is profitable to do so, and introducing payments for environmental services. Nonagricultural options are generally more viable in transforming and urbanized countries with dynamic nonagricultural sectors—and less so in poor agriculture-based countries with stagnant economies.

Agricultural development in less-favored regions is constrained to varying degrees by fragile, sloped, and already-degraded soils; erratic and low rainfall; poor market access; and high transport costs. Typically a shift to more intensive agricultural production systems that can raise productivity and reduce or reverse the need for further crop area expansions is required. The challenge is to do this profitably while ensur-

BOX 8.7 *Two tales of community-driven management, watersheds, and pastures*

Environmental sustainability and income trade off in Eastern Anatolia

Soil erosion is one of the most serious problems affecting the sustainability of agriculture in Turkey because as much as a third of the cultivated land and extensive areas of rangelands and mountain pastures have steep slopes. About 16 million hectares, or more than 70 percent of the cultivated and grazed land area in Turkey, are affected by erosion, especially in the upper watershed of the Euphrates River in Eastern Anatolia. Extensive livestock systems are a main culprit. Poor rangeland management has led to extensive soil degradation, limiting the scope for natural forest regeneration, and contributing to greatly increased soil sedimentation.

The Eastern Anatolia Watershed Rehabilitation Project, with strong community involvement, has helped slow soil and forest degradation in the region. It closed forest grazing. It terraced and reforested degraded hillsides. It intensified livestock production and horticulture in the valley. And it compensated for the loss of income from extensive livestock systems. Without taking into account the eventual benefits of reduced sedimentation downstream, the project had an estimated rate of return of about 16 percent and is widely judged successful.

Many households have seen their income rise, but the poverty impact of the project has been ambiguous. The main beneficiaries from small-scale irrigation are households with access to springs, the main source of water in the project area. The majority of the livestock are owned by wealthier households with more land and greater ability to switch to intensive livestock systems. Immediate project benefits have been linked to land and water-source ownership, while forest income from fuelwood collection and timber sales—from which the poor could benefit to the same degree—will be received only in the long term, after the restoration of forest cover on the hillsides.

Reconciling environmental sustainability with income generation for the poor has been difficult because of uncertainty about the size and timing of eventual conservation benefits, and unequal access to productive resources in areas of intensive cultivation. After the initial willingness of the communities to agree to forest closures in return for the immediate compensatory benefits, pressure to reopen closed areas for grazing is expected to escalate.

Comanagement of pastures raises herder incomes in Mongolia

Mongolia has the largest remaining contiguous area of common pastureland in the world, home to 172,000 herding families. Pasturelands have never been privately owned, but customary rights governed the traditional pasture management system prior to the period of central planning. With transition to a market economy, private livestock ownership was reintroduced but no longer was governed by traditional institutions. Rapid growth in the number of herder families (more than doubling between 1992 and 1999) and livestock (by about 30 percent) has caused severe pasture degradation. Overgrazing and desertification may affect about 76 percent of pastureland. A successful comanagement approach between state and communities has received active government and NGO legal and technological support (using GIS systems and community mapping) and has begun to fill the institutional vacuum in pasture management.

Adoption of community-based pasture management practices tends to be higher in areas with limited pasture capacity, far away from cities and market centers, and in herder communities with strong social relations. The most problematic issue is resolution of disputes between the herders from different communities. As suggested by a survey of selected sites, incomes have risen between 9 percent and 67 percent during the three years since the beginning of the project. Improvement and protection of community hayfields, establishment of hay and fodder funds, and preparation of additional fodder for the winter are reported to have helped reduce animal losses by an average of 6–12 percent.

Sources: World Bank 2004f; Ykhanbai and Bulgan 2006.

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organizational culture or human resources to support participatory approaches. New specialist structures may have to be created, cutting across disciplines and relevant ministries. Alternatively, organizations from the private sector and civil society could be contracted to link central policies and procedures with practices on the ground.

Training and leadership support from outside actors (NGOs) have often succeeded in filling a void in leadership and technical skills in the community and government ministries, even within the context of an institutional vacuum in the trasition period in Mongolia (as in Mongolia, box 8.7).

Sometimes well-intentioned interventions to redress poverty in less-favored areas may backfire and undermine traditional ways of managing common property natural resources. For example, government attempts to help pastoral communities manage droughts and grazing areas in the agropastoral systems of the Middle East and North Africa ended up further degrading farmland and rangeland (box 8.8).

So, despite their promise, community approaches are not a panacea on their own. Acute resource loss, irreconcilable social conflict, a lack of capacity, or simply the absence of a valid community often requires more centralized interventions or at least support from outside agencies. Resolving conflicting interests between pastoralists and agriculturalists in many dryland areas (as in Sudan, Lebanon, and Mongolia), or managing and controlling water resources beyond the immediate watershed, may demand more than what community approaches can deliver. Much remains to be learned about the conditions for them to succeed and be scaled up.

Given the large externalities in less-favored regions, promoting sustainable farming and reducing poverty do not always

watersheds with a downstream hydropower plant (usually most vulnerable to sedimentation) or domestic water suppliers (affected by contamination and sedimentation) are good candidates. Large basins with multiple users, where downstream impacts are the cumulative impact of myriad upstream uses, are poor candidates. Using PES for biodiversity conservation is also difficult because of the lack of stakeholders with strong financial interests.

Conclusions

Since the 1992 Earth Summit in Rio, it is generally accepted that the agriculture and environment agendas are inseparable. Degradation of natural resources undermines the basis for agricultural production and increases vulnerability to risk, imposing high economic losses from unsustainable use of natural resources. The agriculture-for-development agenda will not succeed without more sustainable use of natural resources—water, forests, soil conservation, genetically diverse crops and animal varieties, and other ecosystem services. At the same time, agriculture is often the main entry point for interventions aimed at environmental protection. It is the main user of land and water, a major source of greenhouse gas emissions, and the main cause of conversion of natural ecosystems and loss of biodiversity. The intricate links between the agriculture and environment agendas require an integrated policy approach.

The large environmental footprint of agriculture on natural resources remains pervasive, but there are many opportunities for reducing it. Getting the incentives right is the first step towards sustainability. Improving natural resource management in both intensive and extensive farming areas requires removing price and subsidy policies that send the wrong signals to farmers, strengthening property rights, providing long-term support to natural resource management, and developing instruments to help manage increased climate risks.

Better technologies and better ways of managing water and modern farm inputs are now available to make intensive farming more sustainable. But their widespread adoption is hindered by inappropriate pricing policies, insufficient training of farmers, and a failure to manage negative externalities. In less-favored regions, new and promising technologies are emerging, but their adoption is complicated by the length of time before payoffs are realized and the need for collective action. One of the more promising recent developments has been devolution of control to local organizations for community natural resource management.

On the positive side, many opportunities exist to harness agriculture's potential as a provider of environmental services. The emergence of new markets and programs for payments for environmental services is a promising approach that should be pursued by local and national governments as well as the international community. Agriculture's role is central to mitigation of climate change and protection of biodiversity, and carbon financing may become an important source of funding for these global public goods (chapter 11). But in many cases, development of markets for environmental services at the local level, with close proximity between service providers and consumers of these services, may be more promising than putting into place national payment schemes when governance and fiscal capacities are weak.

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Table 9.1 Rural households' diverse sources of income

	Income shares				
	Agricultural income		Nonagricultural income		
	Self-employed	Wage	Wage	Self-employed	Transfers and others
Sub-Saharan Africa					
Ethiopia 1999	0.74	← 0.03[b] →		0.05	0.18
Ghana 1998[a]	0.55	0.02	0.15	0.22	0.05
Malawi 2004[a]	0.67	0.08	0.12	0.10	0.04
Nigeria 2004[a]	0.55	0.13	0.19	0.12	0.01
Zambia 2003	0.65	← 0.06[b] →		0.10	0.17
South Asia					
Bangladesh 2000[a]	0.15	0.13	0.21	0.22	0.29
Nepal 1996[a]	0.35	0.18	0.19	0.15	0.14
Pakistan 2001[a]	0.43	0.06	0.24	0.12	0.17
East Asia and the Pacific					
Indonesia 2000[a]	0.17	0.09	0.34	0.23	0.16
Vietnam 1998[a]	0.35	0.04	0.08	0.49	0.04
Europe and Central Asia					
Azerbaijan 2001	0.53	←	0.27[b]	→	0.20
Albania 2005[a]	0.29	0.04	0.25	0.21	0.23
Bulgaria 2001[a]	0.18	0.18	0.19	0	0.45
Kyrgyzstan 1998	0.42	← 0.20[b] →		0.09	0.30
Latin America and Caribbean					
Ecuador 1998[a]	0.29	0.18	0.25	0.2	0.04
El Salvador 2001	0.17	0.09	0.32	0.2	0.18
Guatemala 2000[a]	0.25	0.22	0.21	0.14	0.19
Nicaragua 2001[a]	0.22	0.21	0.31	0.17	0.10
Panama 2003[a]	0.13	0.15	0.44	0.16	0.12
Peru 1997	0.49	0.07	←	0.44	→ —

Sources: World Bank (2005p) for Zambia, World Bank (2007) for Ethiopia, World Bank (2003e) for Kyrgyzstan, World Bank (2003a) for Azerbaijan, World Bank (2005k) for El Salvador, Escobal (2001) for Peru, Davis and others (2007) for the remaining countries.
a. Using comparable methodology for calculating incomes (see box 3.2).
b. May include two or more sources of income.
— = not available

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The structure of rural employment shows striking differences across developing regions (table 9.2). Off-farm work in agriculture and nonagriculture employs 47 percent to 49 percent of adult males in Latin America and the Caribbean, South Asia, and in the Middle East and North Africa, and 38 percent in East Asia and the Pacific.[1] In Sub-Saharan Africa, it employs 20 percent of adult males.

Off-farm work is also important for women, employing 25 percent of rural adult females in East Asia and the Pacific, Europe and Central Asia, and Latin America and the Caribbean. In South Asia, 11 percent of women participate in the agricultural wage labor market, but even fewer work in rural nonfarm activities. This contrasts with East Asia and the Pacific and Latin America and the Caribbean, where women participate less often in the agricultural wage labor market and more in the rural nonfarm economy. In Sub-Saharan Africa, statistics from national surveys report low female wage labor, but the emerging literature suggests that many women, particularly poor women, rely increasingly on agricultural wage labor.[2]

The supply of female labor is both a household decision and a determinant of the household's balance of power.[3] Changing the balance of power as women enter the labor force in turn changes the household's decision. A traditional society in which women do not work outside the farm can remain that way for a long time, even as conditions outside the household, such as female wages, are changing. But once women start working, the change can be very rapid, with lots of women coming out of their homes to be active in the labor market. This suggests that there can be high payoffs to one-time interventions by governments or nongovernmental organizations that assist women's entry into the labor force: once it has started, it will stick as a new self-fulfilling pattern has been established.

Table 9.2 Rural employment by sector of activity, selected countries
% of adults

Sector of activity	Sub-Saharan Africa	South Asia	East Asia and the Pacific (excl. China)	Middle East and North Africa	Europe and Central Asia	Latin America and the Caribbean
Men						
Agriculture, self-employed	56.6	33.1	46.8	24.6	8.5	38.4
Agriculture, wage earner	4.0	21.8	9.4	9.4	10.1	20.9
Nonagriculture, self-employed	6.9	11.8	11.5	8.8	7.4	9.2
Nonagriculture, wage earner	8.6	15.4	17.4	30.9	31.3	17.2
Nonactive or not reported	21.7	14.6	14.4	26.0	27.5	13.4
Women						
Agriculture, self-employed	53.5	12.7	38.4	38.6	6.9	22.8
Agriculture, wage earner	1.4	11.4	5.7	1.0	5.4	2.3
Nonagriculture, self-employed	6.8	2.9	11.3	2.8	1.6	11.7
Nonagriculture, wage earner	2.8	2.7	8.4	3.9	18.1	11.5
Nonactive or not reported	32.7	64.3	35.5	53.3	46.9	51.2

Source: WDR 2008 team.
Note: Data are for 2000 or the nearest year. Based on representative household surveys for 66 countries, which accounts for 55 percent of the population in Sub-Saharan Africa, 97 percent in South Asia, 66 percent in East Asia and the Pacific (excluding China), 74 percent in Europe and Central Asia, 47 percent in the Middle East and North Africa, 85 percent in Latin America and the Caribbean. See endnote 19, chapter 3, page 272 for the methodology and the list of countries.

Agricultural wage employment

Agriculture is a large and growing employer of wage labor

Assessing the correct number of paid workers in agriculture is difficult because in many contexts agricultural wages complement self-employment. Labor Force Survey and Population Census data that classify workers by their main activity typically miss large numbers of casual wage earners. In rural Africa, for example, recent in-depth studies suggest that participation in the agricultural labor market is far greater than large-scale household surveys suggest, with agricultural wage employment particularly important for poor and relatively landless households. Data from all regions suggest a positive correlation between national per capita income and wage labor's share in agricultural employment (figure 9.2).

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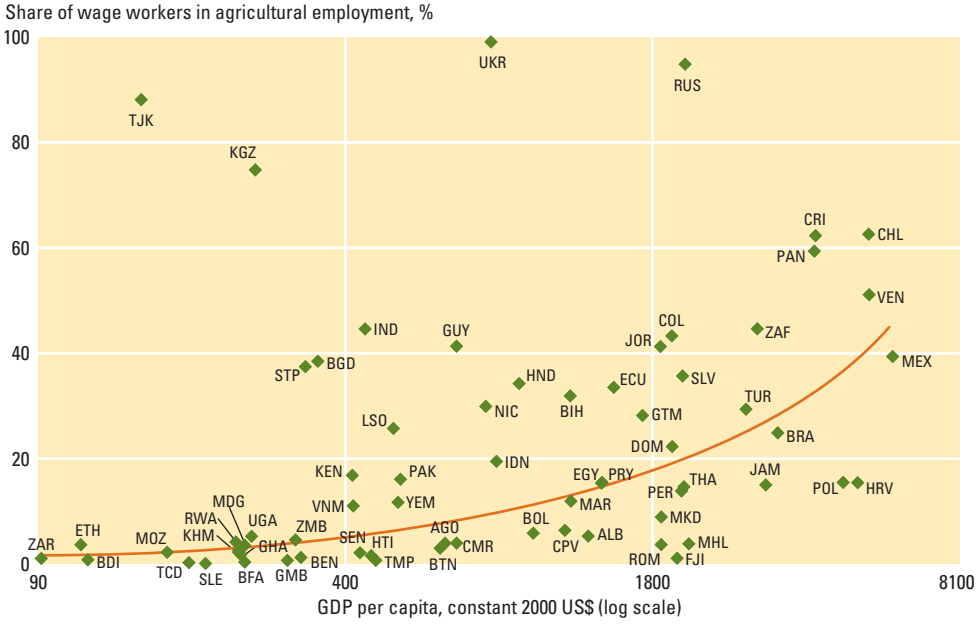
Figure 9.2 The share of wage workers in agricultural employment rises with per capita income



Sources: WDR 2008 team; World Bank 2006z.
Note: See table 9.2. The list of 3-letter codes and the countries they represent can be found on page xviii.

