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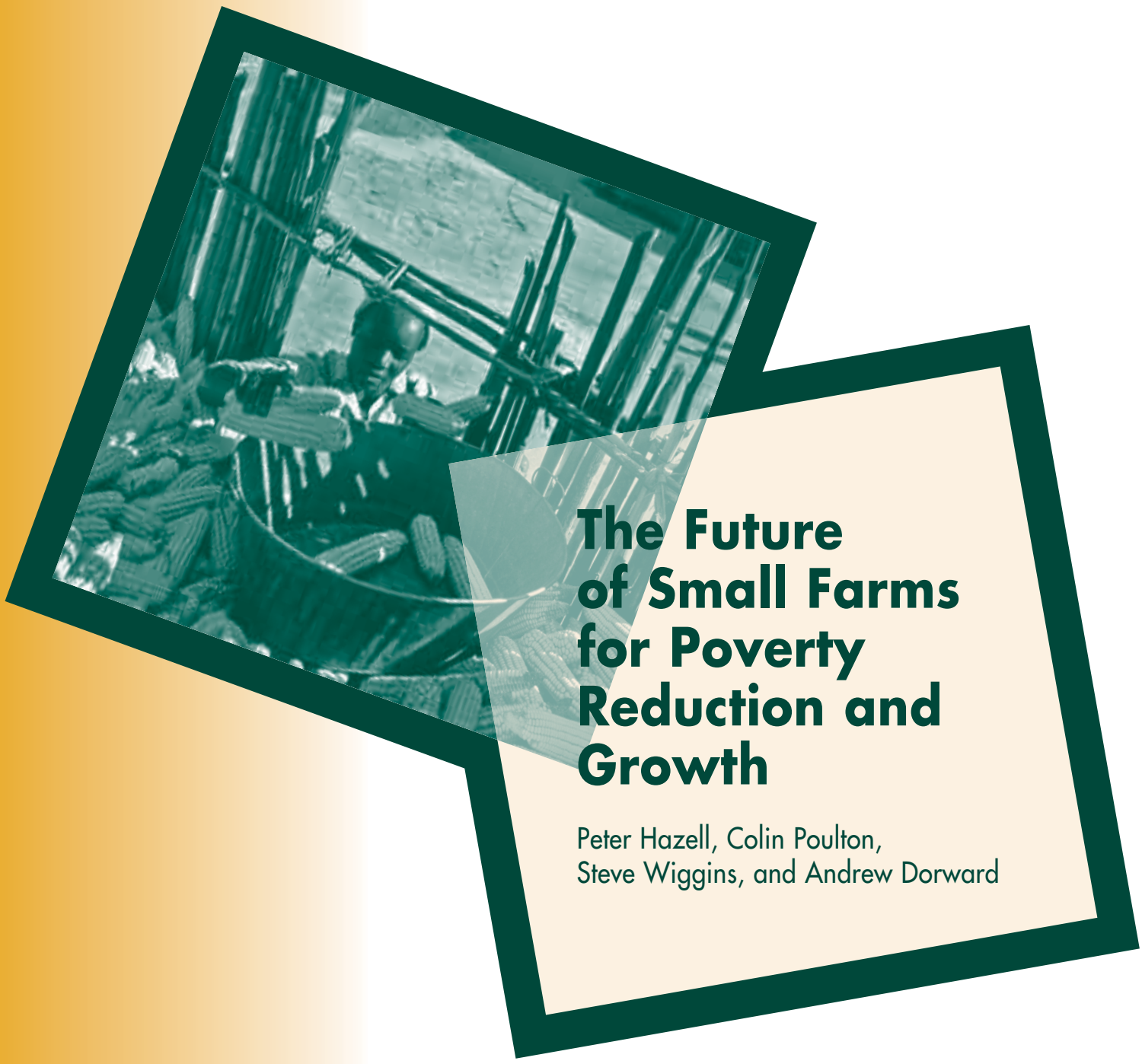

The Future of Small Farms for Poverty Reduction and Growth

Peter Hazell, Colin Poulton,
Steve Wiggins, and Andrew Dorward

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Foreword

The people operating small farms in developing countries have to cope with the risks of these small businesses and have long faced heavy challenges. Today, these challenges are particularly severe, and the aspirations of young people on small farms have changed. Globalization and the integration of international markets are stimulating intense competition, offering some opportunities but also new risks. In light of these pressures and others, many of the world's millions of small farmers are simply not making it. Indeed, half of the world's undernourished people, three-quarters of Africa's malnourished children, and the majority of people living in absolute poverty live on small farms.

The transformation of the small-farm economy is one of the biggest economic challenges of our time. For some, it entails growth into specialized, market-oriented farms; for others, part-time farming combined with off-farm rural jobs; and for others, a move out of agriculture. The pathways of transformation differ by region and location and will take decades. Policy must take a long-run view to support and guide this process efficiently, effectively, and in social fairness. The role of women farmers and their livelihoods requires particular attention.

In this paper, Peter Hazell, Colin Poulton, Steve Wiggins, and Andrew Dorward address several crucial questions. Do small farms in fact have a future? In what situations can small farms succeed? What strategies are most appropriate for helping to raise small-farm productivity? The authors review both sides of the debate over the future of small farms before coming to their conclusions. Coming down firmly on the side of policy support for small farms, they point to small farms' significant potential for reducing poverty and inequity. They also clarify the differing roles of and needs for small farms in different country contexts and spell out a policy agenda for promoting small-farm development.

This discussion paper is based on a literature review and the deliberations of an international workshop, "The Future of Small Farms," organized by the International Food Policy Research Institute (IFPRI) 2020 Vision Initiative, the Overseas Development Institute (ODI), and Imperial College London in Wye, England, from June 26 to 29, 2005. (A proceedings volume for this workshop is available from IFPRI, www.ifpri.org/events/seminars/2005/smallfarms/sfproc.asp.)

We hope that this discussion paper will help stimulate renewed attention among many stakeholders—including policymakers, researchers, the private sector, and nongovernmental organizations—to small-scale agricultural development. Healthy and productive small farms could serve as a crucial mechanism for achieving the poverty and hunger Millennium Development Goals.

Joachim von Braun
Director General, IFPRI

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We would like to thank participants in the international workshop "The Future of Small Farms," organized by the International Food Policy Research Institute (IFPRI) 2020 Vision Initiative, the Overseas Development Institute (ODI), and Imperial College London in Wye, England, in June 2005. We also appreciate the many helpful comments made by anonymous reviewers of this paper. Finally, we are grateful to the U.K. Department for International Development (DFID), the International Food Policy Research Institute (IFPRI), the International Development Research Centre (IDRC), the Latin American Center for Rural Development (RIMISP), and the U.S. Agency for International Development (USAID) for funding the synthesis work involved in preparing this paper.

Executive Summary

The Role of Agriculture[1]

The case for rural development is easy to make: the large majority of the poor live in the rural areas of the developing world. Even with urbanization, this reality will not change for at least another 20 years. Although some of the rural poor may be helped by transfers from cities, for most poor households any improvement in their incomes will depend on generating more and better jobs in rural areas.

Agriculture is likely to be central to rural development and rural poverty alleviation. Farming has high potential to create jobs, to increase returns to the assets that the poor possess—their labor and in some cases their land—and to push down the price of food staples, which is crucial when so many of the poor are net buyers of food. Historically, few countries have industrialized successfully without prior development of their agriculture. Recent comparisons made across countries show that increases in agricultural productivity are closely related to poverty reduction. In most rural areas, moreover, there are few alternatives to farming as a large-scale source of jobs. The opportunities for mining and tourism are restricted to locations with mineral deposits or natural assets, and rural manufacturers find it difficult to compete with urban factories.

Nevertheless, some changes in the past quarter century make agricultural development more difficult than before. The prices of most commodities have fallen on world markets. The better opportunities for Green Revolution–type packages of improved seeds and fertilizer have already been taken up, and there are doubts about the ability of research to provide major technical advances. In some areas soil fertility has been lost, water tables are falling, and climate change may mean increasingly adverse weather. Parts of Africa face significant impacts from the HIV/AIDS epidemic. Finally, current policy preferences prevent the state from taking as active a role in fostering agricultural development as it did in the past.

How much these changes hinder agricultural development varies by context. This paper considers different country situations, based on the prospects for minerals, manufacturing, and agriculture. In most cases, agriculture proves central to development efforts, either as a leading sector or as a supporter to other sectors.

The Case for and against Small Farms

Should agricultural development efforts emphasize small or large farms? In terms of efficiency, small farms typically make intensive use of land by using much labor, since the costs of supervising household labor are low. Self-provisioning saves costs of marketing. Large farms, on the other hand, have lower costs when transacting with the outside world in procuring inputs, marketing produce, and gaining access to credit.

[1] This executive summary is also available as 2020 Policy Brief 75, published under the same title as this discussion paper.

With regard to equity and poverty reduction, small farms are preferred to large. Smallholdings are typically operated by poor people who use a great deal of labor, both from their own households and from their equally poor or poorer neighbors. Moreover, when small-farm households spend their incomes, they tend to spend them on locally produced goods and services, thereby stimulating the rural nonfarm economy and creating additional jobs.

The changes already described affect both small and large farms, and more or less equally. But other developments may pose more severe challenges for smallholdings. When new technologies require more capital inputs, mechanization, or high levels of education, these requirements may disadvantage smaller farms.

More worrying are the implications of changes to marketing chains. Supermarket operators are becoming increasingly important in parts of the developing world. The supermarkets impose stricter standards for the quality, consistency, and timeliness of supply. They may also require the ability to trace consignments back to the source to confirm how they have been produced. Supermarkets expect their suppliers to adjust rapidly to changing consumer demands. Small-scale, undercapitalized, and often undereducated farmers find it particularly difficult to meet these requirements, especially those of traceability and credence (that is, characteristics that relate to production methods like pesticide use but cannot be proved by examining the produce), even if family labor is often well suited to delivering high-quality products.

Will small farms be marginalized from the new supply chains? Much depends on whether they grow produce where credence attributes matter and whether supermarkets can obtain their supplies from large farms. When supermarkets can deal with a few large farms, they will; when credence attributes are less important or there are no alternatives to small farms, then smallholders are likely to become part of the evolving supply chains. Equally important is how quickly supermarkets come to dominate food supply chains. Supermarkets thrive in growing economies, so as their control of marketing increases and some small farmers are excluded, chances are that new jobs are being created for them in nonfarm activities.

The Policy Agenda for Small Farms

What are the policy implications? Policies for smallholders need to vary by context. In some cases, and for some small farms, smallholder development promises both to drive or sustain growth and to deliver reasonably equitable development. In other cases, policymakers need to consider whether there are social reasons to support small farms. If not, the policy agenda involves establishing social safety nets for the poor and facilitating good exits from farming for small farmers.

A contemporary agenda for smallholder development to promote growth and equity would have three central elements, as follows.

One is getting the basics in place. These basics include ensuring that the macroeconomy is stable and that public goods—rural roads, rural education and health care, agricultural research and extension—are funded by the state. The basics also include good governance for agricultural and rural development: ensuring the rule of law in the countryside; providing opportunities for resolving disputes, especially over land; and making any public interventions in food and credit markets as transparent and predictable as possible.

A second element is encouraging farmers to follow demand and improving marketing systems. Improving marketing systems so that farmers receive a greater share of market prices may involve upgrading transport infrastructure and systems, providing credit to traders and processors, and forming farmer associations for bulk marketing.

There are also questions about how to respond to high variability of market prices, both between

seasons and across the years. Some people argue that price variability requires public intervention in markets, but others argue for improvements to private marketing systems through, for example, incentives to invest in storage.

The third element is institutional innovation in providing inputs and services. As experience over the past two decades has shown only too clearly, markets however much liberalized often fail in rural areas. Critical problems are lack of information on the intentions and character of small farmers and the difficulty of overcoming complementary coordination problems in the delivery of input, financial, technical, and output marketing services needed for small-farm intensification. Institutional innovations are needed to overcome these failures, but who will take the initiative? In certain circumstances, the private sector has adequate incentives to innovate. In many cases, however, the state has a key role to play in coordination. Yet state agencies may be unfamiliar with this role and ill equipped to perform it, and they may lack the necessary incentives. Greater engagement with, and accountability to, other stakeholders (like private companies, nongovernmental organizations [NGOs], and farmer associations) can create incentives. Even in the best cases, however, one should not expect a completely smooth ride, because new roles take time to learn, old habits and mistrust persist, and some institutional experiments work better than others.

