

TOPIC GUIDE:

Agriculture
and Growth



Frank Ellis
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About Topic Guides

Welcome to the Evidence on Demand series of Topic Guides. The guides are being produced for Climate, Environment, Infrastructure and Livelihoods Advisers in the UK Department for International Development (DFID). There will be up to 30 Topic Guides produced 2013-2014.

The purpose of the Topic Guides is to provide resources to support professional development. Each Topic Guide is written by an expert in the field. Topic guides:

- Provide an overview of a topic
- Present the issues and arguments relating to a topic
- Are illustrated with examples and case studies
- Stimulate thinking and questioning
- Provide links to current best 'reads' in an annotated reading list
- Provide signposts to detailed evidence and further information and
- Provide a glossary of terms for a topic.

Topic Guides are intended to get you started on a subject you are not familiar with. If you already know about a topic then you may still find it useful to take a look. Authors and editors of the guides have put together the best of current thinking and the main issues of debate.

Topic Guides are, above all, designed to be useful to development professionals. You may want to get up to speed on a particular topic in preparation for taking up a new position, or you may want to learn about a topic that has cropped up in your work. Whether you are a DFID Climate, Environment, Infrastructure or Livelihoods Adviser, an adviser in another professional group, a member of a development agency or non-government organization, a student or researcher we hope that you will find Topic Guides useful.



Tips for using Topic Guides

I am going to be under the spotlight. How can a Topic Guide help?

The Topic Guides, and key texts referred to in the guides, cover the latest thinking on subject areas. If you think that a specific issue might be raised when you are under the spotlight, you can scan a Topic Guide dealing with that issue to get up to speed.

I have just joined as an adviser. Where should I start?

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The main text of a Topic Guide takes around three hours to read. To get a good understanding of the topic allow up to three hours to get to grips with the main points. Allow additional time to follow links and read some of the resources.

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Topic Guides, while providing an overview and making key resources easy to access, are also meant to be stretching and stimulating. The annotated reading lists point to material that you can draw on to get a more in-depth understanding of issues. The Topic Guides can also be useful as aide-memoires because they highlight the key issues in a subject area. The guides also include a glossary of key words and phrases.

I would like to read items in the reading list. Where can I access them?

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- Send an email to the Evidence on Demand Editor at enquiries@evidenceondemand.org with your recommendations for other Topic Guides.



About the Topic Guide: Agriculture and Growth

The purpose of the Topic Guide: Agriculture and Growth is to stimulate thinking about pro-poor growth in which agriculture is expected to play a major role. The Topic Guide outlines the propositions and empirical evidence in support of growth based on small-farm agriculture. This sector has a unique potential to accelerate poverty reduction while also stimulating non-farm economic activity. Eventually these processes result in a transition by which the impetus for growth is taken up by other sectors and the role of agriculture diminishes. The guide also points to the complementary role in poverty reduction that can be played by non-farm activities in the rural economy, and at some point by rural-urban transitions in which a steady shift of labour from agriculture into the urban economy occurs.

The Topic Guide makes essential links between aggregate ideas about pro-poor growth and livelihood concepts applied at more local levels of scale. The power of the livelihoods approach is its recognition of the different assets and skills held by different people in rural society, and the consequent different constraints and opportunities they experience. This indicates opening up multiple pathways for individuals' more productive participation in the economy – including rising agricultural productivity certainly, but also diverse non-farm activities, and the barriers and prospects represented by urban migration. The guide provides examples of differing experiences with pro-poor growth based on small-farm agriculture. It also summarises arguments about land access, farm size, food markets, supermarkets, gender and post-conflict recovery in relation to both growth and livelihood dimensions.

As stated in the general description of Topic Guides, the purpose of this Topic Guide is to stimulate thinking around a specific area of policies for poverty reduction, in this instance the links between pro-poor growth, small-farm agriculture, and improving rural livelihoods. The guide is not a manual for decision making in specific instances of support to rural livelihoods in the many countries and circumstances under which Livelihoods Advisers operate. The latter would be a different scale of undertaking altogether. Nevertheless, some summary guidelines which emerge from the coverage of the guide are offered early in the main text.

About the author

Frank Ellis is an Emeritus Professor at the University of East Anglia and has spent 40 years researching, writing and teaching on rural development, agricultural policies, livelihoods and social protection.



Agriculture, pro-poor growth and rural livelihoods: debates, scales and guidelines

Debates about the role of agriculture in pro-poor growth are partly about sequencing and partly about the flexibility for labour absorption represented by small-farm agriculture. One set of ideas focuses on the necessity of agricultural growth as a precursor to achieving a transition to a more broad-based growth in which agriculture plays a declining role over time. Another focuses on the labour intensity of small-farm agriculture, which means that a given rate of economic growth has a larger impact on poverty reduction if it originates in agriculture than in sectors offering a lower employment intensity of production.

In some of the literature cited in this Topic Guide, views and evidence about the role of agriculture in growth and poverty reduction appear polarised, perhaps unhelpfully so. There is an ‘agriculture first’ view which proposes that rising standards of living are neither achievable nor sustainable unless agriculture is prioritised in the early phases of the long-run growth process. An opposing ‘agriculture sceptic’ position challenges the idea that poverty is best tackled by focusing on the rural sector where it is most prevalent. This position argues that economic progress proceeds by leaving behind failing sectors in favour of fast-growing ones. Empirical evidence is not definitive in support of either of these opposing stances, and numerous intermediate positions can be validly argued. In reality, long-term growth and poverty reduction involves a messy interaction between farm and non-farm growth which plays out in different variations in the history of different countries and regions.

This Topic Guide sets out the main arguments concerning the role of agriculture in pro-poor growth, and also endeavours to connect these arguments to a livelihoods perspective. This is not as straightforward as may initially seem the case. The growth arguments often occur at a high level of aggregation: the entire agriculture sector and its potential for growth and poverty reduction relative to other sectors and the economy as a whole. This aggregate perspective does not necessarily provide a good guide to the strategy that is most appropriate for particular rural livelihoods in particular places. These are influenced by local ecological, spatial, market and employment constraints and opportunities. What is appropriate for an area with rich soils and reliable rainfall close to a capital city is unlikely to be suitable also for a remote area with poor soils and unreliable rainfall.

When working with rural livelihoods, an additional complication occurs due to the differing prospects between individuals and families facing different assets, income sources and risk factors. This applies even in an apparently relatively homogeneous rural area where most people appear to be semi-subsistence small farmers. The poorest in such environments typically do not possess or have access to sufficient land to provide themselves with enough food over an annual cycle, and depend on employment by other farmers or in other occupations to construct a viable livelihood. Initiatives designed to increase agricultural output and incomes are likely to have differential impacts across a rural society, even allowing for spread effects beyond those who do well directly from new opportunities made available. There are often gender differences, too, in who gains and who loses from programmes seeking to raise rural incomes through small-farm based growth.

Small-farm agriculture as the basis for pro-poor growth has powerful arguments and evidence in its favour. However, this does not mean that it can be or should be the exclusive focus of attention for reducing rural poverty. There are places where the prospects for agriculture are poor, and there are people for whom agriculture is unable to provide a pathway out of poverty even if they live in high-potential agricultural areas. At the level of livelihoods programmes experience has already shown that there are multiple farm and non-



farm activities which can provide people with the capability to climb out of poverty. In addition, the option of exiting agriculture altogether is both predicted by agricultural growth models, and is complementary to sustained productivity growth in farming itself. These ideas lead to a provisional set of guidelines regarding the translation from aggregate growth narratives to the level of livelihoods programming, in which the aim is to enable the greatest number of people to move out of poverty, utilizing an array of potential pathways through which this might be achieved.¹

Livelihoods Box 1: Provisional guidelines linking pro-poor growth to livelihoods

- Poverty reduction involves multiple pathways by which individuals and families can attain more secure livelihoods.
- Small-farm agricultural growth certainly has a key role to play in this, but at livelihoods level should be set alongside other options.
- The power of the livelihoods approach is its recognition of the different assets and skills held by different people in rural society, and the consequent different constraints and opportunities they experience.
- Agriculture works best for those possessing sufficient land to take advantage of new varieties, new methods, or improving access to markets.
- Others may gain indirectly from an agricultural growth process through increased labour demand on farms and in ancillary services, but the strength of this indirect effect needs to be properly examined or supported in each case.
- In many instances, individuals can gain from asset and skill support in areas other than agriculture, and this especially applies to opening up new avenues for the economic participation of women.
- Gender imbalances are not corrected by reinforcing divisions of labour in which women are consigned to the lowest return occupations (for example producing root crops for subsistence); rather, women require the capability to enter higher return activities of the type that are routinely open to men.
- Rural-urban transitions need to be mainstreamed into ideas for generating pro-poor growth and improving livelihoods, rather than being treated as peripheral or even undesirable.
- Inter-generational differences create significant opportunities for diversifying pathways out of poverty, with young people often seeking to exit agriculture but lacking the transitional funding, employment skills, or knowledge of opportunities to make this possible.

¹ Guidelines like this are useful up to a point, but it is not appropriate to adopt an overly prescriptive set of rules for deciding under what conditions particular agricultural or non-agricultural activities will prove optimal for accelerating rural poverty reduction. For any particular exercise in livelihoods programming, there is no escaping the necessity to examine the aspirations, removable constraints and feasible range of options for that set of poor people, possessing a particular range of assets and skills, in that location, and at that time.



Agriculture, growth and poverty reduction

“No country has been able to sustain a rapid transition out of poverty without raising productivity in its agricultural sector” Peter Timmer (2005)

This is a strong claim that embodies a set of ideas about growth and poverty reduction in low-income countries which has been an important strand of the literature on these topics for the past four decades. Importantly it implies a sequential ordering of development priorities, with productivity increases in agriculture giving rise to agricultural growth as a precondition for industrial or other non-farm growth.

The origin of this set of ideas lies in debates about industrialization processes in Europe in the 19th and early 20th centuries. In the context of relatively closed economies (little foreign trade) and justifiable fear of hostile neighbours, how could the non-farm economy grow unless agriculture could be relied upon to deliver low-cost food to the emerging industrial labour force? Further, a growth in agriculture would provide a market for increases in industrial output, and generate savings which could be converted into manufacturing investment. These ideas are elaborated for low-income developing country settings in a classic article by Johnston & Mellor (1961).