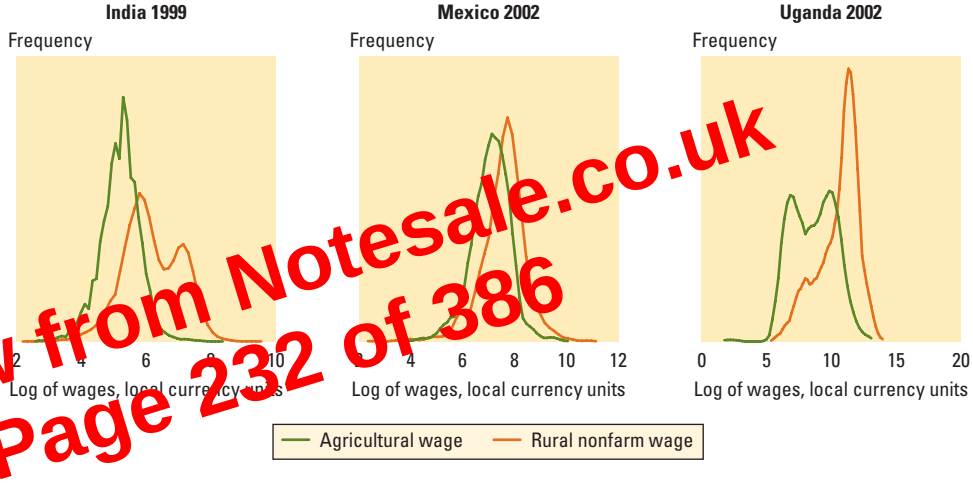
Wages and earnings in the rural labor market

Wages are higher in the rural nonfarm sector than in agriculture, mostly because of skill differences

Wages are considerably higher in rural nonfarm employment than in agricultural wage employment (figure 9.8). In Mexico the average wage in nonagriculture is 56 percent higher than in agriculture. Both sectors frequently exhibit a bimodal wage distribution, revealing dualism.

How much of this wage difference simply reflects the fact that lower-skill workers take agricultural jobs? For unskilled workers (defined as workers with no schooling), much of the difference in distribution is eliminated, especially in Uganda and India (figure 9.9). Even the remaining difference in wage distribution cannot prove any fundamental sectoral difference in labor compensation, because workers choose their sector of activity and in so doing may select that sector according to other skills not captured by education.

Figure 9.8 Wages are much higher in rural nonfarm employment than in agricultural employment in India, Mexico, and Uganda



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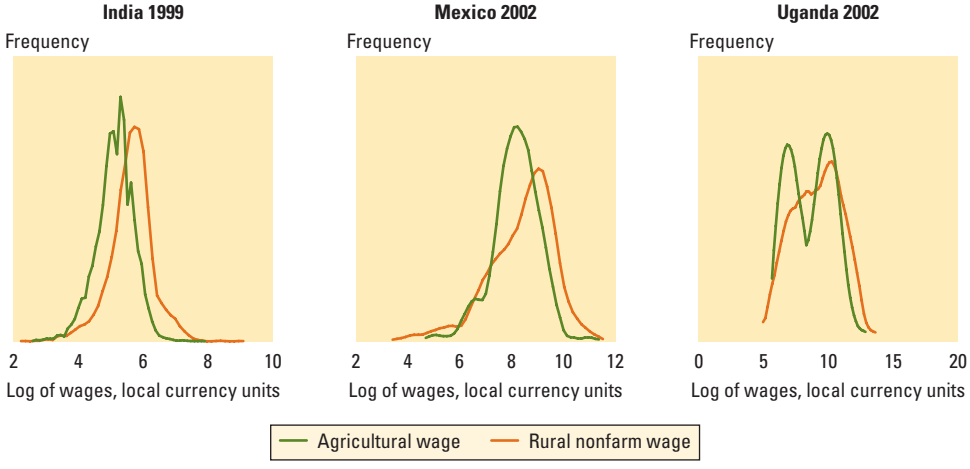
Source: WDR 2008 team.
Note: See note for table 9.2.

Figure 9.9 For workers with no education, wages in agricultural and rural nonfarm employment are not so different across sectors



Source: WDR 2008 team.
Note: See note for table 9.2.

Table 9.3 Average years of education of rural 18–25 year olds, selected countries

	Sub-Saharan Africa	South Asia	East Asia and the Pacific (excl. China)	Middle East and North Africa	Europe and Central Asia	Latin America and the Caribbean
Urban						
Men	8.5	7.3	10.1	9.3	10.6	8.7
Women	7.6	6.5	10.1	9.2	11.1	8.9
Rural						
Men	5.5	5.3	8.0	6.8	9.7	5.7
Women	4.3	3.0	7.7	5.0	10.0	5.8

Source: WDR 2008 team.
Note: Calculations of average education levels for 18–25 year olds based on 58 countries (excluding China and India) with recent household survey data with information on years of education, weighted by 2000 population. See Background Note by WDR 2008 team (2007) for details.

Low levels of education in the rural labor force tend to reproduce themselves over generations—poorly schooled parents tend to have poorly schooled children, who then have fewer opportunities for higher income. Poverty may affect the ability to continue education—and so is a direct factor in reducing household investment in education. Poverty and low education thus become transmitted across generations.

Returns to education are low in agricultural employment, higher in the rural nonfarm economy and in cities

A primary determinant of these schooling gaps is the low rate of return to schooling in traditional agriculture. In Bukidnon, Philippines—where most of the employment is in harvesting and is paid piece rate—raising the level of schooling has no effect on wages.[42] Similar results are found in many other contexts.

But as famously argued by T. W. Schultz (1975), rates of return are higher in dynamic settings, where technological change and a more complex environment require more difficult decisions. During the green revolution in India, education had higher returns in regions with higher rates of adoption of the new seeds.[43] In Taiwan (China), education was also more valuable for production in areas with greater weather instability.[44] Similarly, the return to schooling in rapidly growing economies is significant. For adults in Indonesia, the return to one additional year of education is estimated at 13 percent, a value close to other international estimates.[45]

There is also ample evidence of a correlation between education and the access and return to nonfarm employment. In China and India, better education enables rural workers to find high-paying nonfarm employment, whereas a lack of education tends to force them into agricultural employment or low-wage nonfarm employment at best.[46] Similarly, in Ghana, Peru, and Pakistan, returns were higher in nonfarm than in farm activities.[47] Mirroring these studies, the returns to education across countries are consistently higher in urban areas than in rural markets, particularly beyond basic schooling.[48] Studies in Bolivia and Turkey also show returns to education to be higher close to urban centers, suggesting that off-farm opportunities enhance the value of schooling.

These higher returns in the nonagricultural economy will influence the schooling decisions of rural households, if the potential for employment exists. In the Philippines and Thailand, rural households invest a major portion of their additional income in schooling children who later engage in rural nonfarm jobs or migrate to cities to seek more lucrative employment.[49] In India, rural-to-urban migration significantly increases the rate of return to rural schooling at levels beyond that of middle school. Rural parents appear to know this: urban rates of return affect decisions to school their children to higher levels.[50]

The low level of rural schooling may also reflect the low quality of rural schools, relative to those in urban areas.[51] Rural-urban differences in school quality manifest themselves in differences in school

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A final word on rural labor markets and migration: the need for policy attention

As agriculture intensifies and diversifies, and economies develop, well-functioning rural labor markets and migration are crucial in reducing rural poverty and dampening rural-urban income disparities. But stunningly little policy attention has been given to the structure, conduct, and performance of rural labor markets and how they ease successful transitions out of agriculture. Certainly, special attention is needed to provide training to workers to take good jobs, to adjust labor legislation that protects them but does not stifle employment, and to help migrants find good employment elsewhere. Interventions are also needed on the demand side of the labor market, especially a better investment climate, and on safety nets for the disadvantaged. Compared with other aspects of the rural economy, much is left to be explored in understanding how to improve rural labor markets.

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focus H *The two-way links between agriculture and health*

Agriculture can pose major threats to health through increased incidence of malaria linked to irrigation, pesticide poisoning, and diseases transmissible from farm animals to humans in intensive livestock systems. And some of the developing world's major health problems, such as AIDS and malaria, can have disastrous effects on agriculture, through the loss of labor, knowledge, and assets. So coordinating agriculture and health interventions can yield significant welfare benefits for the poor in developing countries.

Agriculture affects health, and health affects agriculture. Agriculture supports health by providing food and nutrition for the world's people and by generating income that can be spent on health care. Yet agricultural production and food consumption can also increase the risks of water-related diseases (malaria) and foodborne diseases—as well as health hazards linked with specific agricultural systems and practices, such as infectious animal diseases (avian flu, brucellosis), pesticide poisoning, and aflatoxicosis.[1]

Illness and death from AIDS, malaria, tuberculosis, and other diseases reduce agricultural productivity through the loss of labor, knowledge of productive adults, and assets to cope with illness. Because the majority of the world's poor work in agriculture and the poor suffer disproportionately from illness and disease, taking an integrated view of agriculture and health is necessary to address poverty and promote agriculture for development.

The lack of coordination of policy making between agriculture and health[2] undermines efforts to overcome ill health among the rural poor and gives short shrift to agriculture's role in alleviating many of the world's most serious health problems. Considered here are malaria, pesticide poisoning, AIDS, and diseases transmitted from animals to humans. The important link through food security and nutrition is discussed elsewhere (focus C).

Malaria

Every year an estimated 300 to 500 million people get sick from malaria, and more than 1 million die from it, many of them children.[3] Characteristics of agricultural production systems, such as crop rotation, the presence of livestock, and the proximity of villages to fields and water sources, affect malarial risk. In particular, irrigation can create conditions that favor parasitic vectors and facilitate disease transmission.[4] In Ethiopia researchers found malaria prevalence to be higher in those villages close to government-promoted micro dams.[5] But in Tanzania malaria was less prevalent in irrigated areas, where rice-growing improved incomes so that farm households could afford insecticide-treated nets.[6]

The impact of malaria on agricultural productivity has a long history. In the first half of the 20th century it was the leading public health problem in Italy, much as in many developing countries today. Absences resulting from illness and death were common during the agricultural season, leaving millions of hectares of Italy's most fertile land fallow.[7] In the developing world malaria contributes to [illegible] serious negative impacts on productivity. One study of farmers engaged in intensive [illegible] production in Côte d'Ivoire showed that malaria suffering produced about half the yields and [illegible] the incomes that healthy farmers did.[8]

Malaria can be controlled by modifying or manipulating agricultural water systems. In the early 1900s better maintenance and improvements of irrigation and drainage systems reduced malaria cases by more than half in the Arab Republic of Egypt, India, and Indonesia.[9] A case study in India in 1940–41 showed that intermittent irrigation of rice fields reduced malaria contraction from 48 percent to 4 percent. Today, there are many options to mitigate the negative effects of irrigation while maintaining agricultural productivity. They include providing location-specific knowledge of drainage techniques, intermittently wetting and drying rice fields, alternating rice with a dryland crop, and using livestock as "bait" for mosquitoes.[10]

Pesticide poisoning

Pesticides can increase agricultural productivity, but when handled improperly, they are toxic to humans and other species. In addition to food safety concerns, unintentional poisoning from exposure kills an estimated 355,000 people each year, two-thirds of them in developing countries.[11] Costs of medical treatment, lost labor, and lower long-term productivity can be high.

Many farmers in developing countries overuse pesticides and do not take proper safety precautions because they do not understand the risks and fear smaller harvests. Making matters worse, developing countries seldom have strong regulatory systems for dangerous chemicals: Pesticides banned or restricted in industrial countries are used widely in developing countries.[12]

Farmer perceptions of appropriate pesticide use vary with the setting and culture. It is common in Latin America for farmers to believe that exposure to pesticides increases their tolerance and makes them stronger and more able to work, often leading to very high exposure. In a potato-farming community in Carchi, Ecuador, researchers documented 171 pesticide poisonings per 100,000 people per year in the late 1990s—among the highest in the world. Pesticide poisoning there was the second largest cause of death for men (19 percent) and fourth for women (13 percent). The high health care costs and lost work time outweighed the benefits of pesticide use. Farmers who focused on naturally preventing or suppressing pests and used pesticides only when necessary substantially reduced exposure while maintaining yields and increasing profitability.[13]

In the Philippines in 1989–91 farmers commonly applied two insecticide doses[14] per growing season, elevating their health costs by an average of 70 percent above those who did not use pesticides. The yield benefits from pesticide use were more than offset by the cost of illness.[15]

To limit the health and economic costs of pesticide use, policy makers can finance training and information campaigns and reduce accessibility to the more dangerous agrochemicals through banning or taxing their use. Natural control and integrated

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BOX 10.2 *Comprehensive Africa Agricultural Development Program*

The CAADP developed by the African Union through its NEPAD initiative aims to help African countries reach a higher path of economic growth through agricultural-led development that eliminates hunger, reduces poverty and food insecurity, and enables expansion of exports. CAADP provides a common framework (rather than a set of supranational programs) reflected in the key principles and targets defined and set by the Africa Heads of State and Governments, in order to (i) guide country strategies and investment programs, (ii) allow regional peer learning and review, and (iii) facilitate greater alignment and harmonization of development efforts.

The main principles and targets that define the CAADP framework are the following:

- agriculture-led growth as a main strategy to achieve the Millennium Development Goal of poverty reduction
- a 6-percent average annual agricultural growth rate at the national level
- an allocation of 10 percent of national budgets to the agricultural sector (compared with the current 4 percent)
- use of regional complementarities and cooperation to boost growth
- policy efficiency, dialogue, review, and accountability—principles shared by all NEPAD programs
- partnerships and alliances to include farmers, agribusiness and civil society communities
- implementation by individual countries, coordination by regional economic communities, and facilitation by the NEPAD secretariat

Consistent with the NEPAD principles of ownership and accountability, the CAADP process at the country level is initiated on a demand-driven basis, through consultation with regional economic communities and their member countries. It is a three-part process:

- A country assessment of progress and performance toward CAADP targets and principles is completed. The assessment includes identifying the gaps in alignment of policies, strategies, and investments, including development assistance, to the growth and spending targets.
- A country CAADP compact is established that includes needed actions and commitments by national governments, the private sector, the farming community, and development partners active in the country to close the gaps identified in the country assessment. The compact guides country policy and investment responses to meet the 6-percent agricultural growth targets, the planning of development assistance to support country efforts, and the public-private partnerships as well as business-to-business alliances to raise and sustain the necessary investments in the agribusiness and farming sectors.
- Policy dialogue and review arrangements are set up to monitor commitments and progress, including institutional arrangements for coordination and review, and mechanisms and capacities to facilitate the transition to evidence-based and outcome-oriented policy planning and implementation.

The shared CAADP framework around common principles and targets can help stimulate and broaden performance benchmarking, mutual learning, and harmonization of country development efforts.

Currently, two of the main regional economic communities—the Common Market for Eastern and Southern Africa (COMESA) and the Economic Community of West African States (ECOWAS), which together cover about 40 African countries—have taken strong leadership and ownership of the agenda and are now working with their member states on accelerating its implementation. About a dozen countries in the two regions are preparing for country roundtable discussion following the three-part process described above. The process is expected to be completed in the two regions by the end of 2008.

Source: NEPAD secretariat 2005, 2006.

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with just two staples in Asia during its green revolution—rice and wheat.[2] Moreover, livestock are important in most farming systems. Heterogeneity complicates the scientific task of discovery of new technologies, but also offers scope for a wide range of innovations.

Sub-Saharan agriculture depends overwhelmingly on the timing and quantity of rain. Only 4 percent of the arable land is irrigated, less than a fourth that of India at the dawn of its green revolution in the early 1960s. Dependence on rain not only increases heterogeneity of farming systems, but also increases the vulnerability to weather shocks and limits the ability to exploit known yield-enhancing technologies. Although present farming systems are largely rain fed, the continent has significant potential for storage of water and better water management.