Even in situations where the agenda described is appropriate, it may not be carried out. Successful intervention on behalf of small farm–led agricultural development requires that governments have an interest in mobilizing the support needed and the capacity to do so. Political will is a fundamental precondition for agricultural investment and policy reform, and it has been lacking in many of today's poorest countries, particularly in Africa. Even Asian countries that have consistently shown strong political commitment to small farm–led agricultural development now face major political economy challenges to cutting back subsidy support to agriculture in the Green Revolution heartlands and redirecting some of those resources to investments in public goods that can expand future small farm opportunities. Vested interests and widespread opposition in rural areas, among large farmers and the fertilizer and seed industries, have become major impediments to adapting the policy agenda to changing economic conditions.

African countries have produced much more government rhetoric about agricultural development over the years than actual commitment, but a number of changes to the development agenda have the potential to produce concrete results. These changes include increased emphasis on democratization, decentralization, and participatory policy processes (for example, poverty reduction strategy papers [PRSPs]). The impact of these changes on the orientation of agricultural policy (pro– or anti–small farms) is as yet unproven, but there may be opportunities to be seized.

Conclusions

The case for smallholder development as one of the main ways to reduce poverty remains compelling, at least to these authors. The policy agenda, however, must change to meet the new challenges facing small farms. The challenge is to improve the workings of markets for outputs, inputs, and financial services to overcome market failures. Meeting this challenge calls for innovations in institutions, for joint work between farmers, private companies, and NGOs, and for a new, more facilitating role for ministries of agriculture and other public agencies. New thinking on the role of the state in agricultural development and new opportunities to build on democratization, decentralization, and the introduction of participatory policy processes, plus a renewed interest in agriculture among major international donors, give grounds for hope that greater support can be delivered to enable small farm development. But unless key policymakers adopt a more assertive agenda toward small-farm agriculture, there is a growing risk that rural poverty will rise dramatically and that waves of migrants to urban areas will overwhelm available job opportunities, urban infrastructure, and support services.

1. Introduction

Of the developing world's 3 billion rural people, more than two-thirds reside on small farms (less than 2 hectares), of which there are nearly 500 million (see Box 1 for a definition of small farms). These small farmers include half of the world's undernourished people, three-quarters of Africa's malnourished children, and the majority of people living in absolute poverty (IFPRI 2005). Moreover,

Box 1—What do we mean by "small farms"?

Definitions of small farms vary. The most obvious measure is farm size, and several sources define small farms as those with less than 2 hectares of cropland. In a similar but less precise vein, others describe small farms as those with "limited resources," a definition that includes land as well as capital, skills, and labor.

Other authors emphasize, variously:

- the low technology often used on small farms,
- dependence on household members for most of the labor, and
- subsistence orientation, where the primary aim of the farm is to produce the bulk of the household's consumption of staple foods.

Context matters as well: a 10-hectare farm in many parts of Latin America would be smaller than the national average, operated largely by family labor, and producing primarily for subsistence making it a small farm by most criteria. The same-sized holding in the irrigated lands of West Bengal, on the other hand, would be well above the average size for the region, would probably hire in much of the labor used, and would produce a significant surplus for sale. In this case, the 10-hectare farm would be described as medium, if not large, and probably be seen as "commercial" as well.

Some of the debate on small farms is confused by the proponents having in mind different kinds of small farms. Those optimistic about the prospects for smallholder development have in mind small farms that are large enough to provide one or more full-time jobs for the household and capable of generating enough income—albeit in combination with some off-farm work, especially in the slack season for farming—to escape poverty. How large is "large enough" in this case? The answer might be as little as 1 hectare for irrigated land, and as much as 3 hectares for rainfed cropland.

Other observers have in mind that many small farms are smaller than these sizes and are incapable of providing enough work or income to be the main livelihood of the household. These are perhaps better termed "marginal farms," a term in standard use in India for holdings of less than 1 hectare.

Very small or marginal farms in some countries make up the majority of all holdings—in India, for example, farms of less than 1 hectare comprise 62 percent of all holdings and occupy 17 percent of farmed land.

Development strategies for these different kinds of small farms may be rather different, with correspondingly different policy implications—a point that will be taken up in Chapter 2 of this paper.

Source for definitions: Nagayets 2005.

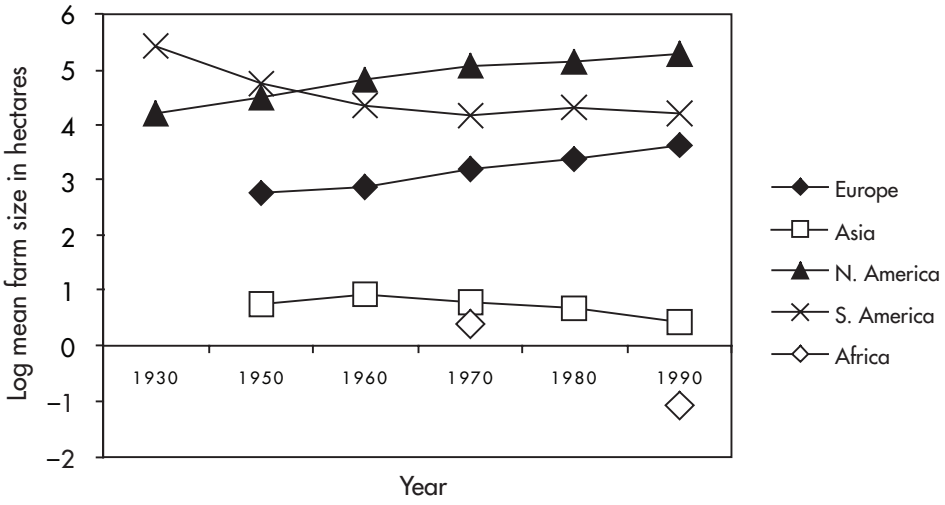
despite recurring predictions that small farms will soon disappear, they have proved remarkably persistent. Indeed, the area operated in small farms in the developing world appears to be rising rather than falling, and average farm size declined in large parts of the developing world during the second half of the 20th century (Figure 1). Although for many small farms the importance of farming in household income has declined, the number of rural households who use farming as a platform for their livelihood strategies continues to grow.

Agricultural growth that improves productivity on small farms has proven to be highly effective in slashing poverty and hunger and raising rural living standards, as demonstrated in large parts of Asia during the Green Revolution. Moreover, most of the countries that have failed to launch an agricultural revolution remain trapped in poverty, hunger, and economic stagnation. But the conventional conclusion that developing countries should continue to invest in their agricultural development, and in small farms in particular, is being challenged.

The challenge begins with the role of agriculture itself. Agriculture has become a relatively minor sector in many successfully transforming countries and is now seen as less important for growth and employment creation than other more rapidly growing sectors. Moreover, globalization has led to an explosion in international agricultural trade, reducing prices and increasing competition in agriculture around the world, making it more difficult for farmers in countries with poorly developed agricultural sectors to compete in either their traditional export markets or their own domestic markets for food and feed.

Even in countries where good prospects for agricultural growth remain, it may no longer be the case that small farms have a promising future. In successfully growing countries, many small-scale farms disappear as their workers are attracted to higher-paying opportunities in other more rapidly growing sectors of the economy, and farms become fewer and larger. History shows that this exit pattern contributes to national economic growth and helps avoid widening

Figure 1—Mean farm size by continent, 1930–1990



Source: Eastwood, Lipton, and Newell 2004.

income gaps between rural and urban areas. But part of today's global challenge arises because this transition must happen on an unprecedented scale and with unprecedented speed. More than 2 billion people live in developing countries whose per capita incomes are doubling every 10–15 years, a situation that leads to enormous pressure for millions of small farms to find exit strategies. Rapid growth in nonfarm employment opportunities is required—perhaps more than most countries can hope to generate or than can be handled without serious social dislocations and environmental degradation.

But this is only part of the threat to small farms today. New driving forces pose serious challenges to the viability of small-scale farming, even in countries that are not growing rapidly. These forces include falling prices for most of the agricultural commodities that small farmers grow, especially food staples; the scourge of HIV/AIDS; mounting pressure on natural resources from population growth; intensified international competition; and the vigorous entry of supermarket chains into some developing-country markets where they make new demands on potential suppliers for quality, consistency, and timeliness.

Just how serious are these threats to small farms? Under what conditions can small farmers seize new opportunities in the context of changing markets? How can small farms provide the basis for rural livelihoods that generate incomes above the poverty line, with little risk of slipping back into poverty? And for small farmers who cannot climb out of poverty, what alternative opportunities can be created? What policy interventions are needed to help manage the transition to fewer and larger farms while avoiding worsening poverty and social inequalities at regional and household levels?

2. The Role of Agriculture

Small farms are important players in most developing countries, accounting for significant shares of agricultural output and national employment, and thus their future is linked to future possibilities for the agricultural sector. This role is itself currently an issue of some debate, and so we begin with an assessment of the agricultural context in which the small farm debate must be resolved.

Contending Views

The historical record shows that other than a few city or island states, almost no country has ever achieved rapid economic growth at the early stages of development without substantial growth of its agriculture. As the impacts of globalization and trade liberalization are felt around the world, however, and as many countries have grown out of low-income status, there is a growing sense that the role of agriculture must also change and that this need for change has important implications for agricultural development strategy. Key arguments made for and against agriculture are summarized in Table 1.

Some of the differences in this debate can be resolved by recognizing that there is no single role for agriculture, and country context in terms of access to international markets, natural resources, and stage of development plays an important role in defining opportunities and constraints and hence roles for the agricultural sector. Context is also important in determining whether agricultural growth will be pro-poor or not.

Stage of Development

Agriculture dominates the economy of most poor countries and historically has played an important role in launching an economic transformation. But its role changes with a country's economic transformation, particularly as national per capita income grows. This transformation has several important implications for agriculture and the rural economy:

- Agriculture's shares in national income and employment fall sharply as countries grow richer and diversify, even though agricultural output and employment typically keep growing until quite late in the development process. This process means that agriculture becomes progressively less important for driving growth in national income and employment and that the baton passes to other more rapidly growing sectors like manufacturing and services.
- As per capita incomes rise, labor becomes more expensive relative to land and capital and small farms begin to get squeezed out by larger and more capitalized farms that can capture growing economies of scale. There is an exodus of agricultural workers.
- As per capita incomes rise, consumers diversify their diets and demand higher-value livestock products, fruits and vegetables, and relatively fewer food staples. They also demand higher-quality products and more processed and precooked foods. Urbanization accentuates these patterns and also places a high premium on market access, especially for perishable products (Pingali, Khwaja, and Meijer 2005).

As a result of these changes, farms become larger, more commercial, and more specialized in higher-value products. Many small farms disappear, while others adapt either by farmers specializing in high-value niches in which they can compete or by becoming part-time farmers.

Table 1—Summary of the debate about the role of agriculture

Type of argument	Case for agriculture	Case against agriculture
Engine of growth	Agriculture is a large enough sector in many countries that its growth can make a real difference to rural living standards. Moreover, agriculture has powerful growth linkage effects on the rest of the economy, including providing a growing demand for nascent industries.	Agriculture has become a relatively small sector in successfully growing countries, and other faster-growing sectors should now be prioritized. In many poor countries where agriculture still dominates, its low productivity and unfavorable market prospects undermine its potential. Moreover, agriculture's growth linkages are weaker in today's liberalized economies and may not be any larger than the linkages associated with employment-intensive manufacturing and services.
Alternatives to agriculture	Many poor countries do not have viable alternatives to agriculture. Their manufacturing sectors are small and internationally uncompetitive, and their service sectors are demand constrained.	Trade liberalization and foreign direct investment have opened up new opportunities for developing countries to become early exporters of manufactures and some services and to rely more on low-cost food imports.
Technical feasibility	Modern science is opening up new opportunities to increase agricultural productivity, even in countries and regions that have not benefited much from new technologies in the past.	The best technological opportunities have already been exploited, and agricultural research now faces diminishing returns in the better agricultural areas and costly and risky prospects in lagging regions. Modern intensive farming also leads to environmental degradation in many developing-country situations. A shift toward private funding of research means that the problems of poor farmers are less likely to be a priority.
Poverty impact	Agricultural growth has proven to be powerfully pro-poor when based on small farms and the products they grow, especially food staples.	Changes in market systems mean that there are limited market opportunities for small farms today, and the prices of the products they grow are at historic lows. The combination of lower prices and smaller farm sizes reduces the direct poverty impact of agricultural intensification. The rural poor have also diversified away from agriculture as their main source of livelihood. Commercial farms and high-value market chains offer better prospects for creating employment and reducing poverty.
Policy environment	Structural adjustment programs have removed the worst of the biases against agriculture and opened the way for more successful agricultural investments.	There is no tolerance today for the kinds of big public spending on agriculture, including subsidies, that characterized the Green Revolution and that some think are needed in Africa today. Many countries also lack the governance and administrative capability to implement ambitious agricultural development programs.