The persistence of small-scale peasant agriculture was not necessarily envisaged in early versions of agricultural growth for poverty reduction. Since a key objective was to generate a rising marketed quantity of food grains, larger scale and mechanised technologies were considered important attributes of agricultural growth. However, in the 1960s a significant shift in emphasis occurred towards raising productivity on the small farms which dominated the structure of agriculture in low-income Asia, Africa and parts of Latin America. This shift emphasised the ‘scale neutral’ character of advances in crop yields, and the economic efficiency of utilizing labour-intensive farming methods in labour-abundant rural economies (Hayami & Ruttan, 1971). The logic that rising output on small farms could satisfy both growth and poverty reduction strategic objectives has subsequently underpinned evolving approaches to rural development, and several sources provide recent and accessible restatements of this essential proposition (Timmer, 2005; Byerlee *et al.*, 2009; Barrett *et al.*, 2010; Hazell *et al.*, 2010).

Empirical support

A strong empirical underpinning supports the notion that yield growth on small farms can lead to a cumulative beneficial impact on economic growth and poverty reduction (see World Bank, 2007; de Janvry & Sadoulet, 2010; Christiaensen *et al.*, 2011). The main steps in the argument are set out in a box below. This pro-poor growth sequence seems to work reasonably well as a description of what occurred in large Asian countries between the 1960s and 1980s when the Green Revolution in rice and wheat increased average grain yields from around 1 to 3 tons per hectare, and success in agriculture was followed by accelerating growth in non-agricultural sectors in the 1990s and 2000s. One example that appears to fit the model well is Thailand, a brief summary of the experience of which is given in Case Study 1 below. Nevertheless, variations in this experience across countries within this group, as well as between Asia and other regions, suggest that small-farm agricultural growth is part of a complex picture, playing different roles in different periods and places, and not definitively the driving factor in all examples of successful growth with poverty reduction (Tsakok & Gardner, 2007).



Box 1: Pro-poor growth through small-farm agriculture

1. The majority of the poor (roughly 70 per cent is cited) live in rural areas, and are mainly engaged in agriculture or ancillary activities, as farmers or farm labour.
2. Time-series and cross-section data show that a given increase in sector GDP has between 3 and 4 times the poverty reduction impact from agriculture as compared to non-farm sectors.
3. This observation is especially powerful for large Asian countries (China, India, Indonesia), but is also reproduced across other countries and regions. It is weak in Africa due to the hitherto slow pace of yield gains in that region.
4. The strength of the poverty reduction impact of agricultural growth is greatest for countries with relatively equal farm size structures (in the large Asian countries) and is weaker in countries with unequal sizes of holdings (Latin America).
5. Agricultural growth stimulates the growth of non-farm sectors by providing a market for consumption goods and the provision of input and marketing services to agriculture (growth linkages) (Mellor, 1976; Hazell & Haggblade, 1993).
6. This effect is most powerful when land productivity increases more rapidly than labour productivity, for then food prices fall (benefitting urban consumers and landless or food-deficit rural dwellers) while labour use in growing agriculture is maximised (Lipton, 2005).
7. Also critical in this sequence is the decline in real food prices (i.e. food prices relative to wage levels) caused by rising output, releasing wage income to spend on non-food commodities (Dorward, 2013).
8. A cumulative beneficial spiral occurs in which rising farm incomes are sequentially followed by rapid non-farm growth, increasing the size of the market for farm products, and demanding higher value farm outputs (this is sometimes referred to as 'the economic transformation'), leading to ever higher incomes in both sectors.
9. Once this spiral is set in motion, the agricultural shares of output and labour decline rapidly, as the share of food in consumer expenditure diminishes with rises in real per capita income.

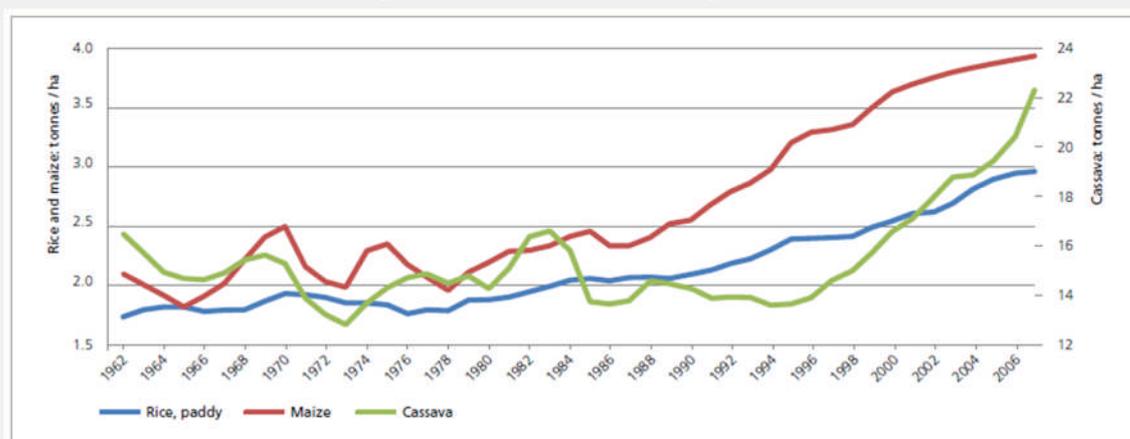
Case Study 1: Agricultural growth and poverty reduction in Thailand

Agricultural development in Thailand since 1960 has facilitated the country's transformation into an urbanized economy based around manufacturing. There have been two phases: rapid agricultural growth based on expanding the area in production and absorbing more labour; and, as Thai farming began to shed land and labour, slower but continued growth through higher yields and output per person.

From the 1960s to the early 1980s new lands were opened up for farming, facilitated by the existence of a forest frontier where squatting was tolerated. This absorbed the rising labour force to produce more of the main staples for both the domestic market and export (rice and teak in the first place). At this time, agriculture was the main driver of the economy. More than 70% of the active population was employed in the sector in 1980, among them the majority of the poor.

Agriculture then began to intensify, as Thailand experienced rapid economic growth led by manufacturing. Labour began to leave agriculture, attracted by jobs in manufacturing, urban services and the rural non-farm economy. At the same time, it became harder to open up new land. Agricultural growth slowed, but productivity of land and labour increased notably. The sector became more mechanised and more capital intensive, facilitated by increasing availability of formal credit. Use of improved varieties and greater application of inputs led to increasing yields. Farming households increasingly diversified their income sources, and some have become specialised in higher value products sold into sophisticated marketing chains. The graph below clearly reveals the transition from area expansion to yield growth that began to occur in the late 1970s.

Thailand yield trends for selected crops 1960 to 2007



Overall since 1960, poverty has fallen throughout Thailand. Rates in rural areas have also fallen markedly. In the early 1960s, more than 60% of the rural population lived in poverty; by the early 2000s, the figure was just above 10%. Improvements probably came initially from increasing farm incomes and subsequently from rural non-farm jobs and remittances from migrants.

With agricultural growth, the real price of rice more than halved in the second half of the 20th century. From 1988 to 2007, the number of households affected by food poverty declined from 2.6 million to 418,000, and almost disappeared from urban areas. As a result, child malnutrition also declined. The incidence of underweight young children fell from 17% in 1987 to 7% in 2006; that of stunting fell from 25% to 16%.

Source: Leturque, H. And S. Wiggins, 2011, *Thailand's progress in agriculture: transition and sustained productivity growth*, ODI Development Progress, London: Overseas Development Institute



The ‘neglect’ of agriculture in the recent past

Before opening up further the notion of multiple components in pro-poor growth, it is worth commenting briefly on an argument that the reader will encounter in some of the recent agricultural growth literature to the effect that agriculture was ‘neglected’ in low-income developing countries over a 20-year period from the early 1980s to the early 2000s. This neglect comprised a halving of agricultural sector budgets by governments, and a decline by two-thirds in donor commitments to the agricultural sector over this period (Bezemer & Headey, 2008; Byerlee *et al.*, 2009). This decline in public agricultural sector investment in low-income countries is thought to have dampened agriculture’s potential contribution to pro-poor growth in this period.

While this argument may have some merit, it should also be borne in mind that this was an era when donors’ own prescriptions for achieving increases in farm output growth switched radically from state provision of services and subsidies to liberalizing markets and finding private solutions to previous public responsibilities. The fall in state agricultural expenditures was to a considerable degree imposed on governments by donors under structural adjustment programmes, and donor funding (predominantly delivered through governments) fell likewise, being switched to new priorities of rural education (universal primary education) and health services. Thus what really occurred in this period was an intentional effort to make faster progress in agriculture by downsizing the profile of the state in farm policies, rather than a casual drift into agricultural neglect. Since the early 2000s, the consensus has swung back in favour of more government involvement in stimulating agricultural growth, and an important part of the argument in favour of this has been coordination failures in liberalised markets and high transaction costs in input and output markets, especially in disadvantaged rural areas (Dorward *et al.*, 2004).

This digression is important for locating agricultural growth in a broader context of claims on scarce government and donor funds in low-income countries. The question arises why agriculture should be privileged for public funding above, say, small-scale metalworking or bicycle repair workshops or tourist services – all of which are labour intensive and can contribute to pro-poor growth. The only reasonable answer to this is that agriculture is unique in the sheer scale of what can be achieved for pro-poor growth for a given outlay of public funds, as suggested by the sequence given in Box 1 above. However, this claim is always worth testing against what is observable in the experience of individual countries with respect to sectoral patterns of growth and poverty reduction, for otherwise there is a risk that agriculture is privileged for resources when other sectors could, with some help, make their own significant contributions to pro-poor growth objectives.

Differences in productivity and poverty rates across sectors

An interesting feature of small-farm agriculture’s high labour intensity of production (and hence high poverty reduction impact) is that value added per person in agriculture is a third to a quarter of the value added per person in non-farm sectors (Gollin *et al.*, 2012). Even when these figures are adjusted downwards to compensate for inaccuracies in measuring labour input and value added between the sectors, non-farm sectors on average exhibit more than twice the value added per person in agriculture. This productivity gap should result in a shift of labour from low productivity to higher productivity occupations. It is an authentic if somewhat abstract ‘law’ of economics that resources should move from lower to higher returns per unit of each resource until their marginal productivity is equalised across all sectors. Gollin *et al.* conclude that there must be severe barriers to labour mobility between sectors for this difference in productivity to persist.

As might be expected, these differences in average productivity between sectors are correlated with sectoral differences in the incidence of poverty. In general, urban incomes



are higher than rural incomes, and urban rates of poverty are lower than rural rates. This again points to the potential importance of rural-urban transitions in improving the livelihood prospects of those who make the move, as well as reducing the absolute numbers of poor in rural areas. The emerging position regarding trends and differences between urban and rural poverty is summarised by Byerlee *et al.* (2009 p.7) as follows:

“Even in countries that have experienced rapid reduction in rural poverty, mostly in Asia, disparities between rural and urban incomes have tended to widen. In a sample of almost 70 countries, the median urban income (consumption) is at least 80 per cent higher than rural income in half the countries. These differences have been increasing in many countries. In India, rural and urban incomes were fairly similar in 1951, but the gap has since widened substantially. In China, the gap between urban and rural incomes narrowed in the early reform years, when rapid agricultural growth drove overall economic growth, but it has since opened again from a ratio of 2.1 in 1993 to 3.5 in 2002 [...]. In China the incidence of urban poverty declined twice as fast as that of rural poverty between 1980 and 2001; in Indonesia, 2.5 times as fast over the same period; and in Thailand 3.7 times as fast between 1970 and 1999.”

