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The Future of Small Farms

STEVE WIGGINS

Overseas Development Institute, United Kingdom

JOHANN KIRSTEN

University of Pretoria, South Africa

and

LUIS LLAMBÍ*

Instituto Venezolano de Investigaciones Científicas, Venezuela

Summary. — Interest in agriculture for growth and poverty reduction reawakened in the early 2000s made all the keener by the sudden rise in cereals prices on world markets in 2007–08. But is it still possible to drive agricultural growth through small farms, as happened in the green revolution? Whether small farms have a future was debated at a workshop held in Wye, United Kingdom, in June 2005. It concluded that small farm development is not just desirable for poverty reduction, but also feasible, even in changing circumstances and particularly those of more concentrated supply chains with more demanding buyers. That said, while much that needs to be done is straightforward, such as provision of public goods, fostering the institutional innovations to allow small farmers to deal with the emerging supply chains will require patient work, tailored to specific circumstances. The future of all smallholders may well not lie in farming, but the measures to stimulate the rural nonfarm economy and provide jobs for those leaving farming—a favorable rural investment climate, provision of public goods, institutional development—are largely the same as those for agricultural development as well.

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1. INTRODUCTION

Agricultural development has returned to the limelight in development studies and practice, more so than at any time since the early 1970s. Increasing awareness that most poverty is rural and that agricultural development has been neglected in some developing countries was lent urgency by the shock of the 2007–08 spike in cereals prices on world markets. A new consensus on the need to reinvest in agricultural development has emerged, perhaps best stated in the World Development Report for 2008 (World Bank, 2007).

Yet within that consensus there is a considerable debate over the role that small farms may play in agricultural development, and indeed over the future of small farms, the subject of this special issue. In the developing world there are around 500 million farms of less than 2 ha. On these farms live the majority of the absolutely poor, and about half of the world's undernourished population (Nagayets, 2005). Prospects for these farms as viable and thriving agricultural enterprises, as the basis for more diversified rural livelihoods, and for relieving the poverty of their inhabitants are matters of great concern. To inform these debates a symposium was convened in June 2005 in Wye, Kent, by the International Food Research Institute (IFPRI), the Imperial College of the University of London, and the Overseas Development Institute (ODI).¹ This edition of World Development includes an overview of the debates and seven of the papers presented.

This introductory article proceeds as follows. Section 2 presents the background to the renewed interest in agriculture and the position of small farms within this, set within a brief historical review of thinking about small farms in development. Key issues concerning the smallholder development

are reviewed in Section 3, including: the efficiency of small farms, especially in relation to the emerging supply chains; small farm development and poverty reduction; and the transformation of agrarian structures in the longer run and the implications for smallholder agriculture. Section 4 then summarizes the papers in this special edition. The final section concludes by discussing the main policy implications.

2. BACKGROUND: RENEWED INTEREST IN AGRICULTURE, BUT NOT NECESSARILY IN SMALL FARMS

Interest in agricultural development in general and small farms in particular has waxed and waned through time (see Byerlee, de Janvry, & Sadoulet, 2009; Ellis & Biggs, 2001; Staatz & Eicher, 1986). In the 1950s, most agriculture in developing countries, and especially that practiced on small farms, was seen as being “traditional,” a low productivity activity. Agriculture was not considered central to economic growth and development that would instead be led by manufacturing industry. Indeed, agriculture's main role in dual sector theories of development, such as that of Sir Arthur Lewis, was the first and the foremost to release labor of low marginal productivity in agriculture for industry. Small farms were seen primarily as a labor reserve.

Experiences of industrialization in the 1950s and 1960s suggested, however, that it rarely provided enough jobs for underemployed rural labor. Moreover, it was increasingly evident

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that slow-growing agriculture threatened to undermine development, as food became scarce at national level while rural populations remained in poverty. This prompted a reassessment of the role of agriculture: far from being a follower of industrialization, Johnston and Mellor (1961) proposed a central role for agriculture in development, based on its potential functions as a supplier of food and raw materials, a source of capital, surplus labor, and foreign exchange, and as a market for produce of other sectors.

At the same time, the potential of small farms was reassessed as analyses of surveys led to the conclusion that small farmers were efficient users of resources: an insight that was summarized by Schultz's (1964) conclusion that small farmers were "efficient, but poor." Smallholder development schemes of the 1950s confirmed the potential of small farms, as seen in the burgeoning production of coffee and tea from small farms in Kenya and the rapid increases in agricultural production from smallholdings created by land reforms in Korea and Taiwan (World Bank, 1975).

