Future Agricultures

Working Paper

Cautious commercialisation. Findings from village studies in Ethiopia, Ghana, Kenya, Malawi & Tanzania

Steve Wiggins, Gem Argwings-Kodhek, Samuel Gebreselassie, Samuel Asuming-Brempong, Ephraim Chirwa, Mirriam Muhome Matita, Ntengua Mode & Khamaldin Mutabazi

Corresponding author: Wiggins, s.wiggins[at]odi.org.uk

March 2014

Acknowledgements and disclaimer

Many thanks to John Farrington for his helpful comments on an earlier version of this paper.

This research was made possible by funding from DFID.

The views expressed in this paper, however, do not necessarily reflect those of DFID or indeed of any of the institutions for which we work. The authors are solely responsible for the contents, including any errors and omissions.

Abbreviations

NASFAM	National Smallholder Farmers' Association of Malawi
SF	Small farmer
DFID	Department for International Development, UK Government

Units of measurement

ha	hectare
kt	thousand tonnes
M	million
m	metre
mm	millimetre

Cite as:

Wiggins, Steve, Gem Argwings-Kodhek, Samuel Gebreselassie, Samuel Asuming-Brempong, Ephraim Chirwa, Mirriam Muhome Matita, Ntengua Mode & Khamaldin Mutabazi, 2013, Cautious commercialisation. Findings from village studies in Ethiopia, Ghana, Kenya, Malawi & Tanzania. FAC Working Paper 82, Brighton, UK: Future Agricultures Consortium.

Contents

Summary

In the early stages of agricultural development, some smallholders become increasingly commercialised: that is, they engage more with the market, both increasing their sales and using more purchased inputs and hired labour. In the process commercialising small farmers are likely to intensify their production, raise productivity of land and labour, and increase their net farm incomes. They may also specialise, but this is not inevitable; commercialisation could, at least initially, mean adding more farm activities, thereby diversifying the portfolio.

Commercialisation can be central to agricultural development, with the promise of contributing to economic growth, with the reduction of poverty and hunger. Africa has seen many episodes of more commercial smallholder farming, from the export crop booms in West Africa of the late nineteenth century to more recent spurts in production of food for domestic markets. Unfortunately such episodes have not been more widespread, nor in some cases have they been sustained.

The studies reviewed

This paper looks at experience of commercialisation in selected parts of Africa in the late 2000s, to shed light on key questions asked about the process, including:

- How do farmers commercialise, which small farmers commercialise and to what extent, and what are the drivers of change?
- What are the benefits of commercialisation, both directly to farmers, as well as indirectly to those who may benefit from linkages in the rural economy that create additional jobs?
- Are there drawbacks? For example, in reduced food security as cash crops replace food production, increased inequality, further disadvantage to female farmers, higher risks to vulnerable smallholders or harm to the environment?
- What policies and programmes lead to commercialisation with desirable outcomes? What should be the role of governments, donors who assist them, private enterprise and civil society in promoting favourable commercialisation?

It draws on studies carried out by researchers united by the Future Agricultures Consortium who investigated commercial small farming in five countries: Ethiopia, Ghana, Kenya, Malawi and Tanzania. Studies began in 2007, although the main work began in 2009. Research in each country has taken place in a few districts; usually in areas where there have been recent interventions by external agencies to promote commercial production, but also in some cases from local initiative. The study sites comprise:

- Lume district, central Ethiopia, where some smallholders have since the mid-2000s started to grow vegetables for the Addis Ababa market under irrigation;
- Villages in Brong-Ahafo and Akuapem, Ghana, where in the former area smallholders grow irrigated tomatoes for the domestic market, and in the latter pineapples are produced for export and the home market;
- Sites in the periphery of Nairobi and in Narok District, Kenya, where smallholders grow tomatoes, cabbages and other vegetables as well as produce milk for Nairobi and other major cities;
- Two districts in central Malawi where NASFAM, an NGO, promotes commercialisation of crops such as groundnuts and soybean; and
- Four villages in Kilolo and Kilosa Districts of central Tanzania where small farmers grow onions for the home market under irrigation.

Household surveys were carried out at these sites, looking to compare households who had been the subject of schemes to promote commercialisation with those who had not — although that distinction did not apply at all sites. It was hoped to repeat surveys to capture changes through time, but it proved possible only to resurvey in Ethiopia and Malawi. Surveys of mainly quantitative data were complemented by interviews with key informants within communities and amongst agencies promoting programmes, and from focus group discussions with farmers.

In addition, studies of the efficiency and competitiveness of supply chains were carried out for vegetables from Lume, Ethiopia; for tomatoes from Narok and cabbages from Nyandarua in Kenya; and for onions from central Tanzania.

Individual reports exist for the various studies of the different sites. This synthesis looks across these to derive common and comparative lessons.

Findings

Processes of commercialisation

In almost all cases, commercialisation took place by gradual and marginal change, with few dramatic changes to farming systems. Farmers planted small areas to crops for sale, typically 0.5ha or less, and usually less than half the land farmed, the rest being sown to food crops. Since crops grown for sale were added to the farming system rather than replacing some other enterprise,

commercialisation saw diversification of farming rather than specialisation. This, of course, may be a temporary phase. It remains to be seen whether there will be more specialisation in the future.

Commercialising farmers have usually intensified their production, using external inputs such as improved seed and manufactured fertiliser. They also increased labour per hectare, since irrigation and horticultural crops require more operations.

The largest change seen in production is where irrigation has been introduced. Even here, however, changes are rarely dramatic. In Ethiopia, Ghana (Brong Ahafo), some Kenyan cases and Tanzania, the methods used to irrigate — mainly gravity feed to basins and furrows, hand watering by bucket and watering can — are either well known or else are undemanding in technical skill, even if they are hard work.

These changes were accompanied by more active factor markets. Despite land not being titled or formally registered, parcels were actively changing hands between farmers within their communities. Between one quarter to two-thirds of households were renting land. Land rents were reportedly rising — to almost US$350 a hectare a year in one case. Labour markets were similarly active, with most commercialising smallholders hiring in labour, as much as 138 days a year in one case. In some cases, these largely new jobs were attracting migrants from neighbouring areas with lower agricultural potential. Wages were reported to be rising.

If land and labour markets were active, the market for finance was much less so. Intensification meant buying fertiliser, sometimes crop chemicals and seed. Hence more working capital has been used. Use of credit to obtain inputs was unusual, however: only at one site was credit common, from a farmer association. Moreover, there were few if any reports of input dealers offering inputs against harvests, or of traders offering growers advances. Hence most households surveyed were using their own cash savings. Farmers complained that they were limited by lack of capital.

As with changes to farming, changes to marketing were gradual. Most of the produce sold in these cases was shipped through chains already in existence, or which were modified from existing ways of trading. The destination for produce was usually domestic, to cities that lay within 150km along a tarmac road, so that traders could buy produce early in the morning at the farm or village and still place it on wholesale markets before noon.

Most supply chains observed had a similar structure: produce was sold by farmers in field or village to either brokers or traders, who then shipped it to wholesale markets. Spot deals where produce would change hands for cash at a price agreed there and then were the norm. Only in one case were contracts seen, and even these were mainly verbal agreements.

Marketing, with few exceptions, did not make exceptional new demands on growers. The web of brokers and traders buying from farmers did not expect large, standard lots, of uniform quality, available to schedule. Indeed, brokers worked to overcome the disadvantages of small-scale, unstandardised production delivered as and when produce was ready and could be lifted. Spot deals meant that farmers were paid promptly with no further risks in marketing. Since most produce was destined for ordinary consumers for whom low cost was a primary consideration, demands for quality and standards were limited.

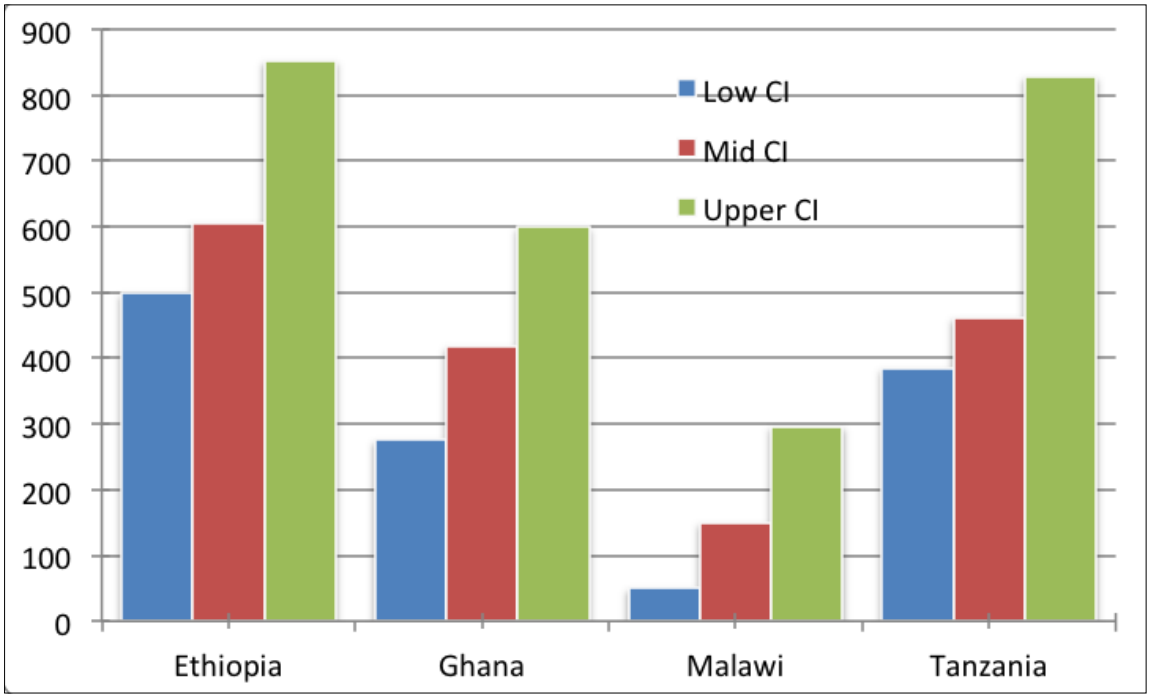
The main drivers of commercialisation seen were market demand and support from outside agencies. The latter, seen in four cases, consisted variously of government agencies, processors, exporters and a national farmer enterprise providing technical assistance on production and marketing and sometimes access to inputs. Such support has, however, been strategic and limited rather than comprehensive. Limited assistance has meant that many smallholders have not achieved the yields that would be technically feasible if access to capital was not restricted and risks in marketing were reduced. The more important lesson, however, may be that it is not necessary for external agencies to do very much to stimulate and support commercial production.

The other cases where there has been little or no direct support for commercialisation from outsiders reinforce this point. In at least three other cases, local initiative in production coupled to private traders linking the growers to markets has been the sole spur. The preconditions for this have been demand in markets and sufficiently well maintained roads to allow trucks to reach the fields. In one case, central Tanzania, local initiatives had created village-level irrigation systems — with commensurate social co-operation to invest in and operate these.

Farmers in these cases were rarely linked to large formal enterprises. This is perhaps not surprising; after all, most produce was for domestic markets and concerned crops such as vegetables that require no processing.

Farmers commercialising usually had more land, assets and access to credit or savings than other small farmers. Often they had more education as well. Did the studies then show that some farmers are excluded from commercialising? In general, no. Even where irrigation has been necessary to produce commercial crops, land has been actively traded. The studies focus on small-scale production by design, so it is no surprise to see few thresholds of commercial production that have to be achieved to participate. Otherwise, production for sale takes place generally on a small scale; indeed, for some participants it is on a micro-scale, with plots of less than 0.25ha of high value crops being common.

Figure A Crop incomes, by degree of commercialisation (CI), terciles, median values in US$



Source: Reports on studies

Note: Tanzania statistics are household incomes.

One repeated observation of disadvantage, however, concerned female farmers. Compared to their male counterparts, they typically had less land and often water as well, less capital, and they lacked labour time owing to domestic duties. They may also, on account of having little cash, be more averse to risks in markets, and are sometimes at a disadvantage when selling produce to male traders. For all these reasons they are often seen to be less commercialised and to have lower sales than corresponding male farmers. Regression models often record a significant negative estimate for output and marketing against the female farmer variable, when other factors have been taken into account.

Farmers commercialise to varying extents, but few farmers specialise in their commercial crops — although there were intriguing glimpses of some farmers in central Tanzania and Lume, Ethiopia who appeared to be moving to highly specialised production.

It would be wrong to suggest that commercialisation was an established trend, where farmers once on the ladder steadily expanded the area to commercial crops or intensified their production. There were setbacks. Pineapple growers in Ghana saw their export market disappear in 2005 as European buyers switched to Costa Rican fruit of a different variety; it took several years to react by replanting, and many smallholders dropped out of the sector. Malawian farmers drastically reduced their tobacco fields following sharp falls in the price of tobacco between 2008 and 2011.

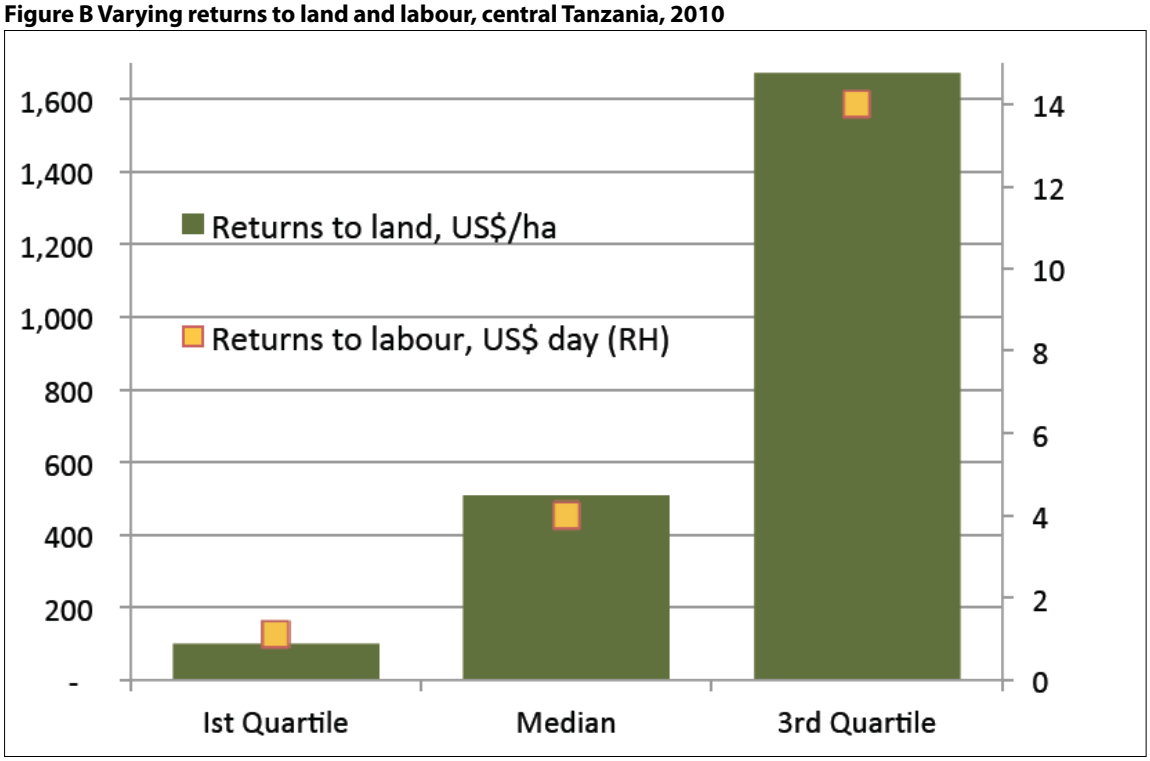
Outcomes of commercialisation

Commercial crops generally had higher gross margins than food staples, even when additional costs of more intensive production were taken into account. Per hectare net returns of more than US$1,000, and sometimes much more, were common for vegetables.