Seen in this dynamic context, arguments against prioritizing small-farm agriculture and food staples make sense once the transformation of a country is well underway, and the focus should shift to larger farms and high-value products. Opportunities for small farms and agricultural workers to leave agriculture also increase with economic growth, but not necessarily fast enough to prevent widening income gaps. Policy attention must then shift to managing their exit.

Location and Resource Endowments

Agriculture generally plays its largest role in the early stages of development, but its potential contributions to economic growth and poverty reduction are affected by a country's resource endowments and its access to international markets. Table 2 summarizes many accepted perceptions of agriculture's roles during the early stages of the economic transformation, differentiated by country context.

Countries with mineral resources may have the opportunity to earn significant export revenues

Table 2—The role of agriculture during the early stages of development, by country context

Country's land distribution	Country's agricultural productivity potential	Country's nonagricultural engines of growth		
		Minerals	Manufacturing	Limited
Unimodal (equitable)	High	Agriculture is secondary growth sector. Agriculture is a means of spreading the benefits from minerals to a broad rural base.	Agricultural growth can speed up manufacturing development by freeing up labor and capital, reducing food costs, and supplying raw materials for agriculture-based industries.	Agriculture is the lead sector for growth and poverty reduction.
	Low	Agriculture is a means of spreading the benefits from minerals to a broad rural base.	Agriculture provides subsistence for the rural poor.	Overall economic prospects are bleak, but exploitation of niche agricultural opportunities is important for growth. Agriculture provides subsistence for the rural poor.
Bimodal (inequitable)	High	Agriculture is a possible secondary growth sector.	Agriculture provides low-cost food and raw materials for agriculture-based industries.	Agriculture is the lead sector for growth.
	Low	Agriculture provides subsistence for the rural poor.	Agriculture provides subsistence for the rural poor.	Overall economic prospects are bleak, but exploitation of niche agricultural opportunities is important for growth.

and government income without agricultural development. In practice, minerals have proved a curse for many poor countries, benefiting just a small segment of the population and contributing to corruption and conflict while leading to a high currency exchange rate that penalizes tradable sectors like agriculture (the Dutch disease problem). The potential role of agriculture in such countries depends on its productivity potential, the size of the mineral revenues, and how they are managed. On the one hand, where productivity potential is good, it may be possible to invest mineral revenues in roads, irrigation and drainage, research, and extension to promote a competitive farm sector despite high exchange rates. A good example is Indonesia, where oil earnings allowed heavy public investment in agricultural and rural development. On the other hand, where agricultural productivity potential is poor, agriculture will remain extensive, functioning as a subsistence reserve for those on the land, unless intensification is aided by heavy subsidies that may be affordable if the mineral economy is sufficiently prosperous (as in Norway and some of the Gulf States). The benefits to the poor will be greater given an equitable (unimodal) distribution of land.

Some countries that are favorably located (such as on a coast) and have good access to international markets at low cost may have good prospects for developing urban-based, export-oriented industries at an early stage. Unless these industries are to be limited to entrepôt activity, then it is likely that agriculture will play an important part in their development. Agriculture will probably be an important initial source of capital and foreign exchange, and most of the needed labor will have to come from agriculture. Moreover, the early stages of manufacturing may be based on processing farm production.

In countries with low agricultural potential, agriculture will inevitably play a smaller role, particularly if there are minerals or potential for export manufacturing or tourism. The most challenging cases are countries with low agricultural potential, no minerals, and limited prospects for alternative growth sectors. Agriculture in these countries is likely to be first and foremost a subsistence reserve where the poor can build livelihoods with little dependency on the state, particularly when land is distributed equitably. That is not to say that there will not be some farming that is competitive, at least on the domestic market. Even countries where the land resources are generally poor for farming contain some pockets of land with reasonable soil and a water supply. Prominent examples here are Sahelian countries that have established themselves as major cotton exporters in the past two decades, and have developed a modest level of irrigated rice production.

Poverty Outcomes

In situations with an equitable (unimodal) distribution of land, agricultural growth can be powerfully pro-poor. It not only raises small-farm incomes and employment, but also contributes to lower food prices and generates strong growth linkages in the nonfarm economy, which in turn help the poor. This role is greater in countries with good agricultural productivity potential.

Asia's Green Revolution demonstrated how agricultural growth that reaches large numbers of small farms could transform rural economies and raise enormous numbers of people out of poverty (Rosegrant and Hazell 2000). Recent studies also show that a more egalitarian distribution of land not only leads to higher economic growth, but also helps ensure that the growth that is achieved is more beneficial to the poor (see, for example, Deininger and Squire 1998; Ravallion and Datt 2002).[2]

In contrast, agricultural growth has proven

[2] There is a large econometric literature that uses cross-country or time series data to estimate growth-poverty elasticities by sector. These studies generally find high poverty reduction elasticities for agricultural productivity growth, especially in the early stages of development and relative to other sectors. For example, Thirtle, Lin, and Piesse (2002) in a cross-country study estimate that a 1 percent increase in crop productivity reduces the number of poor people by 0.72 percent in Africa and by 0.48 percent in Asia. In India, Ravallion and Datt (1996) estimated the elasticity of poverty reduction with respect to agricultural value added per hectare at 0.4 percent in the short run and 1.9 percent in the long run, the latter through the indirect effects of lower food prices and higher wages.

much less pro-poor in countries that began with an inequitable distribution of land (bimodal). Good examples of this case can be seen in South Africa, Zimbabwe, and many parts of Latin America.

The Impact of Globalization

In summary, agriculture's past roles have included those of leading growth sector in countries with good agricultural potential, especially if there are limited alternatives; important sector for spreading the benefits of minerals to a broad rural base; and a subsistence base for many of the poor until they can find alternative livelihoods. These roles are context specific, and understanding these relationships helps resolve part of the contemporary debate about the future role of agriculture.

Contention remains, however, about how globalization is affecting these different roles. Rapid growth in international agricultural trade, low world prices, and increasing competition in agriculture around the world are making it more difficult for farmers in countries with poorly developed agricultural sectors to compete. The pressure on developing-country farmers is exacerbated by the hefty subsidies that farmers receive in most countries of the Organization for Economic Cooperation and Development (OECD).[3] In this environment, some experts ask if it is realistic to continue to prioritize agriculture in poor countries (Maxwell, Urey, and Ashley 2001; Ellis and Harris 2004). This question is especially important for countries in the early stages of development that do not have sufficient minerals or initial manufacturing potential to provide alternative engines of growth of the scale required to launch an economic transformation. Much of Sub-Saharan Africa falls in this category.

The debate centers on four reasons for no longer prioritizing agriculture in poor countries (see also Table 1).

First, in many poor countries (especially in Africa), the agricultural sector has fallen so far behind the rest of the world in terms of its productivity that it would be very difficult and expensive to bring it up to levels at which it could compete in the market at today's low prices. Countries might better take advantage of trade liberalization and private sector capital flows (via foreign direct investment, or FDI) to develop new industries and rely on food imports as needed.

Second, the growth linkages emanating from agricultural growth are much weaker in today's more open economies, especially in small countries. For example, when imports can enter freely, food prices will be determined more by border prices than by domestic agricultural production, and industry can sell directly into foreign markets without having to wait for growth in domestic demand.

Third, the rural poor have diversified away from agriculture, making agricultural growth less important for poverty reduction.

Finally, there is no tolerance today for the kinds of big public spending on agriculture, including subsidies, that characterized the Green Revolution and that some think are needed in Africa today. Many countries also lack the governance and administrative capability to implement ambitious agricultural development programs.

Agricultural development may be difficult and growing more so, but this does not necessarily imply that other sectors offer easier options. At a time when countries like China and India are flooding world markets with cheap goods, launching manufacturing-based industries for export is also challenging, especially for countries that do not have easy access to markets, face high transport costs, or cannot attract much FDI. For many poor countries, especially in Africa, there may simply be no alternative to farming as an activity capable of creating jobs and raising the incomes of the poor on the scale required. This point is made by Fafchamps, Teal, and Toye (2001). Reviewing the prospects for economic growth in Africa, these authors favor manufacturing, owing to its record of potential

[3] The World Bank (2002) estimated their total value at about US$330 billion per year.

growth of as much as 10 percent a year, when agriculture rarely grows at more than half that rate. But they recognize that only a few countries in Africa have the conditions to allow rapid growth of manufacturing on a substantial scale in the short term.

Others place greater hope in the service sector, which is growing rapidly in many countries, including in Africa. Yet the service sector depends largely on the domestic market for its demand, and unless per capita incomes are increasing, demand will remain stagnant. Where this is the case, as in many African countries, new service sector jobs are likely to be low-productivity activities that simply supplement, rather than replace, existing incomes—what Lipton (2004) calls "jobs of distress." The better jobs are often driven by government employment (including the military) and by services directly linked to foreign aid (such as services for expatriates and project activities). Unless Africa can generate rapid growth in service sector exports (in, for example, information technology or tourism), then the longer-term prospects for the service sector ultimately depend on alternative engines of growth like agriculture to increase domestic demand.

There are also important questions about the costs of not developing agriculture. If agricultural development is bypassed in favor of other sectors, it may mean that food and raw materials are only available at a high cost, thus increasing the costs of industry and other activities. Although it may be argued that in a world with more open trading regimes, most countries can import sufficient supplies of agricultural output if necessary, this will not be the case for three important groups of poor countries:

1. the half dozen or so most populous countries (home to the majority of the world's poor) whose total food needs dwarf world trade volumes—even relatively modest production shortfalls in these countries could lead to large increases in world prices;
2. landlocked countries that face high transport costs; and
3. countries with low foreign exchange earnings that can ill afford to divert these earnings away from essential imports and capital goods to foods that could be grown at home.

Moreover, to ignore the agricultural sector in the absence of other opportunities is to condemn the rural majority to poverty. The result may then be heavy expenditure on welfare programs: protection of the very poor and destitute in rural areas can be an expensive business. Ignoring agriculture may also fail to utilize and develop human and other resources in rural areas. It may invite political instability. Historically, countries that have marginalized large sections of their rural populations have had to contend with enduring social inequalities and political tensions that few nations would choose to have. South Africa would be a good example, as would most Latin American countries, with the exceptions of Costa Rica, Cuba, and possibly Mexico.

The costs and difficulties of agricultural development may be more difficult than in the past, but they are not necessarily overwhelming. Modern science is opening up new opportunities to increase agricultural productivity, even in countries and regions that have not benefited much from new technologies in the past. Developments in information technology and energy generation can also overcome some of the constraints of poor infrastructure. As a result of structural adjustment programs and liberalization of agricultural markets, many countries have also created a more enabling environment in which the private sector and civil society can play a greater role in agricultural development, reducing the burden on the state. The difficulties are also affected by the kind of agricultural development pursued, particularly whether small farms and the rural poor are to be at the core of the strategy, and the kinds of political support that can be marshalled. We return to these issues after reviewing the small-farm debate.

3. The Case for and against Small Farms

Advantages of Small Farms

Agriculture may play a central role in development, but this does not necessarily imply that small farms should have an equally central role. What, then, are the arguments for basing agricultural development on smaller farms? Two principal considerations arise, one a matter of efficiency, the other concerning equity and poverty.

Efficiency

The efficiency argument for small-scale agriculture is based upon an extensive and long-standing empirical literature that has investigated the inverse relationship between farm size and production per unit of land. This literature shows a common tendency for larger farms to yield lower gross and net returns per hectare of land per year than smaller farms. These results are generally strongest in Asia, where land is scarce compared with labor.[4]

The causes of the implied diseconomies of scale are summarized by Lipton (2005b) as follows: Economies of scale in agriculture may apply in input supply, processing of harvests, and transport, but for most farm operations, economies of scale are weak, and there may well be diseconomies that apply once production exceeds the scope and capacity of the family farm.[5] But the balance of these two opposing forces lies with smallness, at least in the developing world.