Small and landlocked countries. The majority of the agriculture-based countries in Sub-Saharan Africa are small, making it difficult for them to achieve scale economies in research, training, and policy design. Small countries imply small markets, unless regional markets are better integrated. Nearly 40 percent of Africa's population lives in landlocked countries, in contrast to only 12 percent in other parts of the developing world.[3] Landlocked countries face transport costs that, on average, are 50 percent higher than in the typical coastal country.[4] Transport costs accounted for about one-third of the farmgate price of fertilizers in Malawi, Zambia, and Nigeria (chapter 6). High transport costs also make many staples imperfectly tradable, increasing price fluctuations and related risks to farmers, marketing agents, and consumers.

for environmental services. Regulation needs to be anchored in greatly improved governance, and payment schemes must be made financially sustainable, accountable to those who buy the services, and expanded over the continent.

Territorial development to create rural jobs. The rural nonfarm economy is a source of self-employment and wage employment, but it is highly dual, with high- and low-skill jobs and high- and low-value-adding enterprises. Promoting skills for high-productivity jobs can provide a pathway out of poverty. The Latin American countries are pursuing a distinctly territorial approach, promoting clusters of complementary firms in selected geographic locations. Local agricultural production systems can capitalize on the comparative advantages of a territory's agroecology, proximity to urban centers, or institutional and cultural or historical endowments. Territory-driven development projects go beyond community-driven development to create new economic opportunities based on scale, local synergies, and market access. This territorial approach to rural development is being pursued in Eastern Europe as well, building on rural links to towns and small cities.

Poverty reduction based on earned incomes requires a reassessment of governance mechanisms, institutions, and agents, many of them in disarray. Ministries of agriculture have to be redesigned to correspond to the new functions of the state and the transformation of agriculture in value chains. And civil society has to be engaged as an active participant in governance despite long-standing patterns of social exclusion rooted in deep inequalities.[29] This is a huge agenda (chapter 11). Improving governance for agriculture and rural areas must be a priority, requiring experimentation and learning.

Political, administrative, and financial feasibility

Effective implementation requires assessing the feasibility of the policy and investment instruments that make up the proposed agendas. Feasibility varies significantly by instrument, but also by country type, particularly the capacity to implement reform. Understanding the likely political, administrative, and financial hurdles to reforms is necessary for successful implementation. Different instruments have different levels of political, administrative, and financial feasibility, providing guidelines in composing agriculture-for-development agendas.

Political feasibility

Price and trade policy reform, land reform, and irrigation, while visible and able to enlist political support, always have gainers and losers. These gainer-loser conflicts make decisions more difficult. Agricultural research has fewer tradeoffs, but the impacts are often less immediate and less visible than other investments. Education and food programs have no or few losers, are highly visible, and usually have strong political support but they have costs that constrain implementation.

What can be done to improve political feasibility? When there are identifiable gainers and losers from reform, strategies can use research-based evidence for information and debate, identify administratively feasible complementary support programs to help the losers transit to other sources of income, and provide compensations—as in Mexico's PROCAMPO program to make the North American Free Trade Agreement (NAFTA) politically feasible through decoupled cash transfers. When reforms have delayed or less certain consequences, commitment devices for future support are important. Uganda legislated extension and research reforms through a National Agricultural Advisory Services Act and a National Agricultural Research Act, which committed the government to fund and implement them.

Administrative capacity

Capacity to implement is often low—particularly in agriculture-based countries. Many program designs have erroneously assumed much higher capacity to implement than exists. Others have put in place temporary capacity to assist with implementation rather than strengthening existing capacity. The result has been unsustainable

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Strengthening governance, from local to global

chapter 11

Agriculture remains one of the most promising instruments for reducing world poverty, as shown throughout this *Report*. Chapter 10 identified the main elements of agriculture-for-development agendas. This chapter discusses the crucial role of governance in supporting those agendas: What are the roles of the state, the private sector, and civil society in promoting agriculture for development? How can agricultural policy making and policy implementation be improved? What can decentralization and community-driven development (CDD) add? How can donors make development assistance to agriculture more effective? And what can the international community do to realize the global agriculture-for-development agenda?

Policy instruments outlined in chapter 10 that enjoy strong political support, such as providing infrastructure, services, and social safety nets, are demanding of administrative capacity and fiscal resources. Irrigation schemes that never worked and agricultural extension systems that have broken down are common examples of this problem. Policy instruments that do not pose these problems, such as removing subsidies that mainly benefit larger farmers, are politically difficult to pursue (chapter 4). This dilemma is aggravated by the governance challenges in developing countries: political and economic instability, limited voice and accountability, low state capacity, corruption, and poor rule of law (figure 11.1).

Governance problems tend to be more severe in agriculture-based countries, where the state is especially important for addressing market failures. These countries are often afflicted by conflicts and the postconflict challenges of rebuilding agriculture. Many countries face specific governance problems in rural areas, such as deeply entrenched political and social

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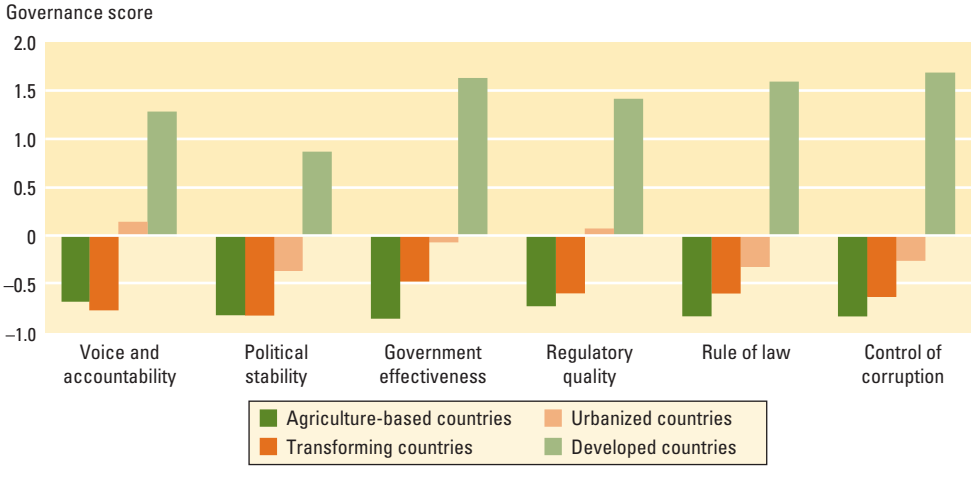
Figure 11.1 Agriculture-based and transforming countries get low scores for governance



Source: Kaufmann, Kraay, and Mastruzzi (2006).
Note: The governance indicators aggregate the views on the quality of governance provided by a large number of enterprise, citizen, and expert survey respondents in developed and developing countries.

production, irrigation, livestock, fisheries, and food are often dealt with by specialized ministries. These ministries have to engage a broad range of stakeholders, including the private sector, civil society, and donors in the formulation of integrated strategies. Consequently, policy makers and bureaucracies need new skills as facilitators and coordinators.

Regulation, too, has become more important and complex. States are asked to regulate biosafety, food safety, grades and standards, intellectual property protection, agricultural input quality, groundwater extraction, and environmental protection. The privatization of agricultural markets requires appropriate regulatory frameworks to maintain competitiveness (chapter 5). In addition, dozens of international agreements oblige countries to put many regulations in place, even when doing so is costly. Regulation is not, however, just a function of the public sector. The private sector can—and often does—engage in self-regulation and adopt corporate social responsibility practices that support the agriculture-for-development agenda.

Civil society—another way to strengthen governance

The third sector comprises producer organizations and other civil society organizations and can help to overcome market failures in agriculture while avoiding government failures. Collective action through producer organizations can facilitate economies of scale—for example, in input supply, extension, marketing, and managing common property resources, such as watersheds and irrigation systems. And the unique competencies of many nongovernmental organizations (NGOs) can be harnessed to deliver services, especially at the local government and community levels. NGOs can engage in standard setting, such as Fair Trade labeling. But collective action can also fail by excluding disadvantaged groups, with the benefits captured only by local elites.

A vibrant civil society strengthens public sector governance by giving political voice to smallholders, rural women, and agricultural laborers (chapter 1). Civil society organizations can monitor agricultural policy making, budgeting, and policy implementation. Civil society can hold policy makers and the public administration accountable and create incentives for change. To do all this, however, the freedom of association, the right to information, and the freedom of the press are crucial.

Ultimately, better governance is the outcome of a long-term political and social process, conditioned by a country's and region's history, embedded in its institutions, and driven by its social movements. It is the citizens of a country and their leaders who reform governance. Donors can only support those reforms.

Agricultural policy processes

Building coalitions

Political commitment to the agriculture-for-development agenda requires the formation of coalitions of stakeholders that support this agenda. At the national level, ministries of agriculture can help form such coalitions, but they need to overcome major challenges. One challenge is coordinating across different ministries. Because sectoral interests often dominate broader development objectives, creating high-level interministerial mechanisms can help, as in Uganda (box 11.2). Another challenge is managing participatory processes that involve a broad range of stakeholders, including donors. A related challenge is avoiding capture by large-scale farmers, who usually have more influence on ministries of agriculture than smallholders, and ensuring voice for disadvantaged groups, including women, tribal groups, and youth.

Although ministries of agriculture can coordinate stakeholders, producer organizations are key players in pro-agriculture coalitions (box 11.2). They are more effective if they are joined by parliamentarians, NGOs, and academics. Agribusiness can be an important partner in such coalitions, especially in transforming and urbanized countries (see focus D). In India, the agribusiness sector is one of the driving forces advocating more public spending on agriculture, knowing that it will benefit from accelerated agricultural growth. The private sector can use its expertise and

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Table 11.1 Types of global organizations and networks relevant for agriculture

Sector/specialization	Intergovernmental organizations	Other organizations
Specialized organizations in the agricultural sector	Food and Agriculture Organization of the UN International Fund for Agricultural Development World Organization for Animal Health World Food Program Global Donor Platform for Rural Development (including bilateral donors)	Global networks of farmers organizations (for example, International Federation of Agricultural Producers, Via Campesina)[a] Multinational agribusiness enterprises (for example, Monsanto, Dow Chemicals)[b] Supermarket chains[b] Consultative Group on International Agricultural Development[c]
Cross-sectoral organizations and networks that include agriculture	Codex Alimentarius	HarvestPlus[c]
Development organizations and funding agencies with agricultural programs	World Bank Group United Nations Development Programme	Private foundations and funding agencies (for example, Rockefeller; Gates Foundation)[a] Nongovernmental development organizations (for example, Oxfam, CARE, Catholic Relief Services)[a]
Specialized environmental organizations	United Nations Environment Programme Intergovernmental Panel on Climate Change Global Environmental Facility	Environmental NGOs (for example, World Wide Fund for Nature, Greenpeace)[a] International Union for the Conservation of Nature[c]
Specialized organizations in other sectors	World Health Organization World Trade Organization United Nations Development Fund for Women	Multinational pharmaceutical and biotechnology companies[b] International Organization for Standardization[c]
General global governance bodies	G8 Summit; G8+5 United Nations Secretariat, Assembly and Economic and Social Council	

Source: WDR 2008 team.
a. Nongovernmental organizations and networks
b. Private sector enterprises
c. Organizations with mixed membership (governmental and/or civil society and/or private sector)

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public-private financing for global public goods, which has dramatically risen in the last decade.

The Rockefeller and Ford Foundations were among the first philanthropists to support agricultural development, beginning in Mexico in 1942 and then spearheading the establishment of the international research centers of the CGIAR. The Gates Foundation has recently become one of the largest funders of the agriculture agenda, mainly in Sub-Saharan Africa, and the Google and Clinton Foundations are entering agriculture as well.

The global reach of agribusiness has dramatically changed the dynamics of the global agenda, especially through integrated supply chains, global concentrations in some industries, and the dominance of private R&D in some areas (see focus D). Private business networks such as the Africa Business Roundtable have started to promote investment in agriculture.

New actors from the developing world are getting involved. China has a strategy to support African agriculture,[38] and India provides technical assistance to several countries in Africa. EMBRAPA (*Empresa Brasileira de Pesquisa Agropecuária*) the Brazilian public corporation for agricultural R&D, recently opened EMBRAPA Africa to provide technical assistance and training to Ghanaian scientists.

The agriculture-for-development agenda in the new global context

Given the complexity and the number of emerging issues, major cross-cutting forces, and new players, delivering on a complex agriculture-for-development agenda is an enormous challenge, one that is well beyond the capacity of the current international institutional architecture. Many experiences on the ground, however, can provide useful lessons for moving forward (box 11.7).

Feasibility and institutional requirements differ considerably, depending on the

———. 1991. "Effects of Technological Change and Institutional Reform on Production Growth in Chinese Agriculture." *American Journal of Agricultural Economics* 73(2):266–75.

Fan, Shenggen, and Connie Chan-Kang. 2004. "Returns to Investment in Less-favored Areas in Developing Countries: A Synthesis of Evidence and Implications for Africa." *Food Policy* 29(4):431–44.

Fan, Shenggen, and Peter Hazell. 2001. "Returns to Public Investments in the Less-favored Areas of India and China." *American Journal of Agricultural Economics* 83(5):1217–22.

Fan, Shenggen, and Philip G. Pardey. 1997. "Research, Productivity and Output Growth in Chinese Agriculture." *Journal of Development Economics* 53(1):115–37.

Fan, Shenggen, Thorat Sukhadeo, and Neetha Rao. 2004. "Investment, Subsidies, and Pro-poor Growth in Rural India." Paper presented at the Institutions and Economic Policies for Pro-Poor Agricultural Growth in Africa and South Asia Seminar. March 29. Washington, DC.

Fan, Shenggen, Linxiu Zhang, and Xiaobo Zhang. 2002. "Growth, Inequality and Poverty in Rural China: The Role of Public Investment." Washington, DC: International Food Policy Research Institute (IFPRI), Environment and Production Technology Division, Dicussion Paper 66.

Fan, Shenggen C., Linxiu Zhang, and Xiaobo Zhang. 2004. "Reforms, Investment, and Poverty in Rural China." *Economic Development and Cultural Change* 52(2):395–422.

FAO. 2000. "The Energy and Agriculture Nexus." Rome: Food and Agricultural Organization (FAO), Environment and Natural Resources Working Paper 4.

———. 2002. *State of Food Insecurity in the World 2001*. Rome: Food and Agriculture Organization (FAO).

———. 2004a. *Report of the Food Security Assessment in West Bank and Gaza Strip*. Rome: Food and Agriculture Organization (FAO).

———. 2004b. *State of Agricultural Commodity Markets*. Rome: Food and Agricultural Organization (FAO).

———. 2004c. *Tendencias y Desafios en la Agricultura, los Montes y la Pesca en America Latina y el Caribe*. Santiago de Chile: Food and Agricultural Organization (FAO).

———. 2004d. *The Market for Non-Traditional Agricultural Exports*. Rome: Food and Agricultural Organization (FAO).

———. 2004e. *The State of Food and Agriculture 2003-2004: Agricultural Biotechnology-Meeting the Needs of the Poor?* Rome: Food and Agricultural Organization (FAO).

———. 2005a. *Increasing Fertilizer Use and Farmer Access in Sub-Saharan Africa: A Literature Review*. Rome: Food and Agricultural Organization (FAO).

———. 2005b. *The State of Food and Agriculture 2005*. Rome: Food and Agricultural Organization (FAO).

———. 2006a. "FAOSTAT". Rome, Food and Agricultural Organization (FAO).

———. 2006b. *State of Agricultural Commodity Markets*. Rome: Food and Agricultural Organization (FAO).

———. 2006c. *State of Food Insecurity in the World 2006*. Rome: Food and Agriculture Organization (FAO).

———. 2006d. *World Agriculture: Towards 2030/2050. Interim Report*. Rome: Food and Agricultural Organization (FAO).