Summary so far

To summarise so far, there are powerful arguments in favour of supporting small-farm growth in low-income countries in order to achieve simultaneously both overall growth and poverty reduction objectives. This strategy is partly thought about in sequential terms, i.e. initial pro-poor growth in agriculture will accelerate the growth of non-farm sectors leading eventually to a relative decline in the importance of agriculture and a shift in labour to non-farm occupations. It is difficult to gauge where in this process a particular country might be at a particular point in time, and different phases may last for different durations in different places. Nevertheless, the conditions need to be in place to allow this shift in labour out of agriculture to occur, driven by productivity and wage differentials between the sectors. Yet evidence and experience suggest that in most countries there are considerable barriers to this shift. These can vary from overt discouragement (many governments are resistant to migration, and have regulations in place to discourage it) to lack of necessary skills, knowledge and capital on the part of would-be migrants. A challenge for livelihoods programmes is to open up pathways allowing rural individuals and families to participate in growth processes wherever these are occurring.

The problem of chronic food insecurity in Africa

In low-income African countries, especially in eastern and southern Africa (excluding South Africa) a phenomenon has arisen over the past two decades of chronic vulnerability to hunger in the lowest per capita income quintile of the rural population (i.e. the bottom 20 per cent). This has arisen for several different reasons, including *inter alia* farm sizes too small to produce enough to satisfy annual food consumption needs, landlessness (both observed and hidden, and particularly affecting young people), soil exhaustion, increased climate variability, and poorly functioning markets for inputs and outputs (especially in remote areas). It is not clear how far these difficulties can be overcome primarily through improving agricultural performance. A key factor has been rapid population growth in rural areas coupled with slow growth in non-farm sectors and relatively low rates of urbanization. An important policy response since around 2005 has been to step up the coverage of social protection so that chronic food insecurity does not turn into famine as a regular occurrence. These difficulties are illustrated by the experience of Ethiopia in Case Study 2.

Case Study 2: Ethiopia: the need for a diverse approach to rural poverty reduction

Ethiopia is a country which illustrates the need for a diverse approach to rural poverty reduction. Since 2005, Ethiopia has had in place a seasonal social protection programme called the Productive Safety Nets Programme (PSNP) which routinely provides 7.5 million people (1.6 million households) with food or cash transfers in the lean season. The PSNP includes a sub-programme which seeks to strengthen the livelihoods of programme participants, mainly through agricultural initiatives, but this has yet to reduce the social transfer caseload.

Ethiopia may provide a valuable example of too heavy a reliance on agriculture to secure rising living standards in rural areas. Ethiopian governments going back not just years but centuries have been disposed to keep people on the land. For half a millennium, this occurred under feudal relations of production (serfs tilling the land of the nobility), then, following a revolution, land was nationalised and redistributed as small farms in a succession of land reforms, but movement out of the village was strongly discouraged. Even today human mobility is looked upon unfavourably by authority. As a result of this history, Ethiopia in the 21st century remains an overwhelmingly rural society with an estimated 82 per cent of its 85 million inhabitants living in rural areas. While urbanization is thought to have accelerated in the past few years, its impact on the big numbers of population growth and its sectoral location will be gradual even in fast migration scenarios (see table below).

Ethiopia: Projected total and rural population compared to PSNP beneficiaries 2010-14

Year	Total '000	Rural %	Rural '000	PSNP plan '000	PSNP % rural
2010	82,950	82	68,019	7,574	11.1
2011	84,709	82	69,462	7,574	10.9
2012	86,465	81	70,037	7,574	10.8
2013	88,215	81	71,454	7,574	10.6
2014	89,958	80	71,966	7,574	10.5
Increase (2010-14)	7,008		3,948		

Source: Ethiopia population trend and rural proportion from World Bank, World Development Indicators: <http://data.worldbank.org/indicator>

Low urban populations imply small markets for farm crops and other rural produce (World Bank, 2009). In the four years 2010-14, the country's total population will have increased to near enough 90 million, of which 72 million (80 per cent) will be rural. The rural population will have increased by 4 million people in this period, or around 1 million people per year needing to secure viable livelihoods in the rural economy. This point is not intended to invoke Malthus; it merely points to awkward parameters within which to situate the notion that farm income growth can be the main source of sufficient poverty reduction to reduce the food insecurity caseload of the PSNP.

More specifically, any success in achieving food security for some current social transfer recipients may be more than offset by new entrants to the category of the chronically food insecure, necessitating PSNP to stay the same or rise in coverage over time. This would occur, for example, if a 20 per cent reduction in caseload was secured through farm income growth (reduction of 1.5 million beneficiaries); but a third of new rural citizens required support to avoid hunger (also 1.5 million people). The mechanism by which the latter occurs is through declining farm size, as each successive generation of rural dwellers seeks land to construct a predominantly farm-based livelihood (see Case Study 3 box below). The lesson is that opening up pathways towards more secure livelihoods and higher incomes in rural Ethiopia needs to occur across a broad front, including raising farm productivity, providing people with the skills and assets to pursue non-farm rural occupations, and setting in motion an orderly migration to cities by addressing the infrastructural requirements that such a migration will entail.

Source: Frank Ellis background working material for an Ethiopia PSNP VFM assessment



Climate change and long-term agricultural outcomes²

The discussion so far has not addressed long-term aspects of future agricultural growth, such as the ability of the human population as a whole to remain food secure in the future, and the impact of climate change on crop yields, livestock and agricultural output. These are complex topics in which it is important to distinguish known facts from subjective projections. A recent review of the evidence emphasises the huge uncertainties that surround most aspects of the impact of climate change on agriculture (Thornton & Cramer, 2012). On the other hand it is widely acknowledged that climate change makes more urgent the need to put in place the processes of innovation and market engagement, as well as enabling policies, to ensure that farm output growth in low-income countries continues to occur in the long term (Conway, 2012).

Climate change seems likely to affect agriculture in three main ways: first, due to the impact of rising temperatures on plant growth and yields; second, due to rising climate variability and higher incidence of climate shocks (floods, droughts etc.); and third, due to the adverse effects of rising sea levels on low lying and coastal agricultural zones. With respect to the first of these it is known that temperatures above 30°C have an adverse effect on wheat and maize yields; however, temperate zones may experience rising yields as temperature rises, while tropical zones may experience the reverse. In the tropics, when previously well watered areas become drier, there is likely to be vegetation change to savannah, and a switch from crop cultivation to livestock herding.

Much of the climate change literature is concerned with adaptation: how farmers themselves adapt to changing climatic conditions, and how they can be assisted to adapt in ways which reduce climate risks for their livelihoods in the future. These considerations need to be set in the context of the high risks already faced by poor farmers in low-income countries, and their resilience in the face of those risks. Another important dimension concerns agriculture's own role in either contributing to or mitigating climate change, with steady rises in productivity thought to have a mitigating effect, partly because it helps to reduce expansion of agriculture at the extensive margin via deforestation. Also here, climate change may alter unfavourably disease vectors and pest populations, with adverse effects on output variability and yields as well as on the costs of control.

From the perspective of this Topic Guide, climate change adds to the argument that the poor require a broad range of options for improving their livelihoods and constructing pathways out of poverty. Climate change adaptation may mean protecting existing farm assets, changing patterns of output within agriculture, shifting from crops to livestock (or vice versa), diversifying into non-farm activities combined with farming, or exiting farming altogether. The effective combination between these alternatives will be context specific, obvious in some cases and difficult to pin down in advance in others.

Non-farm pathways and rural-urban transitions

The rural non-farm economy (RNFE) receives quite a lot of attention in the growth and poverty reduction literature (Haggblade *et al.*, 2008). In its main articulation, this sector plays

² This Topic Guide is unable to do more than provide a brief overview of this area. A future Topic Guide to be written in 2013-14 intends to focus on 'agriculture, livelihoods and climate change', with a view to setting out what is known about long-term impacts. In the current context, the website of the research programme on Climate Change, Agriculture and Food Security (CCAFS) is a valuable resource for tracing the latest research findings in this area: <http://ccafs.cgiar.org/>.



an intermediary role in the pro-poor growth process summarised in Box 1 above. The argument goes that RNFE represents a dynamic and vibrant sector, characterized by small-scale, home-based, and labour intensive enterprises therefore offering an important and complementary contribution to a pro-poor growth trajectory. In this role, it first broadens options for employment and income generation in rural areas, and then acts as the bridge to eventual leadership in the growth stakes by the urban sector.

A key feature of this interpretation of non-farm activities in rural areas is that they constitute in some sense a 'learning experience' for individuals and families that can later be built upon when migration to towns or cities occurs. In the process of setting up and running small-scale rural enterprises, individuals learn new trades (e.g. hairdressing, tailoring, brick making, etc.) And develop business management skills. In fact, not too much should be made of the 'rural' character of such activities: they may occur in villages, small towns or larger towns and the definition of what constitutes an urban area in contrast to a rural area is quite vague and differs administratively across countries. The important consideration is that new pathways are opened up for individuals that allow them to diversify income sources away from excessive reliance on semi-subsistence agriculture, and lay the groundwork for a more complete exit from agriculture for those who wish to do so. An example of a policy initiative designed to push forward a diverse livelihood agenda for poor people in Indonesia is provided in Livelihoods Box 2 below. In this regard, Indonesia can be considered as being in the later phase of a rural-urban transformation, having undergone rapid yield growth in agriculture in the 1970s and 1980s, and the ability of agriculture to provide further avenues for poverty reduction having subsequently diminished.

Livelihoods Box 2: A multiple approach to reducing rural poverty

AusAID has a recent history of substantial support to improving the livelihoods of the poor and assisting the development of social protection policies in Indonesia. In 2013, this donor agency is working with the Indonesian government to develop an action plan for the National Program for Community Empowerment (PNPM). Some preliminary ideas that are being considered as components of this plan include:

- Safe access to national and international migration: support services to prepare families wishing to move to urban areas or abroad, to increase information, reduce pre-departure debt, lower remittance costs, and increase worker safety;
- Financial inclusion through financial literacy and small business support: a major constraint on livelihoods is ignorance about how to budget and manage family resources, also true of village-based enterprises; support would identify and pre-qualify small business advisory services, with a small subsidy to offset start up risks;
- Increasing access to formal sector employment: support will combine investments (for example, travel, childcare facilities and job fairs) that help isolated villagers access formal sector job opportunities, with *in situ* vocational training in basic skills to make them better qualified;
- Helping poor farmers access markets and new value chains: the argument is put forward that the poor are often more constrained by poor understanding of market opportunity than by inputs and technology; the use of ICT (for example prices texted by mobile phone) and mass media (radio, television) offer substantial potential for enhancing the benefits of market access by the poor.