For Schultz the resolution of the paradox of efficient smallholders who were nevertheless poor lay in technical improvements. Coincidentally the early 1960s saw the first fruits of efforts to breed high-yielding, hybrid varieties of cereals that would form the technical core of the "green revolution." The practices of fertilization, water control, and crop protection needed to make use of the new seeds were, at least in theory, scale neutral and thus eminently suitable for small farms.

Further reason to favor smallholder development came from reconsideration of the idea that equity and economic growth would trade off. Chenery, Ahluwalia, Bell, Duloy, and Jolly (1976), in "*Redistribution with Growth*," proposed that investing in the small-scale enterprises of poor people would raise rates of economic growth, not depress them. By far the most numerous of such small enterprises were farms. Donors enthusiastically embraced these ideas, most notably the World Bank whose President, Robert McNamara, declared in Nairobi in 1973 that "Essential to the accomplishment of this objective [to eradicate absolute poverty by the end of this century] is an increase in the productivity of small-scale agriculture" (McNamara, 1973).

Agriculture came further under the spotlight when cereals prices spiked in 1973–74 (Cooper & Lawrence, 1975), seemingly justifying fears that rapid population growth would outstrip increases in agricultural production in the developing world and lead to Malthusian catastrophe. Alarmed leaders redoubled efforts to develop agriculture, most notably through investing in the "green revolution." Governments, above all in Asia, funded agricultural research and extension to promote the new high-yielding varieties of maize, rice, and wheat. They complemented this by building roads and irrigation works, while providing inputs on credit and guaranteeing to buy surpluses from farmers. Internationally, budgets for the agricultural research centers to generate the improved seeds and practices that were the agronomic core of the revolution were greatly increased.

The high level of interest in agriculture in 1970s was soon overtaken, however, by macro-economic stabilization in response to acute trade deficits, debt, and inflation in many developing economies that were apparent by the late 1970s and early 1980s. As the "Washington Consensus" on development policy formed, agriculture came to be seen as just another economic sector; albeit one that often suffered "negative protection" in the form of repressed prices and incentives to farmers (Krueger, Schiff, & Valdés, 1991). Correcting this was not a matter for agricultural policy, however: it would disappear, along with other distortions to the econ-

omy, through the Consensus recommendations of macroeconomic stabilization, economic liberalization, and rolling back of state enterprises. Just as agriculture as a sector was lost to view in development thinking, so too were small farms.

Interest in agriculture and small farms declined still further in the 1990s as poverty reduction and economic growth, the environment, gender, health, and education took precedence (Eicher, 2003). Agricultural development was, furthermore, seen as difficult and problematic, tarnished by its association with ambitious development programs of the 1970s that produced disappointing outcomes.² Donor funding to agriculture diminished accordingly: OECD statistics show that agriculture received only half as much in real terms in 2005 as in 1980, while its share of funding fell from 17% in the early 1980s to 3% in 2005 (Cabral, 2007).

Since the turn of the new century, however, there has been a growing sense that agriculture has been unduly neglected. Setting as the first Millennium Development Goal halving poverty and hunger directed attention to where the poor and hungry live: overwhelmingly in rural areas where agriculture is usually the largest source of livelihoods and jobs. This has been reinforced by the subsequent search for "pro-poor" growth: when the World Bank reviewed the record of growth and poverty reduction in the 1990s (World Bank, 2005), agriculture was the only sector singled out for thematic review.

Consequently, major donors have reassessed agriculture and declared their intention to devote more effort and resources to the sector. The *World Development Report for 2008* (World Bank, 2007) reflects this thinking. It states the case for investing in agriculture to reduce poverty; while recognizing the diversity of contexts and the consequent various pathways—intensification of agriculture, diversification, and out-migration—that rural households may take to escape poverty.³ Some governments, as well, have renewed their interest in agriculture, most notably with the adoption of the Comprehensive Africa Agriculture Development Programme (CAADP) by the African Union.⁴ Private foundations have also joined these efforts.⁵

Interest in agriculture has been stimulated above all by the spike in cereal prices on world markets between early 2007 and mid-2008 that attracted similar political attention to the previous event in 1973–74. Although prices have subsequently fallen back, the medium term outlook is for higher prices than before the spike.⁶