———. 2007a. "AQUASTAT". Rome, Food and Agricultural Organization (FAO).

———. 2007b. *Challenges of Agribusiness and Agro-Industry Development*. Rome: Food and Agricultural Organization (FAO), Committee on Agriculture.

———. 2007c. "Pollution from Industrial Livestock Production Livestock." Rome: Food and Agricultural Organization (FAO), Livestock Policy Brief 2.

FAO, and UNESCO. 2003. *Education for Rural Development: Towards New Policy Responses*. Rome and Paris: FAO and UNESCO.

Farnworth, Cathy, and Michael Goodman. 2007. "Growing Ethical Networks: The Fair Trade Market for Raw and Processed Agricultural Products (in Five Parts), with Associated Case Studies on Africa and Latin America." Background paper for the WDR 2008.

Farrell, Alexander E., Richard J. Plevin, Brian T. Turner, Andrew D. Jones, Michael O'Hare, and Daniel M. Kammen. 2006. "Ethanol Can Contribute to Energy and Environmental Goals." *Science* 311(5760):506–8.

FBOMS (Fórum Brasileiro de ONGs e Movimentos Sociais). 2006. *Agribusiness and Biofuels: an Explosive Mixture. Impacts of Monoculture Expansion on Bioenergy Production in Brazil*. Rio de Janeiro: Nucleo Amigos da Terra/Brasil and Heinrich Boell Foundation.

Feder, Gershon. 1985. "The Relation between Farm Size and Farm Productivity The Role of Family Labor, Supervision, and Credit Constraints." *Journal of Development Economics* 18(2-3):297–313.

Feder, Gershon, Rinku Murgai, and Jaime B. Quizon. 2004. "Sending Farmers Back to School: The Impact of Farmer Field Schools in Indonesia." *Review of Agricultural Economics* 26(1):45–62.

Ferreira, Francisco, Phillippe Leite, and Julie Litchfield. 2006. "The Rise and Fall of Inequality in Brazil, 1981-2004." Washington, DC: World Bank Policy Research Working Paper Series 3867.

Feuillette, Sarah. 2001. "Vers une Gestion de la Demande sur une Nappe en Accès Libre: Exploration des Interactions Ressources usages par les Systèmes Multi-agents; Application à la Nappe de Kairouan, Tunisie Centrale." Ph.D. thesis. Université de Montpellier II.

Fields, Gary. 2005. "Welfare Economic Analysis of Labor Market Policies in the Harris-Todaro Model." *Journal of Development Economics* 76(1):127–46.

Figueiredo, Francisco, Steven Helfand, and Edward Levine. 2007. "Income versus Consumption Measures of Poverty and Inequality in Brazil." University of California at Riverside, Economics Department. Riverside, CA. Processed.

Finan, Frederico, and Claudio Ferraz. 2005. "Exposing Corrupt Politicians: The Effect of Brazil's Publicly Released Audits on Electoral Outcomes." Berkeley, CA: University of California, Institute of Governmental Studies WP2005-53.

Fischer, Günther, Mahendra Shah, and Harrij van Velthuizen. 2002. *Climate Change and Agricultural Vulnerability*. Johannesburg: International Institute for Applied Systems Analysis (IIASA), Report for the World Summit on Sustainable Development.

Preview from Notesale.co.uk
Page 315 of 386

W. Neil Adger, Jouni Paavola, Saleemul Huq, and M. J. Mace, (eds.), *Fairness in Adaptation to Climate Change.* Camgridge, Mass. and London, UK: MIT Press.

Macours, Karen, Alain de Janvry, and Elisabeth Sadoulet. 2004. "Insecurity of Property Rights and Matching in the Tenancy Market." Berkeley, CA: University of California, CUDARE Working Paper Series 922.

Macours, Karen, and Johan F. M. Swinnen. 2006. "Rural Poverty in Transition Countries." Leuven, Belgium: Centre for Transition Economics, LICOS Discussion Paper Series 16906.

Macours, Karen, and Renos Vakis. 2006. "Seasonal Migration and Early Childhood Development in Nicaragua." Paper presented at the UN World Institute for Development Economics Research (WIDER) Conference. September 23. Rio de Janeiro.

Maddison, David. 2006. "The Perception of and Adaptation to Climate Change in Africa." Pretoria: Centre for Environmental Economics and Policy in Africa (CEEPA), Discussion Paper Series 10.

Maertens, Miet, and Jo Swinnen. 2006. "Trade, Standards, and Poverty: Evidence from Senegal." Leuven: Centre for Transition Economics, LICOS Discussion Paper Series 177/2006.

Malik, R. K., Ashok Yadav, and Sher Singh. 2005. "Resource Conservation Technologies in Rice-wheat Cropping Systems Indo-Gangetic Plains." In I. P. Abrol, R. K. Gupta, and R. K. Malik, (eds.), *Conservation Agriculture: Status and Prospects.* New Delhi: Centre for Advancement of Sustainable Agriculture.

Manalili, N. M. 2005. "The Changing Map of the Philippine Retail Food Sector: The Impact on Trade and the Structure of Agriculture and the Policy Response." Paper presented at the Pacific Economic Cooperation Council's Pacific Food System Outlook 2005-6 Annual Meeting. May 11. Kun Ming, China.

Manarungsan, Sompop, Jirawan O. Naewbanij, and Rerngjakrabhet. 2005. "Costs of Compliance to SPS Standards: Shrimp, Fresh Asparagus and Frozen Green Soybeans in Thailand." Washington, DC: World Bank Agriculture and Rural Development Discussion Paper 16.

Mansuri, Ghazala. 2007a. "Migration, School Attainment and Child Labor: Evidence from Rural Pakistan." Washington, DC: World Bank Policy Research Working Paper Series 3945.

———. 2007b. "Temporary Migration and Rural Development." World Bank. Washington, DC. Processed.

Maredia, Mywish K., and Derek Byerlee. 2000. "Efficiency of Research Investments in the Presence of International Spillovers: Wheat Research in Developing Countries." *Agricultural Economics* 22(1):1–16.

Mariner, Jeffrey, Peter Roeder, and Berhanu Admassu. 2002. *Community Participation and the Global Eradication of Rinderpest*. London: International Institute for Environment and Development (IIED).

Martin, Will, and Kym Anderson. 2006. "The Doha Agenda Negotiations on Agriculture: What Could They Deliver?" *American Journal of Agricultural Economics* 88(5):1211–8.

Martin, Will, and Devashish Mitra. 2001. "Productivity Growth and Convergence in Agriculture versus Manufacturing." *Economic Development and Cultural Change* 49(2):403–22.

Martin, William, and Francis Ng. 2004. *Sources of Tariff Reduction*. Washington, DC: World Bank. Background Paper prepared for the 'Global Economic Prospects 2005: Trade, Regionalism, and Development'.

Martínez Nogueira, Roberto. 2007. "New Roles of the Public Sector for an Agriculture for Development Agenda." Background paper for the WDR 2008.

Masters, William A. 2005. "Research Prizes: A New Kind of Incentive for Innovation in African Agriculture." *International Journal of Biotechnology* 7(1/2/3):195–211.

Matsumoto, Tomoya, Yoko Kijima, and Takashi Yamano. 2006. "The Role of Local Nonfarm Activities and Migration in Reducing Poverty: Evidence from Ethiopia, Kenya, and Uganda." *Agricultural Economics* 35(s3):449–58.

Mauget, René, and Serge Koulytchizky. 2003. "Un Siècle de Développement des Coopératives Agricoles en France." In J-M. Touzard and J-F. Draper, (eds.), *Les Coopératives Entre Territoires et Mondialisation.* Paris: L'Harmattan.

Maxwell, Simon. 2005. "Six Characters (and a few more) in Search of an Author: How to Rescue Rural Development Before It's Too Late?" Paper presented at the 25th International Conference of Agricultural Economists. August 16. Durban, South Africa.

Mayer, Jörg, and Pilar Fajarnes. 2005. "Tripling Africa's Primary Commodity Exports: What? How? Where?" Geneva: United Nations Conference on Trade and Development (UNCTAD), Discussion Paper Series 180.

McCarthy, Nancy. 2004. "The Relationship between Collective Action and Intensification of Livestock Production: The Case of Northeastern Burkina Faso." Washington, DC: International Food Policy Research Institute, CAPRi Working Paper 34.

McCarthy, Nancy, Gero Carletto, Benjamin Davis, and Irini Maltsoglu. 2006. "Assessing the Impact of Massive Out-migration on Agriculture." Rome: FAO, Agricultural and Development Economics Division (ESA) Working Paper Series 06-14.

McCord, Michael, Felipe Botero, and Janet McCord. 2005. *CGAP Working Group on Microinsurance: Good and Bad Practices in Microinsurance, Case Study 9: Uganda*. Geneva, Switzerland: ILO.

McCulloch, Neil, Julian Weisbrod, and C. Peter Timmer. 2007. "Pathways Out of Poverty During An Economic Crisis: An Empirical Assessment of Rural Indonesia." World Bank. Washington, DC. Processed.

McGaw, E. M., J. R. Witcombe, and C. T. Hash. 1997. "Use of Molecular Markers for Pearl Millet Improvement in Developing Countries." Paper presented at the DFID PSP-ICRISAT Meeting-cum-Training Course. November 18. Hyderabad, India.

McIntire, John, D. Bouzart, and Prabhu Pingali. 1992. *Crop-livestock Interactions in Sub-saharan Africa*. Washington, DC: World Bank.

McKinsey, J. W., and Robert E. Evenson. 2003. "Crop Genetic Improvement Impacts on Indian Agriculture." In Robert E. Evenson and Douglas Gollin, (eds.), *Crop Variety Improvement and its Effect on Productivity: The Impact of International Agricultural Research.* Oxon, U.K.: CABI Publishing.

McMillan, John, John Waley, and Lijing Zhu. 1989. "The Impact of China's Economic Reforms on Agricultural Productivity Growth." *Journal of Political Economy* 97(4):781–807.

Preview from Notesale.co.uk
Page 324 of 386

Shively, Gerald, and Stefano Pagiola. 2004. "Agricultural Intensification, Local Labor Markets, and Deforestation in the Philippines." *Environment and Development Economics* 9(2):241–66.

Simmons, Phil, Paul Winters, and Ian Patrick. 2005. "An Analysis of Contract Farming in East Java, Bali, and Lombok, Indonesia." *Agricultural Economics* 33(S3):513–25.

Singh, Inderjit, Lyn Squire, and John Strauss. 1986. *Agricultural Household Models*. Baltimore, MD: Johns Hopkins University Press.

Singh, K. M. 2007. "Public-private Partnership in Extension: The ATMA Experience." Paper presented at the Agricultural Summit 2006. October 18. New Delhi.

Skees, Jerry, and Barry Barnett. 2006. "Enhancing Microfinance Using Index-based Risk Transfer Products." *Agricultural Finance Review* 66:235–50.

Smakhtin, Vladimir, Carmen Revenga, and Petra Döll. 2004. "A Pilot Global Assessment of Environmental Water Requirements and Scarcity." *Water International* 29(3):307–17.

Smale, Melinda, and Adam G. Drucker. Forthcoming. "Agricultural Development and the Diversity of Crop and Livestock Genetic Resources: A Review of the Economics Literature." In A. Kontoleon, U. Pascual, and T. Swanson (eds.) *Frontiers in Biodiversity Economics*. Cambridge: Cambridge University Press.

Smale, Melinda, Patricia Zambrano, José Falck-Zepeda, and Guillaume Gruere. 2006. "Parables: Applied Economics Literature About the Impact of Genetically Engineered Crop Varieties in Developing Economies." Washington, DC: International Food Policy Research Institute (IFPRI), Environment and Production Technology Division (EPT) Discussion Paper 139.

Snowden, Frank M. 2006. *The Conquest of Malaria: Italy, 1900–1962*. New Haven, CT: Yale University Press.

Sobel, Dava. 1996. *Longitude*. New York, NY: Penguin.

Society for Elimination of Rural Poverty (SERP). 2006. *Unleashing the Power of the Poor: Creating Wealth for the Poor from the Grassroots*. Hyderabad, India: SERP.

Spencer, Dunstan S. C. 1994. "Infrastructure and Technology Constraints to Agricultural Development in the Humid and Subhumid Tropics of Africa." Washington, DC: International Food Policy Research Institute (IFPRI), Envinronment and Production Technology Division (EPTD) Discussion Paper 3.

Sperling, L., M. E. Loevinsohn, and B. Ntabomvura. 1993. "Rethinking the Farmers' Role in Plant-breeding: Local Bean Experts and On-station Selection in Rwanda." *Experimental Agriculture* 29(4):509–19.

Spielman, David J., Joel I Cohen, and Patricia Zambrano. 2006. "Will Agbiotech Applications Reach Marginalized Farmers? Evidence from Developing Countries." *AgBioForum* 9(1):23–30.

Spielman, David J., Frank Hartwich, and Klaus von Grebmer. 2006. "Building Bridges and Sharing Science: Public-Private Partnerships in the CGIAR." International Food Policy Research Institute. Washington, DC. Processed.

Spielman, David J., and Klaus von Grebmer. 2004. "Public-private Partnerships in Agricultural Research: An Analysis of Challenges Facing Industry and the Consultative Group on International Agricultural Research." Washington, DC: International Food Policy Research Institute (IFPRI), Envinronment and Production Technology Division (EPTD) Discussion Paper 113.

Staatz, John, and Niama Nango Dembele. 2007. "Agriculture for Development in Sub-Saharan Africa." Background paper for the WDR 2008.

Stads, Gert-Jan, and Nienke M. Beintema. 2006. *Women Scientists in Sub-saharan African Agricultural R & D*. Washington, DC: International Food Policy Research Institute (IFPRI).

Stark, Oded, Christian Helmenstein, and Alexia Prskawetz. 1997. "A Brain Drain with a Brain Gain." *Economic Letters* 55(2):227–34.

Stein, Alexander J., H. P. S. Sachdev, and Matin Qaim. 2006. "Potential Impact and Cost-effectiveness of Golden Rice." *Nature Biotechnology* 24(10):1200–1.

Steinfeld, Henning, Pierre Gerber, Tom Wassenaar, Vincent Castel, Mauricio Rosales, and Cees de Haan. 2006. *Livestock's Long Shadow: Environmental Issues and Options*. Rome: Food and Agricultural Organization (FAO).

Stern, Nicholas. 2006. *Stern Review: Economic of Climate Change*. London, U.K.: United Kingdom's Treasury.

Stockbridge, Michael. 2003. *Farmer Organization for Market Access: Learning from Success. Literature Review*. London: Wye College.

Stokstad, Erik. 2007. "Deadly Wheat Fungus Threatens World's Breadbaskets." *Science* 315(5820):1786–87.

[illegible]e, C. 2007. "Agricultural Deskilling and the Spread of Genetically Modified Cotton in Warangal." *Current Anthropology* 48:87–103.

Subramaniam, C. 1995. *Hand of Destiny: Memoirs, Vol. 2. The Green Revolution*. Mumbai: Bharatiya Vidya Bhawan.

Sulaiman V., Rasheed, and Andy Hall. 2002. "Beyond Technology Dissemination: Can Indian Agricultural Extension Reinvent Itself?" New Delhi: National Centre for Agricultural Economics and Policy Research, Policy Brief 16.

Sullivan, Andy. 2005. "$100 Laptop Bridges Digital Divide." *ABC News in Science*. Oct. 17, 2005.

Sundaram, K., and Suresh D. Tendulkar. 2007. "Recent Trends in Labor Supply and Employment in India's Employment Challenge: Some Fresh Results." World Bank. Washington, DC. Processed.