Given the high gross margins that could be made from some commercial crops, it was not surprising that some commercialising farms had high net incomes. In Lume, Ethiopia, for example, net earnings per farm were estimated at US$2,260 in 2010 and a more than double that, US$5,940, in 2012. More commercialised small farms had higher farm incomes than less commercialised holdings. Figure A compares the crop incomes of the surveyed households by median values for terciles of households sorted by an index of commercialisation (value of sales/total value production). The results are clear, consistent and striking: in all cases crop incomes rise with commercialisation.

In those cases where it is possible to divide the sample into those participating in a programme to promote commercialisation and those not, the comparisons are even stronger. For example, in central Malawi, households belonging to NASFAM had a median crop income of US$236 compared to US$70 for those who were not members.

Figure B Varying returns to land and labour, central Tanzania, 2010



Pronounced differences were seen in performance across the farm households. Yields per hectare of crops in central Tanzania, for example, differed between those in the first and third quartiles by factors of two or more. These differences were then reflected in returns to land and labour, as can be seen for central Tanzania in Figure B. Here the ratios between households in the first and third quartiles are not two or three to one, as seen with crop yields, but 13 to one for labour and 17 to one for land.

Reports from the other studies may not have information quite as clear as these examples, but a wide range of yields and returns can be seen for those cases as well.

For some marketing chains there were data on costs and selling prices at successive points in the supply chain, allowing the percentage margins realised over costs to be estimated. Three things were clear. One is that farmers had by far the largest margins: usually well over 100 percent. That, however, has to be qualified by consideration of risks in production and marketing. The unit costs shown and the prices paid are those that apply when things run smoothly — while in reality, of course, there are seasons when pests and diseases, adverse weather, pump breakdowns and so on raise costs and reduce yields. These returns also inherently included an uncosted return to land and water.

Second, margins for wholesalers and retailers showed a modest return on capital and labour, especially when risks are factored in and allowance is made for wastage. Third, the absolute differences between what the farmer receives and what the consumer pays look quite large, with prices doubling and trebling. However, costs of marketing and especially transport are high. So what looks like an inefficient and exploitative chain, if only prices at different points in the chain are considered, often reflects high costs of transport — much of which can be attributed to the poor state of roads, and high capital costs of vehicles and parts. Otherwise, these chains do not seem to show rent-taking.

This is not to say that are no rents in marketing chains. For onions in Tanzania, fully 20 percent of the costs between farm and wholesale went to commissions for brokers in the Dar es Salaam wholesale market, who had only to place arriving shipments with wholesalers.

What of the *potential drawbacks* that concern some observers of commercialisation?

To judge by areas planted to food crops, there was little evidence that farmers were sacrificing food crops to grow crops for sale. On the contrary, most farmers had 1ha or more sown to food crops. Moreover, the areas under food crops bore little relation to the degree of commercialisation. Where it was possible to compare farmers participating in a commercialisation scheme to those not doing so, those commercialising were at the median planting more food crops than those who were not part of the scheme.

The are a planted to food crops is an indirect indication of food security. Households not planting many food crops could still be food secure if they had the income to buy their food. When asked about food consumption and perceived food security, participants in schemes in Ethiopia and Malawi reported more food security than those not belonging to schemes.

From this evidence, incomplete as it may be, there are thus few indications that commercialisation might endanger household food production, or otherwise lead to less food security.

Did commercialisation widen social differences? If it is the better-endowed households that can most commercialise, does this mean that commercialisation widens economic gaps between households? That would seem likely, but when small farmers do intensify and commercialise they employ more hired labour. The rural poor often depend heavily on farm labouring for their livelihoods, so the availability of such work and the rates paid are critical if they are to avoid extreme poverty. So they may benefit as well from commercialisation.

Access to resources is not set in stone. In some of the studies, there are records of remarkable amounts of land being traded, and generally from households with more land to those with less. Furthermore, it is likely that much of the additional income from sales of milk and crops are spent locally, especially on food, construction and services. This again should create extra jobs in the rural economy. These studies, however, did not try to observe this effect, so it remains a reasonable possibility rather than a confirmed fact.

Gender differences came out clearly in most of the studies: female farmers are less likely to be able to take up commercial opportunities than their male counterparts. Female-headed households were therefore likely to find themselves excluded from direct benefits. It is less clear what this observation means for women within male-headed households, although there is concern that if commercial crops are controlled by the men then disparities in income and power within those households may widen.

On the other hand, women labourers from households with few assets may be some of the greatest beneficiaries of a tighter local labour market. More commercial production may offer them some gains that they would not otherwise have. And the disadvantages that female farmers face in commercial production do not just apply here: they can be seen in large measure in any type of farming. If there were no commercial possibilities, would women be better off? Increased labour hiring is one outcome that does offer some improvement, even if it may be less than that enjoyed by farmers who are able to directly farm for the market.

Does commercialisation increase risks? Only one of the studies, that for Tanzania, explicitly asked farmers about risk. Perhaps surprisingly, farmers were not that concerned about price risks; their greater concern was that of production loss to bad weather, pests and diseases. Farmers were probably avoiding undue risk when they kept so much of their land to food crops.

One specific risk that alarms observers arises where farmers take credit with their land as the guarantee, thereby risking loss of the farm in case of default. Not only were there few farmers in these studies who obtained formal credit, but also in those cases, they were not pledging their land against the loan.

Overall, there was little in the studies to suggest that farmers were being tempted into undue risks. On the contrary, their strategies of diversification, cautious commercialisation and investing by using their own savings rather than credit suggests that they deliberately kept risks low. This, of course, could mean that they forego some benefits that may accrue to more specialised and intensive commercial farmers.

Possible damage to the environment was not a focus of the studies, so there is little direct evidence on environmental impacts. In some cases, more commercial production meant more use of fertiliser and agro-chemicals, with the consequent risk that there may be pollution from excess run-off and injury to farmers from unsafe handling of chemicals. In Brong-Ahafo, Ghana there are concerns that small-scale tomato production has to be irrigated and tends to be on fields sited next to streams, with dangers of soil erosion, silting of streams and pollution of watercourses.

On the other hand, it may be that in some cases the opportunities to earn from intensively-operated irrigated plots takes pressure off other natural resources, including hillsides vulnerable to erosion, or bush and forest that might be cleared for more extensive cultivation. This seemed to be the case in central Tanzania. Moreover, where irrigation is critical, there is an incentive for locals to conserve and manage the watersheds that provide the water.

Conclusions and policy considerations

The main points that emerge from this review of the field studies may be summarised as follows:

- Given the opportunity to produce for markets, small farmers are often able to intensify their production of crops and enterprises for sale, thereby raising their incomes — and increasing local demand for hired labour.

- In most cases the stimulus for commercialisation comes from domestic markets, not exports. Domestic marketing demands are less stringent than apply in much export production. In some cases, it has taken an external intervention to stimulate commercial production. Even then, the outside stimulus has been technical assistance and access to inputs, rather than a more comprehensive package of assistance of the kind offered by parastatals in the 1970s and 1980s. Equally, there are cases where the initiative has been entirely with the farmers and the traders to whom they sell.

- Commercialisation has been cautious, gradual and through marginal changes rather than

dramatic transformations. Only occasionally does it seem that some farmers are prepared to sacrifice food production sufficient to meet home needs for commercial crops.

- Intensification accompanies commercialisation as farmers apply more fertiliser, more hired labour and sometimes improved seed and agro-chemicals. In most cases, the working capital for these investments comes from farmers' own savings, rather than credit from banks or advances from input dealers, traders or processors. Lack of credit evidently does not prevent intensification, although it may slow the process, limit the degree and restrict which households may participate.

- Households with more land, savings, assets and sometimes education are disproportionately able to take up commercial opportunities. Female farmers are often disadvantaged since they have fewer assets than males. Social differences may thus widen with commercialisation. On the other hand, commercial farming almost always increases the demand for farm labour, so where the landless and poor depend on such work for their livelihoods they may well benefit.

Policy implications

What in these studies do we understand about the role of public policy and investments? Two main points can be made.

First, few of the cases seen are the result of direct public programmes to commercialise cropping, the exceptions being the irrigation schemes in Ethiopia and NASFAM in Malawi. Indeed, in most of these cases one might argue that comprehensive *direct* action by the state has not been necessary.

Second, on the other hand, this should not be taken to imply that public investments have not been valuable and indeed critical for the success of the small-scale commercial production observed. Less direct measures have been essential. In all cases, a stable macro-economy has allowed farmers and traders to invest and get on with business. If this seems a minor point to be taken for granted, then readers need to bear in mind the chaotic economy of Ghana in the late 1970s, the strong restrictions to private enterprise seen in Ethiopia under the Derg, and the macro-economic difficulties of Tanzania in the late 1970s — all cases where subsequent developments observed in these studies would have been difficult if not impossible.

Moreover, road access is critical to all of these cases. The roads exist because governments have built and maintained them. Some could be improved, to be sure, especially in Lumuma and Msowero in Kilosa District, central Tanzania. Similarly, commercialisation has probably been enhanced by public provision of schools and health posts in rural areas since these allow farmers to express their capabilities.

Well-conceived support by ministries of agriculture can also play a role. The small-scale irrigation programme in Ethiopia shows this, as does the upgrading of irrigation intakes in central Tanzania.

What then should governments, and some NGOs, be doing to support commercial production and ensure that it has the greatest benefits with the fewest drawbacks? Five routes stand out, as follows.

A. The general encouragement to rural enterprise that has resulted from the improvements to the rural investment climate — less inflation, competitive exchange rates, trimming back marketing boards and liberalisation of trading in some crops — that resulted from reforms in the 1980s and 1990s has paid off. Governments should both take pride in this, as well as guard against measures that might reverse these gains.

B. Investment in public goods also pays off. The gains from better roads and schools may not be immediate, but there are signs in these studies that there is more positive change in rural Africa than some reports would suggest. The regular programmes of ministries of education, public works and transport may not grab the headlines or appear as the magic bullets that will rescue rural Africans from poverty, but over the medium term they may be more effective than some more eye-catching direct measures to stimulate agriculture.

C. It may seem that ministries of agriculture are peripheral to these processes and have little role. This would exaggerate and mislead. It is clear that well directed efforts to support what farmers are already doing can pay off. Could there be any better use of donor funds in agriculture than the upgrading of existing irrigation schemes operated by locals in central Tanzania? Moreover, farmers in all these schemes face technical challenges in raising productivity, understanding their technical options, getting access to good seed, and so on. When farmers have commercial opportunities, their need for innovations and technical support rises, as does their interest in these. Arguably, extension services might be most effective when working with such farmers.

D. In all these cases, lack of capital limits investment and further gains. Farmers suffer from this, as do many of the traders they deal with. Finding ways to improve rural financial systems matters. A word of warning, however: this does not mean governments re-entering rural areas with public credit and subsidies. In the past such programmes have often been very costly and have had limited

benefits. Instead, more innovative ways of providing rural finance need to be found, with governments working to support local, civil society and private initiatives. There are promising innovations of late—M-pesa money transfers using mobile phones in Kenya, expansion of the small loans programme of Kenya's Equity Bank, agency banking — and it is these which governments should look to encourage.

E. Last but not least, these studies repeatedly reveal the disadvantages faced by female farmers. Clearly agricultural policy is not, by itself, going to transform longstanding imbalances in gender relations. On the other hand, there are things that could be done to reduce the disparities. These include looking to acknowledge and support women's rights to land and water, making public investments that help reduce the time women spend on domestic tasks such as drawing water, and providing extension that is directed with female farmers in mind.

Dynamics of commercialisation

Only two of the studies carried out could observe the same population of commercialising smallholders at two points in time, and even then, only for the limited period of a couple of years. In some cases, the commercialisation seen comes from changes in the last ten years or so. Hence we have little evidence on the dynamics of commercialisation. Important questions remain unanswered, such as the trajectories of those farmers who have been able to intensify — will they continue to innovate, invest and raise their production further, or have they stepped up but now reached a plateau? Will smallholders continue to diversify as they commercialise, or will some seize the opportunity, but take the risk, of specialisation in cash crops? How much are the communities differentiating, and what is the fate of those who have commercialised?

The literature does not help much, either. Studies that repeat previous enquiries in the same locality and so can observe change are comparatively and surprisingly rare.

Hence the results seen in these studies may reflect some temporary stage that commercialising farms pass through, rather than showing some stable outcome, or, more realistically, some linear trend that points to a future with wider and deeper commercialisation of small-scale farms.

Answering these important questions about dynamics will have to wait, perhaps to be addressed if we have the chance to return to these sites in a few years' time.

This gap in knowledge suggests that wise policy needs to focus on creating conditions that allow people to respond to opportunity and threat and give them wide options, rather than, for example, vigorously promoting a particular crop. Hence policy for rural areas might prioritise ensuring that roads and power allow people to set up other businesses, and that the schools and health systems mean that rural youth are capable of turning their hands to something other than what may be limited options on the home farm.

It also means making sure that the institutions that govern allocation and use of factors of production, such as land tenure, allow flexible responses. For the case of land, that would mean that if and when people leave the land to take up non-farm jobs and businesses, they get a capital asset from their old farm, rather than it simply being expropriated.

1. Introduction

The promise of smallholder commercialisation

In the early stages of agricultural development, some smallholders (see Box A for definition) become increasingly commercialised: that is, they engage more with the market, both increasing their sales and using more purchased inputs and hired labour. Land markets may become (more) active so that farmers with access to labour and capital rent or buy more land.[1] In the process commercialising small farmers are likely to intensify their production by applying more inputs per unit area, to raise yields per hectare and per day of labour worked, and to increase their net farm incomes. They may also specialise, but this is not inevitable, since the early stages of commercialisation could mean adding more farm activities, thereby diversifying the portfolio.

Ideally, as smallholders commercialise, the benefits will spread in the local rural economy; there will be more activity in supplying inputs and processing and marketing outputs. Small farmers with extra income are likely to spend a significant part of this in the local economy, on improved housing, locally manufactured items like furniture, and services such as meals, drinks and entertainment. Both sets of processes should create more jobs for those with little access to land or who prefer not to farm.

Thriving agriculture has wider benefits, as indicated as long ago as 1961 by Johnston and Mellor. It can earn foreign exchange from exported produce; supply cities with food, probably at falling cost; and provide industries such as textiles with raw materials. A growing rural economy can become a market for urban manufactures and services. It can also become a source of capital and labour for industrial development — especially if farming is improving labour productivity so that workers can be released from the land.

Given that agriculture in most low income countries has low marginal productivity so that most working on the land have low incomes, often poverty earnings, then smallholder commercialisation could provide growth that markedly reduces poverty.

Box A: Defining smallholders and commercialisation

No universally accepted definition of *a small-scale farm or smallholding* exists. 'Small' may refer to the area cultivated, the most common criterion used, but it may equally apply to invested and working capital, or to the number of workers. Even taking land as the criterion, defining the area considered 'small' is made difficult owing to the differing soil quality, rains, slope and access to irrigation that apply to any unit of land.

Granted these qualifications, FAO has adopted a 2ha threshold as a broad measure of a small farm. There were roughly 450 million farms in the world smaller than 2ha in the mid-2000s (Nagayets 2005), home to some 32 percent of the world's population. For the developing world alone, there were 430 million small farms, with 39 percent of the population.