While interest in agriculture may thus have revived, enthusiasm for smallholder development is mixed. Some, such as the authors of the World Development Report and of practical initiatives such as the Alliance for a Green Revolution in Africa (AGRA) and the Millennium Villages Programme, see this as central to agricultural growth and poverty reduction. Others, however, have their doubts. They argue that circumstances have changed from the time the green revolution began; above all in access to technology, the demands of supply chain managers, and a reduced capacity and willingness of the state to support small farms (see Ashley & Maxwell, 2001; Byerlee *et al.*, 2009; Ellis, 2005). Indeed, for some observers small farms are simply not up to the challenges of contemporary agricultural development. Considering Africa, Collier (2008) has argued that:

"And reluctant peasants are right: their mode of production is ill suited to modern agricultural production, in which scale is helpful. In modern agriculture, technology is fast-evolving, investment is lumpy, the private provision of transportation infrastructure is necessary to counter the lack of its public provision, consumer food fashions are fast-changing and best met by integrated marketing chains, and regulatory standards are rising toward the holy grail of the traceability of produce back to its source." [p. 71]

“Large organizations are better suited to cope with investment, marketing chains, and regulation,” he thus concludes (Collier, 2008, p. 72).

It seems that large-scale investors would agree. Since the price spike, countries with ample oil revenues that import much of their food have sought to acquire land in Africa, Central and South-east Asia to cultivate food crops to be exported back to the investing countries. Some of these deals have been well publicized, including, for example, Jordan acquiring 25 000 ha in Sudan, Qatar 40 000 ha in Kenya, and Saudi Arabia in discussions over 500 000 ha in Tanzania (von Braun & Meinzen-Dick, 2009). In most cases, the intention is to farm on a large scale, rather than contract small farmers.

In sum, while agricultural development may have returned to the forefront of development, there are questions over the capacity of small farms to invest, innovate, and produce more under contemporary circumstances. How far these doubts are justified is the subject of Section 3.

3. SMALL FARMS: ISSUES AND DEBATES

In reassessing the role and the developmental potential of small farms, three sets of considerations arise. One concerns efficiency and economies of scale. Does being small confer advantages or disadvantages compared to larger units? A second question is how effective smallholder development may be in reducing poverty and generating equitable development compared to agricultural development through larger farms. A third issue is how small farms may evolve as agriculture and economies develop.

(a) *Scale and efficiency*

While many economic activities benefit from economies of scale, it is not clear that this applies in farming. Indeed, surveys in developing countries often report that more is produced per hectare on small than large farms (see, e.g., Cornia, 1985; Eastwood, Lipton, & Newell, 2004; Heltberg, 1998), suggesting diseconomies of scale.⁷ Agricultural censuses in many developing countries also show the average size of operated farm falling through time. Lipton (this volume) argues that if there were economies of scale, then land in smallholdings would more often be rented to larger operators to allow farming at a greater scale; whereas most renting is by smaller operators from landowners.

A common explanation for this inverse ratio concerns use of labor.⁸ On small farms much of the labor comes from the household: self-supervising, motivated to work with care, and flexible to accommodate the unpredictable timing of some farm operations. Large farms, on the other hand, often depend heavily on hired labor that needs to be recruited and supervised, thereby raising transactions costs and thus the implicit cost of labor. The effective difference in labor costs impedes redeployment of workers, through the labor market, across farms to generate equal returns. Instead small farms typically apply more labor per land unit than larger farms, and consequently obtain higher yields per hectare.

In transactions off the farm countervailing economies of scale apply in procuring inputs, obtaining credit and other financial services, getting agronomic and market information, and in marketing, including meeting standards and certifying production (see Poulton, Dorward, & Kydd, this volume). The balance of advantage to small and large scale thus depends on the degree to which labor and manufactured inputs are used in production, to which produce is consumed by the household, and to which buying in marketing chains is con-

centrated. When, as in the early stages of development, farming depends primarily on labor inputs, external inputs are used sparingly, much of the produce is consumed by the household, and when whatever surplus is sold to traders who deal in small lots, then small farms often have advantages over larger units.

Circumstances change, however. Prominent among recent and current changes are those to agricultural supply chains. Increasingly these are being organized by large-scale processors, wholesalers, and supermarket chains. Concentration of buying power, more vertical integration, and increasing use of demanding standards, both public and private, are being seen across the developing world (Reardon, Barrett, Berdegue, & Swinnen, 2009). Large-scale buyers seek to buy commodities in large volume, delivered to precise timetables, and that meet exacting quality and food safety standards. For them, dealing with a few large suppliers entails lower transactions costs than negotiating with large numbers of small farmers.