It is notable that these components comprise a complementary mix of poverty reduction pathways including migration, non-farm employment and business, and access to value chains for poor farmers.



It has already been noted that rural-urban transitions represent something of a quagmire within overall pro-poor development policy. There is often a political resistance to migration and the demands on state resources that urbanization entails. Typically, there is no 'joined up' policy on urban migration, which cuts across the responsibilities of many different sectoral ministries. This adds up to significant barriers to migration, which, as we have seen, show up in economic data in terms of persistent productivity and poverty differences between rural and urban areas. Livelihoods Box 3 below attempts to capture this blockage as it affects livelihood options for poor people. In the view of some researchers, enabling a rapid transition out of rural areas is one of the most urgent challenges facing development policy in Africa, made more urgent by the likely adverse impacts of climate change on the security of farm-based livelihoods (Collier & Dercon, 2009).

Livelihoods Box 3: Livelihoods and rural-urban transitions

It is inexorably true, even when agriculture plays a primary sequential role in the process, that rising incomes and wealth are associated with a transition from mainly rural to mainly urban lifestyles. This transition makes enormous demands, both on the individuals and families who make the move, and on the infrastructural requirements in growing towns and cities that might enable migration to occur without creating blighted urban environments.

It is probably safe to say that development policy for both governments and donors is quite fragmented and disorganized around rural-urban transitions. This is in contrast to agriculture which provides a well-defined policy sphere, often under a single government ministry. In particular, the livelihoods that individuals and families make for themselves in towns and cities tend to be relegated to the peripheries of the pro-poor growth discussion under labels like 'the informal sector'. This contrast is most evident for the expanding shantytowns and slums that mark the transition for most rural-urban migrants into the urban economy.

The livelihood support requirements of the rural-urban transition differ markedly from the pursuit of yield growth on small farms. Here infrastructure (mains drainage, mains water supply, garbage disposal, urban roads and pavements, etc.), and skills building for urban businesses and wage occupations are the priority. In addition, merely securing the legitimacy of migrants in their new habitat is often a struggle needing simplification of complex residency procedures, and the removal of blocking rules and regulations.



Land, farm size and food security³

The finding has already been mentioned that countries or regions with a more equal size distribution of holdings fare better in the poverty reduction impact of agricultural growth than those with less equal holdings. Land is, of course, the fundamental resource on which agriculture depends, and its quality and inherent productivity varies across differing agro-ecological zones within and between countries and regions. Africa is particularly heterogeneous in this regard, containing fewer of the vast expanses of irrigable river plains that characterize many Asian countries. In this part of the guide we consider arguments and evidence around farm size and its role in the potential for small-farm agriculture to act as the engine for poverty reduction.

Scale

In the agricultural economics of development it is taken as virtually axiomatic that agriculture is 'neutral to scale'. This means that, for a given set of crop varieties, if you increase all inputs (including land) in a given proportion, then output will grow in the same proportion. So if you double farm size and other inputs, output will double. This is in contrast to industries which display increasing economies of scale over particular ranges of operation such that doubling inputs would more than double output. However, the notion of scale can still be ambiguous in agriculture when mechanization is brought into the picture. Clearly if you invest in a tractor or combine harvester its unit cost of operation falls up to the point it is used to capacity and this will be at a bigger scale than a farm of 1-2 hectares in size. So crop production may be scale neutral, but can experience economies of utilization where large capital investments in infrastructure or machinery are concerned.

Farm size and efficiency

Since the 1960s, cross-section studies of efficiency across farms of different sizes have tended to show declining productivity per hectare as farm size increases. This phenomenon was first noted for India by Amartya Sen in an article published in 1962 (Sen, 1962), and has been re-affirmed in numerous studies within and across countries ever since. **It is normally termed the 'inverse farm size–productivity' relationship: land productivity rises as farm size goes down.** Given the neutrality of agriculture to scale this seems a puzzling finding; on the face of it, it suggests diminishing returns to scale may be partly responsible.

However, some fairly obvious factors contribute to this finding. Land differs in quality, and small farmers (who need to feed themselves successfully from their own production) are unlikely to locate on poor quality soils, but instead congregate in places where land is more productive. By contrast, large farmers and especially extensive estate or hacienda owners own land areas which contain both productive and less productive soils and even unutilizable land (rocky outcrops, steep hillsides, ravines, etc.). Moreover, as ownership size rises, the proportion of land left idle or for leisure purposes within large estates also rises. In addition, the unit cost of labour rises with ownership size. A small farmer incurs no supervision or incentive costs using family labour, while such costs per worker rise with a hired workforce.

³ This topic guide is unable to do justice to the full scope and depth of the land dimension of poverty reduction. A separate knowledge piece on land, summarizing recent empirical evidence, is intended to be produced in 2013.



The inverse farm size–productivity relationship provides a useful adjunct to the small-farm growth for poverty reduction model. Small farms are more efficient than large farms. Small-scale farmers value land highly and apply labour intensively to each unit of land; larger-scale farmers place a lower valuation on land, and labour is more expensive for them, so they use labour less intensively, and get lower yields and overall productivity (per hectare of farm size). See Larson *et al.* (2012) for a contemporary assessment of the applicability of the inverse farm size relationship in African countries.

The problem of declining farm size

The inverse farm size–productivity relationship does not mean that ever smaller subdivisions of land will be more productive than the larger sizes that preceded them. The strength of the relationship depends on labour being applied ever more intensively to achieve the highest achievable yields with a given technology and capital intensity of production. This effect will plateau when achievable yields have been met, and further shrinkage of farm size will result in declining average product of labour and diminishing efficiency. Moreover, shrinking farm size has adverse effects on the consumption side of the farm household economy, resulting in the emergence of the ‘food deficit’ farmer who, even with the best yield outcomes, is unable to generate enough income from own production or sales to meet the annual food consumption needs of his/her family.

In many countries with large small-farm populations, mean farm size in the small-farm sector is declining over time. This also means that the proportion of farm families who are not quite able to feed themselves from their own plot is rising. In fact, different estimates come up with between 40 and 50 per cent of small-farm households worldwide being in food deficit from their own production. A recent study by Jayne *et al.* (2012) examines dimensions of farm size structure and trends in farm sizes in Africa in considerable detail, and the main results of their empirical work are summarised in Case Study Box 3.

Food security implications of land distribution in Africa

The land distributions described Case Study Box 3 for selected African countries imply unequal and differentiated participation in grain markets (Jayne *et al.*, 2003; 2006). Specifically, in eastern and southern Africa (excluding South Africa) about half the marketed output of staple grains like maize is supplied by just 2-3 per cent of farmers, operating in the farm size range of 4-20 ha. The remaining half of marketed supply originates from a second tier of roughly 20 per cent of households, selling in the range of 0.1 to 5 tons maize per household. All remaining households either only engage in markets in a minor way, or are persistently net buyers of staple grains, the latter corresponding to 40-60 per cent of all rural households.

A feature of grain markets in many African countries is their proneness to price instability. This results from the seasonal character of harvests, sometimes exacerbated by poor management of grain markets by governments (Tschirley & Jayne, 2010). The different participation in markets related to land access inequalities means different ways that food price instability affects food security and growth.

(1) Net buyers

First, particular attention must be paid to the large proportion of buyers only, or net buyers of staple grains, since they correspond, with variations in different African countries, to around 50 per cent of the rural population. This category is adversely affected by above average price hikes, whether these occur for intra-seasonal or inter-seasonal reasons. The extent of



the damage to their consumption capabilities depends on just how high prices go, and the intensity of the shock created by the unexpected inability to purchase enough food.

(2) Distress sellers

The second category for whom price instability represents a serious problem are ‘distress sellers’ who place themselves in a difficult position at both ends of the market, gaining less from their sales if prices slump, and finding themselves unable to buy when prices soar. The term ‘distress sales’ refers to involuntary sales made to meet unavoidable obligations at harvest time, including paying off debts to traders and moneylenders, buying food essentials other than the staple grain, and meeting urgent school or medical expenses.

(3) Surplus food producers

The third category, the surplus food producers are affected in the opposite way, by exaggerated price troughs that can occur, both intra- and inter-seasonally due to the arrival of a bumper harvest. A price collapse at harvest sharply reduces their expected real income from crop sales, and acts as a disincentive to make investments in farm intensification, with knock on effects for agricultural growth.

Livelihoods Box 4: Price instability and rural livelihoods

In many countries in Africa, the livelihoods of the poorest 20 per cent of the rural population are exceptionally precarious. These are households that always experience a ‘food gap’, even in a good year, and varying food crop outcomes result in widening or narrowing this gap, but never succeed in closing it altogether.

They typically require social transfers (food or cash) of some duration in the lean season to avoid hunger and deprivation. Above average or extreme price spikes in their staple food in the lean season intensifies this reliance on social protection; and, moreover, undermines the value of cash transfers because the purchasing power of cash diminishes proportionately with the excessive rate of seasonal increase in food prices.

Prioritizing subsistence farming as a livelihood strategy does give poor households protection against price spikes for part of their consumption needs, but this is often at a high cost in terms of low land and labour productivity. Avoidance of high price instability is beneficial both for encouraging less reliance on subsistence in agriculture and for ensuring the stable food purchasing power of non-farm cash income obtained from wage work or business activity.

Case Study 3: Land, farm size and poverty reduction in Africa

There is a general consensus that broad-based increases in farm productivity can result in transformation of national economies and rapid poverty reduction. It is also agreed that this occurs more powerfully with a relatively equal farm size structure (Asia, Africa) than with highly unequal holdings as pertains in much of Latin America. A recent paper by Jayne *et al.* (2012) on land and farm size in Africa is sympathetic to this view, but presents data showing declining average farm size in a number of countries. This in turn implies a growing incidence of families unable to meet their basic subsistence needs due to insufficient land to cultivate.