Many of these farms offer a precarious livelihood if they are the only or main source of income. Hence it was estimated that half the undernourished in the world, three-quarters of Africa's malnourished children, and most of those in absolute poverty lived on small farms in the mid-2000s (IFPRI 2005).

Have these numbers changed substantially since the mid-2000s? Probably not much: while average farm sizes in OECD countries have long been rising, in most developing countries rapid population growth means that rural populations are still increasing despite out-migration to urban areas. Hence as the number of rural households increases, so too does the number of farms, most of them small — and in most developing countries, tending to become smaller.

Perhaps it might be better to see these farms not by size, but by one of their most important characteristics of small farms — the management of labour — and then refer to farms operated by families, where both management of the farm and most of the labour come from the household. Most small farms in the developing world are family farms. Family farms, however, can operate quite large areas when operations have been mechanised. Most farms in OECD countries remain household enterprises.

Commercialisation can be seen as increasing engagement with markets: most obviously product markets, but perhaps more important, with factor markets. A particular interest here is the extent to which the farm relies on hired labour, since a commercial operation may be one in which household labour provides (much) less labour than that hired in.

Commercialisation may also be seen as a stage of development at which financial criteria of profit, or better said, returns to capital and other factors of production, take precedence over competing goals such as meeting household needs for staple food, minimising risks, or respecting cultural norms about crop choice, technology and engagement with land markets. Markets and their price signals thus come to dominate farmer decisions on production.

As with smallholding, no single measure has been adopted for commercialisation. A simple index would be the share of total production that is sold, although such a measure can be misleading when smallholders with urgent needs for cash sell most of their crops shortly after harvest, even if that means that later in the year they have to buy back food to subsist.

The promise of commercialisation is rich. Such virtuous processes have indeed been seen in the developing world: see, for example, accounts of the green revolution in South Asia and China (Rozelle et al. 2005; Hossain et al. 2003; Hazell and Ramasamy 1991).

In *Africa*, records of small farm commercialisation exist for at least as long ago as the late nineteenth century. Export crop production in West Africa[2] from that time into the first half of the twentieth century came almost entirely from small farms: groundnuts in Senegal, the Gambia, Mali and other parts of the Sahel; cocoa in Côte d'Ivoire and Ghana; cotton in the Guinea savannah; and rubber and oil palm in southern Nigeria. In the second half of the twentieth century small-scale production of export crops flourished in areas of high potential, with good access to ports, and where inputs and technical assistance could be delivered to smallholders. Examples include tea and coffee in Kenya, cotton in the francophone countries of the West African Guinea savannah and in Zimbabwe (Poulton et al. 2004).

There have also been growth spurts from producing food for sale to domestic markets. In some cases these were stimulated and organised by state agencies: examples include hybrid maize in Tanzania and Zambia in the 1970s and 1980s and in Zimbabwe in the first half of the 1980s (Eicher 1995); and rice in the inland delta of the Niger (Diarra et al. 1999). Other cases respond largely to private initiatives including open-pollinated varieties of maize in the middle belt of Nigeria (Smith et al. 1993); horticultural exports from Kenya (Minot and Ngigi 2003); and peri-urban production of dairy, fruit and vegetables for the city of Kano (Mortimore 1993).

These and other examples suggest that commercial production by small farms in Africa has not proved that difficult. The problem is that these experiences have not been more widespread, or perhaps more pertinently, sustained. On the contrary, booms in commercial production have often been sensitive to prevailing prices, especially those linked to world market prices, as well as to state support and organisation. When one or another of these has faltered, growth spurts have been arrested or even gone into reverse.

Issues in smallholder commercialisation

A large literature exists on small farm commercialisation both internationally as well as for Africa; see Wiggins et al. (2011) for a review. The key questions addressed in this literature can be divided into three areas, as follows:

Change and processes

- How do small farms commercialise? To what degree, and how specialised do they become?
- What have been the drivers of commercialisation?
- Which farmers commercialise? What happens to other small farmers?
- How do commercialising small farms interact with larger-scale businesses in farming and the supply chains? What is the scope for complementary outcomes, through contracting and other forms of co-operation?

Outcomes

- What are the benefits of commercialisation? How much benefit do small farmers gain from commercialisation?
- What linkages may be created by commercialisation to create additional jobs and incomes in the rural economy for those not commercialising?
- Are there drawbacks to commercialisation, including the following possibilities:
  - Does producing for sale reduce food and nutrition security of commercialising smallholders?
  - Does commercialisation lead to concentration of land and assets, and widen inequality? Do the poor become even poorer?
  - Does it exacerbate gender inequalities? Are female farmers at a disadvantage in commercialising or as a result of commercialisation?
  - Does commercial farming leave small farmers exposed to higher and unacceptable risks?
  - Does more commercial production damage the environment?

Policy lessons and implications

- What policies and programmes have been effective in promoting commercialisation with desirable outcomes? And hence ...
- …What should government, in collaboration with private enterprise and organised civil society, do to promote commercialisation with desirable outcomes?

This is a long list of pertinent and important questions to which the existing literature has partial responses. The studies presented here aim to add to this knowledge.

2. The current studies

To explore some of these issues, the Futures Agricultures Consortium — a partnership between African and UK researchers — has since 2007 commissioned studies in five countries: Ethiopia, Ghana, Kenya, Malawi and Tanzania.

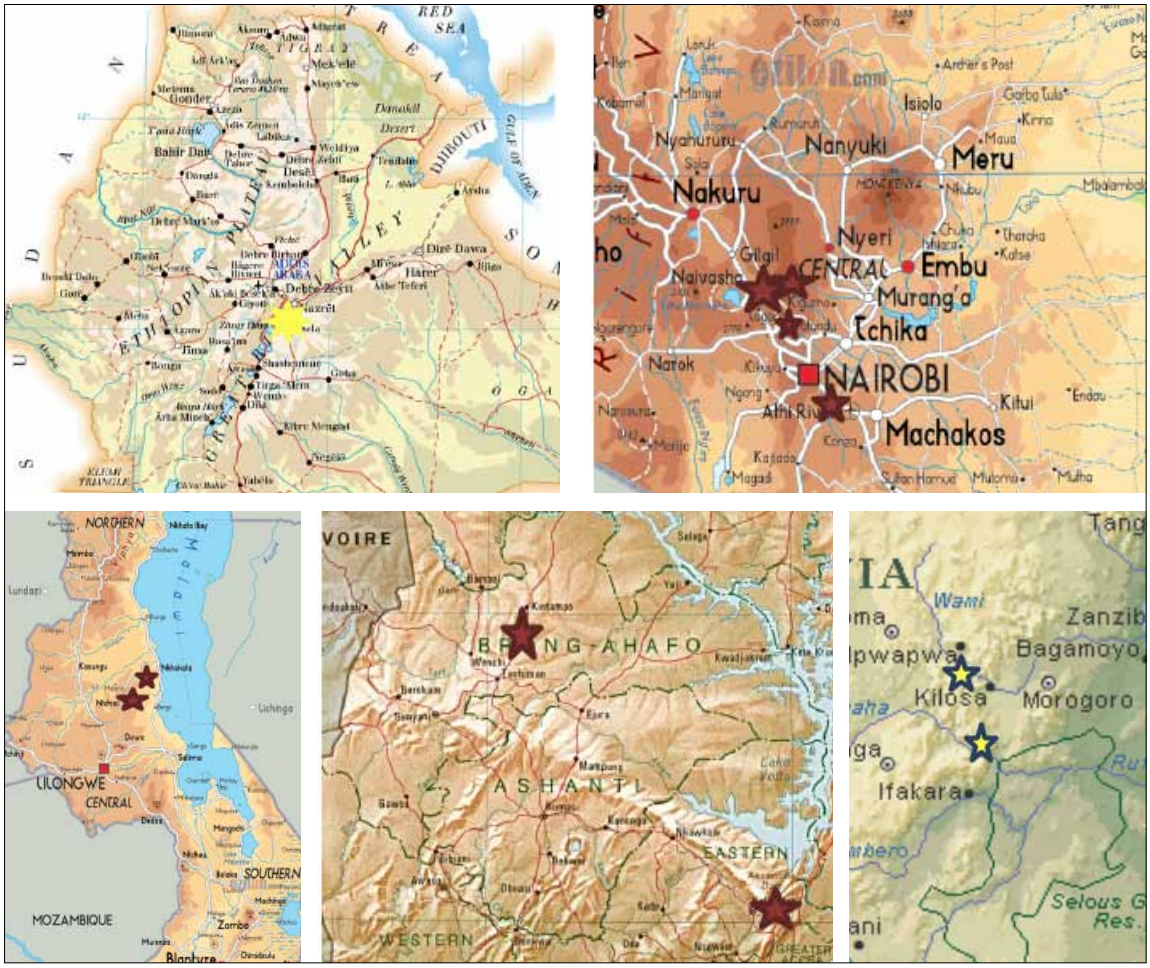
The overall aim has been to improve understanding of the ways in which small scale farming may become commercialised, looking in particular at the degree of participation in initiatives and how they vary by household, and the outcomes from commercialisation.

Studies began in 2007, although the main work dates from 2009 onwards. Research in each country has taken place in a few districts; areas where there have been recent interventions by external agencies — and in some cases from local initiatives — to promote commercial production. The original intention was to survey farm households at two times, to include those actively engaged with the intervention and those not included, to be able to see changes through time as well to draw distinctions between households participating and those not participating. Ultimately, only for Ethiopia and Malawi was it possible to survey more than once. In addition, smaller specific studies looked at particular aspects of commercialisation, including several studies of supply chains for horticultural produce. Table 2.1 lists the reports of studies carried out.

The rest of this section sets out the context of the areas surveyed, the research questions, the data collected and the methods used. Section 2 reports findings for both processes and outcomes of commercialisation, comparing across the cases to identify common experiences and contrasts and to assess the reasons for common and differentiated outcomes. It concludes by summarising key insights, then considering their implications.

Table 2.1: Reports of studies carried out

Country	Study	Author(s)	Date
Ethiopia	Creating new markets via smallholder irrigation: The case of irrigation-led small holder commercialization in Lume district, Ethiopia	Samuel Gebreselassie and E. Ludi	May 2010
Ethiopia	The role of market-driven approach in the promotion and expansion of vegetable value chains in Lume District of Ethiopia	Samuel Gebreselassie	June 2012
Ethiopia	Small commercial vegetable producers in Lume Wereda, Ethiopia: Assessment of status and dynamics over the past three years	Samuel Gebreselassie	October 2012
Ethiopia	Small-investor farmers in Lume district of Ethiopia: opportunities and challenges to transform from agriculture to agro enterprises	Samuel Gebreselassie	February 2013
Ghana	Determinants of commercialization of smallholder tomato and pineapple farmers in Ghana	Samuel Asuming-Brempong, John K. Anarfi, Samuel Arthur and Seth Asante	February 2012
Ghana	Value chain analysis of smallholder pineapple in the Akuapim South municipality of Ghana	Samuel Asuming-Brempong, Atta Boahen Oppong and Sampson Osei	March 2013
Kenya	Kenya Baseline Report	Gem Argwings-Kodhek, Joseph Opiyo and Humphrey Ogolla	June 2011
Kenya	Mapping the tomato value chain in Kenya		February 2013
Kenya	The cabbage value chain financing		June 2013
Malawi	From subsistence to smallholder commercial farming in Malawi: a case of NASFAM commercialisation initiatives	Ephraim W. Chirwa and Mirriam Matita	March 2010
Malawi	Smallholder commercial farming in Malawi: long but promising road to commercialisation	Ephraim W. Chirwa and Mirriam Matita	February 2013
Tanzania	Cell phones, transaction costs & agricultural supply chains: the case of onions in central Tanzania	Khamaldin Mutabazi, Steve Wiggins and Ntengua Mdoe	August 2010
Tanzania	Commercialization of African smallholder farming. the case of smallholder farmers in central Tanzania	Khamaldin Mutabazi, Steve Wiggins and Ntengua Mdoe	February 2012
Tanzania	Small farm commercialisation in Africa: the life courses of husbands, wives and youths in commercialising villages in central Tanzania	Khamadin Mutabazi, Ntengua Mdoe, Steve Wiggins and Christine Okali	November 2013



Map 2.1 Locations of study sites

Context of the cases

For each of the study sites, this section sets out their geography, rural livelihoods, and the intervention that stimulated commercialisation.

In *Ethiopia*, Lume Woreda (district) is located in the central part of the country in East Shoa Zone of Oromiya Region. It is well connected to the capital of Addis Ababa by two hours' drive on a metalled road, as well as to the regional markets of Debre Zeit (Bishoftu) and Nazret, and to the highway that runs to the port of Djibouti. Altitudes in Lume vary from 1500m to 2300m; average rainfall is more than 1,000mm a year.

The Woreda is densely settled with an estimated almost 200 persons per square kilometre in 2005. Some 68 percent of the population live rurally. The predominant occupation of the population is sedentary mixed farming, carried out on smallholdings of 0.5 to 3ha, mostly private holdings. These produce annual crops of grains such as teff, wheat, maize and barley, as well as fruit and vegetables. Cattle, sheep and goats are also kept. Inhabitants of the district also engage in various non-farm activities including waged labour, trade, pottery, sale of local liquors and quarrying of stones, gravel and river sand. Fishery is also practiced on Lake Tute.

Ethiopian agricultural development policy (PRSP/PASDEP 2005/06–2009/10) sees commercialisation of agriculture and integration of small, subsistence oriented farmers into markets as fundamentally important preconditions to ensure sustainable and rapid development (Government of Ethiopia, 2006). Hence the district agricultural development office introduced small-scale irrigation to help farmers grow perishable vegetable crops such as onion, tomatoes and green pepper primarily for market. Starting in 2005 in two villages (peasant associations), two more were added in 2006, another three villages in 2007, and four more in 2008. Not all farmers were covered by the scheme. Owing to limited water supplies, those participating were selected by lots.

The *Ghana* cases come from two zones. In Brong Ahafo Region, small farmers growing tomatoes for sale in Techiman Municipality and Kintampo South District were studied. Brong-Ahafo forms part of the forest-savannah transition zone, land of reasonably good agricultural potential with annual rainfall usually higher than 1,000mm. Most people cultivate holdings of no more than 5ha, producing maize, rice, yams and cassava for food. Population density is modest, typically less than 50 persons per square kilometre. Farming can thus expand if there is labour and a market for surpluses.

Some villages have made use of local streams to irrigate, by pump or bucket, small plots of tomatoes that have a ready market in the towns and cities of Ghana, since tomato is a favourite ingredient in local stews.

In Eastern Region, villages were chosen in Akuapem South District. This lies on the fringes of the forest, where the coastal savannah ends. The ridges and valleys of the District are densely settled at around 190 persons per square kilometre. With an average rainfall of 1,250mm a year in two rainy seasons and mainly fertile soils, this has long been an area of productive mixed farming. Pineapple has become the leading commercial crop in the District, grown by more than a quarter of farmers.

In *Kenya* the selected sites were Lari in Kiambu District, Kinangop in Nyahururu District, Mai Mahui in Naivasha District and Athi River in Machakos District. All lie within 50km of Nairobi, usually with good road access to this major market. The sites divide into those in areas of high agricultural potential, Lari and Kinangop, located at 2,000m or higher on fertile volcanic soils with reliable rains twice a year allowing a wide range of crops and livestock to be cultivated; and those that lie in semi-arid zones, Mai Mahui and Athi River, lower in altitude and with less fertile soil.