On the input side, the retreat of state agencies as providers of seed, fertilizer, credit, and technical assistance has left small farmers more vulnerable to high transactions costs in factor markets: high enough in many cases to result in outright market failure as farmers fail to obtain these external inputs.

If small farms are to compete with larger units and realize their advantages in management of labor, then they need to find ways to overcome their increasing disadvantages in their dealings with those in the rest of the supply chain.

(b) *Small farms and poverty*

Agricultural development in general may be expected to be particularly effective in reducing poverty, acting through four pathways (OECD, 2006): by raising farm incomes and thereby benefiting the many farmers who live in poverty; by creating employment on farms, given that agriculture tends to employ more workers per unit of output than other sectors; by stimulating the rural nonfarm economy through linkages in both production and consumption; and by pushing down the prices of staple foods to the benefit of the many poor who are net food buyers, even in rural areas. The relative contributions of these effects are likely to vary by circumstances, as de Janvry and Sadoulet (2002) demonstrate with stylized models for Africa, Asia, and Latin America.

These expectations are supported by cross-country studies that show strong associations between agricultural development and poverty reduction, an association that tends to be stronger for Africa than elsewhere. For example, Irz, Lin, Thirtle, and Wiggins (2001) estimate that for every 10% increase in farm yields, there has been a 7% reduction in poverty in Africa, more than the 5% reduction estimated for Asia. Growth in manufacturing and services has no such effect. Diao, Hazell, and Thurlow (this volume) reach similar conclusions using models of the economies of Ethiopia, Ghana, Kenya, Rwanda, Uganda, and Zambia built with household survey data, to simulate the impacts of agricultural and industrial growth on poverty reduction. Raising growth rates of agriculture, it turns out, are much more efficient in reducing poverty than raising those of manufacturing industry. Furthermore, Valdés and Foster (this volume) estimate that relative to its generally small fraction of national income, agriculture's contribution to raising the incomes of the poorest is at least two-and-a-half times than that of other sectors.⁹

Some of the ways in which agricultural development can reduce poverty are likely to be enhanced when smallholders raise their production. Compared to larger-scale farmers, small farmers are themselves more likely to be poor, so raising farm incomes directly reduces poverty; while small farmers are more

likely to spend additional income locally so that consumption linkages that stimulate the rural nonfarm economy may be greater. Small farms, for the reasons set out in the previous section, are likely to use more household labor when expanding production, reducing the extent to which they seek additional work off farm, and hence reducing supply to the rural labor market and further driving up rural wages. This was seen in North Arcot District, Tamil Nadu, India, in the 1970s and early 1980s when the green revolution of cereals and the white revolution of small-scale dairying raised returns to the labor of smallholders (Hazell & Ramasamy, 1991).

Although the evidence of poverty reduction arising from agricultural growth in countries where small farms dominate agriculture tends to confirm these expectations, there are few studies that directly compare the impact on poverty of agricultural growth from large farms to that from small.

(c) *Dynamics: changing agrarian structure and the future of small farms*

The history of agriculture in the last two centuries suggests two features of change in agrarian structure as economies grow. One, even if recent experience in developing countries still shows farms becoming smaller, at some point in economic development, farm sizes start to grow as holdings are consolidated. Two, the pathways along which agrarian structures evolve vary considerably. In some industrialized countries, such as England, land was concentrated in medium and large-scale holdings before the middle of the 19th century, whereas in parts of France, Germany, and Japan small family farms were still common late in the 20th century.

Hence while it is thus highly likely that in the long run farms in developing countries will become larger as some farmers leave agriculture for other activities, the rate and manner in which this takes place are difficult to anticipate. There appears to be no general or ideal pattern. For example, both Brazil and China have seen rapid growth of their agriculture since the early 1990s, but while much of the increased output in the former has come from medium to large-scale holdings, most Chinese output continues to be produced on small farms. This suggests that structural changes do not need to accelerate to raise the rate of agricultural development.

Yet even if small farms may persist, there are questions about the prospects for households with very small holdings from which it is difficult to generate incomes above the poverty line. Considerable differentiation already exists among small farms, as evidence presented by Jayne, Mather, and Mghenyi (this volume) for Eastern and Southern African countries indicates. Consequently, whether land is scarce or not, in this region the bottom half of the landholding distribution typically consists of farmers who have access to less than 1 ha.

A better option than farming for households with very small holdings may well be businesses and jobs in the nonfarm economy. Smallholders are already often quite heavily engaged with the rural nonfarm economy. Since in many areas—other than peri-urban—most rural nonfarm activities are linked to agriculture, either in production or consumption linkages, agricultural development may paradoxically be one of the best ways to encourage the nonfarm economy. Given that small and relatively poor farmers typically spend more of their income locally than do larger and better-off farmers, then developing smallholdings in particular is indicated.