Suri, K. C. 2006. "Political Economy of Agrarian Distress." *Economic and Political Weekly*. Apr. 22, 2006.

Suryahadi, Asep, Daniel Suryadarma, and Sudarno Sumarto. 2006. "Economic Growth and Poverty Reduction in Indonesia: The Effects of Location and Sectoral Components of Growth." Canberra: SMERU Research Institute Working Paper 692.

Susmita, Dasgupta, Craig Meisner, and David Wheeler. 2007. "Is Environmentally Friendly Agriculture Less Profitable for Farmers? Evidence on Integrated Pest Management in Bangladesh." *Review of Agricultural Economics* 29(1):103–18.

Swaminathan, M. S, eds. 1993. *Wheat Revolution: a Dialogue?* Madras: MacMillian India Ltd.

Swinnen, Jo, and Scott Rozelle. 2006. *From Marx and Mao to the Market: The Economics and Politics of Agrarian Transition*. Oxford, U.K.: Oxford University Press.

Preview from Notesale.co.uk
Page 332 of 386

van der Walle, Dominique. 2007. "Impacts of Road Infrastructure on Markets and Productivity." Background note for the WDR 2008.

Vergara, Walter. 2005. "Adapting to Climate Change. Lessons Learned, Work in Progress, and Proposed Next Steps for the World Bank in Latin America." Washington, DC: World Bank, Latin America and Caribbean Region, Environmentally and Socially Sustainable Development Department Working Paper 25.

Vergara, Walter, Alejandro Deeb, Adriana Valencia, Raymond S. Bradley, Bernard Francou, Alonso Zarzar, Alfred Grünwaldt, and Seraphine Haeussling. Forthcoming. "Economic Consequences of Rapid Glacier Retreat in the Tropical Andes." *Journal of the American Geophysical Union*.

Visvanathan, S. 2003. "From the Green Revolution to the Evergreen Revolution: Studies in Discourse Analysis." Paper presented at the IDS Seminar on Agriculture Biotechnology and the Developing World. October 1. New Delhi.

Vollrath, Dietrich. 2007. "Land Distribution and International Agricultural Productivity." *American Journal of Agricultural Economics* 89(1):202–16.

Von Braun, Joachim. 2003. "Agricultural Economics and Distributional Effects." *Agricultural Economics* 32(s1):1–20.

Von Braun, Joachim, Ashok Gulati, and Shenggen Fan. 2005. *Agricultural and Economic Development Strategies and the Transformation of China and India*. Washington, DC: International Food Policy Research Institute (IFPRI).

Von Braun, Joachim, David Hotchkiss, and Maarten Innmink. 1989. *Non-traditional Export Crops in Guatemala: Effects on Production, Income and Nutrition*. Washington, DC: International Food Policy Research Institute (IFPRI).

Von Braun, Joachim, and Patrick Webb. 1989. "The Impact of New Crop Technology on the Agricultural Division of Labor in a West African Setting." *Economic Development and Cultural Change* 37(3):513–34.

Vorley, B. 2003. *Food Inc.: Corporate Concentration from Farm to Consumer*. London, U.K.: UK Food Group.

Vranken, Liesbet, Karen Macours, Nivelin Noev, and Johan Swinnen. 2007. "Property Rights Imperfections, Asset Allocation, and Welfare: Co-ownership in Bulgaria." Leuven, Belgium: Centre for Transition Economics, LICOS Discussion Paper Series 180/2007.

Vyas, Vijay Shanker. 2007. "Marginalized Sections of Indian Agriculture: The Forgotten Millions." Institute of Development Studies. Jaipur. Processed.

Wade, Robert. 1982. "The System of Administrative and Political Corruption: Canal Irrigation in South India." *Journal of Development Studies* 18(3):287–328.

———. 1984. "Irrigation Reform in Conditions of Populist Anarchy: An Indian Case." *Journal of Development Studies* 14(3):285–303.

Waibel, H., and D. Pemsl. 1999. *An Evaluation of the Impact of Integrated Pest Management Research at International Agricultural Research Centres*. Rome: Consultative Group on International Agricultural Research, Technical Advisory Committee (CGIAR-TAC).

Walker, Tom. 2007. "Participatory Varietal Selection, Participatory Plant Breeding, and Varietal Change." Background paper for the WDR 2008.

Wang, Honglin, Xiaoxia Dong, Scott Rozelle, Jikun Huang, and Thomas Reardon. 2006. "Producing and Procuring Horticultural Crops with Chinese Characteristics:A Case Study in the Greater Beijing Area." Lansing, MI: Michigan University, Agricultural Economics Department, Staff Paper 2006-5.

Warner, James M., and D. A. Campbell. 2000. "Supply Response in an Agrarian Economy with Non-Symmetric Gender Relations." *World Development* 28(7):1327–40.

Warning, Matthew, and Nigel Key. 2002. "The Social Performance and Distributional Consequences of Contract Farming: An Equilibrium Analysis of the Arachide de Bouche Program in Senegal." *World Development* 30(2):255–63.

Warr, Peter G. 2001. "Poverty Reduction and Sectoral Growth: Evidence from Southeast Asia." Paper presented at the WIDER Development Conference on Growth and Poverty. May 25. Helsinki.

Warren, R. 2006. *Agriculture*. London, U.K.: United Kingdom's Treasury, Background paper for the Stern Review.

Wassenich, P., and K. Whiteside. 2004. "CDD Impact Assessments Study: Optimizing Evaluation Design Under Constraints." Washington, DC: World Bank Social Development Papers, Community Driven Development 51.

Watson, Robert T., Ian R. Noble, Bert Bolin, N. H. Ravindranath, David J. Verardo, and David J. Dokken. 2000. *IPCC Special Report on Land Use, Land Use Change And Forestry*. Geneva: Intergovernmental Panel on Climate Change (IPCC).

Weatherspoon, Dave D., and Thomas Reardon. 2003. "The Rise of Supermarkets in Africa: Implications for Agrifood Systems and the Rural Poor." *Development Policy Review* 21(5):333–55.

Weinberger, Kakinka Margit, and Thomas A. Lumpkin. 2005. "Horticulture for Poverty Alleviation: The Unfunded Revolution." The World Vegetable Center: AVRDC Working Paper Series 15.

Westermann, Olaf, Jacqueline Ashby, and Jules Pretty. 2005. "Gender and Social Capital: The Importance of Gender Differences for the Maturity and Effectiveness of Natural Resource Management Groups." *World Development* 33(11):1783–99.

Wik, Mette, Prabhu Pingali, and Sumiter Broca. 2007. "Global Agricultural Performance: Past Trends and Future Prospects." Background paper for the WDR 2008.

Wilkinson, John, and Rudi Rocha. 2006. "Agri-Processing and Developing Countries." Background paper for the WDR 2008.

Wilson, John S., and Victor O. Abiola. 2003. *Standards and Global Trade: A Voice for Africa*. Washington, DC: World Bank.

Winter-Nelson, Alex, and Karl Rich. 2006. "What International Response to Animal Diseases?" University of Illinois. Urbana, IL. Processed.

Winter-Nelson, Alex, and Anna Temu. 2002. "Institutional Adjustment and Transaction Costs: Product and Input Markets in the Tanzanian Coffee System." *World Development* 30(4):561–74.

Winters, L. Alan. 2002. "Trade Liberalization and Poverty: What are the Links?" *World Economy* 25(9):1339–67.

———. 2006. "International Trade and Poverty: Cause or Cure?" *Australian Economic Review* 39(4):347–58.

Wood, Adrian, and Jörg Mayer. 2001. "Africa's Export Structure in a Comparative Perspective." *Canadian Journal of Economics* 25(3):369–94.

Preview from Notesale.co.uk
Page 335 of 386

———. 2006c. *Agricultural Services and Producer Organizations Project*. Washington, DC: World Bank, Implementation Completion Report No. 35062.

———. 2006d. *Argentina: Agriculture and Rural Development*. Washington, DC: World Bank.

———. 2006e. *Bihar Agriculture: Building on Emerging Models of 'Success'*. Washington, DC: World Bank.

———. 2006f. *Bihar: Towards a Development Strategy*. Washington, DC: World Bank.

———. 2006g. *Clean Energy and Development: Towards an Investment Framework*. Washington, DC: World Bank, Environmentally and Scially Sustainable Development and Infrstructure Vice Presidencies.

———. 2006h. *Enhancing Agricultural Innovation: How to Go Beyond the Strengthening of Research Systems*. Washington, DC: World Bank, Agriculture and Rural Development.

———. 2006i. *India's Employment Challenge: Creating Jobs, Helping Workers*. Washington, DC: World Bank.

———. 2006j. *Indonesia Rural Investment Climate Assessment Report, Revitalizing the Rural Economy: An Assessment of the Investment Climate Faced by Non-farm Enterprises at the District Level*. Jakarta: World Bank.

———. 2006k. *Intellectual Property Rights: Designing Regimes to Support Plant Breeding in Developing Countries*. Washington, DC: World Bank.

———. 2006l. *Irrigation Management Transfer: Lessons from Global Experience*. Washington, DC: World Bank.

———. 2006m. *Making the New Indonesia Work for the Poor*. Washington, DC: World Bank.

———. 2006n. *Malawi Poverty and Vulnerability Assessment: Investing in our Future*. Washington, DC: World Bank.

———. 2006o. *Mali: From Sector Diagnostic Toward an Integrated Growth Strategy: A Country Economic Memorandum*. Washington, DC: World Bank.

———. 2006p. *Managing Food Price Risks and Instability in an Environment of Market Liberalization*. Washington, DC: World Bank, Agriculture and Rural Development Department.

———. 2006q. *Miraculous Catch in Kazakhstan's Northern Aral Sea*. Washington, DC: World Bank.

———. 2006r. *Pakistan: Promoting Rural Growth and Poverty Reduction*. Washington, DC: World Bank.

———. 2006s. *Poverty Assessment for Sri Lanka: Engendering Growth with Equity: Opportunities and Challenges*. Washington, DC: World Bank.

———. 2006t. *Reengaging in Agricultural Water Management: Challenges and Options*. Washington, DC: World Bank.

———. 2006u. *Sustainable Land Management: Challenges, Opportunities, And Trade-Offs*. Washington, DC: World Bank.

———. 2006v. *The Rural Investment Climate: It Differs and It Matters*. Washington, DC: World Bank, Agriculture and Rural Development Department, Report # 36543 GLB.

———. 2006w. *Tunisia: Agricultural Sector Review*. Washington, DC: World Bank.

———. 2006x. *Water Management in Agriculture: 10 Years of Assistance*. Washington, DC: World Bank.

———. 2006y. *World Development Indicators*. Washington, DC: World Bank.

———. 2006z. *World Development Report 2007: Development and the Next Generation*. Washington, DC: World Bank.

———. 2007a. *Brazil Measuring Poverty Using Household Consumption*. Washington, DC: World Bank, Report 36358-BR.

———. 2007b. *Changing the Face of the Waters: The Promise and Challenge of Sustainable Aquaculture*. Washington, DC: World Bank.

———. 2007c. *From Poor Areas to Poor People: China's Evolving Poverty Reduction Agenda*. Washington, DC: World Bank, Poverty Reduction and Economic Management: East Asia and Pacific Region.

———. 2007d. *Global Development Finance: The Globalization of Corporate Finance in Developing Countries*. Washington, DC: World Bank.

———. 2007e. *India: Land Policies for Growth and Poverty Reduction*. New Delhi, India: World Bank Agriculture and Rural Development Sector Unit South Asia Region and Oxford University Press.

———. 2007f. *India: Taking Agriculture to the Market*. Washington, DC: World Bank, South Asia Sustainable Development Department, Internal Report 35251-IN.

———. 2007g. "Reaching Rural Areas with Financial Services: A Fresh Look at Financial Cooperatives." World Bank. Washington, DC. Processed.

———. 2007h. *Watershed Management Approaches, Policies and Operational Lessons for Scaling-Up*. Washington, DC: World Bank Energy, Transport and Water Department.

———. 2007i. *At Loggerheads? Agricultural Expansion, Poverty Reduction, and Environment in the Tropical Forests. World Bank Policy Research Report 2007*. Washington, DC: World Bank.

World Bank, Food and Agriculture Organization (FAO), International Food Policy Research Institute (IFPRI), and World Animal Health Organization (WHO). 2006. *Enhancing Control of Highly Pathogenic Avian Influenza in developing Countries through Compensation: Issues and Good Practice*. Washington, DC: World Bank.

World Bank Operations Evaluation Department. 1998. *India: The Dairy Revolution*. Washington, DC: World Bank.

World Development Report 2008 Team. 2007. "Income and Employment from a Cross-section of Household Surveys." Background note for the WDR 2008.

World Health Organization (Regional Office for Africa). 2006. *Water Related Diseases*. Geneva: World Health Organization.

World Health Organization (WHO). 2003. *The World Health Report 2003: Shaping the Future*. Geneva: World Health Organization.

Worldwatch Institute. 2006. *Biofuels for Transportation. Global Potential and Implications for Sustainable Agriculture and Energy in the 21st Century*. Washington, DC: Worldwatch Institute.

Wright, Brian D., and Philip G. Pardey. 2006. "Changing Intellectual Property Regimes: Implications for Developing Country Agriculture." *International Journal for Technology and Globalization* 2(1-2):93–114.

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A1. Agricultural and rural sector variables