The high potential zones are very densely settled, with 400 persons or more per square kilometre; hence average farm sizes are small, at around 1ha on average. Food crops are grown, plus some cash crops – coffee and tea, which have long been cultivated, complemented increasingly by vegetables. For many farmers, however, it is their cows that matter most. They keep a few, rarely more than three, good quality cross or pure bred dairy cows, fed in stalls on cut fodder with supplements. These produce a steady income from milk sales.

In the semi-arid zones some livestock are kept and food crops are planted, but in the knowledge that they may fail for lack of rain. Where there is irrigation, vegetables may be produced. But the key to livelihoods in these areas are jobs off the farm, in some cases by commuting daily into Nairobi.

These peri-urban cases are in some ways harbingers for the future of rural Africa, as rural areas become more densely settled and closer to major urban centres, both physically as small towns grow into cities, and in journey time as better roads bring the cities closer to the countryside. The peri-urban surroundings of Nairobi potentially offer a glimpse of what may take place in many other parts of Africa in the future.

For *Malawi*, sites were chosen in Nkhotakota and Ntchisi Districts in the Central region. The former District lies at around 475m elevation on the shores of Lake Malawi. It has modest population density of some 55 persons per square kilometre. With an average rainfall of 1,800–2,000mm, it has reasonable agricultural potential. Neighbouring Ntchisi District is a little higher, has heavier settlement at around 100 persons per square kilometre, and a little less rain at 1,000–1,200mm a year. In both Districts the majority of the population live in villages with farming small holdings as the main occupation.

In these Districts, the National Smallholder Farmers' Association of Malawi (NASFAM) has expanded its operations. NASFAM was created in 1994 out of the Smallholder Agriculture Development Project funded by the United States Agency for International Development (USAID) to organize smallholder tobacco production following liberalisation of tobacco growing. Over the years, the mandate extended to diversification into the production of other cash and food crops including groundnuts, rice, chilli, cotton, soya and other legumes. NASFAM promotes farming as a business among smallholder farmers, offering services including extension, training and capacity building in farming and management of associations, while facilitating access to farming inputs, markets and extension.

Finally in *Tanzania* four villages in Kilosa and Kilolo Districts were chosen to study the production of onions and their marketing. In this case, the villages differ by good or bad road access, and by having mobile phone coverage. The villages are located in valleys at under 1,000m high, in hot semi-arid climates with no more than 700mm rain a year. It is possible to raise rainfed crops, but more important are the irrigation schemes that draw water by gravity from local streams. These allow small plots to be irrigated, mainly for onions that are sold to small traders for marketing to Dar es Salaam and other parts of the country. The schemes were constructed originally by local initiative, and later upgraded by the government building concrete intakes with donor funds.

How typical of sub-Saharan Africa are the sites selected? All were chosen because some of the farming households had taken up commercial production, which implies that they all have good to moderate market access — although two of the villages in central Tanzania may be exceptions owing to the long journeys over rough roads to reach market centres. Sites in Ethiopia, Akuapem in Ghana and Kenya are peri-urban with ready access — under two hours' drive on metalled roads — to a large city. Most sites have moderate to good agricultural potential, supplemented in Ethiopia, Brong in Ghana and Tanzania by irrigation.

These sites are favoured either by access to market, their above average agricultural potential, or both of these. There are no areas that might be considered remote or low potential. Hence they do not represent much of the land area of Africa. They do, however, represent the settled areas of Africa. To explain, the population of sub-Saharan Africa is concentrated: around 75 percent of the rural population occupies just 20 percent of the land, with an average settlement density of 120 persons per square kilometre. Some 58 percent live on just 10 percent of the land (Jayne et al. 2014, forthcoming). The sites surveyed belong to these areas of moderate to dense settlement. They thus do represent the conditions that the bulk of African farmers encounter — even if they

do not reflect the large tracts of land with poor market access and medium to low natural potential, but which have only 25 percent of the population. Moreover, as rural population grows and as the combination of growing urbanisation and better roads means better access to markets, they represent the conditions that an increasing share of Africa's farmers will experience.

Research questions and methods

The original set of questions set for the research concerned:

1. How much does the need to achieve food security for the household influence participation in initiatives to commercialise smallholder farming?

2. What is the relation between initial access to assets and participation?

3. How much do commercialisation initiatives resolve potential failures in factor and product markets?

4. Does commercialisation affect the resilience of households to changing conditions and shocks?

5. What have been the early outcomes of such initiatives?

Annex A lists the full set of questions posed at the outset. These were modified as research teams gained information and adjusted the focus of their questions.

It was initially planned that research would select cases where programmes to encourage commercial production were being run in rural farming communities, to record the situation in one year with comparisons possible between households or communities engaged in the programme and those not engaged. It was planned to return two years later to repeat the study and so capture changes through time. In actuality, the idea of a common approach foundered on the need to find research sites, so not all cases show the effect of an identifiable programme. Moreover, the first round of survey and analysis took longer than planned and so it has only been possible to resurvey in two cases: Ethiopia and Malawi. Although this has prevented more analysis of changes through time, differences in the degree of commercialisation of households at other sites gives some indications of the effects of commercialisation.

In addition, to gain insight into the efficiency and competitiveness of supply chains, studies of the chains for vegetables from Lume, Ethiopia; for tomatoes from Narok and cabbages from Nyandarua in Kenya; and for onions from central Tanzania were carried out.

Data collection

For each site, qualitative data were obtained from interviews with key informants within communities and amongst agencies promoting programmes, and from focus group discussions with farmers. This provided information on the context, processes and local perceptions of change.

The main research effort focused on surveys of households, engaged or not with programmes, or with varying degrees of commercialisation, sampled randomly from their populations although sometimes stratified to reflect participation in programmes. Table 2.2 summarises the household surveys at the different sites.

Household questionnaires typically covered household characteristics, assets, areas farmed, labour and other inputs used, outputs, amounts sold and food security as seen in food crop production and sufficiency of own harvests.

Analysis consisted in large part of computing descriptive statistics for key variables, where applicable comparing farms that participated in programmes to promote commercialisation with others; sometimes further divided by location, access to land, or by degree of commercialisation. To examine the degree of commercialisation and its determinants, an index of commercialisation was constructed for each household, taken as the value of produce sold divided by the total value of produce.[3] Regression analyses were then used to examine the factors associated with commercialisation, as measured by the index.

Further details for each study can be found in the reports for these studies.

3. Findings

3.1 Processes of commercialisation

Changes on farm

In virtually all cases, commercialisation takes place by gradual and marginal change, with few dramatic changes to farming systems. Typically farmers plant small areas to crops for sale, or acquire one or two dairy cattle in the Kenyan case. Average areas sown to cash crops did not exceed 1ha, and most often were less than 0.5ha. As will be seen in section 3.1, these areas represented in most cases less than half the area that households farmed, most of the land being sown to food crops.

Table 2.2: Household surveys

Country, site	Participants	Non-participants	Total	Survey date
Ethiopia, Lume District, four peasant associations (kebeles)				Sep/Nov 2009 to Jan 2010 (a)
Land sizes:				
• < 2ha	20	23	43	
• 2 to 4ha	30	29	59	
• > 4ha	30	28	58	
Total	80	80	160	
Re-survey	120	0	120	April/May 2012
Ghana				Nov/Dec 2010
Brong-Ahafo Region				
• Kintampo South, Pamdu village			67	
• Techiman, Tuobodom village			93	
Sub-total, tomato villages	116	44	160	
Eastern Region				
• Akuapem South, Fotobi and Pokrom villages (pineapple)	52	88	140	
Kenya				Nov/Dec 2009
Lari			50	
Kinangop			50	
Mai Mahiu			50	
Athi River			50	
Total			200	
Malawi				Oct/Nov 2009
Nkhotakota and Ntchisi Districts, ten NASFAM Action Groups	202	98	300	(b)
Re-survey			299	Oct/Nov 2012
Tanzania				Aug/Dec 2009 & Oct/Nov 2010 (c)
Ruaha-Mbuyuni village	33	37	70	
Malolo village	32	43	75	
Lumuma village	35	36	71	
Msowero village	35	36	71	
Total	135	152	287	

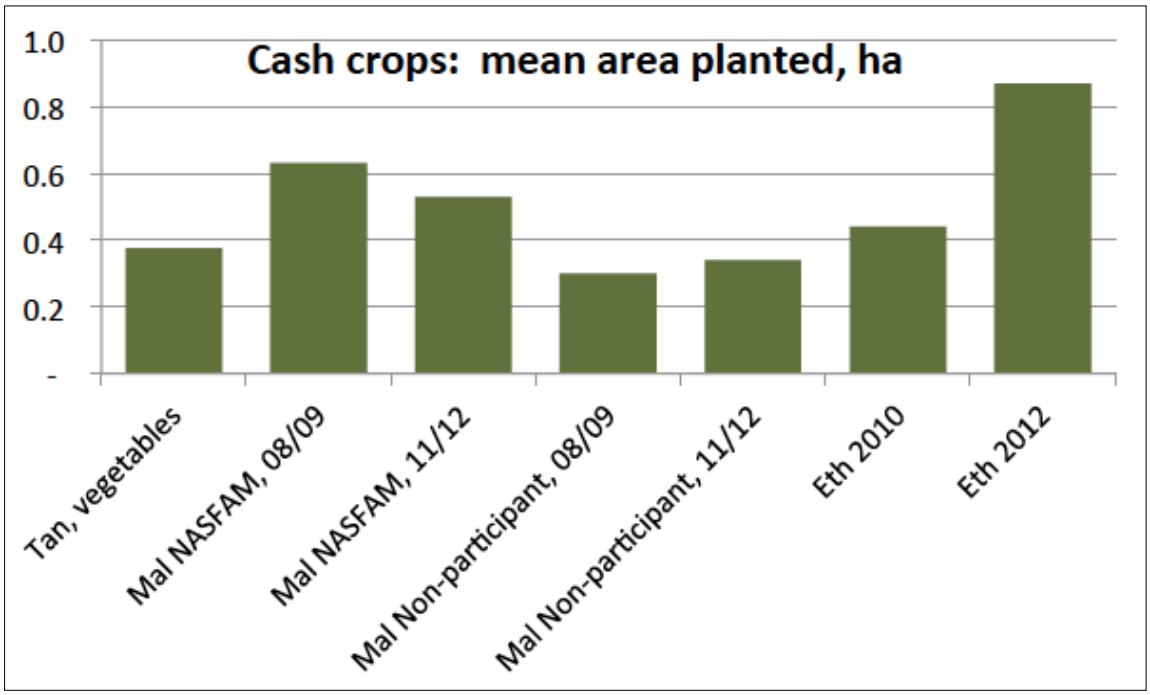
Notes:

a. One kebele began the programme in 2006, one more in 2007, and another two in 2008.

b. Non-participants selected by finding a similar neighbour for every two participating households.

c. Onion farmers were covered in a 2009 survey; 2010 survey covered those without onions.

Figure 3.1 Cash crops, mean area planted, ha



Source: Surveys. Malawi statistics refers to members and non-members of smallholder association NASFAM .

Since crops grown for sale were added to the farming system rather than replacing some other enterprise, commercialisation saw diversification of farming rather than specialisation. Only in two cases, the onion-growing villages of central Tanzania and Lume, Ethiopia, were there signs that some growers — but far from all — were using most of their land to grow the commercial crop and in effect giving up on trying to produce their own staples. We will return to these observations in the conclusions when discussing dynamics of commercialisation, but for the time being these are observations of change at one stage in processes that may later take a different course.

Commercialising farmers have usually intensified their production, using external inputs such as improved seed and manufactured fertiliser. They also increase labour per hectare, responding to the higher physical demands of vegetables and fruits in careful weeding, irrigating, harvesting and in some cases transplanting. Most fruit and vegetables require several times more labour for each operation compared to grains and pulses.

The largest change seen in production is where irrigation has been introduced. Irrigation offers the possibility of growing crops in dry seasons as well as the advantages of close control of soil moisture. Even here, however, changes are rarely dramatic since in Ethiopia, Ghana (Brong Ahafo), some Kenyan cases and Tanzania, the methods used to irrigate — mainly gravity feed to basins and furrows, or hand watering by bucket and watering can — are either well-known or else undemanding in technical skill, even if they are hard work. The most striking changes are perhaps by those Ethiopian farmers in Lume District who have dug wells to the groundwater table and pump their irrigation water. Although this demands capital to buy a pump, pipes and diesel engine, and requires skills of operating the machinery, thereafter the technology of furrow application is relatively straightforward.

Intensification and rural factor markets for land, labour and capital

Intensification had two associated facets: the application of improved technology and more use of factors of production. Technical improvements seen were largely those of improved seed or planting material, application of manufactured fertiliser and crop protection chemicals, and irrigation. Factor markets for land and labour were active in some of the cases studied.

Despite **land** not being titled or formally registered, parcels were being acquired by farmers. In Tanzania 39 percent of households were renting land in 2011, while 23 percent had land that was borrowed or a gift from others. Demand for irrigated land was mounting: informants reported that land rents in Lumuma village had risen from US$48 a hectare in 2004 to US$192 in 2009. In Lume, Ethiopia, the share of households renting land rose from 13 percent in 2010 to 45 percent in 2012, with an average rented area that increased from 0.41 to 1.45ha. Land rents were also rising: from US$203 a hectare in 2010 to US$343 in 2012. Less information on land transfers were recorded in the other cases, but in Malawi in 2008/09 just under 13 percent of households were renting out land. In the pineapple growing areas of Akuapem in Ghana, fully 68 percent of interviewed households reported leasing or renting land.

In Narok District, Kenya where tomatoes had recently started to be grown under irrigation, those with land rights were reported to sometimes sharecrop their land. The owner recruited a labourer for every one to two acres and paid expenses of land preparation, seeds and the

upkeep of the labourer. Upon sale of the tomato crop, the owner deducted their expenses, then split the remaining profit half and half with the labourer. As will be seen in section 3.2, a good crop of tomatoes could yield a large return.

Labour markets were also active since most of the crops grown for sale had heavy labour demands in planting and transplanting, irrigating, weeding and harvesting. In Ethiopia 92 percent of households reported hiring labour in 2010, rising to 98 percent in 2012; the average number of days hired by households had increased from 82 days in 2010 to 138 in 2012. Much of this labour was reported to come from those travelling from nearby districts that had less demand for labour since natural conditions for farming were not as favourable as in Lume District.

In central Tanzania, around 80 percent of households said they hired in labour, with just over one third of households reporting that they both hired in labour as well as worked for others. Most of the labour came from within the village, but in two of the villages migrants were also recruited from semi-arid areas to the north of the uplands.

NASFAM members in Malawi hired labour more often and in greater numbers than their neighbours who did not belong to the Association. In 2008/09, 46 percent of NASFAM members hired in labour, with an average of 55 days; in 2011/12 the fraction had fallen slightly to 45 percent, but the average number of days hired had risen to 68 days. For non-members, 31 and 34 percent hired in labour, averaging 44 and 28 days, for 2008/09 and 2011/12 respectively.

If land and labour markets were active, the market for **finance** was much less so. Intensification meant buying in fertiliser, sometimes crop chemicals and seed. Hence more working capital has been used. Use of credit to obtain inputs was unusual, however. Only in Lume, where farmer associations were the source, did the majority of farmers obtain credit. In 2010, 79 percent obtained such credit, with an average of US$57 per farm; by 2012 this had increased to 85 percent obtaining an average credit of US$133. In the other cases only a very few farmers accessed formal credit.

Moreover, there were few if any reports of input dealers offering inputs against harvests, or of traders offering growers advances — the contracts for pineapples in Ghana being an exception. Hence most of the households surveyed were investing in inputs using their own cash savings. That should not be taken, of course, to indicate that capital is not a limitation: when asked what they would do with a windfall gain, farmers in Kilosa and Kilolo, Tanzania said they would invest in increased onion production, suggesting that they were limited by capital.