While growth of the rural nonfarm economy is likely to help reduce poverty, it may not necessarily improve equity. Just as small farmers face high transactions costs in supply chains, so too do many potential rural entrepreneurs from households of

modest means. Those rural households with some capital, and often with more education, are often better equipped to take up attractive opportunities than their less well-endowed neighbors.

4. INTRODUCING THE CONTRIBUTIONS IN THE SPECIAL ISSUE

Given the doubts expressed about the future of small farms in contemporary conditions, the opening paper, by Hazell, Dorward, Poulton, and Wiggins (this volume), reviews the case for small farms in the light of changing circumstances. These include the rise of supermarkets, the long-term decline in commodity prices (that has perhaps come to a halt) and liberalized trade, agricultural research funding, environmental change, HIV/AIDS, and the consensus that had emerged on the limited support that governments should offer to agriculture, or any other sector.¹⁰

Although some of these are seen as undermining the case for smallholder development, on examination not all of them are necessarily any worse for small farmers than they are for larger scale farmers. But some clear threats to small farms emerge, above all concentration in marketing chains. Market failures, amplified by the retreat from state intervention that has left the private sector responsible for input supply, financial services, marketing, and even technical advice and innovations, are more of a problem for small than large farmers. For the former, transactions costs with markets—always high—are mounting. If smallholders are to survive and prosper, then they have to find ways to meet new demands in supply chains and to interact effectively and economically with suppliers of inputs and services.

This changes the policy agenda. While public goods need to be provided as they always have, the growing challenge is to improve the workings of markets for outputs, inputs, and financial services to overcome these market failures. This calls for innovations in institutions, for collaboration between farmers, private companies, NGOs, and ministries of agriculture—in which public agencies must take on new, more facilitating roles. How far this can be achieved is the main difference between those who believe that small farmers have a future and those who do not.

Valdés and Foster (this volume) re-examine the role of agriculture as a source of growth and poverty reduction, arguing that it is more important than might be thought when looking at the share of gross national income produced by the sector, owing to the links from farming to other sectors. Agricultural growth rates tend to feed forward into the growth of other sectors, with elasticities of 12% in Latin America and the Caribbean and 15% in developing countries as whole. The reverse does not apply: growth in other sectors has a much lower elasticity on growth of agriculture. They argue that given the impact of agriculture on growth, the sector is about twice as important as its nominal share of national income would indicate. Indeed, it is even more important when the aim is to reduce poverty: relative to its generally small fraction of GDP, agriculture's contribution to raising the incomes of the poorest is at least two-and-a-half times than that of other sectors.

While this may thus suggest that agriculture should get a larger share of public and donor funds than it typically does, more important for the authors is the composition of public expenditure. In many Latin American countries much of public spending goes to subsidies on private goods such as fertilizer, irrigation water, and electricity, rather than on public and merit goods. Most of the subsidies are captured by the

large farmers who use these inputs more than smallholders. Shifting spending from subsidies to roads, agricultural research and extension not only promises to raise agricultural growth but also to distribute the benefits more widely. Finally, they note the potential of conditional cash transfers to alleviate poverty but, more important, to ensure investment in future generations, whether they become farmers or not.

The most intense debates on the possibilities of small farms arise for Africa south of Sahara, the theme of Diao, Hazell, and Thurlow's essay (this volume). Despite the importance of agriculture in African economies for incomes and employment, there are widespread doubts about the sector's ability to create enough growth for development; doubts arising from past indifferent and disappointing performance, weak rural institutions, and deterioration in natural resources. The authors argue that there is little alternative to agriculture growth in the early stages of development, at least when mining and manufacturing are little developed.

This paper illuminates these arguments by using models of the economies of Ethiopia, Ghana, Kenya, Rwanda, Uganda, and Zambia built with household survey data. They simulate the impacts of enhanced agricultural and industrial growth to 2015 on poverty reduction, compared to a baseline of no enhanced growth. Raising growth rates of agriculture, it turns out, are more efficient in reducing poverty than raising those of manufacturing industry. In the case of Ethiopia, for example, continuing modest economic growth of 3.1% a year would reduce poverty to a headcount rate of 44% by 2015: raising growth rates, with agriculture growing at 5% a year, would see this figure reduced to 26.5%; while increasing the growth in nonagricultural sectors to 7% a year would only reduce poverty to 37%. These results are perhaps not so surprising: more of the poor belong to farm households than those working in industry, while increased production of food crops tends to push down food prices to the marked benefit of the poor throughout the countries.