In other words, scale of farming leads to different transaction costs for different operations. Poulton, Dorward, and Kydd (2005) summarize the differing cost advantages, as shown in Table 3. The implication is that when labor costs are an important part of agricultural costs, small farms may have significant advantages over larger units. Conversely, once agriculture becomes more intensive in transactions beyond the farm gate—buying substantial quantities of inputs and selling most of the output—larger farms may have the advantage. Thus small farms have the edge for less technologically advanced agriculture with low labor costs, but as an economy develops and wages and the use of capital intensive technology increase, then the advantage shifts to larger farms.[6]

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[4] The evidence for the inverse relationship (IR) is not undisputed. There are particular difficulties with definitions of farm size and with measures of productivity. Where studies have tried, however, to refine definitions of size and productivity (for example, looking at size in terms of land area per worker and at differences in productivity per hectare with an adjustment for land quality), the IR has often been strengthened (Lipton 1993).

[5] The commonly cited cases apply to the quality of labor input, which in turn can be a major contributory factor toward the quality of the final product. Household members working on the farm have the motivation to work diligently and flexibly. This is a particular advantage with farm work, since so many operations require care and attention and a willingness to adapt quickly to changing conditions. In comparison, factory work is less demanding since much of the quality of work is defined by the machinery. On a larger-scale farm, the costs of supervising and coordinating labor rapidly escalate.

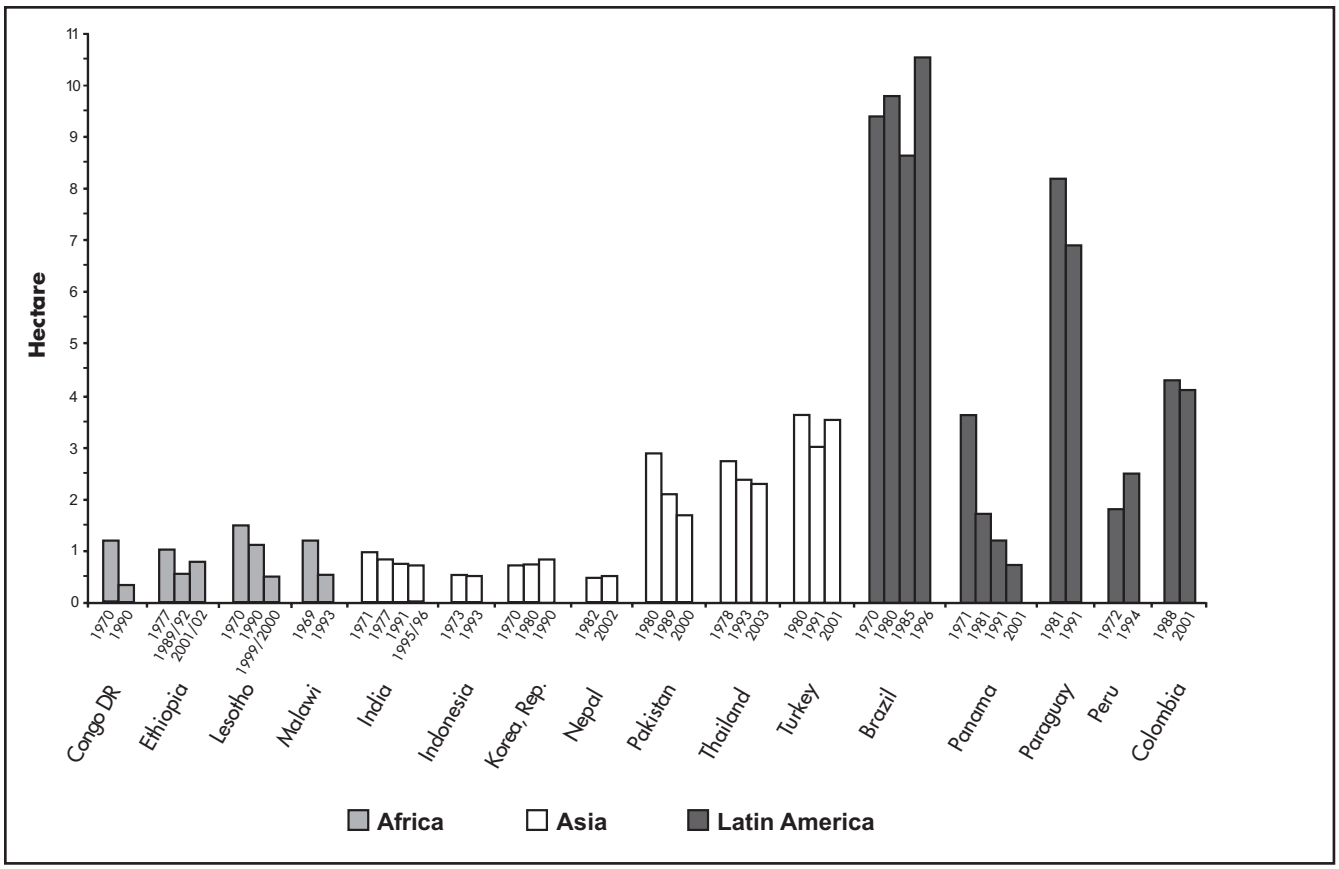
[6] Small farms' more efficient use of labor arises as a result of lower transaction costs, and some of these lower costs, relating to greater self-motivation and lower supervision costs, arise as a result of the low opportunity costs of labor for poor farmers and hence their "self-exploitation" (Dyer 1991, 1996). Under such circumstances marginal returns to labor may be lower than on large farms, though total unskilled employment and labor earnings should be higher.

Table 3—Transaction cost advantages of small and large farms

Transaction	Small-farm advantage	Large-farm advantage
Unskilled labor supervision, motivation, etc.	√	
Local knowledge	√	
Food purchases and risk (subsistence)	√	
Skilled labor		√
Market knowledge		√
Technical knowledge		√
Inputs purchase		√
Finance and capital		√
Land		√
Output markets		√
Product traceability and quality assurance		√
Risk management		√

Source: Poulton, Dorward, and Kydd 2005.

Figure 2—Median farm sizes in the developing world



Source: FAO data from agricultural censuses.

Has economic development tipped the scales from small to large farms? Apparently not yet in most countries, to judge by the evidence of the decline in farm sizes in the developing world (Lipton 2005b). Figure 1 shows how farm sizes have fallen in many developing countries over recent decades, just as they have been rising in most OECD countries. Figure 2 illustrates the trend for selected developing countries. Although the declining farm size reflects the subdivision of farms arising from population growth, if economies of scale existed, then the operated unit size would not necessarily fall, since it would make more sense to rent out small plots to larger operators. But, as Lipton comments, such cases are rare: most tenancy has the opposite effect as parts of larger farms are let out to smaller operators.

An alternative explanation is that land markets are imperfect, so that less land than expected is transferred temporarily or permanently to reflect underlying optimal scales of production.[7] On the one hand, imperfections may encourage large landowners to retain their land under their own operation. Selling prices for land may be inflated well above the discounted value of the future production, on account of the value of the land as collateral against bank credit, the social prestige of land ownership, or the expectation that land prices will rise.

On the other hand, there are forces that may dissuade owners of small plots from selling or renting out their lands. People may retain and manage their own farms rather than renting them out for cultural reasons (Singh 2005). Imperfect labor markets and unemployment may make own cultivation of small pieces of land more attractive than renting out, even if returns are higher on larger farms.

Both large and small landowners may also be reluctant to rent out fields for fear of not being able to regain their land quickly, or ever.

If this alternative interpretation is correct, then the declining average farm size in developing countries does not demonstrate any superior economic efficiency of small farms. It does, however, demonstrate that even tiny landholdings remain a valued component of a diversified livelihood strategy in the context of highly imperfect land, labor, and capital markets.

Equity and Poverty

With regard to equity and poverty reduction, there is a strong case for preferring small to large farms. Small farms are typically operated by poor people who use much labor, both from their own households and from their equally poor, or poorer, neighbors. Many farm surveys have shown that the smaller the holding, the more labor per unit area is applied (Cornia 1985; Heltberg 1998). If there were no transaction costs in labor markets, this difference would not exist, but given the costs of supervising hired labor, larger farmers tend to employ fewer workers than would otherwise be optimal.

Moreover, small-farm households have more favorable expenditure patterns for promoting growth of the local nonfarm economy, including rural towns. They spend higher shares of incremental income on rural nontradables than large farms (Mellor 1976; Hazell and Roell 1983), thereby creating additional demand for the many labor-intensive goods and services that are produced in local villages and towns. These demand-driven growth linkages provide greater income-earning opportunities for small farms and landless workers, among others.

For example, the modern varieties of rice introduced in North Arcot district, Tamil Nadu, India, between the early 1970s and the early 1980s led to a 50 percent increase in regional rice production over a decade. In this case, for every extra hundred rupees of income generated in farming, another 87 rupees were generated in the local nonfarm economy, creating significant additional income and employment opportunities for the poor in the local towns and villages (Hazell and Ramasamy 1991). Small farmers and landless laborers, for example, doubled their household

[7] Were land, labor, and capital markets perfect—with all parties secure in their rights, with complete information on the economics of production, no costs of negotiation, and equal access to capital—then land would be expected to move from larger to smaller units to correct the inverse ratio. The persistence of the inverse ratio suggests that less land is transferred than would be economically optimal.

income over the decade, with important shares coming from off-farm employment and rural nonfarm sources. Notably, about 80 percent of the income increase in the rural nonfarm economy was attributable to consumption linkages and only 20 percent to production links with agriculture.

Changes and Threats to Small Farmers

The arguments described are well known and widely accepted. What concerns some observers [see, for example, Maxwell (2003) and Ellis (2005)] is that in a changing world, the prospects for smallholders are deteriorating. Conditions for small farms have changed considerably since the Green Revolution of the mid-1960s to the 1980s. Contemporary challenges include changing production methods and increased concentration in supply chains; low world prices and markets more open to international competition; changes in research and development (R&D) systems; environmental degradation and climate change; the impact of HIV/AIDS; and changes in the policy environment.[8] Most of these challenges affect both large and small farms, but do they apply more strongly to small farms? If small-farm households were more threatened, these challenges might leave them trapped in poverty or provoke massive and premature migration from rural to urban areas. We therefore now discuss challenges that may pose particular difficulties for smallholder farmers.

Changing Production Methods and Greater Market Concentration

Changes in production methods and supply chains may undermine smallholders' efficiency in land use. Changing production technology affects economies of scale. Green Revolution technology, centered on seeds, was largely scale neutral; small farmers could participate, especially as new rounds of crop breeding made the modern varieties less variable in yield and thus less risky.[9] When new technologies involve higher capital inputs or mechanization or require high levels of education, they may disadvantage smaller farms unless explicit action is taken to help small farms reduce their transaction costs when interacting with input suppliers, bankers, and traders.[10] Many high-value crops require considerable up-front cash investment in seeds, fertilizers, and pesticides. Yet small farms are less able to obtain farm credit than large farms or to obtain inputs at comparable prices.

Second, and more worrying, are the implications of changes to marketing chains. Supermarket operators or their agents are becoming increasingly important in parts of the developing world, especially in Latin America. Buying power is being concentrated in a few hands. Supermarkets have strict standards for the quality, consistency, and timeliness of supply. They may also require the ability to trace consignments back to source and to affirm the conditions under which it was produced, in terms of pesticide use,

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[8] It could be argued that some of these challenges were present in the later agricultural transformations in China and Vietnam or were specifically addressed by policies and public investments.

[9] As noted earlier, small farmers tend to be disadvantaged relative to larger farmers by increased market transactions for inputs, finance, and outputs (but not for labor). Green Revolution technologies increased not only input use, finance demands, risk, and outputs per hectare (favoring larger farms), but also labor demands (favoring smaller farms). These mixed benefits to small and large farms are consistent with the observation that the inverse ratio appeared to weaken in the early stages of the Green Revolution as large farmers adopted new technologies first, but was then often re-established in Green Revolution areas as new technologies were adopted on smaller farms.

[10] Dorward,Kydd, et al. (2004) argue that such interventions were critical to successful Green Revolutions in the past, supporting medium- and small-farmer access to finance, seasonal inputs, and, to a lesser extent, output markets. We discuss these issues in Chapter 3. Nevertheless, policies promoting parallel adoption of mechanization by larger farms often discriminated against small farms.

organic cultivation, use of child labor, or animal welfare. They also often require the ability to adjust rapidly to changing consumer demands with new investments in equipment and knowledge. Small-scale, undercapitalized, and often undereducated farmers find it particularly difficult to meet the quantity, timeliness, traceability, and flexibility requirements of the new supply chains, even if family labor is well suited to delivering high-quality products. Meeting the requirements for credence characteristics—those that cannot be proved by examining the produce, but relate to production methods such as pesticide use—can be particularly onerous for smallholders: auditing and certification costs have strong economies of scale (Raynolds 2004). By and large, smallholders have yet to find widely replicable institutional solutions to the new demands (Boselie, Henson, and Weatherspoon 2003; Reardon and Timmer 2007).