Marketing chains

As with changes to farming, commercialisation mainly involved gradual changes in marketing. Most of the produce for market in these cases moved through chains already in existence, or which were modified from existing ways of trading. In most cases, the destination for produce was domestic: often to cities that lay within 150km along a tarmac road,[4] so that traders could buy produce early in the morning at the farm or village and still place it on wholesale markets before noon.

Most chains observed had a similar structure: the bulk of produce was sold by farmers either in the field or at some point in the village, either to brokers who aggregated produce to sell to traders, or directly to traders themselves (see Table 3.1). Traders would then load produce onto their own vehicles, or contract a lorry, and deliver the produce to wholesale markets either in capital cities or major regional centres. At the wholesale markets there were often another set of brokers who arranged the deal with the purchasing wholesaler, although in some cases traders and transporters sold directly to wholesalers. These then sold off the produce to retailers either at the market, or to further brokers who delivered to retailers. Hence the chains had several levels of intermediation including brokers in both assembly and distribution whose main function seemed to be that of sorting produce into saleable lots by quantity, and in some cases by quality.

Conduct in these supply chains was dominated by spot deals where produce would change hands for cash at a price agreed there and then. There were, however, some interesting variants. For Kenyan cabbages, produce was acquired at the farm for a small deposit; only when the cabbages had finally been sold by the retailer in Nairobi would cash be passed back down the chain to reach the farmer a day or two later. For tomatoes in the same country, deferred payment was accepted between wholesalers and retailers. In both cases, the trust necessary to allow these arrangements to work was underpinned by associations of wholesalers with rules of conduct, who were able to monitor behaviour of brokers and retailers. They could, in addition, expect the police to help them resolve any disputes.

In Tanzania, although deals were spot market, some growers reported longstanding relations with particular traders who visited at harvest time, in one case going back decades. A group of onion traders united by their common island of origin — Pemba — had even stationed one of their group to live in one of the villages to offer credit to trusted growers, provide information on when to come collect harvests and in general to establish and maintain good relations with the farmers.

Table 3.1: Structure and conduct of supply chains studied

Case, produce	Structure	Conduct
Tanzania, onions	Onions sold in villages either to brokers/aggregators who then sell locally to traders, or else directly to traders; then shipped to wholesalers in Dar es Salaam or Mbeya.	Almost all exchanges spot market deals, with cash exchanged for goods in the village. Some longstanding relations of traders to growers.
Ethiopia, onions and tomatoes	Vegetables sold in field or village either to wholesalers from Addis (50%), or to brokers and assemblers who then sell to wholesalers, or ship to regional and district centres.	Deals are spot market, cash paid for produce.
Kenya, tomatoes	Tomatoes sold at field or village to collectors who bulk up shipments then deliver to wholesale markets in Nairobi and other major cities in Kenya such as Kisumu. Brokers handle shipments at central markets, then sell either to wholesalers or to distributors who deliver to retailers.	Spot markets in field, but with deferred payments at wholesale level. In wholesale markets brokers take produce and arrange its distribution, but only pay traders when they have received payment from retailers at end of trading day. Associations in wholesale markets set rules, monitor conduct to maintain trust that underlies the system.
Kenya, cabbages	Produce sold in field to brokers (80%). Brokers are hired by the wholesalers/traders on commission to locate produce, negotiate prices with farmers and organize transport from the farm to the wholesale market in Nairobi.	Spot market deals, but with deferred payments. Brokers negotiate a price and pay a deposit before the crop is harvested. Wholesalers advance produce to retailers. Only when retailers have sold at end of da are prices paid and funds go back down the chain to the farmers. System requires trust; hence the wholesale market is a closed shop with formal associations to regulate conduct.
Ghana, pineapples	A minority of growers contracted to exporters and processors. Others sell to brokers and traders.	For contracts, verbal agreements to buy produce are most common. Some contracts involve provision of technical assistance and inputs on credit. Deals with brokers and traders are spot market.

Source: Reports, see section 2.3

In only one case, that of pineapples in Ghana, were contracts seen; even there this applied to a minority of farmers. Furthermore, most contracts were verbal, not written — although there was no evidence that contracts were any less reliable for not being formally noted.

Export crops were rare in the villages studied. The exceptions were pineapples in Ghana and tobacco in Malawi.[5]

Marketing, with few exceptions, did not make exceptional new demands on growers. The web of brokers and traders who were buying from farmers did not expect large, standard lots, of uniform quality, available to schedule. Indeed, brokers were often active to overcome the disadvantages of small-scale, unstandardised production delivered as and when produce was ready. They helped amalgamate supplies in lots that traders could afford to come and collect. Spot deals meant that farmers were paid promptly with no further risks in marketing.

Traders understood the qualities and standards expected in the domestic markets to which they delivered, and conveyed that information to their farmer suppliers. The domestic markets targeted were not necessarily those of high income consumers; most of the produce from the farmers studied was for popular consumption, being milk, onions, tomatoes, cabbage, groundnuts, etc. Most produce was destined for customers shopping with an eye on price, prepared to accept imperfect but edible[6] produce so long as it was relatively cheap and affordable.

How well these marketing chains performed will be addressed later in section 3.2 where outcomes of commercialisation are considered.

Drivers of commercialisation

The main drivers of commercialisation seen are market demand and support from outside agencies. Taking the latter first, production and marketing has been specifically promoted and supported in four cases (promoters in brackets): Lume, Ethiopia (government); Akuapem, Ghana (processors and exporters); dairying in peri-urban Nairobi (government, co-operatives); and Nkhotakota and Ntchisi, Malawi. Support has come in the form of technical assistance on production and marketing and assistance in accessing inputs.

Such support has, however, been strategic and limited rather than comprehensive. It has not been necessary for outsiders to provide the all-round packages of inputs on credit, technical assistance and marketing that were commonly provided by the parastatals in the 1970s and 1980s to their smallholder clients. Limited assistance has meant that many of the smallholders observed have not achieved the yields technically possible if credit was not restricted and market risks did not apply. The more important lesson, however, may be that it is not necessary for external agencies to do very much to stimulate and support commercial production — provided, of course, that there is a remunerative market for surpluses within reach.

The other cases where there has been little or no direct support for commercialisation from outsiders reinforces this point. For cabbages and tomatoes in Kenya, and for onions in central Tanzania, much of what has happened has come from local initiative in production coupled to private traders linking the growers to markets. The preconditions for this have been demand in markets and sufficiently well maintained roads to allow trucks to reach the fields.

Of these local initiatives, the onion fields of Kilosa and Kilolo stand out, since this crop required furrow irrigation. Households thus had to combine to construct off-takes from streams, dig canals, and then allocate the water amongst resident farmers: a challenge both technical as well as social. All of this was achieved by the farmers themselves, even if subsequently there has been public support to improve the irrigation works.[7]

What about links from the small farmers surveyed to larger-scale enterprises? In these cases, the overwhelming image was one of dealings amongst small enterprises: crops and livestock produced on smallholdings, usually bought by brokers and traders who were equally small-scale.[8] Fertiliser, chemicals and seed for the most part had come from small shops. Exceptions to this applied to those dairy farmers in the highlands north of Nairobi who delivered to co-operatives, some of the pineapple growers in Akuapem who were contracted to processors and exporters, and perhaps some of the farmers in central Malawi who marketed crops with the assistance of NASFAM. In general, however, larger, more formal enterprises were conspicuous by their absence. This is perhaps not surprising: after all, most produce was for domestic markets and concerned crops such as vegetables that require no processing.

Degrees of commercialisation and participation

All studies addressed the question of which farmers commercialise and to what degree. The frequent reply is that it has been farmers with more land, assets, access to credit or with savings; sometimes with more education; and sometimes younger farmers — 'sometimes' since age can correlate with land and assets, thereby making older heads of household more likely to commercialise.

All this is to be expected: having land, capital, skills, etc. will inevitably offer greater opportunities for the more fortunate amongst the smallholders. But do the studies show that some farmers are excluded from commercialising? In general, no; with the notable exception perhaps of the farmers in Lume District who were given access to irrigation — more or less essential to produce marketable vegetables — on the basis of lots.[9] Even where irrigation has been necessary to produce commercial crops, land has been actively traded. Land rentals are frequent in Lume, Kilosa and Kilolo Districts, and they take place in central Malawi as well. Land rentals

in these cases take place despite there being no formal land ownership deeds or official contracts; local norms apparently suffice to underpin a lively exchange of land.

The studies focus on small-scale production by design, so it is no surprise to see few thresholds of commercial production that have to be achieved to participate — except for perhaps the dairying in peri-urban Nairobi where one has to have at least one cow to milk. Otherwise, production for sale takes place generally on a small scale; indeed, for some participants it is on a micro-scale, with plots of less than 0.25ha of high value crops being common.

There is, however, one repeated observation of disadvantage and that concerns female farmers. Compared to their male counterparts, they typically have less access to land and often water as well, less capital, and they lack labour time owing to domestic duties. They may also, on account of having little cash, be more averse to risks in markets, and sometimes be at a disadvantage when selling produce to male traders. For all these reasons they are often seen to be less commercialised and to have lower sales than corresponding male farmers. Regression models often record a significant negative estimate for output and marketing against the female farmer variable, when other factors have been taken into account.

The degree to which farmers commercialise covers a wide range, but it is usually truncated towards the upper end of the distribution: that is, few farmers specialise and depend heavily on their commercial crops. This point will be made in more detail when food security is discussed in section 3.2, but it is common for half or less of the land a household tills to be given over to commercial crops, the bulk of the land being reserved to grow staples for the household's own consumption. For example, most of the small dairy farmers of Lari and Kinangop in the Kenyan highlands still had most of their land in food crops, despite low travel times to Nairobi of two hours or less on good roads. If ever there was a situation where the returns to the cash enterprise, dairying, should have outweighed any possible gain from maize and beans, it would be on these farms.

There was however one surprise among the onion growers of Kilosa and Kilolo. There were farmers in these communities who used the bulk of their land to grow onions and had very little land under food crops. In Lumuma village, for example, of the farmers surveyed with irrigated plots, the median fraction planted to onions was 80 percent. Given that the irrigated plots were typically 0.4ha, the median farmer thus had hardly any land for food crops. This was all the more surprising since Lumuma was one of the villages with poor road access. This, however, applied only to those farmers who had irrigated plots but little or no rainfed land; many farmers in the same community had dryland fields as well.

Some farmers in Lume, Ethiopia seem to be increasingly specialising in vegetable production: between 2010 and 2012, among those households who had expanded the area under vegetables, the share of their land to vegetables had risen from 20 percent to 40 percent. While that is quite a large change in a few years, it still means that most land is under food crops even of these specialising households.

It would be wrong, however, to convey the impression that commercialisation saw an established trend, where farmers once on the ladder steadily either expanded the area to commercial crops or intensified their production. There were setbacks. Pineapple growers in southern Ghana saw demand for exports of their Smooth Cayenne variety to the European market collapse in 2005 as MD2 fruit from Costa Rica came to be preferred. Pineapple production has subsequently recovered as growers have switched to MD2 for export markets, but in the process many smallholders have left the sector and more of the production comes from estates than before (Whitfield 2010, Fold 2008).

The Malawi surveys of 2008/09 and 2011/12 saw a dramatic reduction in the number of farmers growing tobacco, a longstanding cash crop. Of the NASFAM members, only 12 percent still grew the crop in 2011/12 compared to 48 percent in 2008/09; while for households not part of the Association, tobacco growing fell from 28 percent of farms to just three percent. A significant fall in tobacco prices had caused this heavy exit from tobacco. To some extent, farmers switched to groundnuts and soybeans. Not surprisingly, focus groups in 2011/12 spoke much about risks in markets.

3.2 Outcomes of commercialisation

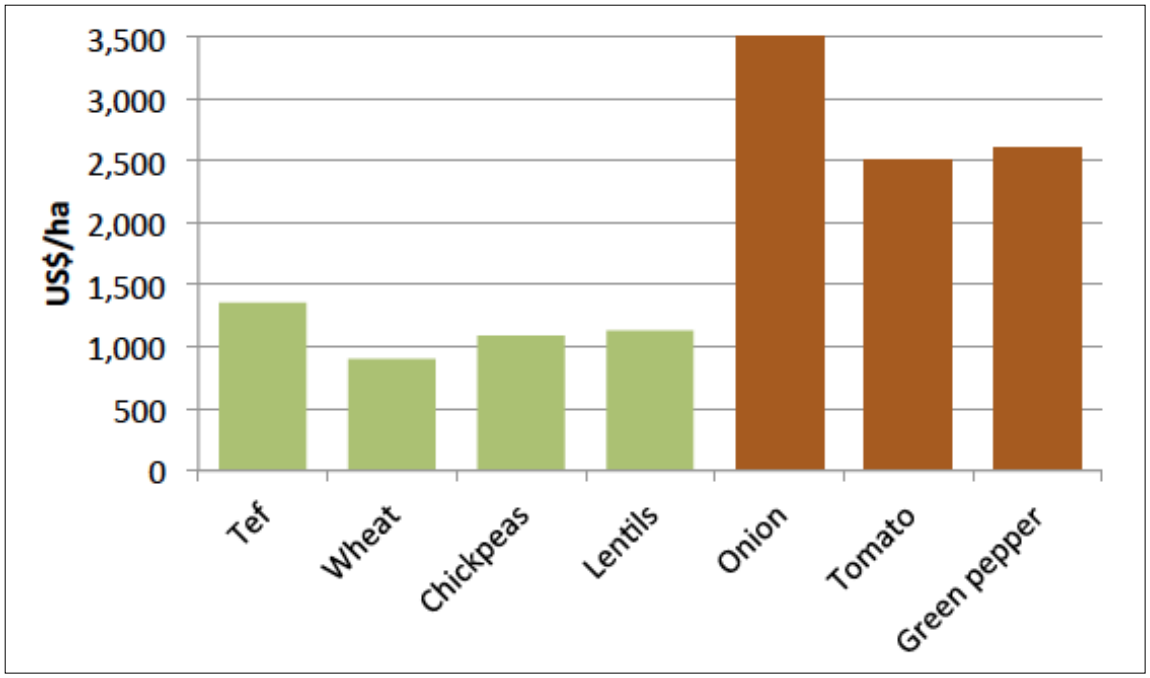
Benefits from commercial production

Returns to crops

Commercial crops generally had higher gross margins than food staples, even when additional costs of more intensive production were taken into account. In Lume District, for example, scheme participants typically made over US$2,000 a hectare from the commercial vegetables, compared to barely half that from food crops (Figure 3.2).

In Kenya similarly impressive gross margins were potentially to be made from tomatoes and cabbages (Figure 3.3). Although the earnings from tomatoes can be stratospheric at more than US$13,000 a hectare when irrigating virgin land, risks are considerable both in avoiding pests and diseases that can ravage a crop, and in finding buyers offering a good price. As mentioned, share-cropping was reported for tomatoes on the new lands of Narok, whereby contracted labourers working one or two acres would be paid half the net returns after discounting the cost of their upkeep during the season. For an acre of virgin land this could come to US$2,700, or on older fields US$1,800. If the labourer had spent around 140 days on the crop[10], their return would be equivalent to US$13-19 a day. The labourer would, however, share some significant risks with the owner.

Figure 3.2 Gross margins, scheme participants, Lume District, US$/ha



Source: Gebreselassie 2010, from Table 9

Cabbages in Kenya may have a lower return than tomatoes, although probably with fewer risks, but the margins are still considerable. Even in the high season when supply is abundant and prices correspondingly low, the return can be more than US$1,200 per hectare.