They also compare the effect of increasing the production of staples, as against vigorous promotion of export crops. Promoting the former has a much larger effect on poverty than the latter, owing to the much larger share of staples in output. Demand for increased staples production, they argue, should not be an impediment: many of these countries are importing basic foods so there is scope for domestic production to displace this.

Is it feasible to promote agriculture based on a drive to raise production of staples? The authors believe so, but note that it is not just a matter of generating and disseminating technology: improved supply chains for inputs and produce are needed, as are investments in infrastructure.

A more detailed review of the circumstances of African smallholders is presented by Jayne, Mather, and Mghenyi (this volume). They begin by arguing that some two-thirds of farmers in Africa face considerable difficulties from poor governance, public under-investment, natural conditions, and the international trading system. The key argument in the paper is that increasing land scarcity and above all its uneven distribution means that for many small farms, the bulk of future livelihoods lie off the farm. Yet in most cases, thriving agriculture will be important to creating nonfarm jobs as well.

Drawing on surveys of small farms in Ethiopia, Kenya, Malawi, Mozambique, and Zambia, they report remarkably inequitable distribution of land among small farmers, even in countries where institutional norms stress the value of equality and where land tenure is flexible. The result is that the bottom half of the landholding distribution usually consists of farmers

who have access to less than 1 ha. Equally striking differences arise in marketed surpluses: typically 50% of marketed maize comes from a very small group—around 2%—of the rural population; and most of the rest comes from 20% to 30% of households. The other 50–70% of smallholders are net buyers of maize. On this basis, policies to stimulate farming by raising the price of staples potentially harm the poor.

The authors also look at the impacts of HIV/AIDS on small farmers in Eastern and Southern Africa. Even for households with members living with HIV/AIDS, impacts differ depending on who is ill and the initial wealth of the household, so that responses need to vary accordingly. While safety nets are needed, so are measures to raise farm productivity.

As a general point, Jayne *et al.* (this volume) argue that progress lies in improved farm productivity that is currently stymied by inadequate, and until recently declining, support from government and donors, and by protection in the North. Yet there are ways forward, through investing in agricultural research, education, roads; and through establishing organizational arrangements that can bring know-how and capital to small farms.

Technical improvement is clearly an important part of improved productivity, the subject of the paper from Michael Lipton (this volume). He begins by arguing that in conditions where capital is scarce and labor is abundant, then lower transactions costs when using households labor will tend to reduce total costs of production. The evidence of declining farm sizes in developing countries, and that most renting is from larger to smaller farmers, most likely indicates that the inverse ratio of farm size to production per hectare still applies in much of the developing world.

But if small-scale farming is to offer people better livelihoods, productivity needs to be raised still further. This implies two challenges: productivity on small farms needs to rise faster than increasing supply can depress prices; and, output per hectare has to rise faster than output per unit of labor, so that the demand for labor rises. Thus new jobs can be created, with rising labor productivity. The green revolution satisfied both conditions, even if this was more through good fortune than design. It also pushed down prices of staple foods, hence benefiting farmers, laborers, and consumers.

The first green revolution, however, took up the early and easy technical options: agricultural research since the mid 1980s has been largely defensive, its advances preserving previous gains but not increasing yields at the rates formerly seen. Moreover, large areas of variable and low potential land have been left behind, without the benefit of technical advances. Thus to repeat and redouble the experiences of the green revolution, new approaches to research will be needed. Lipton (this volume) argues that the promise of transgenics has to be realized. If expertise in biotechnology lies mainly in private research companies, then the public sector could contract them to produce varieties suitable for small farmers in lower potential areas. Given the importance of water control, and likely future scarcity of water, more research into irrigation is also a priority: for which engineers, plant scientists, and economists will need to combine their talents.

A key issue is how to provide small farmers with the services, inputs, and marketing arrangements that will allow them to compete in increasingly demanding markets. Poulton, Dorward, and Kydd (this volume) set out the disadvantages that small farmers face compared to larger farmers in dealing with the new supply chains where transactions costs can multiply. In the past, state agencies could assume the transaction costs when directly providing these services, but that is no longer seen as possible. The challenge is thus to find ways to

co-ordinate the many small farmers with input suppliers, processors, buyers, and service providers.