1. The authors find that farmland per person in agriculture is declining over time in Africa, by as much as 50 per cent or more over 40 years in some countries (see Table below);
2. This finding for farmland per capita reinforces parallel evidence on declining average farm sizes in countries for which requisite comparable data is available over intervals of time;
3. Using spatial population density mapping, it is found that farmland per person in Africa is more skewed than previously thought, with rural households owning the lowest 20 per cent farmland per capita found to live in places with population densities greater than 500 persons per square kilometre;
4. The poorest households are those with the smallest farms. In a separate study of Zambia it was shown that in a period of near doubling of output that occurred in Zambia between the mid-2000s and 2011 (reflecting input subsidies and favourable minimum output prices for maize), the smallest 20 per cent of households participated least in the output gains realised.

Arable land per person in agriculture in selected countries, 1960s-2000s

Country	1960-69 mean area (ha)	2000-08 mean area (ha)	Change (%)
Ethiopia	0.50	0.22	-56.5
Zambia	0.64	0.30	-53.8
Kenya	0.46	0.22	-52.6
Uganda	0.66	0.35	-46.7
Malawi	0.48	0.31	-36.0
Zimbabwe	0.61	0.47	-23.5
Rwanda	0.21	0.17	-17.9
Mozambique	0.36	0.29	-17.4
Ghana	0.65	0.57	-12.5
Nigeria	0.98	0.90	-8.6

These findings suggest that gains in yields can be significantly offset by demographic effects causing farm sizes to decline, and may, in some cases even be overtaken by such effects (the Ethiopia case study given earlier provides an illustration). In addition, there are critical inter-generational aspects of small-farm sizes gathering momentum. In the most densely settled food crop growing areas, the next generation will not be able to secure a foothold in farming since no further farm sub-division is feasible beyond the low farm sizes already reached.

Source: Jayne *et al.*, 2012



Land redistribution

The policy prognosis offered by Jayne *et al.* (2012) is that perhaps redistributive land reform might solve the problem of the rising proportion of farmers who have insufficient land to make a sufficient living. Land redistribution of this type has traditionally been an important sub-strand of the agricultural growth literature. Some very considerable land redistributions were carried out in the mid-20th century (in Latin America and Asia), and the documented success of some of these provides a platform for continued advocacy (Lipton, 2009). But changing farm size within existing ownership or tenure patterns in densely settled areas is exceedingly difficult to manage, so that this solution often turns out to require families to move to places where currently underutilized land could be sub-divided into economically viable farm sizes. This is called ‘resettlement’, and is a debatable policy for which there is surprisingly little factual evidence demonstrating its positive poverty reduction impact.

‘Land grab’: what does it imply?

While advocacy for redistributive land reform remains in the air, an opposing trend has been occurring on the ground in the form of large-scale purchase or lease of agricultural land by commercial investors, both domestically within countries and as foreign direct investment. This process, which accelerated after the world food price crisis of 2007-08 has been dubbed ‘land grab’ in much of its coverage in the media and in think-pieces written about it. The table below gives some data compiled by the World Bank on the area of land transferred in large-scale land deals in selected countries between 2005 and 2009.

‘Land grab’ is generally considered to have potentially negative consequences for poverty reduction for several reasons:

- Large land deals are opaque and may involve dubious governance;
- Many contracts do not reflect the future scarcity of the resource, and have clauses which exclude future renegotiation;
- The ability of regulatory authorities to enforce the productive use of land held is generally limited;
- Arrangements for future tax contributions by owners or lessees are often feeble or non-existent;
- Deals frequently ride roughshod over customary tenure rights and claims, and inhibit challenge by rural dwellers who lose land access rights;
- Planned technologies are generally labour-saving in character, minimizing wage labour and limiting poverty reduction effects.

Table 1: Large land acquisitions in selected countries, 2004-2009

Country	Number of projects	Total area ('000 ha)	Median size (ha)	Domestic share (%)
Cambodia	61	958	8,985	70
Ethiopia	406	1,190	700	49
Liberia	17	1,602	59,374	7
Mozambique	405	2,670	2,225	53
Nigeria	115	793	1,500	97
Sudan	132	3,965	7,980	78

Source: Deininger & Byerlee, 2010, p.xxxiii

It is probably too early to assess whether this trend is as negative and damaging in the longer term as much of the recent commentary upon it suggests. The storm it has provoked



is valuable, however, in promoting transparency in the negotiation of such deals and in strengthening the resolve of governments to require social and revenue objectives to be met if contracts are to be signed. A potentially valuable role could be played by donors, where called upon, to provide legal and other contractual expertise. Deininger & Byerlee (2010) note that a significant proportion of the deals under negotiation in fact fall through, and some of them fail to be activated even after negotiation, so that they never go ahead. Nevertheless even here they may lock up land, introduce land insecurity, and inhibit its use by rural people.

Land tenure

A final aspect of land that needs to be mentioned is its tenure, including private freehold, state ownership, customary tenure and other forms. A considerable body of research shows that farm productivity (principally crop yields per hectare) is not affected by the tenancy arrangements under which land is farmed. This includes the comparison between customary and freehold tenure in African countries, as well as comparisons between owner occupiers, share cropping, or cash tenancy in many different locations. Different forms of tenure generally evolve towards making best economic use of the land available, provided the other contexts of production are facilitating (e.g. working markets).

The form of land tenure does, however, make substantial differences to the part that land can play in transitions out of agriculture. In the past in Africa, a combination of state ownership and customary tenure has meant that land markets are poorly developed, and it has been difficult for households leaving agriculture to realise the true capital value of their land. This difficulty adds to an understandable reluctance to lose land access, since land sales cannot then be used as the launching pad to enter into non-farm business, or ameliorate the risk of seeking non-farm occupations. These difficulties have been partially addressed by recent changes to land legislation in several African countries, but considerable difficulties remain around authenticating ownership for sellers and buyers, weakly developed land registries, and related legal and governance difficulties.



Supermarkets and contract farming

The rise of supermarkets across developing countries is well documented and has accelerated in the past 10 to 15 years. In general, three waves of this process are identified worldwide:

- A first wave occurred primarily in Latin America in the mid-1980s to mid-1990s,
- A second wave expanded supermarkets rapidly in Asia (excluding India) from the mid-1990s,
- A third wave has been occurring in India and Africa and in other later participants in this process since the early 2000s.

Waves in supermarket expansion typically converge towards around 50 per cent of food retail ending up being conducted by supermarket chains. This proportion was already reached in South Africa by the end of the 1990s, but has a long way to go in other African countries.

Associated with supermarkets there has been much discussion about value chains: the way marketing from farmer to consumer is restructured in order to achieve standardised products (which are uniform and high in quality) and to generate value added services such as labelling, processing, packaging, branding. On the one hand, modern wholesaling and retailing 'adds value' through the additional transformations that occur as compared to purchasing a sweet potato at a rural market stall. On the other hand, food supply chains are fiercely competitive so it does not necessarily follow that farmers earn higher incomes as a consequence of these value chain changes. The latter is an empirical matter that can only be established by investigation (see a positive example for Kenya, provided in Case Study Box 4).

The rise of supermarkets has important implications for patterns of agricultural growth and future rural livelihoods. Supermarkets select their places of purchase and farmer suppliers on criteria of cost and reliability. Nearby, well-watered locations with good soils are preferred to remote, high-transport-cost places dependent on unreliable rainfall. Supermarkets bind their farmers into the supply chain through contract farming, in which little of the production process is left to chance. This can result in significant gains in the stability and level of farm incomes for those farmers, although this outcome should not be taken as guaranteed. The regulatory framework is always important, and standards of good practice in contract farming need to be promoted and adhered to by purchasers.



Case Study 4: Supermarkets and farm incomes: a Kenya case study

A paper by Rao and Qaim (2012) seeks to establish whether contract farming for supermarkets raises farm incomes by comparison to an equivalent set of farmers who do not participate in supermarket value chains. They do this using a rigorous method to ensure a statistically valid comparison between the two groups. A survey of vegetable farmers in Kiambu district was undertaken in 2008. In their own words “Kiambu is relatively close to Nairobi, where most of the country’s supermarkets can be found. But also before the spread of supermarkets, this district was one of the main vegetable-supplying areas for the capital city. Based on information from the District Agricultural Office, four of the main vegetable-producing divisions were chosen. In these four divisions, 31 administrative locations were purposively selected, again using statistical information on vegetable production. Within the locations, vegetable farmers were sampled randomly. Since farmers who participate in supermarket channels are still the minority, we oversampled them using complete lists obtained from supermarkets and supermarket traders. In total, our sample comprises 402 farmers: 133 supermarket suppliers and 269 traditional channel suppliers” (Ibid, p.786).

While for many variables no statistical difference was observed between supermarket and traditional farmers, the supermarket suppliers had larger farm sizes (2.7 vs. 1.9 acres), larger vegetable growing areas (1.2 vs. 0.7 acres) and greater engagement in non-farm activities (61 vs. 43 per cent) compared to traditional suppliers. The gross margin per acre in vegetable growing was 92,244 kshs against 53,502 kshs respectively, and the net margin (net income) per acre 79,950 kshs against 36,865 kshs. Overall, results showed that participation in supermarket channels produced gains in per capita household income of 48 per cent. Smaller and poorer farms supplying supermarkets benefitted over-proportionally. Simulations demonstrated that poverty rates among supermarket suppliers were 20 per cent lower than would have been the case without supermarkets.

Given the risk of exclusion from emerging modern supply chains, various organizations in Kenya try to link smallholders to supermarket and export channels. An organization active in Kiambu is the non-governmental organization Farm Concern International (FCI). FCI trains farmers and farmer groups on production of indigenous vegetables before linking them to various supermarkets in Nairobi. FCI also promotes collective action and helps farmers to meet the strict delivery standards imposed by supermarkets. Institutional support by FCI was found to have a positive and significant influence on supermarket participation. Its activities reduce transaction costs and contribute to making smallholder farmers more reliable trading partners for supermarkets. Also important is an invoice discounting service in which FCI pays farmers on delivery, later recouping this amount from the supermarkets. This mechanism enables even relatively poor households with immediate cash needs to participate in supermarket channels, despite the lagged payment schedule. Such findings are helpful for designing institutional support programs to link smallholders to high-value markets.



On a broader scale, the spread of supermarkets and contract farming affects both demand and supply prospects for different categories of farmer. On the demand side, supermarkets effectively capture a considerable proportion of the dynamic growth potential arising from urbanization and non-farm economic growth. On the supply side, meeting this demand is mainly done under contract, so the benefits accrue to those farmers fortunate enough to comply with the cost efficiency criteria of the supermarket chains. There is a risk that the majority of small farmers are excluded from these developments, facing a shrinking domestic market for their outputs, and left in the subsistence or near-subsistence sector in which they are already mired. It is possible, then, that supermarkets and contract farming may accelerate a divergent agricultural growth process between a fast-growing value chain sub-sector, and a stagnating semi-subsistence sub-sector.