The importance of these challenges to smallholder farmers depends on several considerations. One is how quickly supermarkets are capturing the marketing chains, particularly large domestic channels that deliver food to households of modest means. This process seems to have happened rapidly in Latin America and parts of Southeast Asia and China. It appears to be a much patchier and slower process in Africa and South Asia. Box 2 considers this point. A tentative conclusion is that supermarkets will continue to advance rapidly where they have already gained a significant foothold—that is, in the industrializing and middle-income countries of East and Southeast Asia and Latin America. In other regions, and above all in Africa and South Asia, the advance may be quite slow. Given the large population shares still living on small farms in these countries, the idea that supermarkets will rapidly spread—thereby possibly closing down small farms' marketing options—may be exaggerated. That said, it is devilishly difficult to predict such changes, since the key processes are discontinuous and nonlinear.

Another important (and related) question is whether supermarket buyers have alternatives to dealing with smallholders. In cases of bimodal land distribution, the buyers may be able to obtain the supplies they need from a relatively small number of large-scale growers, thus cutting down on transaction costs. Where, however, supermarket buyers have no alternative to sourcing supplies from smallholders—because there are insufficient large farmers in a country and importation is uneconomic or restricted by import regulations—they have sometimes proved willing to invest in technical assistance and credit systems to improve the quantity, quality, and reliability of supplies (Reardon, Timmer, and Berdegué 2005).

A typology of situations can be constructed to assess the prospects for smallholders (see Table 4). This typology differentiates along two axes. The vertical axis separates those goods where credence attributes matter little—as in many staple foods and traditional export crops—from those where credence matters, typically in higher-value produce such as horticulture and livestock.[11] The horizontal axis shows the difference between situations where buyers have to deal with smallholders because land distribution is relatively equal and those where land is unequally held and buyers can deal with large farmers exclusively. The four cells identified by this typology are labeled A through D in Table 4.

Staples and traditional cash crops tend to be in cells A and B, with opportunities for smallholders to compete, especially in cell A. By contrast, commodity chains for higher-value produce are increasingly located in cells C and D. The well-documented cases of smallholder exclusion from evolving marketing channels occur particularly in cell D (see, for example, Carter and Barham 1996; Dolan, Humphrey, and Harris-Pascal 1999) and sometimes in cell B (Latin American supermarket systems summarized by Reardon and Berdegué 2002). The few documented cases of success for smallholders in cell D tend to involve some form

[11] Note that where credence attributes are not insisted upon, small farms can thrive as suppliers of horticultural produce, because of their advantages over large farms in terms of labor quality and motivation (Reardon, Timmer, and Berdegué 2005).

Box 2—The rise of the supermarkets

Data on supermarkets' shares of retail food sales are incomplete. Moreover, different sources report different data, sometimes owing to differences in the definitions of supermarkets. As the table shows, the supermarkets' share of retail food sales varies greatly. As might be imagined, the share tends to grow with urbanization and incomes. But there are also some significant regional effects, such as the very low shares seen in South Asia.

SUPERMARKET SHARES OF RETAIL SALES OF FOOD (%)

Region/country	Earlier share (year)	2001	Circa 2002	2015 projection
North Africa and Middle East				
Egypt			10	13
Morocco			5	15
Tunisia			5	18
Turkey			37	45
Sub-Saharan Africa				
Kenya			10	16
South Africa			55	83
East and Southeast Asia				
China			11	27
China, urban	30 (1999)	48		
Indonesia	20 (1999)	25		
Korea	61 (1999)	65		
Malaysia	27 (1999)	31		
Philippines	52 (1999)	57		
Taiwan	65 (1999)	69		
Thailand	35 (1999)	43		
South Asia				
Bangladesh			1	8
India			2	9
Pakistan			1	3
Latin America				
Argentina	17 (1985)	57	54	61
Brazil	30 (1990)	75	49	76
Chile		50	62	77
Colombia		38	47	58
Costa Rica		50	55	63
El Salvador			54	68
Guatemala	15 (1994)	35	35	44
Honduras			42	54
Mexico		45	45	61
Panama			50	65
Paraguay			35	38
North America				
United States	5–10 (1930)	80		

Sources: The first two data columns come from Reardon, Timmer, and Berdegué (2005). The third and fourth come from Traill (2006). In some cases the two sources of data do not tally. For the projection, Traill uses UN projections of urbanization and incomes in 2015 and assumes complete openness to foreign investment.

Traill (2006) looked at the determinants of supermarket shares: increased incomes and urbanization raise supermarkets' share, as does income inequality—presumably because the rich are more likely to shop in supermarkets. So too does female participation in the labor force. The more open an economy is to foreign direct investment, the greater the supermarket share of retail food sales—an effect that may arise not only as transnational retail corporations enter local markets, but also as competition and demonstration effects stimulate national supermarket chains.

Supermarkets seem to have increased their shares of retail food sales in the developing world rapidly since the early 1990s. Will this continue? Traill makes projections of likely shares in 2015 using projections of likely urbanization and incomes and assuming the economy to be completely open to foreign investment. The pattern is reasonably clear: economies where supermarkets already have 40 percent or more of sales will increase their shares by 10–20 more percentage points; countries that have low supermarket coverage will see their shares rise by smaller amounts, generally less than 10 percentage points. It seems, then, that the speed of advance of the supermarkets is uneven, and where they have not yet gained one third or more of retail food sales, the speed of advance may be quite slow over the next decade.

Table 4—Commercial interest in sourcing supplies from small farmers

	Demand for output from small farms and inequality in farm structure	
Country's agricultural productivity potential	**Unimodal land distribution—high demand for smallholder produce**	**Unimodal land distribution—low demand for smallholder produce**
High—credence attributes not important	A	B
Low—credence attributes important	C	D

Source: Poulton, Dorward, and Kydd 2005.

of donor or NGO support and subsidy. Indeed, the best known (Hortico in Zimbabwe [Henson et al. 2005]) has unusual features and apparently recently collapsed owing to the overvalued exchange rate.

The main question is, will the supermarkets and other high-volume buyers turn the staples chains into those with high credence attributes?

Supermarkets are most likely to try to change supply chains when there is strong demand for foods from a thriving market—a situation associated with economic growth and rising incomes. Such circumstances are promising for small farms because they are likely to offer expanded opportunities for selling farm produce outside supermarket chains. They also offer increased demand for labor in nonfarm activities—a boon for marginal farms where households already depend heavily on off-farm sources for their incomes.

In Africa, supermarkets have penetrated furthest where there is access to large farms (Kenya, South Africa, Zambia, and Zimbabwe).[12] Where there are few large farms, and assuming restrictions on importing supplies, supermarkets will either not prevail or will have to enter into arrangements with smallholders.

The ability of small farmers to supply export and local high-quality, high-value horticultural supermarket chains is much more questionable—but this is a lost opportunity more than a threat. Even here, however, history offers some hope. When global buyers began to source tropical produce from smallholders in the developing world, one hundred or more years ago, they faced similar challenges of quality and consistency. In most cases, solutions were found, and much of the tropical export supply came from small farms. Large-scale plantations were, for most products, the exception rather than the norm—apparently since economies of scale applied in processing, but not in production (Hayami 1996, 2000). Again, policy may be important here if it can encourage (rather than deter) buyers or large-scale producers to search for innovations that will draw in smallholder producers.

It is not yet clear how current changes will affect small farms, and the impacts will almost certainly differ considerably by context. The policy challenge, however, is clear: how to make the institutional innovations that will allow at least some small farms to overcome increased transaction costs and take advantage of the emerging supply chains.

Decline in Commodity Prices and More Open Domestic Markets

The prices of most agricultural commodities have, in real terms, been falling in the long run.

[12] It may nevertheless be premature to conclude that it is the presence of a large-farm sector that has permitted this growth. An alternative explanation, consistent with discussions in earlier sections of this paper, is that a productive large-farm sector has supported agroindustrial development, such that a larger urban middle class now exists in these countries than in many others within the continent, providing the necessary demand for supermarket growth.

Moreover, some price falls seen in the last quarter century seem unusually sharp (for charts of the real prices of key agricultural commodities, see "Commodity Markets Briefs" on the World Bank website). Prices fell dramatically during the 1980s and then experienced further declines, or at best fluctuations around a static position. The increased openness of domestic markets also means that producers are much more exposed to competition from imports

The consequences for all producers are clear: if they cannot raise their productivity or otherwise reduce their unit costs of production faster than prices fall, they will lose income. Whether smallholders are more vulnerable to falling prices than larger farmers hinges largely on whether small farmers produce at higher cost than larger operators. Evidence on this is scant: data on costs of production on different-sized farms are not regularly collected in most developing countries, and in any case estimates of land and labor costs for such calculations are fraught with difficulties. Cross-country comparisons of costs for particular products may act as a proxy for farm size, but they are not easy to make since national surveys have different ways of defining and recording costs and sometimes also use different conventions for presenting summary measures. Still, in the cotton sector, West African smallholders are believed to be among the lowest-cost cotton producers in the world. Arguments for the inverse relationship might also suggest that smaller farms are on average lower-cost producers.

Notwithstanding smallholders' present costs of production, they may be less able to adapt to falling commodity prices than large farms, for two reasons. One, since marginal costs of capital are generally considered to be higher for small farms than large, they may be more disadvantaged when development requires increased capital investment in purchased inputs or equipment. Unfortunately, this is the case for most agricultural development opportunities with the potential to drive significant increases in productivity.

Two, smaller farms may also be disadvantaged if prices are more variable, because they are less able to insure themselves against price risk or to get access to capital to take them through periods of low prices within or between seasons. Large farms are less disadvantaged by fluctuating prices as they are more able to take advantage of individual years when prices are good.[13]

The converse is the question of how much small farmers could benefit from higher commodity prices if these were to be achieved through world trade reform. Small farms' difficulties in accessing services and credit mean that they are often constrained in their ability to take advantage of higher prices by expanding production. Exceptions to this include the limited number of areas where (1) it is still possible to expand the total land area planted, or (2) contract farming systems provide smallholder growers with all the services that they need.[14] Large farms, on the other hand, with better access to markets, information, and capital, will often be better placed to take advantage of any price gains.

Agricultural Research

There are concerns that research systems in developing countries are generating fewer innovations to raise yields than a quarter century ago. Funding to the international agricultural research centers has fallen in real terms. Moreover, the centers have devoted more of their resources to investigating yield protection (against pests and water problems, for instance) than yield increases. Similarly, researchers have been asked to look as much at issues such as natural resource management and gender as plant productivity.

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[13] There is a more general point here regarding large farm advantages in coping with variability—they are also likely to do better in years with good weather and yields if access to seasonal capital and storage facilities allows them to store produce from good harvests until prices improve. Small farms without storage facilities and capital are more likely to be forced to sell soon after harvest when markets are glutted and prices low.

[14] Gillson et al. (2004) found that African cotton production, especially in Tanzania and Zimbabwe, was highly responsive to the world cotton lint price—indeed, more responsive to price than was U.S. production. In both Tanzania and Zimbabwe, however, production responded with a one-year lag, by which time world prices had often changed again. This phenomenon highlights the disadvantage that smallholders face relative to large farms in terms of market intelligence.

Fewer innovations for yield increases affect all farmers, large and small. But there is one way in which smallholders may be harder hit. The balance of research funding has shifted dramatically from public- to private-funded research, particularly in biotechnology, where there is the greatest potential for major advances. This change in the funding of research is disadvantageous to smaller farmers because private research firms lack incentives to address small farmers' concerns (Pingali and Traxler 2002) and instead focus more on the needs of and opportunities for larger farmers.

Environmental Degradation and Climate Change

Farming modifies the local environment, in some cases causing substantial damage and in other cases making improvements. Soil erosion, soil degradation, desertification, salination, deforestation, loss of biodiversity, depletion of groundwater aquifers, and pollution of watercourses are all possible consequences of some farming practices. The results are losses to society as a whole and rising costs for agricultural producers.

Evidence of environmental impacts is, however, patchy. Historically, careful studies of changes to soil and water quality have usually had to be carried out on a small scale, although the development of near infrared spectroscopy looks set to change this (Shepherd et al. 2003). Extrapolating from such studies to make estimates for larger areas is fraught with problems.[15] In addition, studies of environmental change tend to focus on damage and do not always take into account improvements made by farmers, such as soil conservation works and tree planting.