Effective answers will vary by crops, depending on the need for processing and the importance of quality and other standards, including credence characteristics (those that cannot be ascertained by inspecting the produce such as use of child labor). When buyers can source produce from a few large farmers, they often do so. When for lack of larger units they necessarily have to deal with many smaller growers, ways to make that possible are more likely to be found.

Poulton *et al.* (this volume) look at a range of arrangements for reducing transactions costs in markets for outputs, finance, and inputs; as well as for provision of research and extension, land tenure, and water management. Possible arrangements include contract farming, commodity chain support where government intervenes strategically at critical points, decentralized agricultural development planning, and farmer associations. There are few universal solutions since so much depends on the crop, the service, and the local context. Effective responses will need tailoring, with active learning to find them. The authors are guardedly optimistic that the difficulties can be overcome in most cases, partly since there are several options; although they are not so for crops where credence characteristics are important and where buyers have the option to buy these from large farms.

Structural transformation of the rural economy will see non-farm activities provide an increasing share of rural livelihoods and incomes. Currently, as Haggblade, Hazell, and Reardon (this volume) report, nonfarm earnings represent 30% to 45% of rural household incomes across the developing world, the share increasing through time. Much of the paper is concerned with the insights revealed by surveys of households and enterprises into the dynamics and linkages, the processes by which the nonfarm rural economy develops.

A key proposition is that in most cases, and certainly in early stages of development, nonfarm activities will not usually be an engine of growth for the rural economy. Rural areas have to produce a tradable good or service to overcome limits of the local economy: often the tradable good or service will come from agriculture. Moreover, since agriculture is usually far larger an activity in rural areas than any of the diverse manufacturing and service activities that make up the nonfarm sector, so potentially it can have much greater impact.

Multipliers from agricultural growth to the rest of the rural economy can be strong, with most estimates lying between 1.3 and 1.8. Consumption links tend to be larger than those in production, with services and trading dominating the activities so stimulated. Smallholder farming in particular is likely to have strong links, since the poor typically spend more of their income locally than do the rich and broadly distributed first-round income gains usually have the highest second-round effects through linkages. While improved links to urban areas benefit the rural economy, some activities are threatened, with rural crafts often declining in the face of competing products from urban factories. To allow the links to work, however, there has to be rising productivity in agriculture, to allow labor and capital—rural savings rates of 25–35% have been seen in green revolution areas of Asia—to be freed for investment in nonfarm activities.

Just as small farmers face high transactions costs in supply chains, so too do many potential rural entrepreneurs. The better-off households, with some capital, and often with more education, are better equipped to take up attractive opportunities. So public policy to provide information to the poor, to remove the barriers to their entry, and to invest in their education and training will be needed if growth is to reduce poverty.

Finally, Birner and Resnick (this volume) look at a relatively neglected topic: how policies for smallholder farming are chosen. The literature they review includes stylized regularities, starting with the relative lack of influence that small farmers have had on policy-makers. Despite their numbers, they have often been taxed disproportionately and have seen little public investment and services in return. This varies by context: for example, countries with highly unequal distribution of land have often seen substantial taxation of farming, but with rural elites compensated by subsidies and other favors; while in countries where family farms have dominated—above all those in East and South-East Asia—previous net taxation of small farms has been replaced from the 1970s onward by strong public investment in rural infrastructure, social services, agricultural research, extension, and support for credit systems.

Several hypotheses have been advanced as to how agricultural policy is chosen, although no one approach offers more than partial insights. Hence the authors propose a framework that combines elements of other approaches, comprising: the processes by which policy coalitions and interest groups come into being and how they deploy political capital; the ideas and ideologies that inform debates; and, timing, given that policy-making is discontinuous and substantial changes are usually only made when “policy windows” open.

5. CONCLUSION

Overall this collection of papers suggests that small farm development is not only desirable for its impacts on poverty, but also feasible even in changed circumstances. There is broad consensus on the policy implications, although there remain issues to address, as follows.

First, broad policies to support smallholder development are clear in outline: provide public goods to rural areas including roads, health services, clean water, and schools; invest in agricultural research and extension. Public goods are particularly important for small farmers since they are unlikely to provide these themselves in the absence of public investment. Public goods need to be complemented by correcting market failures where possible. How to do the latter is not so clear. Ideally institutional innovations, such as those outlined by Poulton *et al.* (this volume), provide the answers. Some such innovations may be private initiatives, stimulated by a favorable investment climate, other may need public action. There may, however, be situations where institutional answers are hard to find and there is a need for more direct public action. Malawi's experiences since 2005 in subsidizing fertilizer show the practical power of second-best public responses to acute market failure: use of cheaper fertilizer has been associated with much increased maize production. This case has been unusual, in the degree of poverty of rural areas and the dependence on maize farming: in other more promising contexts the costs and the potential disincentive to private investment in input supply would probably not be justified. Finding effective and economical response to market failures will require patient and adaptive work to find solutions that will be tailored to circumstances of crops, supply chains, and farmers.