	Rural population			Agricultural employment and labor force			Agriculture value added			
	Total millions 2003–05[a]	Average annual % growth 1990–2005	% total population 2003–05[a]	Total agricultural employment thousands 2002–04[a]	Employment in agriculture % total 2002–04[a]	Share of women in agricultural labor force % 2003–05[a]	$ millions 2003–05[a]	Average annual % growth 1990–2005	$ per agricultural worker 2003–05[a]	% GDP 2003–05[a]
Albania	1.7	–1.3	55.3	668	58.1	44.9	1,452	3.0	1,022	23.4
Algeria	12.1	0.0	37.4	2,069	20.9	52.2	7,572	4.3	1,021	9.7
Angola	7.3	0.8	47.4	..	..	53.8	1,747	4.6	159	8.1
Argentina	3.9	–0.7	10.1	..	1.2	8.6	14,700	2.7	4,159	10.3
Armenia	1.1	–0.4	35.7	..	45.7	21.4	778	2.9	2,340	23.0
Australia	2.4	–0.3	12.0	383	4.1	40.5	18,704	2.9	21,919	3.4
Austria	2.8	0.4	34.0	204	5.4	43.3	4,554	1.1	12,865	1.8
Azerbaijan	4.0	1.4	48.6	..	39.9	52.4	1,013	2.8	484	11.9
Bangladesh	104.8	1.6	75.3	30,451	51.7	51.5	11,303	3.2	157	21.0
Belarus	2.8	–1.5	28.2	..	..	22.6	1,989	–0.9	1,797	10.0
Belgium	0.3	–1.3	2.8	75	1.8	28.2	3,253	1.5	19,753	1.1
Benin	4.9	2.7	60.2	..	..	46.2	1,274	5.5	311	32.1
Bolivia	3.3	0.7	36.3	..	..	35.4	1,132	2.9	300	15.2
Bosnia and Herzegovina	2.1	–1.4	54.8	..	..	52.3	748	0.1	5,098	10.3
Brazil	30.2	–1.6	16.4	16,627	20.8	19.1	39,213	4.1	1,489	6.6
Bulgaria	2.4	–1.5	30.2	284	9.9	35.7	2,140	2.6	4,693	10.7
Burkina Faso	10.5	2.6	82.1	..	..	46.9	1,296	3.6	110	31.0
Burundi	6.6	1.6	90.3	..	..	53.3	235	–1.7	36	38.3
Cambodia	11.2	1.9	80.9	..	60.3	55.4	1,710	3.8	181	33.7
Cameroon	7.4	0.5	46.3	..	..	45.1	2,966	5.1	386	20.9
Canada	6.4	–0.1	20.0	436	2.7	45.9	14,687	0.6	20,042	2.2
Central African Republic	2.5	1.9	62.1	..	..	51.1	723	3.9	2[illegible]	55.2
Chad	7.1	2.8	75.1	..	..	51.8	1,042	3.9	155	26.1
Chile	2.1	–0.6	12.7	801	13.5	12.9	4,[illegible]34	3.[illegible]	2,076	5.7
China	784.5	–0.4	60.5	..	44.1	47.7	26,[illegible]32	3.7	292	12.7
Hong Kong, China	0.0	..	0.0	9	0.3	[illegible]	[illegible]	..	..	0.1
Colombia	12.2	0.8	27.6	..	20.6	[illegible]	11,285	–0.7	1,346	12.5
Congo, Dem. Rep.	38.2	2.4	68.4	..	..	[illegible]	3,018	–0.1	88	47.9
Congo, Rep.	1.6	2.3	40.2	..	..	59.8	[illegible]	..	176	5.7
Costa Rica	1.7	0.6	38.8	[illegible]	[illegible].3	10.1	[illegible]	3.2	1,833	8.7
Côte d'Ivoire	9.9	1.8	55.4	..	..	39.9	[illegible]	2.5	426	22.7
Croatia	1.9	–0.9	[illegible].7	270	16.[illegible]	[illegible].4	2,024	–0.8	6,855	7.1
Czech Republic	2.7	[illegible].4	[illegible].4	215	[illegible].[illegible]	[illegible]	3,004	0.8	4,045	3.1
Denmark	0.8	[illegible].1	[illegible].5	85	[illegible].[illegible]	24.5	3,895	3.0	22,260	1.9
Dominican Republic	3.2	–0.[illegible]	34.1	..	15.9	18.5	2,544	4.1	1,934	11.8
Ecuador	[illegible].9	0.4	37.7	..	9.0	15.9	2,260	1.1	699	7.0
Egypt, Arab Rep.	4[illegible].6	2.0	57.3	..	28.7	48.2	12,244	3.3	497	15.6
El Salvador	2.7	0.4	[illegible].5	480	19.0	8.1	1,421	0.9	695	9.6
Eritrea	3.4	2.2	[illegible].9	..	..	51.4	119	–1.7	37	17.1
Ethiopia	58.9	1.9	84.2	..	..	40.4	3,893	2.4	64	43.9
Finland	2.0	0.4	38.9	121	5.1	35.4	4,863	1.5	18,515	3.1
France	14.2	–0.2	23.5	1,006	4.2	33.9	42,432	1.1	25,639	2.4
Georgia	2.2	–0.9	47.7	1,124	54.2	39.8	853	–6.1	1,061	18.4
Germany	20.5	–0.2	24.8	892	2.4	37.4	24,594	0.8	14,241	1.0
Ghana	11.5	1.1	53.0	..	..	44.8	3,389	3.8	283	37.3
Greece	4.5	0.6	41.0	649	14.5	49.2	10,482	–0.5	8,065	5.9
Guatemala	6.5	1.6	53.2	..	38.7	9.0	6,381	2.7	1,117	22.8
Guinea	6.0	2.2	67.4	..	..	48.6	666	4.4	88	19.5
Haiti	5.2	0.5	61.8	..	..	34.3	720	..	143	27.9
Honduras	3.8	1.9	53.9	..	36.2	21.4	898	2.3	410	13.4
Hungary	3.4	–0.3	34.0	226	5.7	24.5	3,802	0.3	3,588	4.5
India	771.9	1.4	71.5	..	..	37.5	123,324	2.5	219	19.3
Indonesia	115.6	–0.5	53.1	41,652	44.6	43.5	38,429	2.3	421	14.9
Iran, Islamic Rep.	22.6	–0.3	33.6	..	..	43.2	17,892	3.2	1,058	11.2
Ireland	1.6	0.6	39.8	120	6.6	6.3	3,820	..	10,582	2.5
Israel	0.6	1.7	8.4	46	2.0	20.3	..	..	..	..
Italy	18.9	0.0	32.5	1,087	5.0	41.8	36,477	1.2	14,380	2.4
Jamaica	1.2	0.2	47.2	..	19.7	29.5	461	–1.5	912	5.6
Japan	43.8	–0.3	34.3	2,927	4.6	42.7	74,849	–0.7	19,177	1.7
Jordan	1.0	0.6	18.1	59	3.8	69.1	284	0.1	505	2.8
Kazakhstan	6.4	–0.7	42.9	2,465	34.8	26.2	3,036	–3.0	1,137	7.6
Kenya	26.6	2.3	79.5	..	..	49.0	4,166	2.6	169	28.2
Korea, Rep.	9.3	–1.3	19.4	1,982	8.7	45.6	22,416	1.0	6,922	3.7
Kuwait	0.0	0.1	1.7	..	..	0.0	221	6.1	8,078	0.5
Kyrgyz Republic	3.3	1.2	64.3	982	52.7	36.1	669	3.0	549	34.1
Lao PDR	4.4	1.8	79.7	..	..	48.6	1,157	4.5	264	46.8
Latvia	0.7	–0.7	32.1	..	14.1	30.0	507	–1.2	2,046	4.2
Lebanon	0.5	0.4	13.5	..	..	38.7	1,149	1.9	11,485	6.5
Lithuania	1.1	–0.3	33.3	245	17.2	25.7	1,191	0.7	2,743	6.0
Macedonia, FYR	0.6	–1.6	31.9	117	20.9	38.4	589	–0.1	2,811	13.2

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Selected world development indicators

In this year's edition, development data are presented in six tables presenting comparative socioeconomic data for more than 130 economies for the most recent year for which data are available and, for some indicators, for an earlier year. An additional table presents basic indicators for 75 economies with sparse data or with populations of less than 2 million.

The indicators presented here are a selection from more than 800 included in *World Development Indicators 2007*. Published annually, *World Development Indicators* reflects a comprehensive view of the development process. Its opening chapter reports on the Millennium Development Goals, which grew out of agreements and resolutions of world conferences in the 1990s, and were formally recognized by the United Nations General Assembly after member states unanimously adopted the Millennium Declaration at the Millennium Summit in September 2000. In September 2005 the United Nations World Summit reaffirmed the principles in the 2000 Millennium Declaration and recognized the need for pursuing ambitious national development strategies backed by increased international support. The other five main sections recognize the contribution of a wide range of factors: human capital development, environmental sustainability, macroeconomic performance, private sector development and the investment climate, and the global links that influence the external environment for development. *World Development Indicators* is complemented by a separately published database that gives access to over 1,000 data tables and 800 time-series indicators for 222 economies and regions. This database is available through an electronic subscription (*WDI Online*) or as a CD-ROM.

Data sources and methodology

Socioeconomic and environmental data presented here are drawn from several sources: primary data collected by the World Bank, member country statistical publications, research institutes, and international organizations such as the United Nations and its specialized agencies, the International Monetary Fund (IMF), and the OECD (see the *Data Sources* following the *Technical notes* for a complete listing). Although international standards of coverage, definition, and classification apply to most statistics reported by countries and international agencies, there are inevitably differences in timeliness and reliability arising from differences in the capabilities and resources devoted to basic data collection and compilation. For some topics, competing sources of data require review by World Bank staff to ensure that the most reliable data available are presented. In some instances, where available data are deemed too weak to provide reliable measures of levels and trends or do not adequately adhere to international standards, the data are not shown.

The data presented are generally consistent with those in *World Development Indicators 2007*. However, data have been revised and updated wherever new information has become available. Differences may also reflect revisions to historical series and changes in methodology. Thus data of different vintages may be published in different editions of World Bank publications. Readers are advised not to compile data series from different publications or different editions of the same publication. Consistent time-series data are available on *World Development Indicators 2007* CD-ROM and through *WDI Online*.

All dollar figures are in current U.S. dollars unless otherwise stated. The various methods used to convert from national currency figures are described in the Technical notes.

Because the World Bank's primary business is providing lending and policy advice to its low- and middle-income members, the issues covered in these tables focus mainly on these economies. Where available, information on the high-income economies is also provided for comparison. Readers may wish to refer to national statistical publications and publications of the Organisation for Economic Co-operation and Development (OECD) and the European Union for more information on the high-income economies

Classification of economies and summary measures

The summary measures at the bottom of most tables include economies classified by income per capita and by region. GNI per capita is used to determine the following income classifications: low-income, $905 or less in 2005; middle-income, $906 to $11,115; and high-income, $11,116 and above. A further division at GNI per capita $3,595 is made between lower-middle-income and upper-middle-income economies. The classification of economies based on per capita income occurs annually, so the country composition of the income groups may change annually. When these changes in classification are made based on the most recent estimates, aggregates based on the new income classifications are recalculated for all past periods to ensure that a consistent time series is maintained. See the table on classification of economies at the end of this volume for a list of economies in each group (including those with populations of less than 2 million).

Summary measures are either totals (indicated by **t** if the aggregates include estimates for missing data and nonreporting countries, or by an **s** for simple sums of the data available), weighted

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Table 1. Key indicators of development *(continued)*

	Population			Population age composition %	Gross national income (GNI)[a]		PPP gross national income (GNI)[b]		Gross domestic product per capita	Life expectancy at birth		Adult literacy rate	Carbon dioxide emissions per capita
	Millions 2006	Average annual % growth 2000–06	Density people per sq. km 2006	Ages 0–14 2006	$ billions 2006	$ per capita 2006	$ billions 2006	$ per capita 2006	% growth 2005–06	Male years 2005	Female years 2005	% ages 15 and older 2000–05[c]	metric tons 2003
Mexico	104	1.0	55	30	820.3	7,870	1,189	11,410	3.6	73	78	92	4.1
Moldova	4	–1.3	117	18	3.7	1,100[g]	11	2,880	5.2	65	72	99	1.8
Mongolia	3	1.2	2	30	2.3	880	6	2,280	7.1	65	68	98	3.2
Morocco	30	1.1	68	31	58.0	1,900	152	5,000	6.0	68	73	52	1.3
Mozambique	20	2.0	26	44	6.9	340	25[d]	1,220[d]	6.6	41	42	..	0.1
Namibia	2	1.3	2	41	6.6	3,230	17[d]	8,110[d]	3.6	47	47	85	1.2
Nepal	28	2.1	193	39	8.1	290	45	1,630	–0.1	62	63	49	0.1
Netherlands	16	0.5	483	18	698.5	42,670	615	37,580	2.6	77	82	..	8.7
New Zealand	4	1.1	15	21	112.4	27,250	112	27,220	1.1	78	82	..	8.7
Nicaragua	5	1.1	43	38	5.2	1,000	21[d]	4,010[d]	1.7	68	73	77	0.8
Niger	14	3.4	11	49	3.7	260	12[d]	830[d]	0.1	45	45	29	0.1
Nigeria	145	2.5	159	44	92.4	640	152	1,050	3.4	46	47	69	0.4
Norway	5	0.6	15	19	308.9	66,530	203	43,820	2.5	78	83	..	9.9
Oman	3	1.2	8	34	*23.0*	*9,070*	*37*	*14,570*	*2.2*	73	76	81	12.8
Pakistan	159	2.4	206	38	122.3	770	398	2,500	4.1	64	65	50	0.8
Panama	3	1.8	44	30	16.1	4,890	25	7,680	6.4	73	78	92	1.9
Papua New Guinea	6	2.1	13	40	4.6	770	14[d]	2,410[d]	1.8	56	57	57	0.4
Paraguay	6	2.0	15	37	8.4	1,400	31[d]	5,070[d]	1.9	69	74	93	0.7
Peru	28	1.5	22	32	82.7	2,920	172	6,080	6.5	68	73	88	1.0
Philippines	85	1.8	284	35	120.2	1,420	506	5,980	3.5	69	73	93	1.0
Poland	38	–0.1	124	16	312.2	8,190	565	14,830	5.9	71	[illegible]	[illegible]	8.0
Portugal	11	0.6	116	16	191.6	18,100	229	21,580	0.9	[illegible]	81	94	5.5
Romania	22	–0.7	94	15	104.4	4,850	212	9,820	8.2	[illegible]	75	97	4.2
Russian Federation	142	–0.5	9	15	822.4	5,780	1,656	11,630	7.3	59	72	99	10.3
Rwanda	9	2.4	375	43	2.3	250	12[d]	[illegible]	[illegible]	43	46	65	0.1
Saudi Arabia	24	2.3	12	37	*289.2*	*12,510*	[illegible]	[illegible]	*3.8*	71	75	83	13.7
Senegal	12	2.4	62	42	8.9	750	22	1,840	1.0	55	58	39	0.4
Serbia	7	–0.2	84	..	29.0	[illegible]	..	..	6.0	70[k]	76[k]	96[k]	..
Sierra Leone	6	3.7	79	43	1.4	[illegible]	5	[illegible]	[illegible]	40	43	35	0.1
Singapore	4	1.5	6,376	[illegible]	[illegible]	29,320	[illegible]	[illegible]	[illegible]	78	82	93	11.4
Slovak Republic	5	0.0	112	[illegible]	53.2	9,870	95	[illegible]	8.3	70	78	..	7.0
Slovenia	2	0.1	[illegible]	14	37.7	[illegible]	[illegible]	23,970	5.4	74	81	100	7.7
South Africa	47	[illegible]	[illegible]	32	[illegible]	[illegible]	555[d]	11,710[d]	3.9	47	49	..	7.9
Spain	44	[illegible]	87	14	[illegible]	[illegible]	1,221	28,030	3.6	77	84	..	7.4
Sri Lanka	[illegible]	0.4	306	[illegible]	[illegible]	1,300	99	5,010	6.6	72	77	91	0.5
Sudan	[illegible]	2.0	[illegible]	39	29.9	810	80[d]	2,160[d]	10.7	55	58	61	0.3
Sweden	9	0.3	[illegible]	[illegible]	394.2	43,580	317	35,070	4.2	78	83	..	5.9
Switzerland	7	0.6	[illegible]	16	425.9	57,230	305	40,930	2.6	79	84	..	5.5
Syrian Arab Republic	19	2.5	106	36	30.7	1,570	77	3,930	2.6	72	76	81	2.7
Tajikistan	7	1.2	47	38	2.6	390	9	1,410	5.6	61	67	99	0.7
Tanzania	39	2.6	45	42	13.4	350[i]	29	740	3.3	46	47	69	0.1
Thailand	65	0.9	127	23	193.7	2,990	592	9,140	4.2	68	74	93	3.9
Togo	6	2.7	116	43	2.2	350	9[d]	1,490[d]	-1.0	53	57	53	0.4
Tunisia	10	1.0	65	25	30.1	2,970	86	8,490	4.1	72	76	74	2.1
Turkey	73	1.3	95	29	393.9	5,400	661	9,060	4.8	69	74	87	3.1
Turkmenistan	5	1.4	10	31	..	..[j]	..	..	..	59	67	..	9.2
Uganda	30	3.4	152	50	8.9	300	45[d]	1,490[d]	1.5	49	51	67	0.1
Ukraine	47	–0.9	80	14	90.6	1,950	350	7,520	8.3	62	74	99	6.6
United Kingdom	60	0.2	249	18	2,425.2	40,180	2,148	35,580	2.6	77	81	..	9.4
United States	299	1.0	33	21	13,446.0	44,970	13,233	44,260	2.4	75	81	..	19.9
Uruguay	3	0.1	19	24	17.6	5,310	37	11,150	6.8	72	79	..	1.3
Uzbekistan	27	1.2	62	32	16.2	610	60	2,250	5.8	64	71	..	4.8
Venezuela, RB	27	1.8	31	31	164.0	6,070	201	7,440	8.5	71	77	93	5.6
Vietnam	84	1.3	271	29	58.1	690	278	3,300	6.9	68	73	..	0.9
West Bank and Gaza	4	3.9	621	45	*4.5*	*1,230*	..	..	-1.7	71	76	92	..
Yemen, Rep.	22	3.1	41	46	16.4	760	20	920	0.2	60	63	54	0.9
Zambia	12	1.7	16	46	7.5	630	12	1,000	4.3	39	38	..	0.2
Zimbabwe	13	0.6	34	39	*4.5*	*340*	*25*	*1,950*	-5.4	38	37	89	0.9
World	6,518s	1.2w	50w	28w	48,481.8t	7,439w	66,596t	10,218w	2.8w	66w	70w	82w	4.0w
Low income	2,403	1.9	85	36	1,562.3	650	6,485	2,698	6.1	58	60	61	0.8
Middle income	3,086	0.9	45	25	9,415.4	3,051	24,613	7,976	6.3	68	73	90	3.5
Lower middle income	2,276	0.9	81	25	4,635.2	2,037	15,977	7,020	7.9	69	73	89	2.9
Upper middle income	810	0.8	20	25	4,789.7	5,913	8,763	10,817	4.9	66	74	94	5.3
Low & middle income	5,489	1.3	57	30	10,977.7	2,000	31,089	5,664	6.0	64	67	79	2.4
East Asia & Pacific	1,900	0.9	120	23	3,539.1	1,863	12,958	6,821	8.6	69	73	91	2.8
Europe & Central Asia	460	0.0	20	20	2,205.8	4,796	4,444	9,662	6.8	64	74	98	6.8
Latin America & Caribbean	556	1.3	28	30	2,650.3	4,767	4,891	8,798	4.2	69	76	90	2.4
Middle East & North Africa	311	1.8	35	33	771.2	2,481	2,005	6,447	3.6	68	72	73	3.4
South Asia	1,493	1.7	312	33	1,142.7	766	5,140	3,444	6.9	63	64	58	1.0
Sub-Saharan Africa	770	2.3	33	43	648.3	842	1,565	2,032	3.2	47	48	59	0.7
High income	1,029	0.7	31	18	37,528.9	36,487	35,692	34,701	2.6	76	82	99	12.8