Livelihoods Box 5: Livelihoods and value chains

The livelihoods of farmers previously reliant on risky sales in informal markets can be improved by contractual sales in supermarket or food processor value chains. This is as much due to the reduction in income risk as to level of income, although the latter may increase too.

A medium term danger that needs to be guarded against is excessive encouragement of high value crops for which there is limited urban or export demand. This can lead to switches in cropping patterns by farmers, leading to ruin when buyers reject output for which demand has already been fulfilled.

A broader issue for the rural economy as a whole is potentially diverging livelihood outcomes between participants and non-participants in the emerging structure of agricultural markets. This is a variant of the problem of 'betting on the strong' while depending on the weak gaining indirectly (via employment effects). It also indicates the necessity, as discussed at several junctures in this Topic Guide, of developing better tools for helping families who are unable to gain from agricultural initiatives to construct different pathways out of poverty.



Gender and agricultural growth

Gender inequalities both result from processes of growth and mean that growth is not as fast (nor as effective in reducing poverty) as it could have been in the absence of such inequalities. This has two main aspects:⁴

- (a) Growth processes in which male participation is consistently and cumulatively higher than female participation result in women having to assume more domestic responsibilities than before, and they also result in women being relegated to the lowest income occupations;
- (b) Women's lack of ownership of, or access to, assets (including land, credit, education and skills) means that they are unable to contribute to growth to the extent that would otherwise be possible (growth is foregone, and unequal returns to human capital persist).

Verschoor *et al.* (2006) identify eight major pathways connecting gender equality to growth (Box 2 below), seven of which reflect the underutilization of female potential (see also Blackden *et al.*, 2006; Croppenstedt *et al.*, 2013).

Box 2: Pathways linking gender differences to economic growth

1. The gender gap in human capital lowers growth
 2. Female labour market participation raises growth
 3. Female education lowers fertility and thereby raises growth
 4. Equal gender relations raise the productivity of investment in agriculture
 5. Gender inequality lowers investment in children and thereby future growth
 6. The gendered distribution of labour negatively affects female supply response and thereby growth
 7. Female savings raise growth
 8. The gender wage gap may in a few circumstances raise growth*
- * this is due to a 'low wage' effect in semi-industrial export economies

Source: Verschoor *et al.* (2006)

The first major impact channel (corresponding to point no. 1 in Box 2 above) relates to the multiple, negative implications of lower female human capital (education and health) for growth. This lower human capital has impacts on productivity at home, in agriculture (Croppenstedt *et al.*, 2013) in wage employment and entrepreneurship; it also has results in higher fertility, and lower child human capital accumulation. The second channel relates to the positive relationship between female labour force participation and growth. This is related to the third and fourth pathways, namely, that equal gender relations – achieved by mediating equitable access to assets (land, labour and credit) – raise the productivity of investment directly, but also indirectly, through generating higher female savings. Gender equality (especially through education as mentioned above) has further growth implications through lowering fertility rates and increasing investment in children and thereby future

⁴ The discussion here paraphrases the arguments put forward in a Gender and Growth Assessment for Nigeria prepared for DFID in 2009.



growth. The inequitable gender division of labour that consigns women to the domestic sphere and leaves women ‘time poor’ is a constraint to growth.

Livelihoods Box 7: Growth, gender and livelihoods

From a livelihoods viewpoint, the ideas presented above suggest most importantly that the tendency to observe what women do, then seek to reinforce their position in those activities, is the wrong way to tackle the problem of gender imbalance in rural welfare and wellbeing. For example, it is tempting to argue that, since women are the main cultivators of food crops, and have the main responsibility for the nutrition of family members, then assistance should be targeted especially at crops like cassava or sweet potatoes grown by women.

However, this stance effectively serves to entrench rural women in domestic activities and those with a low return per person-hour, while men are able to pursue activities with a higher return per person-hour. Instead, both short- and long-term support should be directed at opening up options for women, providing them with the training, skills and access to capital to pursue higher return and non-farm activities.

A substantial amount of empirical research shows that men generally have been better placed than women to take advantage of evolving opportunities, not just because men have been less limited by cultural constraints but also because they have had more education than women and more experience of opportunities outside the home (Blackden *et al.* 2006). Indeed, men’s disengagement from the home farm in pursuit of better opportunities elsewhere is one of the factors resulting in an increased work burden for the women left behind, and greater time poverty for these women. Occasionally, women can overcome this process by engaging in the specialist harvesting and packaging of high value horticultural crops. However, more broadly, assisting women to diversify in the direction of higher return activities is the way forward to reverse the growing gender inequality resulting from the fact that men have more economic freedom than women do.

Seeking to improve the circumstances of women or men separately also comes with important provisos not to neglect the obvious truth that women and men are bound together in complex social interactions, the outcomes of which are notoriously difficult to predict. This is another reason for not taking the seemingly obvious route of supporting women in what they already spend most of their time doing. A notorious past example which was meticulously documented was a rice improvement project in The Gambia in the 1980s where the logic was that ‘since rice was a women’s crop’ this project would enhance women’s status and incomes. However, as soon as rice became more profitable, men took over the paddy fields, and women in protest withdrew their labour, resulting in project outcomes which were the antithesis of what was intended.



Promoting agriculture in post-conflict states

Conflict has a damaging effect on agricultural output, and recovery to former output levels can take many years. Typically, a sharp drop in agricultural GDP is registered between pre-conflict and post-conflict agricultural performance. This is because agricultural production will have greatly decreased in zones where armed combat was taking place, input supply chains will have been dislocated or ceased to function altogether, and marketing chains for farm outputs likewise disrupted. A common response to conflict on the part of small farmers is to focus only on immediate family subsistence, even if they had previously had diverse engagement in markets, due to the high risk of mobility and exchange in zones experiencing conflict.

Beyond these general statements, each conflict has its own specific character which varies greatly from one instance to another. The duration of conflict is evidently important; the longer a conflict continues, the more disruptive its impact on previous livelihood patterns. Conflict invariably causes displacement of non-combatants, sometimes on a large scale, and this displacement may be within country, or across borders. If the conflict persists, displaced persons may have settled in their new location or new country, and do not all return to their former land and occupations. Conflicts may envelope an entire area of countryside, or just selected places within it, with different implications for post-conflict recovery. Finally, the destruction caused by conflict can differ, mainly affecting physical infrastructure (railways, roads, bridges, power lines) in some conflicts or causing high levels of human mortality in others. In other conflicts, both these effects are seen. The Rwanda genocide of 1994 represents an extreme case of the destruction of human capital, and its growth effects are summarized in Livelihoods Box 7.

Obviously considerable interest centres on the speed of recovery from conflict, and how this can be accelerated with external assistance. Here again it is difficult to generalize, since much depends on the factors of conflict duration and breadth, displacement and asset loss already mentioned. The speed of recovery also depends crucially on whether an abrupt and complete cessation of hostilities occurs, or whether this is prolonged over months or years, in which case continued risk slows down the resumption of former levels of production and trade. All post-conflict reconstruction literature agrees that 'securing the peace', including continued humanitarian operations and building trust, are prerequisites to securing growth. After a long period of conflict, subsequent agricultural growth can be rapid from a low base, as occurred in Uganda in the mid-1990s after more than two decades of high political instability and intermittent conflict.

Strong agricultural growth after conflict requires a number of complementary measures. The rebuilding of physical infrastructure, when this has been extensively damaged, is a priority, since without transport and communications, growth will be limited to the recovery of subsistence levels of output with few spread effects resulting from cash generation and expenditure in the rural economy. Also critical is the removal of unexploded ordnance (principally landmines) which, aside from the devastating effect on individuals who inadvertently trigger them, can make previously farmed areas off-limits for many years. Improving the availability of seeds and fertilizers, and farmers' access to them, can make significant contributions, and experience in successfully doing this has built up in a number of post-conflict countries such as Uganda, Mozambique and Rwanda. Finally, trading and markets can be improved through many different initiatives, including rebuilding market places in district towns, facilitating the provision of credit for trading and storage, and strengthening market information systems. The private sector is essential to the pace of recovery in markets and needs a facilitating rather than blocking governance context.



Case Study 5: Conflict and economic recovery in Rwanda

In 1994, Rwanda became the site of violent conflict of two types. In the south, genocide committed by ethnic Hutus against Tutsis resulted in 800,000 deaths, while in the north and east, civil war resulted in the widespread disruption of transport and services and the destruction of physical infrastructure as well as additional human mortality. A principal effect of the genocide was destruction of skilled human capital, since educated Tutsis were targeted in particular. There was also substantial loss of livestock: estimates suggest that after the violence the number of animals had been halved, compared with pre-conflict levels. In civil war areas there was increased mortality due to disease and famine. Overall, it is estimated that GDP per capita in Rwanda would have been about 30 per cent higher if these conflicts had not occurred.

A paper by Serneels and Verpoorten (2012) examines the micro-level relationships of cause and effect associated with the Rwanda conflict. The study found that rural households and localities that experienced more intense conflict were lagging behind in terms of consumption per capita six years after the conflict, relative to households and communities less affected by the conflict. This result remained valid after controlling for a wide range of community characteristics, including human displacement. It was also found that post-conflict returns to land were lower, and returns to labour higher, in conflict intense areas. This is consistent with excess land being available post-genocide and labour, especially skilled labour, being in shorter supply. In civil war affected zones, the higher post-conflict returns to skilled labour did not feature, showing that the educated labour force was relatively unaffected in those parts of the country.

Overall, the study affirmed that, in the medium term (in this instance six years), recovery from conflict is incomplete. Additionally, the assets that are depleted by conflict vary greatly for different types of conflict; in this instance the genocide destroyed human capital, with especially high mortality amongst skilled and educated Rwandans, causing prolonged deficits in institutional and enterprise skills and capabilities after the conflict.



Farmers are incredibly resilient. Their livelihoods are risky with or without conflict, and multiple risks are the norm (weather risks, price risks, governance risks, etc.). In general, if peace is properly established, and a degree of normality returns to institutional contexts, agriculture will bounce back from conflict. This does not mean that a surge in output above pre-conflict levels should be expected. Farmers will focus first on securing their own subsistence. Local level conflict over land for returning displaced persons may take years to resolve (and this resolution is an important intermediate rebuilding activity in its own right). The emergence from conflict does not mean that previous limitations on small-farm growth are instantly overcome.

Livelihoods Box 8: Post-conflict states and livelihoods

The most important objective for livelihoods in immediately post-conflict states is to 'secure the peace'; in other words to avert a renewal of hostilities, ensure that humanitarian needs are met, promote a return to normality in the working of markets and institutions, and replace or repair infrastructure. This is all to do with bringing risk down to levels where the degree of risk is manageable, and can be contained by actions that are within households' control. Uncontrollable factors of hunger, violence, theft and threats to human mobility are impediments to the resumption of exchange and working markets, and they slow down the recovery of household assets to former levels.