Second, it is recognized that many members of small farm households will increasingly need to find work in the rural nonfarm economy. Agriculture and the rural nonfarm economy are more complementary than in competition: there is little necessary trade-off between the two sides of the rural economy. Agricultural growth is often a potent spur to non-

farm activity; while nonfarm activity can sometimes generate capital for investment on farm. As far as policy is concerned, much of what is needed to stimulate rural nonfarm activity is the same as that needed to promote agriculture: a favorable investment climate in rural areas; provision of public goods of roads, power, other physical infrastructure, education, health and safe water; and functioning rural institutions, such as those to facilitate rural financial intermediation, that resolve market failures. Since, however, better-off households are more likely to have the capital and education to take opportunities off the farm, investing in education and training will be critical if those from poorer backgrounds are to get the benefits as well.

Third, the diversity of context in which small farms exist is as wide as it is important. Dynamics and trajectories of rural economies and hence the likely impacts of public policies vary greatly. Hence policies and programs need tailoring to these contexts, although there are limits to how finely tuned they can be. There is an art to getting the balance between standardizing and tailoring programs, differentiating partly with respect to the local circumstances and partly with respect to the technical requirements of the programs.

Applying the broad principles while working on the detail of local application, and in particular to find effective solutions to market failures, represents a major challenge to those engaged in the study and practice of rural development.

NOTES

1. Some 65 specialists in agricultural development attended the 3-day event, at which 13 keynote papers were presented.
2. Integrated rural development programs were prominent vehicles for aid at the time, yet it was not long before they were widely perceived as having failed—even if the evidence on their performance is rather less clear cut (Howell, 1990).
3. Other examples include the World Bank's (2003) "Reaching the rural poor" which regretted the reduction in Bank funding to rural development in general and to agriculture in particular, for which sector funding had shrunk in FY 2002 to just 7.9% of lending, from more than 30% in the early 1980s. Reviewing its foreign assistance, USAID (2002) commended agriculture for its direct contribution to poverty reduction as well as for indirect contributions through linkages from agriculture to the nonfarm economy, and from rural to urban areas. This led to a new agriculture strategy in 2004 that emphasized linking smallholders to markets. The UKs Department for International Development (DFID) published a strategy and a policy paper (Department for International Development (DFID), 2005) for agriculture in 2005, arguing for the effectiveness of agricultural growth in poverty reduction.
4. Originally drawn up by the New Economic Partnership for Africa (NEPAD), this was backed by Ministers of Agriculture of the African Union who, meeting in Maputo in July 2003, committed their countries to allocate at least 10% of national budgets to agricultural and rural development within 5 years.
5. An important complement to these efforts is the establishment of the Alliance for a Green Revolution in Africa (AGRA) in 2006, chaired by the former UN Secretary General, Kofi Annan, and funded in large part by

the Rockefeller and Bill and Melinda Gates Foundations. Beginning with work on seed varieties, agricultural education, soil fertility, and water management, it aims to revitalize small-scale agriculture in Africa. In another notable initiative, the UN-funded Millennium Villages Project that began in 2004 also emphasizes the possibilities of raising the productivity of small-scale food production in the continent.

6. Some factors that contributed to the spike such as demand for feedstock for biofuels, and higher oil prices that push up costs of nitrogen fertilizer, machinery operations and thus the costs of agricultural production—are expected to apply for at least the medium term. Hence forecasters expect average cereals prices, in real terms, to be some 10–20% above their levels seen during 1997–2006, with those for vegetable oils likely to be 30% higher (OECD-FAO, 2009).
7. Some wonder to what extent unobserved differences in quality of lands may explain the inverse ratio.
8. Another potential advantage to farming on a small-scale is that those working on small plots may have detailed knowledge of their soils and other local conditions that allows them to vary cultivation at the very small scale to good effect.
9. Other studies cited in Box 1.2 of the World Development Report for 2008 (World Bank, 2007) confirm these findings.
10. In a changing world, the list of key factors and their importance are on the move. Since the meeting in Wye in 2005, concerns over falling commodity prices have been reversed, while others such as water scarcity, climate change, and rising oil prices have come to the fore.

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