a. Calculated using the World Bank Atlas method. b. PPP is purchasing power parity; see Technical notes. c. Data are for the most recent year available. d. The estimate is based on regression; others are extrapolated from the latest International Comparison Program benchmark estimates. e. Based on a 1986 bilateral comparison of China and United states (Ruoen and Kai 1995), employing a different methodology than that used for other countries. This interim methodology will be revised in the next few years. f. The GNI and GNI per capita estimates include the French overseas departments of French Guiana, Guadeloupe, Martinique, and Réunion. g. Excludes data for Transnistria. h. Excludes data for Kosovo and Metahia. i. Data refer to mainland Tanzania only. j. Estimated to be lower middle income ($906–$3,595). k. Data are for Serbia and Montenegro together.

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Table 2. Poverty ***(continued)***

	National poverty line								International poverty line				
	Population below the poverty line				Population below the poverty line								
	Survey year	Rural %	Urban %	National %	Survey year	Rural %	Urban %	National %	Survey year	Population below $1 a day %	Poverty gap at $1 a day %	Population below $2 a day %	Poverty gap at $2 a day %
Madagascar	1997	76.0	63.2	73.3	1999	76.7	52.1	71.3	2001[a]	61.0	27.9	85.1	51.8
Malawi	1990–91	..	..	54.0	1997–98	66.5	54.9	65.3	2004–05[a]	20.8	4.7	62.9	24.3
Malaysia	1989	..	..	15.5	..	..	..	..	1997[b]	<2	<0.5	9.3	2.0
Mali	1998	75.9	30.1	63.8	..	..	..	..	2001[a]	36.1	12.2	72.1	34.2
Mauritania	1996	65.5	30.1	50.0	2000	61.2	25.4	46.3	2000[a]	25.9	7.6	63.1	26.8
Mexico	2000	42.4	12.6	24.2	2004	27.9	11.3	17.6	2004[a]	3.0	1.4	11.6	4.2
Moldova	2001	64.1	58.0	62.4	2002	67.2	42.6	48.5	2003[a]	<2	<0.5	20.8	4.7
Mongolia	1998	32.6	39.4	*35.6*	2002	43.4	30.3	36.1	2002[a]	10.8	2.2	44.6	15.1
Morocco	1990–91	18.0	7.6	13.1	1998–99	27.2	12.0	19.0	1998–99[a]	<2	<0.5	14.3	3.1
Mozambique	1996–97	71.3	62.0	69.4	..	..	..	..	2002–03[a]	36.2	11.6	74.1	34.9
Namibia	..	..	..	..	..	..	..	..	1993[b]	34.9	14.0	55.8	30.4
Nepal	1995–96	43.3	21.6	41.8	2003–04	34.6	9.6	30.9	2003–04[a]	24.1	5.4	68.5	26.8
Netherlands	..	..	..	..	..	..	..	..	..	..	..	..	..
New Zealand	..	..	..	..	..	..	..	..	..	..	..	..	..
Nicaragua	1993	76.1	31.9	50.3	1998	68.5	30.5	47.9	2001[a]	45.1	16.7	79.9	41.2
Niger	1989–93	66.0	52.0	63.0	..	..	..	..	1995[a]	60.6	34.0	85.8	54.6
Nigeria	1985	49.5	31.7	43.0	1992–93	36.4	30.4	34.1	2003[a]	70.8	34.5	92.4	59.5
Norway	..	..	..	..	..	..	..	..	..	..	..	..	..
Oman	..	..	..	..	..	..	..	..	..	..	..	..	..
Pakistan	1993	33.4	17.2	28.6	1998–99	35.9	24.2	32.6	2002[a]	17.0	3.1	73.6	26.1
Panama	1997	64.9	15.3	37.3	..	..	..	..	2003[b]	7.4	2.1	18.9	7.5
Papua New Guinea	1996	41.3	16.1	37.5	..	..	..	..	..	..	..	..	..
Paraguay	1991	28.5	19.7	21.8	..	..	..	..	2003[b]	13.6	5.6	29.8	13.8
Peru	2001	77.1	42.0	54.3	2004	72.1	42.9	53.1	2003[b]	10.5	2.9	30.6	11.9
Philippines	1994	53.1	28.0	40.6	1997	50.7	21.5	36.8	2000[a]	14.6	2.9	43.0	16.3
Poland	1993	..	..	23.8	..	..	..	..	1[a]	<2	<0.5	<2	<0.5
Portugal	..	..	..	..	..	..	..	..	..	..	..	..	..
Romania	1994	27.9	20.4	21.5	..	..	..	..	2003[a]	<2	0.5	12.9	3.0
Russian Federation	1994	..	..	30.9	..	..	..	..	2002[a]	<2	<0.5	12.1	3.1
Rwanda	1993	..	..	51.2	1999–00	65.7	14.3	60.3	2000[a]	60.3	25.6	87.8	51.5
Saudi Arabia	..	..	..	..	..	..	..	..	..	..	..	..	..
Senegal	1992	40.4	23.7	33.4	..	..	..	..	2001[a]	17.0	3.6	56.2	20.9
Serbia	..	..	..	..	..	..	..	..	..	..	..	..	..
Sierra Leone	1989	..	..	82.8	2003–04	74.1	56.4	70.2	1989[a]	57.0	39.5	74.5	51.8
Singapore	..	..	..	..	..	..	..	..	..	..	..	..	..
Slovak Republic	..	..	..	..	..	..	..	..	1996[b]	<2	<0.5	2.9	0.8
Slovenia	..	..	..	..	..	..	..	..	1998[a]	<2	<0.5	<2	<0.5
South Africa	..	..	..	..	..	..	..	..	2000[a]	10.7	1.7	34.1	12.6
Spain	..	..	..	..	..	..	..	..	..	..	..	..	..
Sri Lanka	1990–91	22.0	15.0	20.0	1995–96	27.0	15.0	25.0	2002[a]	5.6	0.8	41.6	11.9
Sudan	..	..	..	..	..	..	..	..	..	..	..	..	..
Swaziland	..	..	..	..	..	..	..	..	2001–01[a]	47.7	19.4	77.8	42.4
Sweden	..	..	..	..	..	..	..	..	..	..	..	..	..
Switzerland	..	..	..	..	..	..	..	..	..	..	..	..	..
Syrian Arab Republic	..	..	..	..	..	..	..	..	..	..	..	..	..
Tajikistan	..	..	..	..	..	..	..	..	2003[a]	7.4	1.3	42.8	13.0
Tanzania	1991	40.8	31.2	38.6	2000–01	38.7	29.5	35.7	2000–01[a]	57.8	20.7	89.9	49.3
Thailand	1994	..	..	9.8	1998	..	..	13.6	2002[a]	<2	<0.5	25.2	6.2
Togo	1987–89	..	..	32.3	..	..	..	..	..	..	..	..	..
Tunisia	1990	13.1	3.5	7.4	1995	13.9	3.6	7.6	2000[a]	<2	<0.5	6.6	1.3
Turkey	1994	..	..	28.3	2002	34.5	22.0	27.0	2003[a]	3.4	0.8	18.7	5.7
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	1999–00	37.4	9.6	33.8	2002–03	41.7	12.2	37.7	..	..	..	..	..
Ukraine	2000	34.9	..	31.5	2003	28.4	..	19.5	2003[b]	<2	<0.5	4.9	0.9
United Kingdom	..	..	..	..	..	..	..	..	..	..	..	..	..
United States	..	..	..	..	..	..	..	..	..	..	..	..	..
Uruguay	1994	..	20.2	..	1998	..	24.7	..	2003[b]	<2	<0.5	5.7	1.6
Uzbekistan	2000	30.5	22.5	27.5	..	..	..	..	2003[a]	<2	<0.5	<2	0.6
Venezuela, RB	1989	..	..	31.3	..	..	..	..	2003[b]	18.5	8.9	40.1	19.2
Vietnam	1998	45.5	9.2	37.4	2002	35.6	6.6	28.9	..	..	..	..	..
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	1998	45.0	30.8	41.8	..	..	..	..	1998[a]	15.7	4.5	45.2	15.0
Zambia	1998	83.1	56.0	72.9	2004	78.0	53.0	68.0	2004[a]	63.8	32.6	87.2	55.2
Zimbabwe	1990–91	35.8	3.4	25.8	1995–96	48.0	7.9	34.9	1995–96[a]	56.1	24.2	83.0	48.2

a. Expenditure base. b. Income base.

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Table 6. Key indicators for other economies

	Population			Population age composition	Gross national income (GNI)[a]		PPP gross national income (GNI)[b]		Gross domestic product	Life expectancy at birth		Adult Literacy rate	Carbon dioxide emissions
	Thousands 2006	Avg. annual % growth 2000–06	density people per sq. km 2006	% Ages 0–14 2006	$ millions 2006	$ per capita 2006	$ millions 2006	$ per capita 2006	per capita % growth 2005–06	Male Years 2005	Female Years 2005	% ages 15 and older 2000–04[c]	per capita metric tons 2003
Afghanistan	..	..	..	..	8,092	..[d]	..	..	..	..	..	28	..
American Samoa	60	1.5[e]	298	..	..	..[f]	..	..	..	..	..	..	5.1
Andorra	67	0.5[e]	143	..	..	..[g]	..	..	..	..	..	..	..
Antigua and Barbuda	84	1.5	190	..	937	11,210	1,129	13,500	6.9	..	..	..	5.0
Aruba	101	0.7[e]	533	..	..	..[g]	..	..	..	..	..	97	21.8
Bahamas, The	327	1.4	33	28	..	..[g]	..	..	..	68	74	..	5.9
Bahrain	740	1.6	1,042	27	*10,288*	*14,370*	*13,436*	*18,770*	*5.3*	73	76	87	31.0
Barbados	270	0.2	628	19	..	..[g]	..	..	..	*73*	*78*	..	4.4
Belize	297	2.9	13	36	1,084	3,650	1,977	6,650	2.1	69	74	..	2.9
Bermuda	64	0.4	1,276	..	..	..[g]	..	..	..	76	81	..	7.9
Bhutan	647	2.4	14	38	915	1,410	3,681[h]	5,690[h]	5.8	63	65	..	0.6
Botswana	1,758	0.0	3	37	10,380	5,900	21,534	12,250	4.0	35	34	81	2.3
Brunei Darussalam	381	2.2	72	29	..	..[g]	..	..	*–0.5*	75	79	93	12.7
Cape Verde	518	2.3	129	39	1,105	2,130	3,100[h]	5,980[h]	3.7	68	74	81	0.3
Cayman Islands	46	2.2[e]	177	..	..	..[g]	..	..	..	..	..	..	7.1
Channel Islands	150	0.4	..	16	..	..[g]	..	..	..	*76*	*83*	..	..
Comoros	614	2.1	275	42	406	660	1,233[h]	2,010[h]	–1.6	61	64	..	0.2
Cuba	11,286	0.2	103	19	..	..[i]	..	..	*5.2*	75	79	100	2.3
Cyprus	765	1.6	83	19	*13,633*	*18,430*	*15,898*	*21,490*	*1.3*	77	82	97	10.1
Djibouti	806	2.0	35	41	857	1,060	2,046[h]	2,540[h]	3.2	52	55	..	0.5
Dominica	72	0.2	97	..	287	3,960	470	6,490	3.5	..	..	..	2.0
Equatorial Guinea	515	2.3	18	45	4,246	8,250	5,226[h]	10,150[h]	–7.0	42	43	87	0.3
Estonia	1,341	–0.4	32	15	15,307	11,410	23,522	17,540	11.8	67	78	100	13.5
Faeroe Islands	48	0.2[e]	35	..	..	..[g]	..	..	..	..	..	..	13.7
Fiji	853	0.9	47	31	2,815	3,300	5,292	6,200	2.7	66	71	..	1.3
French Polynesia	260	1.6	71	27	..	..[g]	..	..	..	71	76	..	2.8
Gabon	1,406	1.7	5	40	7,032	5,000	7,465	5,310	–0.4	53	54	64	0.9
Gambia, The	1,553	2.8	155	40	488	310	3,059[h]	1,970[h]	2.1	55	58	..	0.2
Greenland	57	0.2	0	..	..	..[g]	..	..	..	..	..	..	10.0
Grenada	108	1.1	318	..	478	4,420	845	7,810	4.1	..	..	..	2.1
Guam	172	1.7	312	30	..	..[g]	..	..	..	73	78	..	24.9
Guinea-Bissau	1,633	3.0	58	48	307	19[d]	1,655	830[h]	1.2	44	47	..	0.2
Guyana	751	0.2	4	29	849	[illegible]	3,503[h]	4,680[h]	4.4	61	67	..	2.2
Iceland	299	1.0	3	22	15,[illegible]	51,56[illegible]	10,930	36,560	2.1	79	83	..	7.6
Iraq	..	..	..	..	..	..[i]	..	..	..	..	..	74	..
Isle of Man	77	0.9	134	..	..	..	..	..	..	..	..	..	..
Kiribati	101	1.7	[illegible]	..	124	[illegible]	9[illegible]	8,970[h]	4.2	..	..	..	0.3
Korea, Dem. Rep.	22,569	0.5	197	25	..	..[d]	..	..	..	61	67	..	3.5
Lesotho	1,789	0.[illegible]	69	38	1,839	[illegible]03	7,764[h]	4,340[h]	3.1	34	36	82	..
Liberia	[illegible]	1.6	35	47	[illegible]69	140	..	..	4.7	42	43	52	0.1
Libya	5,9[illegible]	2.0	[illegible]	[illegible]	[illegible]011	7,380	..	..	3.6	72	77	84	8.9
Liechtenstein	35	0.8[e]	218	..	..	..[g]	..	..	..	..	..	..	..
Luxembourg	462	0.9	178	19	35,133	76,040	27,519	59,560	5.0	76	82	..	22.1
Macao, China	463	0.7	16,422	15	..	..[g]	..	..	16.2	78	82	91	4.1
Maldives	337	2.5	1,123	40	902	2,680	..	..	16.0	68	67	96	1.4
Malta	405	0.6	1,266	17	*5,491*	*13,610*	*7,517*	*18,630*	*1.9*	78	81	..	6.2
Marshall Islands	65	3.6	363	..	196	3,000	..	..	0.6	..	..	..	..
Mauritius	1,253	0.9	617	24	6,833	5,450	16,934	13,510	2.7	70	77	84	2.6
Mayotte	187	3.9[e]	499	..	..	..[f]	..	..	..	..	..	..	..
Micronesia, Fed. Sts.	111	0.6	159	39	264	2,380	869[h]	7,830[h]	–1.2	67	69	..	..
Monaco	33	0.3[e]	16,718	..	..	..[g]	..	..	..	..	..	..	..
Montenegro	606	–1.7	44	..	2,317	3,860	..	..	7.7	72	77	..	..
Myanmar	50,962	1.1	78	29	..	..[d]	..	..	*3.9*	58	64	90	0.2
Netherlands Antilles	184	0.7	230	22	..	..[g]	..	..	..	73	80	96	22.7
New Caledonia	238	1.9	13	28	..	..[g]	..	..	..	72	78	..	8.3
Northern Mariana Islands	82	2.6[e]	172	..	..	..[f]	..	..	..	..	..	..	..
Palau	20	0.8[e]	44	..	162	7,990	..	..	5.2	..	..	..	12.3
Puerto Rico	3,929	0.5	443	22	..	..[g]	..	..	..	74	82	90	0.5
Qatar	828	5.2	75	22	..	..[g]	..	..	*1.4*	72	77	89	63.0
Samoa	186	0.7	66	40	421	2,270	1,188[h]	6,400[h]	2.0	68	74	99	0.8
San Marino	29	1.1[j]	477	..	..	..[g]	..	..	..	..	..	..	..
Sao Tome and Principe	160	2.3	167	39	124	780	..	..	4.6	62	65	85	0.6
Seychelles	86	0.9	186	..	741	8,650	1,420[h]	16,560[h]	3.0	..	..	92	6.6
Solomon Islands	489	2.6	17	40	331	680	1,062[h]	2,170[h]	2.8	62	64	..	0.4
Somalia	8,485	3.2	14	44	..	..[d]	..	..	..	47	49	..	..
St. Kitts and Nevis	48	1.5	134	..	428	8,840	614	12,690	3.8	..	..	..	2.7
St. Lucia	166	1.0	272	28	848	5,110	1,157	6,970	4.1	72	76	..	2.0
St. Vincent and the Grenadines	120	0.5	307	29	470	3,930	839	7,010	3.6	70	75	..	1.7
Suriname	452	0.7	3	30	1,446	3,200	3,667	8,120	5.3	67	73	90	5.0
Swaziland	1,126	1.2	65	40	2,737	2,430	5,822	5,170	2.5	42	41	80	0.9
Timor-Leste	1,029	4.5	69	41	865	840	..	..	–6.7	56	58	..	0.2
Tonga	102	0.4	142	35	223	2,170	879[h]	8,580[h]	1.8	71	74	..	1.1
Trinidad and Tobago	1,309	0.3	255	21	17,461	13,340	21,281	16,260	12.2	67	73	98	22.1
United Arab Emirates	4,636	5.9	55	22	*103,460*	*23,950*	*103,637*[h]	*23,990*[h]	*3.4*	77	82	89	33.4
Vanuatu	215	2.0	18	39	369	1,710	706[h]	3,280[h]	3.6	68	71	..	0.4
Virgin Islands (U.S.)	109	0.0	310	24	..	..[g]	..	..	..	77	80	..	124.3