Climate change represents a global phenomenon to which farming contributes in part and to which it is especially vulnerable, since most farming depends upon the weather. Although the science of climate change is reasonably well established in broad outline, the precise impacts of processes that play out over decades are as yet only vaguely discernable. For example, attempts to predict changes in rainfall for different large regions of the world have very large margins of error. At the scale of countries and major regions within them, much more work is needed to improve prediction of the impact of climate change, but there is increasing evidence that crop production will be hardest hit in tropical areas, particularly in Africa (Hulme et al. 2001; Royal Society 2005).

The impacts of both environmental degradation and climate change are usually assumed to be more severe for small farmers than for larger holdings,[16] on the grounds that small farmers have less access to human, social, and financial capital and information than do larger farmers. This assumption is plausible, but not proven, and it might equally be argued that larger farmers who have heavy investments in fixed capital are also very vulnerable to changes in the environment. Smallholders whose major asset is their labor power may be able to adapt their production patterns and practices to new environmental conditions more easily. Again, the evidence on the relative impacts of these changes on small and large farmers is limited.

The Impact of HIV/AIDS

Although the threat of HIV/AIDS is nearly universal, the pandemic has been most prevalent to date in Eastern and Southern Africa. HIV infection typically runs at 10 percent or more of the adult population, reaching almost 40 percent in Botswana and Swaziland. Large numbers are dying—in Sub-Saharan Africa, between 2 and 2.5 million persons died of the syndrome in 2003 (UNAIDS 2004).

For HIV/AIDS-affected households, the immediate effects on farming include loss of labor to sickness, death, and caring, and erosion of capital and

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[15] For example, soil erosion measurements are usually made from plots that measure less than one tenth of a hectare. Extrapolating the results from such plots to a river basin does not take into account that much of the soil washed off one area is retained in some other part of the basin where it is deposited as silt. There are even some cases of farmers deliberately encouraging soil erosion from hillsides to improve the soil of their valley-bottom lands.

[16] Climate change impacts extend beyond agriculture to include other sectors, such as health, where poor and vulnerable communities are likely to be hit hardest (IPCC 2001).

assets to pay for drugs, treatment, and transport to hospital.[17] For the households in question, the consequences may be less land tilled, less use of purchased inputs, and substitutions from cash crops to food crops for subsistence and survival and from crops with high peak demands for labor to those less demanding of labor. Cash crops are particularly likely to be abandoned when adult males fall sick, since men typically assume responsibility for such crops and have the contacts to market the produce. Agricultural skills and knowledge, including highly specific knowledge of the local ecology and plants, may not be passed down the generations (Mutangadura, Mukurazita, and Jackson 1999; Jayne et al. 2004).

HIV/AIDS can cruelly expose gender imbalances: widows often find they must struggle to maintain their rights to land held in the name of their deceased husbands. They may lose contracts for cash crops. They are less likely to get access to credit or extension advice than did their late husbands.

Within the wider community, mutual support networks may wither in the face of an epidemic that creates heavy additional demands that exceed either the capacity or willingness of the unaffected population to respond. Loss of leaders and other key members of the community may undermine the working of local organizations and institutions.

The broad outline of impacts is well rehearsed. More precise estimates, and an understanding of how the impacts at levels from household to village to region and country interact, are lacking. The evidence from rural communities is still thin.[18]

Some plausible ideas about the effects on overall farming systems and agricultural sectors may not apply. For example, although individual households may lose labor, rural populations will continue to rise, so the overall labor supply will probably not fall. The calls already made for turning the attention of agricultural research and extension to labor-saving innovations may be appropriate for individual households, but less necessary for the wider community.[19]

The impacts on afflicted households may vary considerably by household, depending on who is sick and dies and on the household's assets. Loss of household heads[20] and those with earning power creates more hardship than the loss of others. And impacts can be severe for households with few assets. Some events may wrongly be attributed to the epidemic. For example, recent cropping shifts in Eastern and Southern Africa from grains to tubers may arise from changing factor prices, not from HIV/AIDS.

The most dire predictions, as seen in the New Variant Famine hypothesis (de Waal and Tumushabe 2003) that sees households and communities losing assets to the point that shocks to the system are likely to result in outright famine, do not seem to be borne out by observations from Zambia. There, despite HIV prevalence of 17 percent of adults, the lowest quartile of smallholder households did not reduce their area tilled or their crop output or lose assets in the period 1990–2003 (Jayne et al. 2004).

Responding to the epidemic's challenge to agriculture may require, above all, an intensified effort to raise farm productivity by expanding the menu of technical innovations plus redress of gender biases in land rights and in access to extension, education, and marketing chains. In large part, the agenda is not new—the epidemic is what makes it so much more important to succeed and draws attention to issues that have long needed more concerted action.

Are smallholders more at risk of contracting HIV/AIDS? In the early stages of the epidemic, small farmers may have been less at risk, since the virus was most likely to affect the urban, the mobile,

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[17] See Jayne et al. (2004) for one of the most comprehensive reviews of the effects of HIV/AIDS on agriculture.

[18] Jayne et al. (2004) is the main source for the arguments that follow in this section.

[19] This has probably always been the case: within any village, households have different relative endowments of land, labor, and capital—differences that factor markets, even when functioning reasonably well, do not completely even out. Hence, there has long been a demand for a wider range of technical options to suit such differing circumstances.

[20] Recent research reports that the majority of deaths are not necessarily heads of household or their spouses (Mather et al. 2004).

and those with higher incomes. Subsequently the epidemic has spread into rural areas, including some of the more remote ones, leaving small farmers equally at risk as other groups.

Are the impacts of the epidemic on smallholders more severe than on larger farmers? Some smallholders who are poor and lack assets may be particularly affected. Studies to date (Mather et al. 2004) show that poor households lacking assets, savings, and other means to cover the costs of the disease are more vulnerable to reduced output, loss of productive assets, and eventual destitution.

But perhaps the most salient point about the impact of the epidemic is the sharp discrimination that it exerts. Those households affected by the disease may incur heavy losses of all kinds; neighboring households whose members are not seropositive may be little affected by the epidemic.[21] The impact of the disease is highly uneven.

Changes in the Policy Environment

Since the 1980s the international community has moved away from supporting government intervention in agricultural development. Although government involvement was a ubiquitous feature of successful "green revolutions" (Dorward, Kydd, et al. 2004), the high fiscal costs associated with many marketing and input subsidies became an escalating burden as governments proved unable to phase them out once they had achieved their initial purposes. India, for example, currently spends about US$10 billion per year on subsidies that are largely unproductive (Dorward, Kydd, et al. 2004). Similar problems persist in many other Asian countries. In Africa, early Green Revolution successes like hybrid maize proved unsustainable because of their high fiscal costs, which contributed to eventual debt crises and stagnation in many of the countries where it spread (Smale and Jayne 2003).

The shift from extensive government interventions to a narrower state role, which leaves private actors in the market to provide inputs, services, credit, and marketing, has left many smallholders at a disadvantage because they face higher transaction costs in the markets than larger operators.

Threats to Small Farmers: Summary

Not all of the changes that might be thought particularly harmful to small farmers are necessarily any worse for them than they are for larger-scale farmers. But some clear threats to small farms emerge. In large part they arise from market failures, themselves amplified by the policy retreat from intervention that has left the private sector operating within markets as the main actor in input supply, financial services, marketing, and even technical advice and innovations. If smallholders are to survive and prosper, then they must find ways to meet new demands in supply chains and to obtain inputs, credit, and technical knowledge from private agents at competitive prices with large-scale farms. A key question is how far the public sector should intervene in helping small farms gain access to markets, technologies, and support services rather than leaving everything to the private sector. How one answers this question is one of the key differences between those who believe that small farmers have a future and those who do not.

[21] Indeed, they may conceivably benefit from those affected selling livestock, land, or other valuable assets at distress prices.

4. Strategies for Small Farms

Debate about the future role of agriculture and the viability of small farms continues and will probably not be resolved until sufficient new evidence emerges from the post-globalized era to enable rigorous hypothesis testing. In the meantime, policymakers must make strategic decisions about development priorities, and their actions will themselves have an important impact on the final outcomes for small farms.

Roles for Small Farms

In Chapter 2 we reviewed the role agriculture can play in different country contexts (see Table 2). Table 5 takes this analysis a step further and highlights the key roles that small farms might play in each type of context. Two key roles are identified. One is a growth or development role. This role arises when agriculture itself has a growth role to play and when commercially oriented small farms are efficient and can compete in the market. Because many small farmers are also poor, these situations can be win-win opportunities for growth and poverty alleviation. Such opportunities are most likely to arise in countries with reasonable agricultural potential and where land is already distributed equitably.

Countries starting with large mineral or urban-based manufacturing sectors will have high exchange rates and ready access to low-cost food imports, so small-farm growth opportunities are likely to be limited to high-value domestic markets. But in countries where agriculture is the lead growth sector, small-farm growth opportunities will arise primarily in the domestic market for food staples and in high-value export markets, at least during the early stages of development when the domestic market for high-value products is still small.

A second role for small farms arises from its potential social contributions. Small farms can provide a way for governments to spread the benefits from a large mineral or urban-based manufacturing sector during the early stages of development when most people are still engaged in agriculture. As economies grow, small farms can also serve as a useful reserve employer until sufficient exit opportunities exist—a role that can be especially important in fast-growing countries regardless of their primary engine of growth. Finally, small farms may provide a social safety net or subsistence living for many of the rural poor, even when they are too small to be commercially viable. These social roles are most important in countries with poor agricultural productivity potential, a biomodal distribution of land, or a large mineral or urban-based manufacturing sector. These social roles do not necessarily require that small farms be commercially viable, and in fact subsistence-oriented small farms may be the most appropriate ones to target.

As economic transformation proceeds, small farms play a shrinking role in all kinds of countries. Rising real wages within the wider economy tend to drive farm consolidation (as has occurred in many OECD countries and is now occurring in parts of East Asia), and the small farmers that survive find niches in high-value markets or become part-time farmers. Small farms' role as a reserve employer, however, is tricky because it can lead to government support policies that keep too many people in agriculture for too long, as happened in many OECD countries.

Table 5—Priorities for small farms by country context

Land distribution	Agricultural production potential	Early stages of development			Later stages of development
		Nonagricultural engines of growth			
		Minerals	Manufacturing	Limited	All types of countries
Unimodal (equitable)	High	Commercial opportunities for small farms selling high-value products in domestic market Social value in retaining small farms to spread mineral wealth and provide subsistence for the rural poor	Commercial opportunities for small farms to sell food staples and high-value products in domestic market Social value in retaining small farms as a reserve employer	Commercial opportunities for small farms in export crops, food staples, and some high-value products	Remaining small farms gradually squeezed out, and those that survive focus on high-value products and part-time farming Social value in retaining small farms as a reserve employer until sufficient exit opportunities have been created
	Low	Social value in retaining small farms to spread mineral wealth and provide subsistence for the rural poor	Social value in retaining small farms as a reserve employer and to provide subsistence for the rural poor	Opportunities for small farms to exploit niche agricultural opportunities Small farms provide subsistence for the rural poor	
Bimodal (inequitable)	High and Low	Social value in retaining workers in agriculture and to provide subsistence for the rural poor	Social value in retaining small farms as a reserve employer and to provide subsistence for the rural poor	Opportunities for small farms if land redistributed; otherwise small farms that exist exploit niche opportunities Social value in retaining workers in agriculture and to provide subsistence for the rural poor	

The Role of Government Interventions

Should governments intervene to support small farms? There is less debate about this issue when considering social roles since even the most ardent free market advocates expect market solutions to provide only efficient outcomes, not necessarily equitable or poverty-reducing outcomes. Direct support to subsistence-oriented small farms may be a more cost-effective alternative to other forms of income transfers and social safety nets. For example, food aid, donors' common response to distress, typically costs more than US$250 for each metric ton of cereals delivered in rural areas, compared with typical smallholder production costs of US$100 or less.[22] But this will not always be the case. Moreover, it is important that support policies for nonviable small farms do not encourage too many workers and poor people to stay in agriculture or for too long.

The need for governments to support commercially oriented small farms to exploit growth opportunities is less obvious. In such situations, it might seem that governments should stand back and let market forces hold sway in driving agriculture and small-farm development. In theory, this process should ensure that the most efficient types of agriculture, commodities, regions, and farm sizes prevail. Policy interventions would focus on providing an enabling economic environment for market-led development, typically by providing stable and undistorted economic incentives and essential public goods and services.