Post-conflict circumstances may offer new opportunities for improving livelihoods. For example, conflict may have shifted gender-related patterns of activity, providing scope for opening up alternative options for women; furthermore, patterns of crop marketing may have been disrupted in ways that open up new opportunities for growing and selling different crops in particular rural areas. Therefore, in addition to the critical task of returning a disrupted rural economy to the normal functioning of mobility and exchange, it is always worth trying to identify new prospects which have arisen as a consequence of the conflict, and that offer a potential platform for beneficial future changes in poor people's livelihoods.



Timeline: International conferences on agriculture and growth 2008-12

Salzburg Global Seminar and Future Agricultures Consortium, Conference: Toward a Green Revolution in Africa, chaired by Kofi Annan, held in Salzburg, Austria, Apr-May 2008
<http://www.salzburgglobal.org/current/aai-b.cfm>

FAO, High-Level Conference on World Food Security, held in Rome, Italy, 3-5 June 2008
<http://www.fao.org/foodclimate/hlc-home/en/>

United Nations, Comprehensive Framework for Action, report of the High-Level Task Force on the Global Food Crisis, July 2008
<http://www.un.org/issues/food/taskforce/Documentation/CFA%20Web.pdf>

FAO, Conference on Institutions and Policies to Manage Global Market Risks and Price Spikes in Basic Food Commodities, held in Rome, 26-27 October 2009, report and key papers available as FAO, *Commodity Market Review 2009-10*
<http://www.fao.org/docrep/012/i1545e/i1545e00.pdf>

GCARD, First Global Conference on Agricultural Research for Development (GCARD), held in Montpellier, France, 28-31 March 2010
<http://www.egfar.org/gcard>

World Bank, Annual Bank Conference on Land Policy and Administration, held in Washington D.C., 26-27 April 2010
<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTARD/0,,contentmdk:22491301~pagepk:148956~pipk:216618~thesitepk:336682,00.html>

Future Agricultures Consortium (FAC), Conference on Awakening Africa's Sleeping Giant, held at the School of Oriental and African Studies, University of London, 1-2 June 2010
<http://www.future-agricultures.org/events/sleeping-giant>

Center for Effective Global Action (CEGA), Conference on Agriculture for Development Revisited, held at University of California, Berkeley, 1-2 October 2010
http://cega.berkeley.edu/events/agfordev_revisited/

CGIAR, First Global Conference on Agriculture, Food Security and Climate Change held in The Hague, Netherlands, 31 Oct to 5 Nov 2010
<http://www.afconference.com/the-first-conference>

IFAD, Conference on New Directions for Smallholder Agriculture held in Rome, Italy, 24-25 January 2011
<http://www.ifad.org/events/agriculture/index.htm>

FAO, Trade and Markets Division, High-Level Event on Food Price Volatility and The Role of Speculation, held at FAO Headquarters, Rome, Italy 6 July 2012
<http://www.fao.org/economic/est/est-events-new/hlf/en/>

APAARI, Global Conference on Women in Agriculture held in New Delhi, India, 13-15 March, 2012
<http://www.apaari.org/events/activities-completed/gcwa.html>

CGIAR, Second Global Conference on Agriculture, Food Security and Climate Change: Hunger for Action, held in Hanoi, Vietnam, 3-7 September 2012
<http://www.afconference.com/>



Annotated reading list

The annotated list of references which follows comprises citations addressing the large-scale strategic debate about the role of agriculture in growth and poverty reduction. With one exception, these are recent articles. The exception is an article written in 1961 which captures an agriculture-centred growth view as stated 50 years ago, using many of the same arguments as can be found today. Most of the growth literature is written by economists, and much of it is fairly aggregate in character.

Old classic

Johnston, B.F. and J. Mellor, 1961, 'The role of agriculture in economic development', *American Economic Review*, Vol.51, No.4, pp.566-593 [Available from JSTOR]

Comment: Nearly all versions of agriculture for growth to this day position themselves in one way or another relative to the arguments of this article. It is an economics text, and the non-economics reader should skip the difficult bits and focus on the descriptive narrative. Johnston and Mellor provide persuasive arguments for raising productivity in agriculture as essential in the early phase of achieving sustained overall growth. Note that part of this involves an accelerating movement of labour out of agriculture in this phase, an aspect downplayed in the later evolution of these ideas. Also later dropped was the notion that agriculture should generate savings to be invested in other sectors. In the context of the Green Revolution it came to be expected that productivity and incomes could rise for the majority of farmers initially without high migration out of agriculture, which would come later when non-farm growth took off.

The case in favour of putting small-farm agriculture first

All references listed here provide accessible overviews of the empirical case for putting small-farm agriculture first in the quest for growth with high poverty reduction. In addition to summarizing the empirical evidence that has accumulated over many years, some of them add to that evidence with new data or new methods for interpreting previous data.

Barrett, C.B., M.R. Carter and C.P. Timmer, 2010, 'A century-long perspective on agricultural development', *American Journal of Agricultural Economics*, Vol.92, No.2, pp.447-68

Summary: This article strategically surveys the past century's literature on agricultural development. We organize the discussion around three "grand themes" that reveal the richness of agricultural development as an intellectual endeavour. First, we explore the role of agriculture in the broader development process from a macroeconomic and political economy perspective. We then examine the role of technological and institutional change in successful agricultural development. Finally, the focus turns to a microeconomic perspective on agricultural household decision making and the problems of imperfect and missing markets, asymmetric information, and transactions costs that lead to widespread apparent inefficiency and disequilibrium.



Byerlee, D., A. De Janvry and E. Sadoulet, 2009, 'Agriculture for development: toward a new paradigm', *Annual Review of Resource Economics*, No.1, pp.15-31 Available at: [Http://are.berkeley.edu/~esadoulet/papers/Annual_Review_of_resecon7.pdf](http://are.berkeley.edu/~esadoulet/papers/Annual_Review_of_resecon7.pdf)

Summary: The fundamental role that agriculture plays in development has long been recognized. In the seminal work on the subject, agriculture was seen as a source of contributions that helped induce industrial growth and a structural transformation of the economy. However, globalization, integrated value chains, rapid technological and institutional innovations, and environmental constraints have rapidly changed the context for agriculture's role. We argue that a new paradigm is needed that recognizes agriculture's multiple functions for development in that emerging context: triggering economic growth, reducing poverty, narrowing income disparities, providing food security, and delivering environmental services. Yet, governments and donors have neglected these functions of agriculture with the result that agriculture growth has been reduced, 75% of world poverty is rural, sectoral disparities have exploded, food insecurity has returned, and environmental degradation is widespread. Mobilizing these functions requires shifting the political economy to overcome anti-agriculture policy biases, strengthening governance for agriculture, and tailoring priorities to country conditions.

De Janvry, A. And E. Sadoulet, 2010, 'Agricultural growth and poverty reduction: additional evidence', *The World Bank Research Observer*, Vol. 25, No.1, February Available at: <http://wbro.oxfordjournals.org/content/25/1/1.short>

Comment: Alain de Janvry was co-lead author of the 2008 World Development Report (WDR) and has a solid lifetime reputation in the agricultural economics of development. This is an important article originally written as a background paper to the WDR. It provides evidence for the superior poverty reduction powers of rising agricultural productivity compared to growth in other economic sectors. Initial evidence is summarized showing the correlation between higher yields (i.e. rising land productivity) and poverty reduction in the major world regions; in addition it is shown that a more equal (small) farm size structure is associated with greater poverty reduction than an unequal size structure (comparing, for example, China and Brazil). These findings support the small-farm yield growth variant of the agriculture for poverty reduction argument. Going beyond simple correlations, the paper uses newer econometric techniques to demonstrate causality running from small-farm yield growth to high poverty reduction. The paper also considers evidence regarding the efficacy of public (government) service provision as a stimulus to agricultural growth and finds a mixed picture of relative success, which is context specific.

Timmer, P.C., 2005, 'Agriculture and pro-poor growth: an Asian perspective', Working Paper No.63, Washington, D.C.: Centre for Global Development. Available at: [Http://www.cgdev.org/content/publications/detail/2986](http://www.cgdev.org/content/publications/detail/2986)

Comment: An accessible restatement of the 'agriculture first' position containing the quotable sentence: 'No country has been able to sustain a rapid transition out of poverty without raising productivity in its agricultural sector'. Timmer reprises the main arguments, strongly influenced by the Green Revolution experience of large Asian countries (India, China, Indonesia). In Timmer's view this experience is replicable in other settings, while recognizing that certain factors may act as barriers to its achievement or require innovative policies to secure desired outcomes.

Broadening the discussion

References here broaden out the discussion by providing diverse arguments and evidence that modify the argument, or suggest caution concerning the proposition that agriculture has a unique role to play in achieving pro-poor growth. A degree of scepticism does not imply



'throwing the baby out with the bathwater'. No one is suggesting that yield growth in small-farm agriculture does not have a powerful influence on food security and poverty reduction. However, questions are raised whether this can (a) be as successful in contemporary Africa as it was in Asia in the Green Revolution; (b) solve problems of too little land and chronic vulnerability to hunger in Africa; and (c) result in neglect of other important avenues for growth and poverty reduction, in particular the burgeoning informal sector in expanding cities.

Collier, P. And S. Dercon, 2009, *African agriculture in 50 years: Smallholders in a rapidly changing world*. Expert meeting on how to feed the world in 2050, Food and Agriculture Organization of the United Nations, Rome, June 24, 2009
[Ftp://ftp.fao.org/docrep/fao/012/ak983e/ak983e00.pdf](ftp://ftp.fao.org/docrep/fao/012/ak983e/ak983e00.pdf)

Summary: For economic development to succeed in Africa in the next 50 years, African agriculture will have to change beyond recognition. Production will have to have increased massively, but also labour productivity, requiring a vast reduction in the proportion of the population engaged in agriculture and a large move out of rural areas. Climate change is likely to require an acceleration of this process, with commensurate faster and further migration of large populations. In this paper, we ask how this can be squared with a continuing commitment to smallholder agriculture as the main route for growth in African agriculture and for poverty reduction. We question the evidence base for an exclusive focus on smallholders, and argue for a much more open-minded approach to different modes of production.