Returns to commercialising small farms

Given the high gross margins that could be made from some commercial crops, it was not surprising that some commercialising farms had high net incomes. In Lume, Ethiopia, for example, net earnings per farm were estimated at US$2,260 in 2010 and a more than double that, US$5,940, in 2012. These returns were particularly good, as in central Tanzania the overall return to land for both irrigated onions and food crops were estimated at a median of US$509 a hectare, giving just over US$1,000 return to households with 2ha of land.

More commercialised small farms had higher farm incomes than less commercialised holdings. Figure 3.4 compares the crop incomes of the surveyed households by median values for terciles of households sorted by the index of commercialisation (value of sales/total value production; see section 2). The results are clear, consistent and striking: in all cases crop incomes rise with commercialisation.

Figure 3.3 Gross margins, tomato and cabbage growers in Kenya, US$/ha

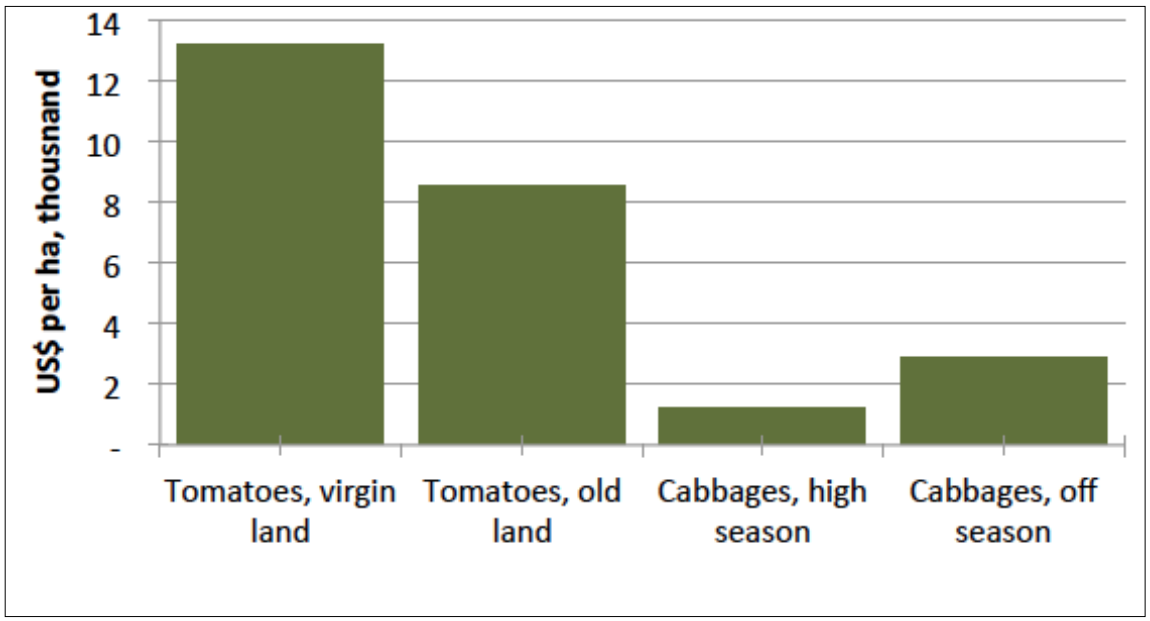
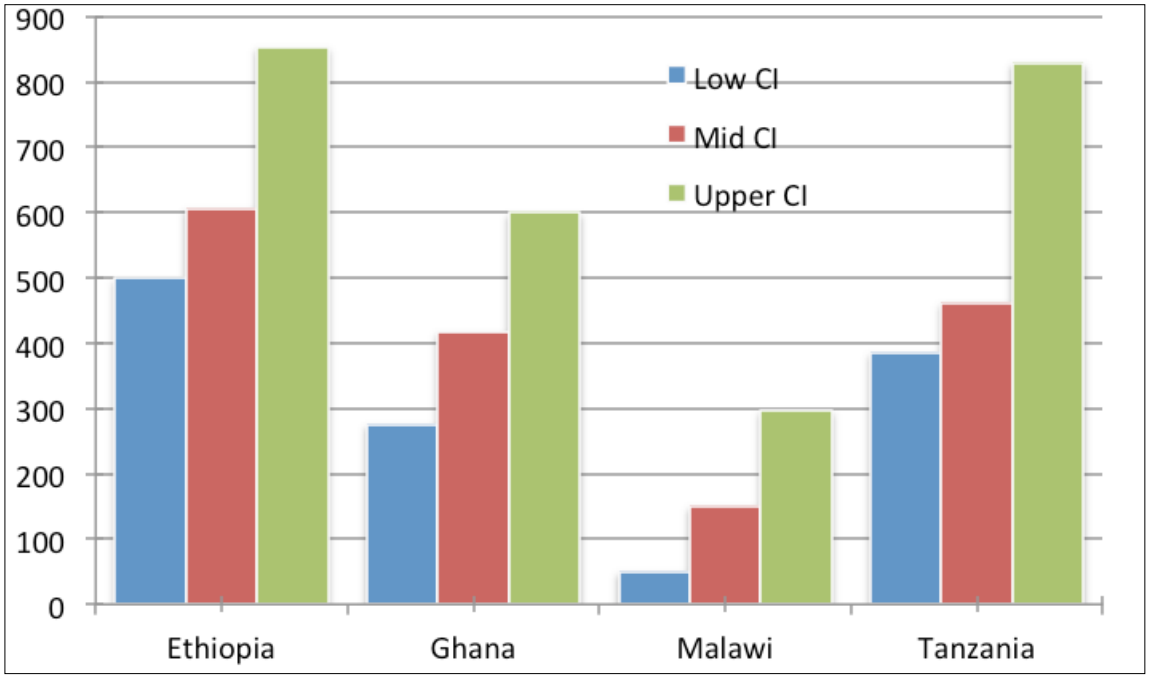


Figure 3.4 Crop incomes, US$, by degree of commercialisation (CI), terciles, median values



Note: Tanzania statistics are household incomes

In those cases where it is possible to divide the sample by those participating in schemes and those not, the comparisons are even stronger. For example, in central Malawi households belonging to NASFAM had a median crop income of US$236, compared to US$70 for those who were not members.

Moreover, as the degree of commercialisation rises so too does crop income, as the scatter plot in Figure 3.5 shows for the three countries for which these statistics are available.

Range of performance

Pronounced differences were seen in performance across the farm households. Yields per hectare of crops in central Tanzania, for example, differed between those in the first and third quartile by factors of two or more (Figure 3.6). A similar range of yields was seen for Lume, Ethiopia (Figure 3.7). This also shows that across the distribution yields rose significantly between 2010 and 2012.

Figure 3.5 Crop income, median in US$, against median index of commercialisation for terciles in Ghana, Ethiopia and Malawi

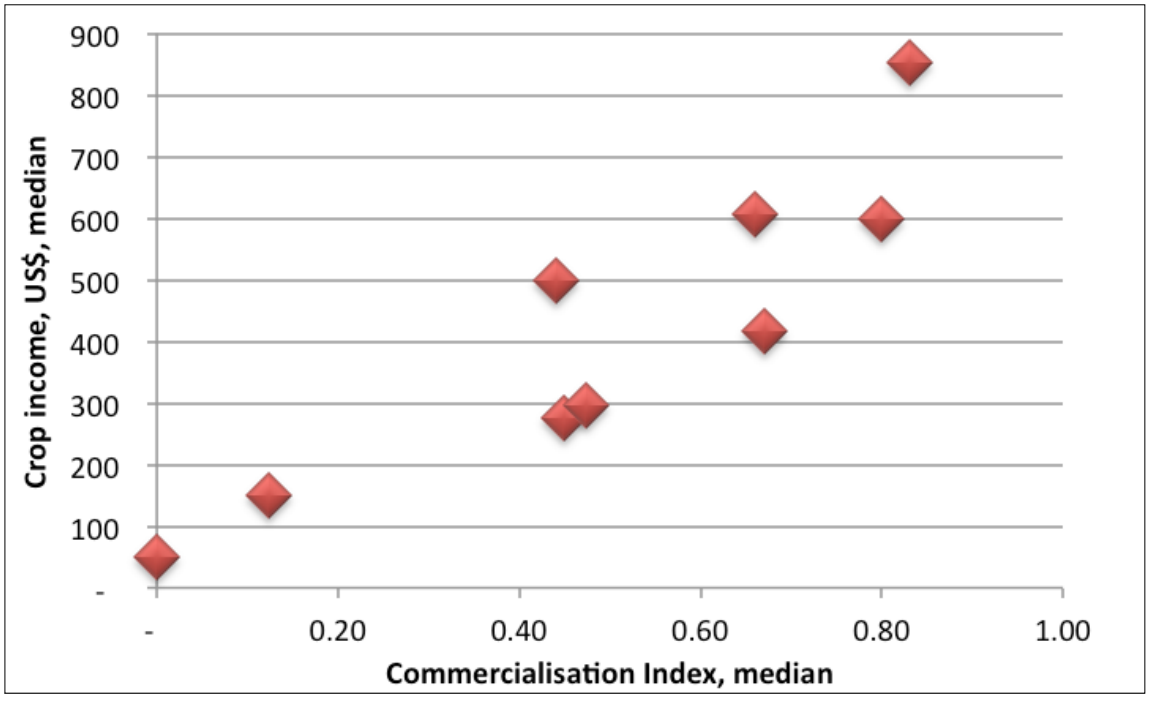
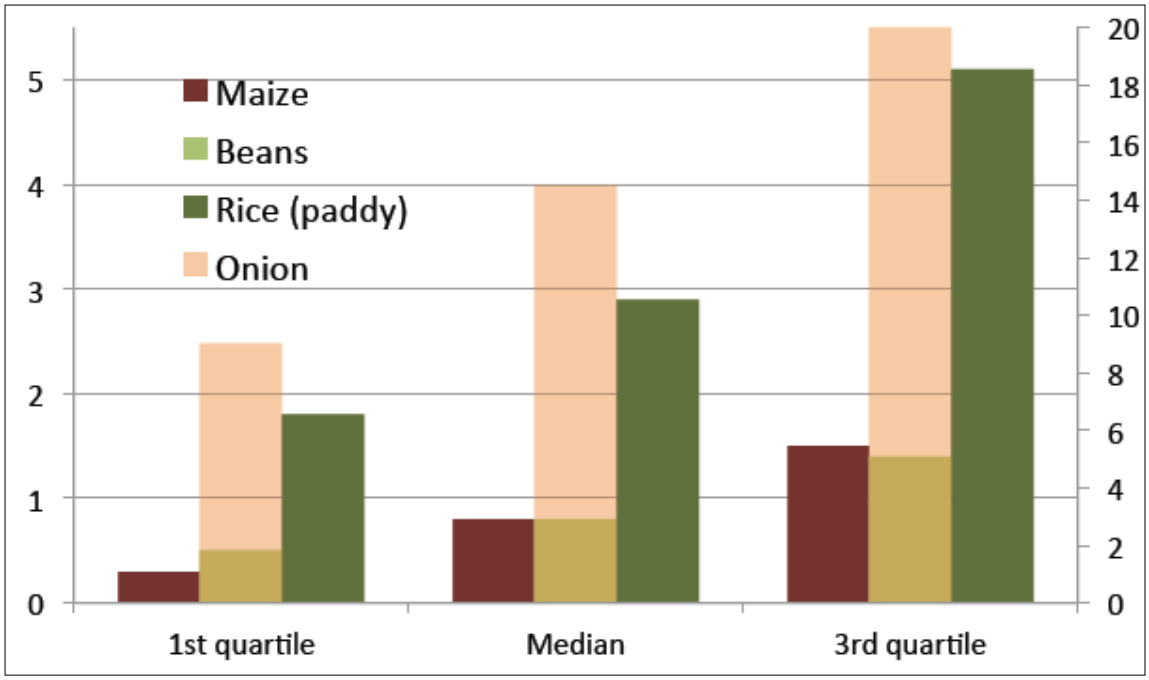


Figure 3.6 Yield variation, central Tanzania, 2010, tonnes per ha



Note: Onion yields plotted on right hand axis

Figure 3.7 Yield variation, Lume, Ethiopia, 2010 and 2012, tonnes per ha

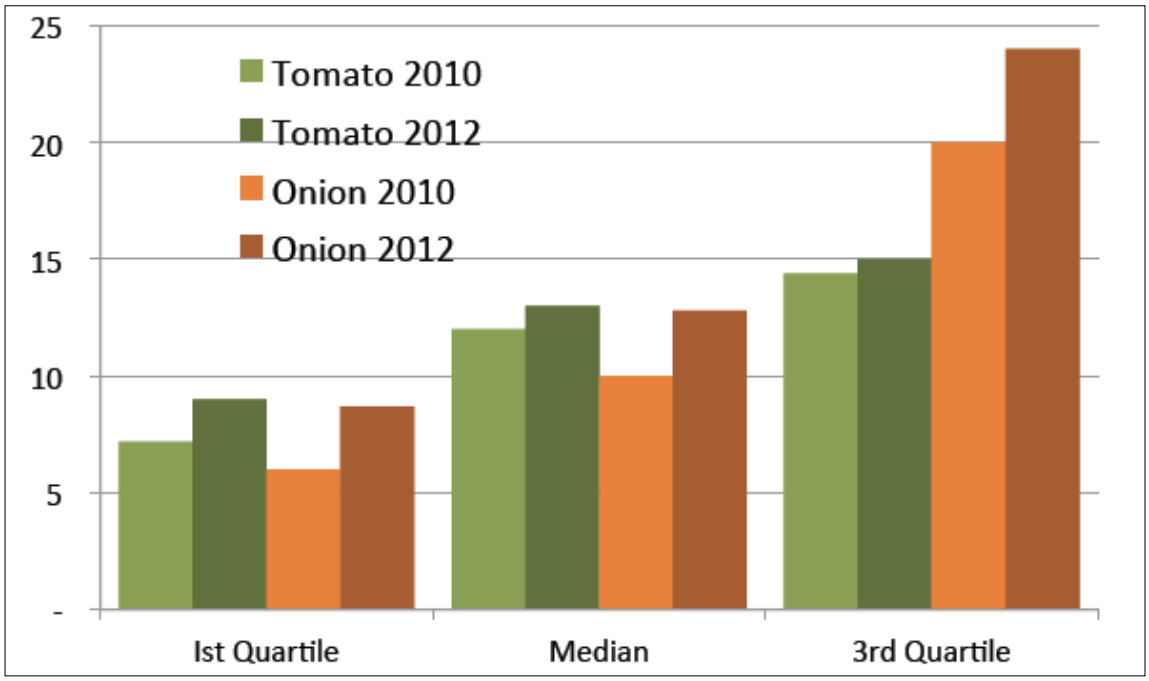
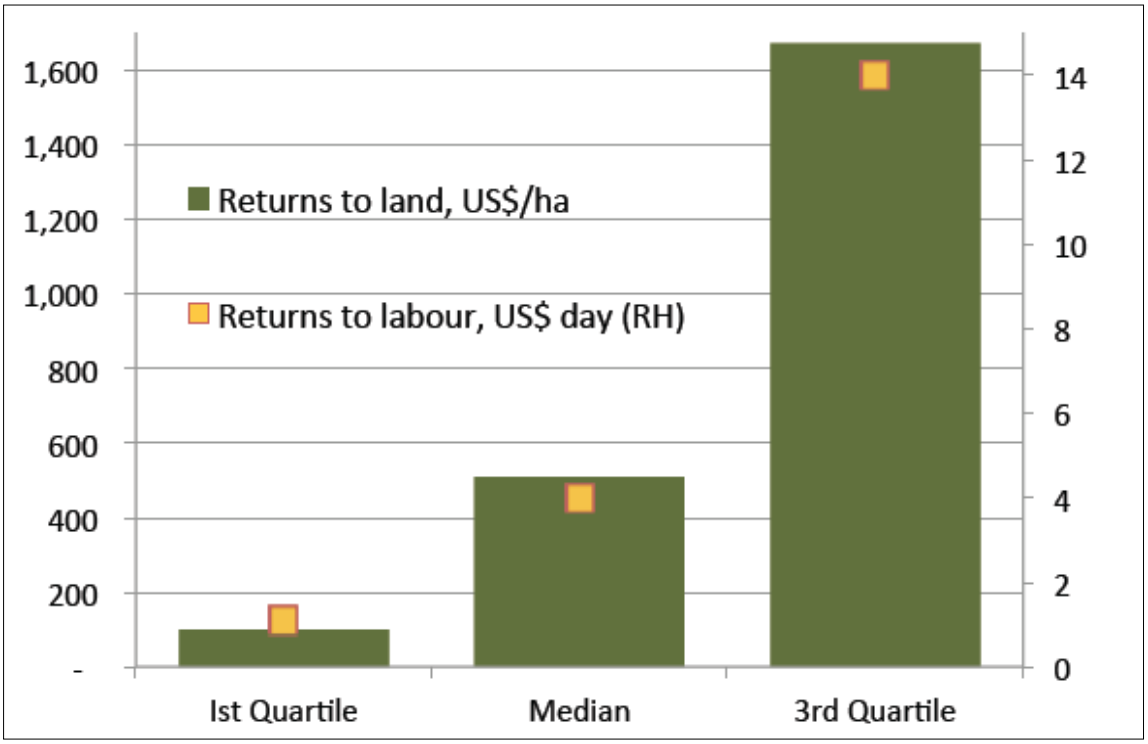


Figure 3.8 Varying returns to land and labour, central Tanzania, 2010



These differences were then reflected[11] in returns to land and labour, as can be seen for central Tanzania in Figure 3.8, where the ratios between households at the first and third quartile are now not two or three to one as seen with crop yields, but 13 and 17 to one for labour and land respectively.