Although widely favored in much contemporary development thinking, this approach faces the problem that there are many institutional and market failures in poor countries and these failures can lead to discriminatory and inefficient outcomes. For example, if market failures penalize small farms over large ones in accessing markets and inputs, then unfettered markets may favor large-farm outcomes that are less efficient as well as less equitable than those that could result from small farm–led growth. In this case, targeted policy interventions that correct the underlying market failures might be win-win solutions for efficiency and equity.

A wide range of failures in input and output markets exist in developing countries, and many of these are linked and spill over from one market to another. Agricultural development requires a process of sustainable intensification in which farmers combine land, labor, technical skills and information, purchased inputs, and fixed and working capital to produce outputs for sale. If they are to invest in sustainable intensification they need to be assured of reasonably reliable access to a complete set of these factors of production and input and output services, on reasonable terms. If one element of the set is missing, then investments in all the others will be lost or significantly reduced.

Analysts differ in the extent to which they believe these complementarities pose a problem for the development of private service suppliers. Conventional liberalization policy does not recognize this as a problem. Other analysts (for example, Poulton, Dorward, and Kydd 2005) observe that potential service suppliers face uncertain demand for their services unless farmers are assured of access to other complementary services. Such assurance is lacking in poor rural areas that have not yet achieved a widespread transition out of low input/low output farming unless some external agent undertakes to provide the important missing services or coordinates

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[22] All tons in this paper are metric tons. For communal areas of Zimbabwe, the estimated cost of producing one ton of maize was under US$80 in 1995/96 (Sukume et al. 2000) interestingly, the same source computes a production cost of just under US$70 a ton for maize from large-scale commercial farms that usually enjoy better soils than the small farmers in the same ecological zone (the agroecological zone known as Natural Region II in this case).

Imports of maize on the world market usually cost at least US$220, including cost, insurance, and freight (CIF) to Harare; if they are then delivered to rural areas, additional transport and handling costs must be added.

In Malawi in 2003–04, an informed adviser on food security claimed that although the import parity price of maize was around US$250 a ton, it cost a leading food aid agency as much as US$450 a ton to deliver food aid to rural clients, including the cost of targeting.

provision of the missing services by other actors. Such coordination mechanisms must be credible to farmers and to all service providers. Without such mechanisms, it is argued, private investors will not invest significant capital in developing agricultural service businesses and will only provide opportunistic agricultural services that do not require significant investment in specific assets (dedicated fixed costs). These arguments are supported by several observations: (1) successful "green revolutions" (involving staple crops) were generally associated with some state activity in service coordination (Dorward, Kydd, et al. 2004); (2) intensive cash-crop production by small farmers is generally developed through contract farming, interlocking systems, or complementary coordination by supply chain facilitators or champions (Best, Ferris, and Schiavone 2005); and (3) it is hard to find examples of sustainable intensification of small farms without such mechanisms (Poulton et al. 2006).

If complementary coordination is important, then some problems in service delivery cannot be addressed by focusing on individual services; specific attention needs to be given to establishing mechanisms for complementary coordination. Yet differences in market characteristics for different kinds of products present a challenge, as well as opportunities for developing different types of mechanisms. In broad terms private companies face potential gains in taking on the costs and risks of complementary coordination for small-farm production if (1) high fixed costs in processing or other downstream costs provide strong incentives for firms to have secure high-volume purchases; (2) small farms are important suppliers (because they are lower-cost suppliers than large farms, because there are political benefits in dealing with small farms, or because land tenure systems mean that there are no larger farms to source from; see Table 4 and associated discussion); and (3) the company has some degree of monopsony in buying farmers' produce so that crop purchases can provide some collateral for loans for seasonal capital and thus some protection against strategic default by farmers.[23] Conditions 1 and 3 are often related in that high fixed costs lead to economies of scale and represent an entry barrier to small-scale buyers. They therefore encourage smaller numbers of larger buyers in a more concentrated market. Larger buyers are then more likely to be able to access the capital and develop the organizational capability to deliver low-cost services to large numbers of small farms. Where these conditions are lacking, however, private sector companies are unlikely to provide complementary coordination mechanisms and these mechanisms must be provided by other actors.

Large-scale success in the past has required large-scale interventions by governments, but African experience with such interventions has often been disappointing, with high costs and low returns. There are few if any examples of large-scale and effective coordination mechanisms in staple crop production that have not involved the state. A key challenge to small farm development in poor rural areas is therefore the development of new coordination systems and new complementary roles for governments (including local governments and ministries of agriculture), civil society organizations, farmer organizations, and large- and small-scale agribusiness firms. Such mechanisms are being developed and tested on a small scale, with mixed success (see, for example, Poulton, Kydd, et al. 2005), but much greater efforts are needed in adaptive policy research.

Policy Support for Small Farms over Time

Table 5 implies that the need for particular types of policy support should vary by country context and stage of development. The poorest countries and rural areas, at a very low stage of development, are characterized by low road density, poor roads, poor telecommunications, poor human health, lack of irrigation infrastructure, and lack of productive agricultural technologies.

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[23] This protection can also be achieved by horizontal coordination between buyers who agree to share information about farmers who default on loans (Stockbridge, Smith, and Lohano 1998).

They also lack a developed and diversified monetary economy; the markets for agricultural inputs, outputs, and finance are very "thin" (with small and unreliable traded volumes); and the business environment is, to say the least, difficult. Information on prices, technologies, markets, and other potential market players is poor, contract enforcement is difficult and weak, and risks are high—not only in production and prices, but also in access to input and output markets and to financial and transport services. In such conditions there is a strong need for investment in public goods, infrastructure, agricultural research and extension, and institutions to support business and market activity. Market conditions of poor rural areas are also likely to encourage a low-level equilibrium in which complementary services are not provided to small farms, particularly services for small-farm production of staple crops.

Successful agricultural development that provides public goods and overcomes coordination failure should, however, lead to the establishment of thick markets and, with time, these should be able to provide effective complementary coordination without the need for nonmarket arrangements. Policies promoting such coordination are then no longer needed, and indeed are likely to inhibit market development.

Dorward, Kydd, et al. (2004) analyze the successes and failures of supply-side, state-led policies and demand-side market liberalization phases of agricultural policy. Looking at the sequencing and effectiveness of attempts to address problems related to public goods, complementary coordination, and market development, they describe a common pattern of government policy in successful "green revolutions" in terms of two active policy phases. The first phase "establishes the basics" with investments in public goods to develop technologies that will raise small farms' potential productivity. Then the second phase "kick-starts markets" with coordinated complementary investments to improve small farmers' access to the financial services and input and output markets necessary for technology adoption. Once large numbers of farmers have successfully adopted the new technology with sustained participation in financial services, input, and output markets, then these markets can attract private sector investment, allowing governments to withdraw—although they often find this difficult.

Government Effectiveness

The analysis described draws attention to the important challenges facing policy interventions to support small-farm development. Not only are complex interventions needed at early stages of development, but these need to be adjusted and changed as development proceeds.

Critics of small-farm development are doubtful whether many governments have the capability to effectively implement these kinds of agendas. A key question for any intervention is whether the net economic and social benefits of intervening are sufficient to justify the costs. In many countries administrative and technical capacity is weak in government, and particularly in ministries of agriculture. These weaknesses are not new (see, for example, the discussions in Timmer 1991) but have been exacerbated by structural adjustment programs and market liberalization programs that neglected rather than reformed many public institutions serving rural areas. These weaknesses pose challenges for any government interventions that aim to facilitate supply of services to small farms, whether these interventions are restricted to the supply of services with public-good characteristics or include a wider coordinating role, though the challenges will be different. In some cases small-farm development policy might be more costly and challenging than alternative development strategies based, for example, on delivery of health and education services. They must therefore be justified on the basis of significant win-win benefits or poverty reduction (Maxwell, Urey, and Ashley 2001).

Small-farm proponents must include early reform and strengthening of key public institutions

at the core of their agenda. Such reform will often require overcoming vested interests; otherwise new forms of inefficiencies and rent seeking simply replace the old. New innovations may be needed. For example, increased donor support of key public sector investments could be based on financing arrangements that empower the users of public services (such as vouchers, user fees, and other cofinancing mechanisms) and are backed up with appropriate institutional reforms to improve mandates and performance of public institutions.

There is also need to form new partnerships between the public, private, and NGO sectors for the provision of public services. Even though government must pay for many of these goods and services, the public sector does not necessarily have to deliver them. Recent years have seen considerable success in using NGOs and community-based organizations to deliver targeted assistance to the poor, and private firms can be contracted to build and maintain schools, health centers, roads, and the like. Contracting arrangements with other parties can be much more cost-effective and may offer better possibilities for involving local people and communities. The types of partnerships desired will vary by sector and function, with many more opportunities to diversify supply arrangements for education and health services, for example, than provision of rural roads and market regulation.

The Politics of Assisting Small Farms

Although there are country contexts where government support for small-farm development is clearly warranted, this does not mean it will or can happen. Successful intervention also requires that governments have the interest and capacity to mobilize the support that is needed. Political will is the fundamental precondition for agricultural investment and policy reform. Decisionmakers (senior politicians and bureaucrats) have to decide to prioritize agricultural investment over competing investment options and to take on the task of reforming policy, which may provoke opposition from some quarters. They, therefore, must be persuaded of the benefits or necessity of doing this.

The Green Revolution followed serious commitment to agriculture by Asian and Latin American governments who not only invested heavily in the necessary rural infrastructures and technologies, but also implemented major policy and institutional reforms to support agriculture.

In China, national interest considerations were important in generating the agricultural reforms that commenced in 1978. Two decades of policy failures during the Great Leap Forward and the Cultural Revolution had weakened the economy and damaged the credibility of the political leadership. Economic reform was initiated in 1978 in the agricultural sector because of a "perception at the top that stagnation of agricultural productivity was a bottleneck hindering further development of the overall economy" (Gulati, Fan, and Dalafi 2005, 12).

Similarly, in India national interest considerations were important in generating the major investments of the Green Revolution era. These investments were undertaken in response to the country's precarious food-security situation, coupled with its reluctance to bow to the political pressures that accompanied acceptance of Public Law 480 food aid from the United States. Ideology—in the form of Nehru's advocacy of science for agriculture (which preceded the food aid issue)—also played a role (Visvanathan 2003).

In both China and India, commercially oriented small farms were major beneficiaries of the public interventions, particularly land policies, grain marketing and support services, and agricultural R&D.

In Latin America there was also significant government commitment to agriculture, but small farms never received the same priority as in Asia. This situation was largely a reflection of the prevailing and highly inequitable distribution of land and the powerful entrenched interests of the landed class (Lopez 2004).

In many Asian and Latin American countries there is continued public support for and investment in agriculture, but major political economy

challenges have arisen in cutting back subsidy support to agriculture in the Green Revolution heartlands, now that the developmental job of kick-starting markets has long been accomplished. Vested interests and widespread opposition in rural areas have become major impediments to adapting the policy agenda to changing economic conditions, even though reorienting public expenditure away from subsidies toward expenditures on key public goods—such as rural roads and agricultural research—would provide a greater stimulus to agricultural growth and future small-farm opportunities.

In African political discourse, agriculture is regularly referred to as the "backbone of the economy," yet the share of national budgets devoted to agriculture remains consistently well below that in Asia (Fan and Rao 2003).[24] Even when significant sums are spent, they tend to be on subsidy programs rather than on long-term investments in productive capacity. Moreover, despite structural adjustment programs, many African countries have yet to fully implement needed policy reforms because of the resistance of entrenched political and bureaucratic interests that retain control of policy levers useful for patronage or rent-seeking purposes. Meanwhile, as budgets have contracted, long-term investment has been increasingly left to donors, whose own funding for the agricultural sector has been in decline.

Overall, the political economy prospects for pro-smallholder agricultural development are not that favorable in any region today. But a number of changes are underway in the development agenda that have the potential to modify this story in many poor countries (Birner and Resnick 2005). These are democratization, decentralization, and the increasing reliance on participatory policy processes (like PRSPs). The impact of these changes on the orientation of agricultural policy (pro- or anti-small farms) is as yet unproven, but there may be opportunities to be seized.

Democratization may squeeze opportunities for private rent seeking in the long term[25] and ultimately also strengthen the voice of small-farm households simply by virtue of their numbers. The long term, however, could be long indeed. In many countries, the formal structures of democracy (like parliaments and parliamentary elections) may be instituted long before they really become the center of power and decisionmaking. In the meantime, the need for presidents or ruling groups to win regular elections may actually strengthen the incentives for the exercise of patronage.