Note: For data comparability and coverage, see the technical notes. Figures in italics are for years other than those specified.
a. Calculated using the World Bank Atlas method. b. PPP is purchasing power parity; see Definitions. c. Data are for the most recent year available. d. Estimated to be low income ($905 or less). e. Data are for 2003–2006. f. Estimated to be upper middle ($3,596–$11,115). g. Estimated to be high income ($11,116 or more). h. The estimate is based on regression; others are extrapolated from the latest International Comparison Program benchmark estimates. i. Estimated to be lower middle income ($906–3,595). j. Data are for 2004–2006.

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Technical notes

These technical notes discuss the sources and methods used to compile the indicators included in this edition of Selected World Development Indicators. The notes follow the order in which the indicators appear in the tables.

Sources

The data published in the Selected World Development Indicators are taken from World Development Indicators 2007. Where possible, however, revisions reported since the closing date of that edition have been incorporated. In addition, newly released estimates of population and gross national income (GNI) per capita for 2006 are included in table 1 and table 6.

The World Bank draws on a variety of sources for the statistics published in the *World Development Indicators*. Data on external debt for developing countries are reported directly to the World Bank by developing member countries through the Debtor Reporting System. Other data are drawn mainly from the United Nations and its specialized agencies, from the International Monetary Fund (IMF), and from country reports to the World Bank. Bank staff estimates are also used to improve currentness or consistency. For most countries, national accounts estimates are obtained from member governments through World Bank economic missions. In some instances these are adjusted by staff to ensure conformity with international definitions and concepts. Most social data from national sources are drawn from regular administrative files, special surveys, or periodic censuses.

For more detailed notes about the data, please refer to the World Bank's *World Development Indicators 2007*.

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Data consistency and reliability

Considerable effort has been made to standardize the data, but full comparability cannot be assured, and care must be taken in interpreting the indicators. Many factors affect data availability, comparability, and reliability: statistical systems in many developing economies are still weak; statistical methods, coverage, practices, and definitions differ widely; and cross-country and intertemporal comparisons involve complex technical and conceptual problems that cannot be unequivocally resolved. Data coverage may not be complete because of special circumstances or for economies experiencing problems (such as those stemming from conflicts) affecting the collection and reporting of data. For these reasons, although the data are drawn from the sources thought to be most authoritative, they should be construed only as indicating trends and characterizing major differences among economies rather than offering precise quantitative measures of those differences. Discrepancies in data presented in different editions reflect updates by countries as well as revisions to historical series and changes in methodology. Thus readers are advised not to compare data series between editions or between different editions of World Bank publications. Consistent time series are available from the *World Development Indicators 2007* CD-ROM and in *WDI Online*.

Ratios and growth rates

For ease of reference, the tables usually show ratios and rates of growth rather than the simple underlying values. Values in their original form are available from the *World Development Indicators 2007* CD-ROM. Unless otherwise noted, growth rates are computed using the least-squares regression method (see *Statistical methods* below). Because this method takes into account all available observations during a period, the resulting growth rates reflect general trends that are not unduly influenced by exceptional values. To exclude the effects of inflation, constant price economic indicators are used in calculating growth rates. Data in italics are for a year or period other than that specified in the column heading—up to two years before or after for economic indicators and up to three years for social indicators, because the latter tend to be collected less regularly and change less dramatically over short periods.

Constant price series

An economy's growth is measured by the increase in value added produced by the individuals and enterprises operating in that economy. Thus, measuring real growth requires estimates of GDP and its components valued in constant prices. The World Bank collects constant price national accounts series in national currencies and recorded in the country's original base year. To obtain comparable series of constant price data, it rescales GDP and value added by industrial origin to a common reference year, 2000 in the current version of the *World Development Indicators*. This process gives rise to a discrepancy between the rescaled GDP and the sum of the rescaled components. Because allocating the discrepancy would give rise to distortions in the growth rate, it is left unallocated.

Summary measures

The summary measures for regions and income groups, presented at the end of most tables, are calculated by simple addition when they are expressed in levels. Aggregate growth rates and ratios are usually computed as weighted averages. The summary measures for social indicators are weighted by population or subgroups of population, except for infant mortality, which is weighted by the number of births. See the notes on specific indicators for more information.

For summary measures that cover many years, calculations are based on a uniform group of economies so that the composition of the aggregate does not change over time. Group measures are compiled only if the data available for a given year account for at least two-thirds of the full group, as defined for the 2000 benchmark year. As long as this criterion is met, economies for which data are missing are assumed to behave like those that provide estimates. Readers should keep in mind that the summary measures are estimates of representative aggregates for each topic and that nothing meaningful can be deduced about behavior at the country level by working back from group indicators. In addition, the estimation process may result in discrepancies between subgroup and overall totals.

Table 1. Key indicators of development

Population is based on the de facto definition, which counts all residents, regardless of legal status or citizenship, except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of the country of origin.

Average annual population growth rate is the exponential rate of change for the period (see the section on statistical methods below).

Table 4. Economic activity

Gross domestic product is gross value added, at purchasers' prices, by all resident producers in the economy plus any taxes and minus any subsidies not included in the value of the products. It is calculated without deducting for depreciation of fabricated assets or for depletion or degradation of natural resources. Value added is the net output of an industry after adding up all outputs and subtracting intermediate inputs. The industrial origin of value added is determined by the International Standard Industrial Classification (ISIC) revision 3. The World Bank conventionally uses the U.S. dollar and applies the average official exchange rate reported by the International Monetary Fund for the year shown. An alternative conversion factor is applied if the official exchange rate is judged to diverge by an exceptionally large margin from the rate effectively applied to transactions in foreign currencies and traded products.

Gross domestic product average annual growth rate is calculated from constant price GDP data in local currency.

Agricultural productivity refers to the ratio of agricultural value added, measured in constant 1995 U.S. dollars, to the number of workers in agriculture.

Value added is the net output of an industry after adding up all out-puts and subtracting intermediate inputs. The industrial origin of value added is determined by the International Standard Industrial Classification (ISIC) revision 3.

Agriculture value added corresponds to ISIC divisions 1–5 and includes forestry and fishing.

Industry value added comprises mining, manufacturing, construction, electricity, water, and gas (ISIC divisions 10–45).

Services value added corresponds to ISIC divisions 50–99.

Household final consumption expenditure is the market value of all goods and services, including durable products (such as cars, washing machines, and home computers), purchased by households. It excludes purchases of dwellings but includes imputed rent for owner-occupied dwellings. It also includes payments and fees to governments to obtain permits and licenses. Here, household consumption expenditure includes the expenditures of nonprofit institutions serving households, even when reported separately by the country. In practice, household consumption expenditure may include any statistical discrepancy in the use of resources relative to the supply of resources.

General government final consumption expenditure includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security, but excludes government military expenditures that are part of government capital formation.

Gross capital formation consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories and valuables. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of buildings, roads, railways, and the like, including commercial and industrial buildings, offices, schools, hospitals, and private dwellings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and "work in progress". According to the 1993 SNA net acquisitions of valuables are also considered capital formation.

External balance of goods and services is exports of goods and services less imports of goods and services. Trade in goods and services comprise all transactions between residents of a country and the rest of the world involving a change in ownership of general merchandise, goods sent for processing and repairs, nonmonetary gold, and services.

The **GDP implicit deflator** reflects changes in prices for all final demand categories, such as government consumption, capital formation, and international trade, as well as the main component, private final consumption. It is derived as the ratio of current to constant price GDP. The GDP deflator may also be calculated explicitly as a Paasche price index in which the weights are the current period quantities of output.

National accounts indicators for most developing countries are collected from national statistical organizations and central banks by visiting and resident World Bank missions. Data for high-income economies come from the Organization for Economic Cooperation

Table 5. Trade, aid, and finance

Merchandise exports show the free on board (f.o.b.) value of goods provided to the rest of the world valued in U.S. dollars.

Merchandise imports show the c.i.f. value of goods (the cost of the goods including insurance and freight) purchased from the rest of the world valued in U.S. dollars. Data on merchandise trade come from the World Trade Organization (WTO) in its annual report.

Manufactured exports comprise the commodities in Standard Industrial Trade Classification (SITC) sections 5 (chemicals), 6 (basic manufactures), 7 (machinery and transport equipment), and 8 (miscellaneous manufactured goods), excluding division 68.

High technology exports are products with high R&D intensity. They include high-technology products such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.

Current account balance is the sum of net exports of goods and services, net income, and net current transfers.

Foreign direct investment is net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, re-investment of earnin gs, other long-term capital, and short-term capital, as shown in the balance of payments. Data on the current account balance, private capital flows, and foreign direct investment are drawn from the IMF's *Balance of Payments Statistics Yearbook and International Financial Statistics*.

Official development assistance or official aid from the high-income members of the Organisation for Economic Co-operation and Development (OECD) are the main source of official external finance for developing countries, but official development assistance (ODA) is also disbursed by some important donor countries that are not members of OECD's Development Assistance Committee (DAC). DAC has three criteria for ODA: it is undertaken by the official sector; it promotes economic development or welfare as a main objective; and it is provided on concessional terms, with a grant element of at least 25 percent on loans.

Official development assistance comprises grants and loans, net of repayments, that meet the DAC definition of ODA and are made to countries and territories in part I of the DAC list of aid recipients. Official aid comprises grants and ODA-like loans, net of repayments, to countries and territories in part II of the DAC

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Weights vary over time because both the composition of the SDR and the relative exchange rates for each currency change. The SDR deflator is calculated in SDR terms first and then converted to U.S. dollars using the SDR to dollar Atlas conversion factor. The Atlas conversion factor is then applied to a country's GNI. The resulting GNI in U.S. dollars is divided by the midyear population to derive GNI per capita.

When official exchange rates are deemed to be unreliable or unrepresentative of the effective exchange rate during a period, an alternative estimate of the exchange rate is used in the Atlas formula (see below).

The following formulas describe the calculation of the Atlas conversion factor for year t :

$$e_t^* = \frac{1}{3}\left[e_{t-2}\left(\frac{p_t}{p_{t-2}} \Big/ \frac{p_t^{S\$}}{p_{t-2}^{S\$}}\right) + e_{t-1}\left(\frac{p_t}{p_{t-1}} \Big/ \frac{p_t^{S\$}}{p_{t-1}^{S\$}}\right) + e_t\right]$$

and the calculation of GNI per capita in U.S. dollars for year t:

$$Y_t^{\$} = (Y_t/N_t)/e_t^*,$$

where e_t^* is the Atlas conversion factor (national currency to the U.S. dollar) for year t, e_t is the average annual exchange rate (national currency to the U.S. dollar) for year t, p_t is the GDP deflator for year t, $p_t^{S\$}$ is the SDR deflator in U.S. dollar terms for year t, $Y_t^{\$}$ is the Atlas GNI per capita in U.S. dollars in year t, Y_t is current GNI (local currency) for year t, and N_t is the midyear population for year t.

Alternative conversion factors

The World Bank systematically assesses the appropriateness of official exchange rates as conversion factors. An alternative conversion factor is used when the official exchange rate is judged to diverge by an exceptionally large margin from the rate effectively applied to domestic transactions of foreign currencies and traded products. This applies to only a small number of countries, as shown in Primary data documentation table in World Development Indicators 2007. Alternative conversion factors are used in the Atlas methodology and elsewhere in the Selected World Development Indicators as single-year conversion factors.

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