Reports from the other studies may not have information quite as clear as these examples, but a wider range of yields and returns can be seen for those cases as well. The reasons for these differences have not been probed, but differences appear related to access to labour, information, working capital, skills and experience.

The implications of such a range of performance will be discussed in the conclusions.

Performance of marketing chains

Obtaining information on costs and returns in marketing chains is not easy, but three studies had some data on these: studies of supply chains for tomatoes and cabbages in Kenya, and for onions in Tanzania. These provide enough information to make some judgments about the performance of the marketing chains. Performance here is judged largely by whether margins made by different actors in the chain were commensurate with their time and working capital, or whether, conversely, they were taking rents.

For Kenyan tomatoes and cabbages, Table 3.2 shows the costs and selling prices at successive points in the supply chain, together with the percentage margins realised over costs. Three things are clear.

One is that farmers have by far the largest margins. That, however, has to be qualified by consideration of risks in production and marketing: the unit costs shown and the prices paid are those that apply when things run smoothly. In reality, however, there are seasons when pests and diseases, adverse weather, pump breakdowns and so on raise costs and reduce yields. Furthermore, if crops cannot be sold when picked or transport breaks down, then for tomatoes at least, being highly perishable, a whole crop can be lost. Returns to farmers do not include a return to the land they use, either.[12]

The second point to note is that the margins for wholesalers and retailers show a modest return on capital and labour, especially when risks are factored in and allowance is made for wastage.

Third, the absolute differences between what the farmer receives and what the consumer pays look quite large, with prices doubling and trebling. However, costs of marketing and especially transport are high. What looks like an inefficient and exploitative chain, considering just the prices at different points in the chain, needs to be qualified by the high costs of transport — much of which is attributable to the poor state of roads and high capital costs of vehicles and parts. There is little evidence here that farmers are exploited by market intermediaries.

This is not to say that there are no rents at all in marketing chains. For onions in Tanzania, fully 20 percent of the costs between farm and wholesale went to commissions for brokers in the Dar es Salaam wholesale market. It is hard to imagine that this high margin reflected their costs, since all they had to do was place arriving shipments with wholesalers.

Table 3.2: Marketing margins, tomatoes and cabbages, Kenya, 2011

	Tomato, Kshs/box		Cabbage, Kshs/piece	
Farmer	**High season**	**Lean season**	**High season**	**Lean season**
Unit cost	533	533	4.87	4.87
Sells to …	*1,500*	*3,000*	*10*	*20*
Collecting wholesaler				
• Broker fees	150	150		
• Council fees, cess	170	170	1.50	1.50
• Transport & loading	580	580	3.30	3.30
Total costs	2,400	3,900	14.80	24.80
Sells to …	*3,000*	*5,000*	*23*	*30*
Retailer				
• Transport & loading	100	100	5.85	5.85
• Council fees	120	120	1.90	1.90
Total costs	3,220	5,220	30.75	37.75
Sells to consumer	*4,000*	*6,300*	*40*	*60*
Margins, Kshs/box				
Farmer	967	2,467	5.13	15.13
Wholesaler	600	1,100	8.20	5.20
Retailer	780	1,080	9.25	22.25
Margins, % mark-up on costs				
Farmer	181%	463%	105%	311%
Wholesaler	25%	28%	55%	21%
Retailer	24%	21%	30%	59%

Source: Reports on cabbage and tomato supply chains

Drawbacks from commercialisation

In the literature, concern is often expressed over the effects of commercialisation of smallholder farming in the forms of food insecurity, increasing inequality between farm households including gender inequality, increased risks, and damage to the environment. So what do these studies report on these dangers?

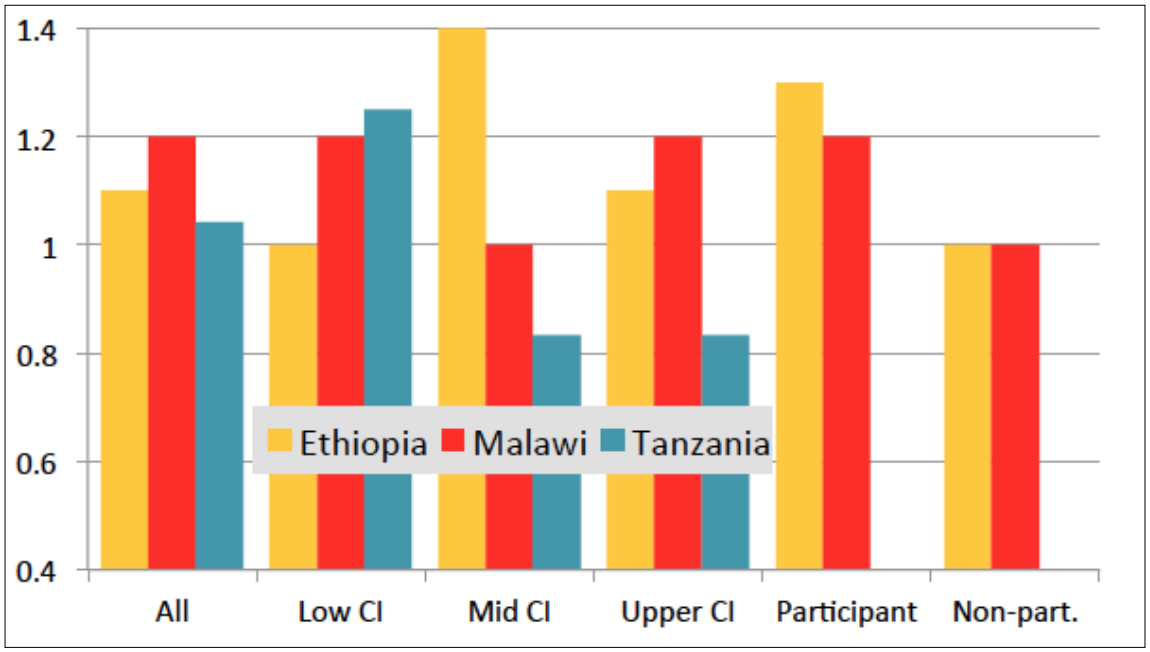
Less food security?

Judging by the areas planted to food crops, farmers were not sacrificing these to grow crops for sale. On the contrary, most farmers had 1ha or more sown to food crops. Moreover the area under food crops bore little relation to the degree of commercialisation (Figure 3.9). Where it was possible to compare farmers participating in a commercialisation scheme to those not doing so, those commercialising were at the median planting more food crops than those who were not part of the scheme — see the last two sets of columns in Figure 3.9

Considering not the absolute area, but the share of farm land planted to food crops, there are also few signs that the share to food crops falls with increasing commercialisation; see Figure 3.10 showing results for Ethiopia and Malawi. For Ethiopia there were, however, signs that some households were expanding their vegetable plots at the expense of food crops (see Figure 3.11), while other households were reducing their vegetable plots. Even those expanding their vegetable plots, however, had less than half of their land allocated to the cash crop.

In Malawi, changes were less dramatic over the three years, as seen in Figure 3.12: total areas farmed were falling a little for both NASFAM members and others. The area to cash crops in members' fields was also falling, so the share stayed the same, at just 27 percent of the cultivated area. For non-members there was a slight increase in cash crops, so the share to cash crops rose from 17 percent to 25 percent.

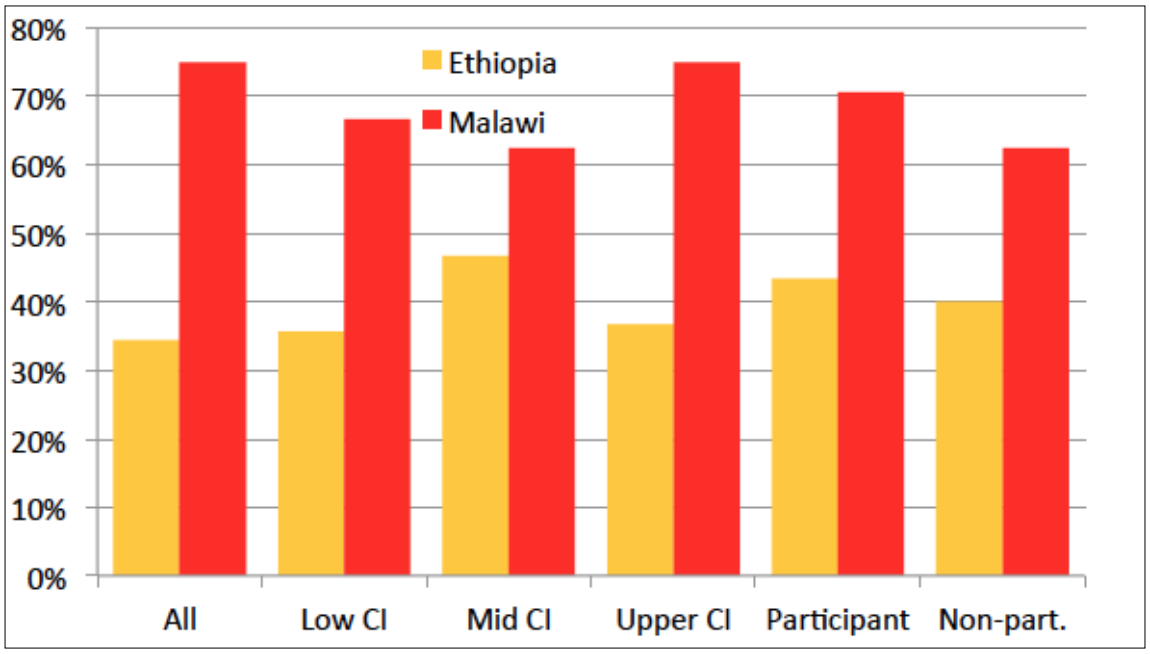
Figure 3.9 Area sown to food crops, ha, in Ethiopia, 2010, Malawi, 2008/09 and Tanzania, 201



Source: Survey statistics

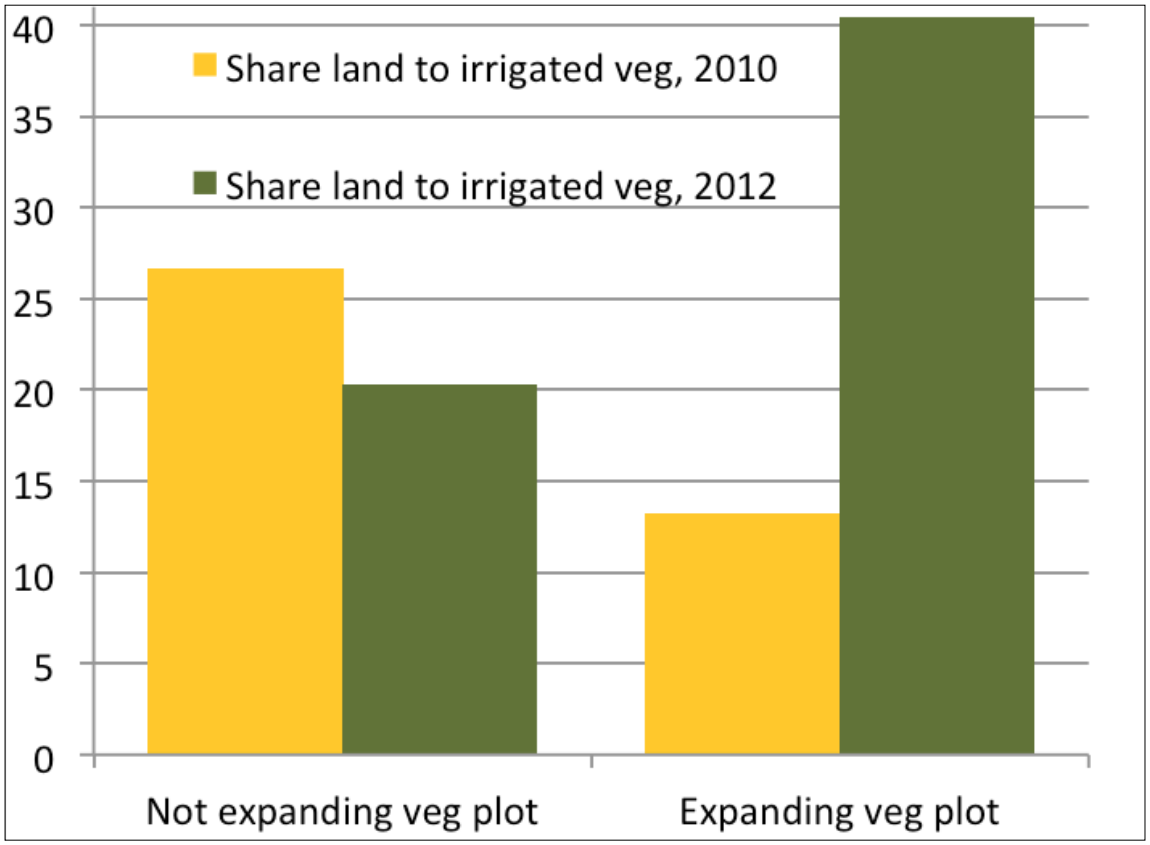
Note: CI = commercialisation index

Figure 3.10 Share of area sown to food crops, Ethiopia, 2010 and Malawi, 2008/09



Source: Survey statistics

Figure 3.11 Share of land to irrigated vegetables in Lume, Ethiopia, 2010 and 2012



Looking at these statistics, it seems that farmers were reluctant to plant less than 1ha[13] of food crops. For central Malawi where farm sizes average 1.6ha, almost three-quarters of the farm is sown to food; while in Lume District, Ethiopia where farms are typically twice as large, the fraction falls to one-third — although the area under food crops remains similar.