Decentralization also offers promise for more effective local support to small farms in the long term, although a degree of central control needs to be maintained to ensure the continued provision of national-level public goods, such as agricultural research investment. According to Foster, Brown, and Naschold (2001), agroecological heterogeneity means that solutions to many agricultural development problems should be sought at a decentralized, rather than a central, level. We would add that effective management and coordination of agricultural service provision can only really occur at the local level, where much of the relevant information is available for holding frontline service providers accountable for their performance. Decentralizing the planning and management of agricultural service provision does have major risks. If decentralized administrations have too few resources, they will be unable to implement local plans and service delivery. There is also a danger that decentralized

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[24] Agriculture recently achieved a higher political profile in Africa. In 2003 the Heads of African States of the African Union declared that they would allocate up to 10 percent of their fiscal budgets to agriculture by 2008 (the Maputo Declaration), and African governments are also working together on the Comprehensive Africa Agriculture Development Programme (CAADP) through the New Partnership for Africa's Development (NEPAD). It remains to be seen whether these initiatives will lead to any significant increase in investment and policy support for agricultural development and small farms.

[25] This will depend on, among other things, the rules governing party funding under the evolving political dispensations.

planning processes will be captured by local elites (Bardhan 1996).

In many countries where small-farm development is important for poverty reduction, participatory policy processes are being introduced at a number of levels, including economywide (like PRSPs), sectoral and subsectoral, and local. Multistakeholder deliberations on policy design and implementation are particularly relevant to the agricultural sector, which has a large number of stakeholders, both within government (where relevant ministries might include livestock, forestry, water resources, roads, and finance, as well as agriculture) and outside it (Foster, Brown, and Naschold 2001). In theory, involving a wide range of stakeholders allows policy design to draw on a wide range of available expertise and information. Moreover, although pro-reform forces are generally weak, they could be strengthened if policy "spaces" are created that give nongovernmental stakeholders the right not just to help formulate policy, but also to hold public agencies accountable for their performance. The success of such "spaces" is likely to depend partly on the extent to which participants use them to seek a consensus on ways forward for their sector or subsector, as opposed to using them to propagate and entrench conflicting viewpoints. Regular deliberative fora may in themselves help to forge consensus, even where participants begin with polarized views (Hall and Soskice 2001). The challenge may be greater, however, in situations of major inequality (such as when unions of peasants and the landless are pitched against large landholders or corporate interests in Latin America) or when the focus of discussion is a staple food system (where local producer and consumer interests diverge) rather than an export cash crop system.

Reviews of first-generation PRSPs (such as in Cromwell et al. 2005) show that agriculture—indeed, rural productive sectors generally—has often been underemphasized in these documents, though it is not clear whether responsibility for this neglect lies domestically or with donors, whose preferences tend to influence what is included in the documents. Thus the impact of new policy trends on the direction of agricultural policy is as yet unproven.

Similarly, at the sectoral level, the current consensus is that sectorwide approaches (SWAPs) have yet to be as effective in agriculture as in social sectors (Foster, Brown, and Naschold 2001). Nonetheless, the need to get multiple domestic stakeholders to work together and to achieve greater coordination among donors supporting the agricultural sector means that attempts to evolve more flexible SWAPs will continue.

At the subsectoral level, multistakeholder deliberative fora have made a useful contribution to strengthening the performance of the Southern and Eastern African cotton sectors (Tschirley, Poulton, and Boughton forthcoming). Key elements of success appear to include the relatively small number of key stakeholders involved and the reasonable coincidence of interests across stakeholders within export cash-crop systems.

As already noted, there appears to be potential to build on ongoing administrative decentralization programs to establish participatory, local agricultural development planning processes that would respond flexibly to agroecological diversity and provide a framework for coordinating service providers in a liberalized market context. This potential has yet to be realized, however, not least because of the weakness of decentralized administrations in many countries.

What are the implications of the foregoing discussion for those seeking to promote pro-smallholder agricultural reform in developing countries?

For technocratic elements within state bureaucracies, one implication would seem to be that, early in the reform process, reformers should push for the creation of both national and local fora for discussions on ways forward for particular subsectors or areas. As noted, these fora should also enable private sector, farmers', and NGO representatives to hold public agencies accountable for their performance in delivering on agreed-upon actions, thus strengthening the voices of those pushing for reform outside of government.

This is particularly important in Africa, where political scientists are pessimistic about the ability of other measures to push neopatrimonial political systems in a more developmental direction.

Donors are more influential players in policymaking in Africa than in much of Asia or Latin America. Even in Africa, donors must accept limitations to the effectiveness of their pressure when strong, domestic political interests are threatened (de Renzio 2006). Nevertheless, the leverage that comes from providing 40 percent of a government's budget cannot be entirely ignored! Furthermore, after a period of declining expenditure on agriculture and rural development by major donors (and many national governments), several donors show welcome evidence of a commitment to reverse this trend (such as the U.K. Department for International Development and the Development Assistance Committee of the OECD), although this commitment still needs to be translated into action.[26] This shift represents a major opportunity to encourage more favorable agricultural policies in Africa, although the leverage that comes from additional resources needs to be used wisely. In particular, supply-driven increases in funding for public sector agricultural agencies could undermine any incentive they have to reform themselves or to adopt more effective, pro–small-farm policies. Donors should therefore make credible (and coordinated) commitments to reward better governance within such agencies with additional resources.

Given the importance of local context in defining appropriate institutional arrangements to support smallholder agricultural growth, conditionality could center on process, rather than on the adoption of particular policy reforms.[27] As noted, where good process is defined to include the participation of private sector, farmers', and NGO representatives in setting policy and monitoring implementation, it serves the dual purpose of enabling institutional innovation and of strengthening the hand of reform proponents within the broader battle for pro-smallholder agricultural policy. Such principles can be applied at both the national level (through, for example, SWAPs) and the local level (through competitive funding windows to which a wide range of stakeholders, including local administrations, are eligible to apply).

An additional priority for donor funding in the sphere of agricultural and rural development is support for farmer organization development. Strong farmer organizations are valuable for service delivery and for advocacy, at both the national and the local level, where they could be an important counterweight to the power of local elites in decentralized planning processes. The effectiveness of farmer organizations, however, is critically dependent on their own internal governance and management. Significantly increasing external funding for such organizations could lead to formation of weak organizations, in much the same way as it could undermine the incentives for public sector agencies to reform their organization and management.

Finally, there are debates over modalities for agricultural support, given that some donors have shifted toward direct budget support linked to PRSP processes. The perceived neglect of agriculture within first-generation PRSPs has led some to see moves toward greater donor reliance on direct budget support as a threat to agriculture,

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[26] In Africa, a similar commitment has been made by national governments through the African Union (African Union 2003).

[27] Some (such as Lockwood 2005) argue against conditionality of any kind, suggesting instead that the majority of aid funding should be used to reward key development outcomes ex post facto. In his discussant's comments at the 2005 small farms workshop in Wye, Rob Paarlberg argued that funding should reward measurable outcomes in terms of delivery of specific rural public goods, such as increases in road density or agricultural research output. This approach would leave the search for appropriate institutional arrangements for the delivery of such public goods entirely up to local stakeholders.

even though some African governments might like to spend more on agriculture than their major donors. One domestic reason given for the low priority given to agricultural investment within both PRSPs and national budgets is the technical weakness of many ministries of agriculture, which reduces their success in getting agricultural issues listed as national priorities and in competing for scarce budget allocations with better-organized ministries such as health and education.[28] Given the complexities of agreeing on a reform agenda for the agricultural sector, further efforts are required to develop sectorwide approaches for agricultural reform as a prerequisite for effective participation by ministries of agriculture in PRSP production and medium-term expenditure framework (MTEF) negotiations.[29]

[28] Greater agreement between governments and donors about the central role of public delivery of basic health and education services makes it easier for these ministries to develop and present a compelling case for funding to ministries of finance.

[29] A counterargument is that the most effective weapon in persuading ministries of agriculture to "get their act in order" is to allow their funding to be cut through PRSP and MTEF processes until they are forced to change their attitudes toward reform. Given, however, the political impetus to preserve some level of expenditure for ministries of agriculture and the risk that coordination failures will prevent a more persuasive "act" from emerging, a more direct approach to capacity building and policy development in agriculture is arguably more appropriate.

5. Conclusions

Do small farms have a future in the developing world? This paper has summarized and taken forward the debates around the importance of agriculture, and specifically small farms, in promoting growth and poverty reduction in developing countries. Agriculture and small farms have played a major role in development and poverty reduction in the past, but changing global conditions and donor policies, and the characteristics of today's poor countries, are widely acknowledged as making this task much more difficult now.

The paper develops a typology of country contexts in which the differing roles and needs for small-scale agricultural development are considered. This typology helps clarify current debates regarding (1) the potential for small-farm development as a driver of growth and poverty reduction and (2) the roles of governments and the private sector in promoting such development.

What are the policy implications? Policy for smallholders needs to vary by context. In some cases, smallholder development promises to drive or sustain growth as well as to deliver reasonably equitable development. In other cases, policymakers need to consider whether there are social reasons to support small farms. If not, the policy agenda involves creating social safety nets for the poor and facilitating good exits from farming for small farmers.

Looking at smallholder development for growth and equity, a contemporary agenda would have three central elements, as follows.

One is getting the basics in place. This step includes ensuring that the macroeconomy is stable and that public goods—rural roads, rural education and health care, agricultural research and extension—are funded by the state. The basics also include good governance for agricultural and rural development: ensuring the rule of law in the countryside; providing opportunities for resolving disputes, especially over land; and making any public interventions in food and credit markets as transparent and predictable as possible.

The second element is encouraging farmers to follow demand and to improve marketing systems. Improving marketing systems so that farmers receive a greater share of market prices may involve upgrading transport infrastructure and systems, providing credit to traders and processors, and forming farmer associations for bulk marketing.

The third element is institutional innovation in the provision of inputs and services. As experiences of the past two decades have shown only too clearly, markets—however much liberalized—often fail in rural areas. Too little information is available on the intentions and character of small farmers. It is difficult to overcome complementary coordination problems in the delivery of input, financial, technical, and output marketing services needed for small-farm intensification. Institutional innovations are required to overcome these failures, but who will take the initiative? In certain circumstances, the private sector has adequate incentives to innovate, but in many cases the state must play a key role in coordination. Yet state agencies may be unfamiliar with this type of role and ill equipped to perform it, or they may lack the necessary incentives. Greater engagement with, and accountability to, other stakeholders (private companies, NGOs, and farmer associations) can create incentives. Even in the best cases, however,

one should not expect a completely smooth ride, because new roles must be learned, old habits and mistrusts persist, and some institutional experiments work better than others.

Even in situations where this agenda is relevant, it may not be carried out. Successful intervention on behalf of small farm–led agricultural development requires that governments have the interest and capacity to mobilize the needed support. Political will is a fundamental precondition for agricultural investment and policy reform, and this will has been lacking in many of today's poorest countries, particularly in Africa. Even in Asian countries that have consistently shown strong political commitment to small farm–led agricultural development, major political economy challenges now exist in cutting subsidy support to agriculture in the Green Revolution heartlands and redirecting some of those resources to investments in public goods that can help expand small-farm opportunities. Vested interests and widespread opposition in rural areas have become major impediments to adapting the policy agenda to changing economic conditions.

In Africa there has been much more government rhetoric about agricultural development over the years than actual commitment, but a new emphasis on democratization, decentralization, and participatory policy processes (for example, PRSPs) has the potential to produce concrete results. Whether these changes will orient agricultural policy toward or away from small farms is as yet unproven, but there may be opportunities to be seized.

In conclusion, the case for smallholder development as one of the main ways to reduce poverty remains compelling. The policy agenda, however, has changed. The challenge is to improve the workings of markets for outputs, inputs, and financial services to overcome market failures. Meeting this challenge calls for innovations in institutions, for joint work between farmers, private companies, and NGOs, and for a new, more facilitating role for ministries of agriculture and other public agencies. New thinking on the role of the state in agricultural development, wider changes in democratization, decentralization, and participatory policy processes, and a renewed interest in agriculture among major international donors do present opportunities for greater support to small-farm development. But unless key policymakers adopt a more assertive agenda toward small-farm agriculture, there is a growing risk that rural poverty could increase dramatically and waves of migrants to urban areas could overwhelm available job opportunities, urban infrastructure, and support services.

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