Ellis, F., 2005, 'Small-farms, livelihood diversification and rural-urban transitions: strategic issues in sub-Saharan Africa', in International Food Policy Research Institute (IFPRI), *The Future of Small Farms: Proceedings of a Research Workshop*, Wye, UK, June 26-29, Washington, D.C.: IFPRI, available at:
[Http://www.ifpri.org/sites/default/files/publications/sfproc.pdf](http://www.ifpri.org/sites/default/files/publications/sfproc.pdf)

Comment: This was a conference paper which argued that after four decades of optimism about the role agriculture could play in growth and poverty reduction in Africa, some critical rethinking of the conventional stance might be valuable. The paper highlighted differences between Asian and African experiences, the failure of the structural adjustment era to regenerate agriculture, the significance of diverse rural livelihoods in Africa, and the relative neglect of rural-urban transitions in thinking about future growth options. A version of the same arguments were also published as a chapter in an edited collection.⁵

Hasan, R. And M.G. Quibria, 2004, 'Industry matters for poverty: a critique of agricultural fundamentalism', *Kyklos*, Vol.57, No.2, pp.253–64
This is a journal article

Comment: H & Q begin by affirming that cross-country evidence shows a close link between aggregate economic growth and poverty reduction. They also quote Mellor (2000) to the effect that 'it is the direct and indirect effect of agricultural growth that accounts for virtually all the poverty decline'; a stance with which they disagree, describing it as 'agricultural fundamentalism'. They appear to demonstrate using econometrics that in East Asia industrial rather than agricultural growth was chiefly responsible for poverty reduction while in South Asia the reverse was true. However, it is possible that their choice of poverty line (they used the \$2 per day poverty line) produced this result, since when the same method is

⁵ Ellis, F., 2010, 'Strategic dimensions of rural poverty reduction in sub-Saharan Africa', Ch.3 in B. Harriss-White and J. Heyer (eds), *The Comparative Political Economy of Development: Africa and South Asia*, London: Routledge, pp.47-63



applied using a \$1 per day poverty line, the primary role of agricultural growth in reducing poverty is re-affirmed (Christiaensen *et al.* 2011).

Tsakok, I. And B. Gardner, 2007, 'Agriculture in economic development: Primary engine of growth or chicken and egg?', *American Journal of Agricultural Economics*, Vol.89, No.5, pp. 1145-51

This is a journal article

Summary (edited): Having become convinced that cross-sectional econometric studies, popular as they may be, are proving of quite limited use in sorting out fundamental issues in economic growth, we attempt an alternative approach using Popperian ideas of refuting falsifiable conjectures in country case studies. These case studies do not provide the clean refutations that we would like to obtain concerning polar views about agriculture in economic growth. They undermine both polar views. Our conclusion is that neither polar view applies, as evidenced by four country cases with very different histories and institutional structures. There are other underlying factors at work. Methodologically, we believe our approach has advantages over cross-sectional econometrics. It provides less-constrained ways of data based assessment of hypotheses

Land, farm size and food security

Deininger, K. And D. Byerlee, 2012, 'Rising global interest in farmland: Can it yield sustainable and equitable benefits?', *World Development*, Vol.40, No.4, pp.701–714

This is a journal article

Summary: Resurgent interest in agriculture raises issues about agrarian structure and the balance between large and small farms that have thus far been addressed mainly from a smallholder angle. We identify economic and policy factors that contributed to episodes of large farm growth, their impact, and ways in which these may have changed recently. An analysis of recent land demand from large investors suggests that greater clarity in the definition of property rights, attention to employment effects and technical viability, and mechanisms to re-allocate land from unsuccessful ventures to more productive entrepreneurs will be critical to facilitate better developmental outcomes.

Jayne, T.S., B. Zulu, and J.J. Nijhoff, 2006, 'Stabilizing food markets in Eastern and Southern Africa', *Food Policy*, Vol.31, No.4, pp.328-341

Summary: A major challenge for agricultural policy in Africa is how to address the market instability-related causes of low farm productivity and food insecurity. This paper highlights structural changes affecting the behaviour of food markets in eastern and southern Africa and discusses their implications for the design of strategies to stabilize food prices. These changes include (1) an increasing trend in maize prices toward import parity levels, reflecting an emerging structural maize deficit in much of the region; (2) increasingly diversified food consumption patterns in both rural and urban areas; (3) highly concentrated marketed maize surplus, which have largely unrecognized implications for the magnitude of price risk faced by most farm households; and (4) the strategic interactions between private and public marketing actors leading in some cases to heightened market instability and food crises. In the prevailing dual market environment now characterizing most of the region, greater coordination, transparency, and consultation between private and public market actors is needed to achieve reasonable levels of food price stability and predictability.



Jayne T.S., J. Chamberlin, and M. Muyanga, 2012, Emerging land issues in African agriculture: implications for food security and poverty reduction strategies, *Stanford Symposium Series on Global Food Policy and Food Security in the 21st Century*, Stanford University, California: Center on Food Security and the Environment
[Http://iis-db.stanford.edu/evnts/6534/Jayne_1_12_12_final.pdf](http://iis-db.stanford.edu/evnts/6534/Jayne_1_12_12_final.pdf)

Summary: Despite the fact that sub-Saharan Africa in 2012 contains much of the world's unutilized and underutilized arable land, a significant and growing share of Africa's farm households live in densely populated areas. Based on two alternative spatial databases capable of estimating populations at the level of one square kilometre (sq km) and distinguishing between arable and non-arable land, we find that in at least five of the 10 countries analysed, 25 per cent of the rural population resides in areas exceeding 500 persons per sq km, an indicative maximum carrying capacity for areas of rain-fed agriculture in the region. Farm surveys reveal (a) declining mean farm size over time within densely populated smallholder farming areas; (b) great disparities in landholding size within smallholder farming areas, leading to highly concentrated and skewed patterns of farm production and marketed surplus; (c) half or more of rural farm households are either buyers of grain or go hungry because they are too poor to afford to buy food; most households in this category control less than one hectare of land; and (d) a high proportion of farmers in densely populated areas perceive that it is not possible for them to acquire more land through customary land allocation procedures, even in areas where a significant portion of land appears to be unutilized.

Gender and agricultural growth

Croppenstedt, A., M. Goldstein, and N. Rosas, 2013, 'Gender and agriculture: inefficiencies, segregation, and low productivity traps', *The World Bank Research Observer*, Vol.28, No.1, pp.79-109

Summary: Women make essential contributions to agriculture in developing countries, where they constitute approximately 43 per cent of the agricultural labour force. However, female farmers typically have lower output per unit of land and are much less likely to be active in commercial farming than their male counterparts. These gender differences in land productivity and participation between male and female farmers are due to gender differences in access to inputs, resources, and services. In this paper, we review the evidence on productivity differences and access to resources. We discuss some of the reasons for these differences, such as differences in property rights, education, control over resources (e.g. land), access to inputs and services (e.g. fertilizer, extension, and credit), and social norms. Although women are less active in commercial farming and are largely excluded from contract farming, they often provide the bulk of wage labour in the non-traditional export sector. In general, gender gaps do not appear to fall systematically with growth, and they appear to rise with GDP per capita and with greater access to resources and inputs. Active policies that support women's access and participation, not just greater overall access, are essential if these gaps are to be closed. The gains in terms of greater productivity of land and overall production are likely to be large.



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Jayne, T. S., B. Zulu, and J.J. Nijhoff, 2006, 'Stabilizing food markets in Eastern and Southern Africa', *Food Policy*, Vol.31, No.4, pp.328-341

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Glossary of key words and phrases

Agricultural policy refers to levers used by governments to influence agricultural outcomes; these may comprise funding R&D (agricultural research), providing advice (extension services), influencing input markets (seeds, fertilizer), regulating output markets (price or quality controls), licensing traders, holding strategic food stores, or controlling trade (imports and exports). In general, the effort of the past 30 years has been to reduce the profile of the state in agriculture, and to seek private solutions to public objectives.

Agriculture is a sector of the economy, comprising crop and livestock production. It is not necessarily always rural (hence 'urban agriculture'). Perhaps the defining characteristic of agriculture is its need for land and soil as a resource, although intensive pig or chicken rearing in sheds also counts as agriculture. Agriculture is also characterized by the reproduction and nurturing of living things (plants and animals), and by the seasonality of the cultivation and harvesting cycles of annual and perennial plants.

Efficiency has both technical and economic aspects. The technical aspect is the same as productivity; for example, a farm that produces 4 tons of maize per ha is obviously more efficient than one that produces 2 tons maize per ha, other things being equal. The economic aspect is rather different because it requires that resources are combined in such a way as to minimise the cost per unit of a given level of output, and this may be at a differing level of input use and output from the maximum technically feasible. In the wider economy, efficiency is attained when the additional return achieved by redeploying resources from lower to higher productivity uses is equalized across all resources and activities.

Farm is a unit of production in agriculture, typically comprising a defined land area with boundaries either owned, or leased, or allocated under customary tenure. These boundaries are not always inscribed in law, and boundary disputes are common in farming areas under customary tenure. Farm is also often used as synonymous with agriculture, and the comparison farm vs non-farm divides the economy as a whole between agriculture and all non-agriculture sectors combined.

Farm size refers to the entire area of the land unit owned or leased by an individual, family, household or enterprise. This includes unproductive as well as productive parts of the farm, as well as the area of residence if the homestead is on the farmland. In villages, people's homes may be separate from the fields they own or lay claim to for their farming activities, in which case farm size refers to the total area of those fields. Also see inverse farm size productivity.

Gross domestic product (GDP) is calculated by adding up the total value of a country's annual output of goods and services. $GDP = \text{private consumption} + \text{investment} + \text{public spending} + \text{change in inventories} + \text{exports} - \text{imports}$. See also growth.

Growth, overall, is the rate at which real GDP changes on an annual basis.

Growth sector (like agriculture, manufacturing, etc.), refers to the rate of change of total value added in the sector, i.e. the value of total output less the value of inputs into the sector. This is also the same as that sector's contribution to GDP.

Inverse farm size–productivity relationship (see also farm size and productivity). This refers to the empirical finding that productivity per ha of total farm size declines as farm size



Increases, a regularity observed within and across countries in numerous cross-section studies. Recent research suggests that this relationship tends to disappear as the degree of engagement and sophistication of markets increases.

Productivity refers to the return to a resource, or to all resources. In crop production, the simplest measure of productivity is output per unit of land (e.g. 6 tons of maize per ha). This is an average product, for land, also referred to as yield. Economists often need to measure changes for all resources, not just a single resource, and this is called ‘total factor productivity’. See [efficiency](#) for a closely related concept.

Returns to scale refers to what happens to output if all inputs into production are increased by the same amount. If output rises by more than the percentage change in inputs, this is increasing returns to scale; if output rises by exactly the same proportion, it is constant returns to scale. It is generally thought that crop production exhibits constant returns to scale or, put another way, is ‘scale neutral’.