The area planted to food crops is only an indirect indication of food security. Households not planting many food crops could still be food secure if they had the income from cash crop sales and other work to buy their food.

Figure 3.12 Areas planted to food and cash crops, Malawi, 2008/09 and 2011/12

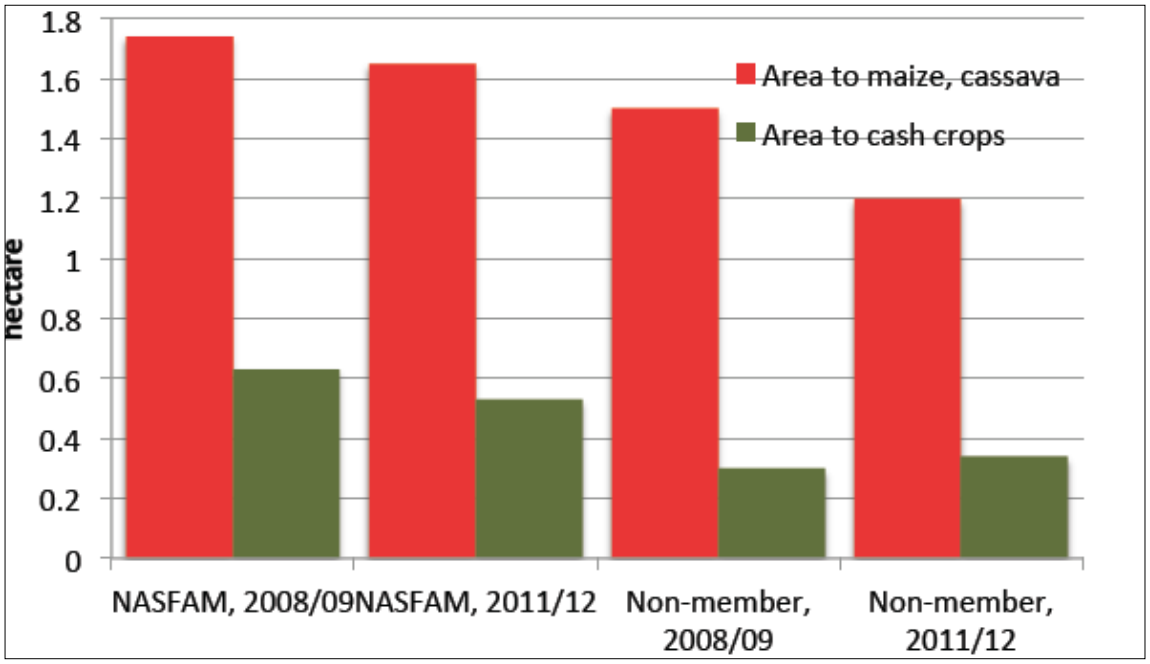
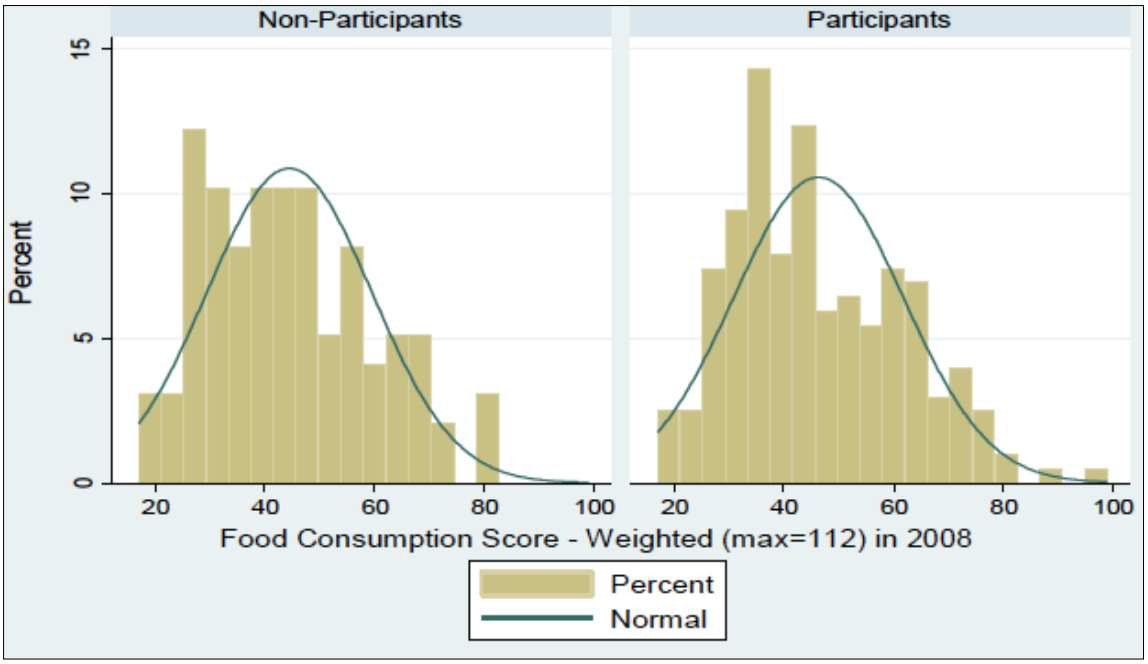
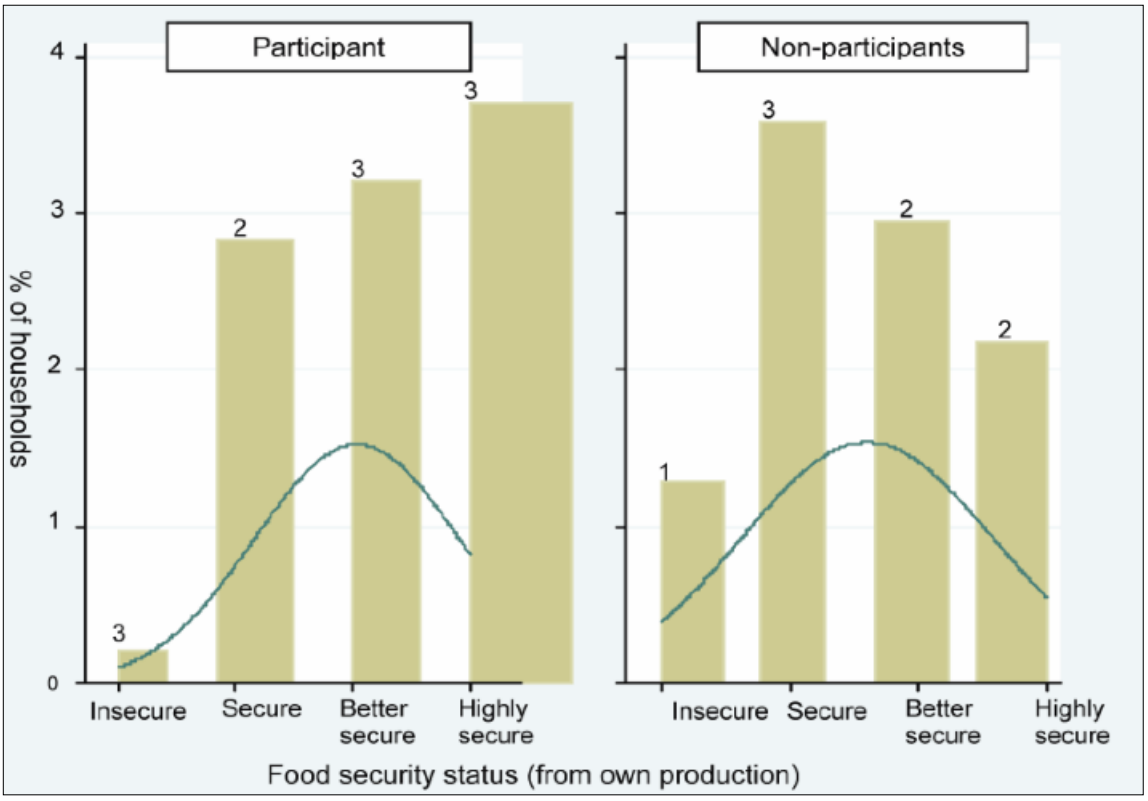


Figure 3.13 Food consumption and perceived food security, scheme participants and others, Ethiopia, 2010 and Malawi, 2008/09

(a) Malawi, 2008/09, food consumption scores



(b) Ethiopia, 2010, perceived food security



When asked about food consumption and perceived food security, participants in schemes in Ethiopia and Malawi reported more food security than those not belonging to schemes (Figure 3.13).

From this evidence, incomplete as it may be, there are thus few indications that commercialisation might endanger household food production, or otherwise lead to less food security.

Social differentiation and gender inequalities

The studies show considerable differences amongst the households surveyed in wealth as measured by access to land, tools, housing, sometimes livestock, and savings. Households are also differentiated by the levels of education of the adults. It is also clear that those with more assets are more likely to be able to take advantage of commercial opportunities in farming — although where there are good opportunities off the farm, some of the better-off households may prefer to work there rather than intensify their agriculture. In the peri-urban surrounds of Nairobi, this seemed particularly the case for households in areas with modest to low agricultural potential, such as Athi River.

This qualification aside, if it is the better-endowed households that can most commercialise, does this mean that commercialisation widens economic differences between households? That might seem likely, but when small farmers do intensify and commercialise they employ more hired labour. For example, NASFAM members in central Malawi in 2011/12 used 68 days of hired labour compared to the 28 days hired in by non-members; even taking into account that members had larger farms, the intensity of use of hired labour was two-thirds greater (30 versus 18 days per hectare). In Ethiopia in 2010, participants irrigating hired in 139 days, while those not irrigating hired in 98 days of labour. Although precise statistics may not be available, it was evident that onion growers in Tanzania were hiring similarly large amounts of labour on their plots. It would be surprising if the same were not true in peri-urban Nairobi, or on the tomato and pineapple fields of Ghana. Rural poor people often depend heavily on farm labouring for their livelihoods, so the availability of such work and the rates paid are critical if they are to avoid extreme poverty (see, for example, Dorward et al. 2003 on ganyu labour in Malawi). Hence if more commercial small farms are increasing their intensity of hired labour use, as is shown in Ethiopia and Malawi, then it is likely that the rural poor and landless are benefiting.

Access to resources is not set in stone. In some of the studies, there are records of remarkable amounts of land being traded. For example, in Lume, Ethiopia in 2012, 45 percent of households and most (86 percent) scheme participants were renting land, with an average area of 1.94ha being rented. In central Tanzania, 113 out of 287 households reported renting land. Land rentals were also reported in central Malawi (there were no data for Ghana and Kenya). The extent of local land markets in Ethiopia and Tanzania was a surprise, given that in both cases farmers do not have legal titles to their land — and indeed, in both countries a generation ago such transfers would have been either illegal or actively discouraged. Lack of formal title or of rental contracts, however, does not seem to have prevented active rural land markets emerging. Moreover, given that land was generally rented from households with more land to those with less land, there are signs that such markets equalised access to land.

A further modification of any tendency to increased differences comes from linkages in the rural economy. It is likely that much of the additional income from sales of milk and crops is spent locally, especially on food, construction and services. This again should create extra jobs in the rural economy. These studies, however, did not observe these, so this remains a reasonable possibility rather than a confirmed fact.

Gender differences came out clearly in most of the studies. Female farmers are less likely to be able to take up commercial opportunities than their male counterparts. Female-headed households were therefore likely to find themselves excluded from direct benefits. It is less clear what this observation means for women within male-headed households, although there is concern that if commercial crops are controlled by men, then disparities in income and power within those households may widen.[14]

On the other hand, women labourers from households with few assets may be some of the greatest beneficiaries of a tighter local labour market. More commercial production may offer them some gains that they would not otherwise have. And the disadvantages that female farmers face in commercial do not just apply here; they can be seen in large measure in any type of farming. If there were no commercial possibilities, would women be better off? Increased labour hiring is one outcome that does offer some improvement, even if it may be less than that enjoyed by farmers who are able to directly farm for the market.

Risks in commercial farming

Only one of the studies, that in Tanzania, explicitly asked farmers about risk. Perhaps surprisingly, farmers in central Tanzania were not particularly concerned about price risks; their greater concern was that of production loss to bad weather, pests and diseases.

Less directly, the extent of additional risks that commercialisation may entail comes from the evidence of the degree to which farmers used their land for commercial enterprises and how much they specialised. As reported, most were reluctant to sacrifice food crops to commercial; commercialisation often meant having a wider range of crops and enterprises rather than specialisation. Hence it would be surprising if farmers were increasing their exposure to risks. Moreover, in the peri-urban surroundings of Nairobi, commercialisation was associated with increasing opportunities off the farm, so that sources of livelihoods may have been diversifying rather than concentrating.

One specific risk that alarms observers arises where farmers take credit with their land as the guarantee, thereby risking loss of the farm in case of default. Not only were there few farmers in these studies who obtained formal credit, but even those who did were not pledging their land against the loan.

Overall, there was nothing in the studies to suggest that farmers were being tempted into undue risks. On the contrary, their strategies of diversification, of cautious commercialisation, and investing by using their own savings rather than credit suggests that they deliberately kept risks low. This, of course, could mean that they forego some benefits that may accrue to more specialised and intensive commercial farmers.

Harm to the environment

This was not a focus of the studies, so there is little direct evidence on environmental impacts. In some cases, more commercial production meant more use of fertiliser and agro-chemicals, with the consequent risk that there may be pollution from excess run-off and injury to farmers from unsafe handling of chemicals. In Brong-Ahafo, Ghana there are concerns that small-scale tomato production means that fields are sited next to streams, in contravention of rules that forbid cultivation of stream banks (see Wiggins et al. 2004) on account of soil erosion, silting of streams and pollution of watercourses.

On the other hand, it may be that in some cases the opportunities to earn from intensively-operated irrigated plots takes pressure off other natural resources, including hillsides vulnerable to erosion or bush and forest that might be cleared for more extensive cultivation. This seemed the case in central Tanzania. Moreover, where irrigation is critical, there is an incentive for local people to conserve and manage the watersheds that provide the water.

4. Conclusions and policy considerations

Summarising the findings

The main points that emerge from this review of the field studies may be summarised as follows:

- Given the opportunity to produce for markets, small farmers are often able to intensify their production of crops and enterprises for sale, thereby raising their incomes — and increasing local demand for hired labour.

- In most cases the stimulus for commercialisation comes from domestic markets, not exports. Domestic marketing demands are less stringent than apply to some export production. In some cases, it has taken an external intervention to stimulate commercial production. Even then, the outside stimulus has been technical assistance and access to inputs, rather than a more comprehensive package of assistance of the kind offered by parastatals in the 1970s and 1980s. There are equally cases where the initiative has been entirely with the farmers and the traders to whom they sell.

- Commercialisation has been cautious, gradual and through marginal changes rather than dramatic transformations. Only occasionally does it seem that some farmers are prepared to sacrifice food production sufficient to meet home needs for commercial crops.

- Intensification accompanies commercialisation as farmers apply more fertiliser, more hired labour and sometimes improved seed and agro-chemicals. In most cases, the working capital for these investments comes from farmers' own savings rather than credit from banks or advances from input dealers, traders or processors. Lack of credit evidently does not prevent intensification, although it may slow the process, limit the degree and restrict which households may participate.

- Households with more land, savings, assets and sometimes education are disproportionally able to take up commercial opportunities. Female farmers are often disadvantaged since they have fewer assets than males. Social differences may thus widen with commercialisation. On the other hand, commercial farming almost always increases the demand for farm labour, so where the landless and poor depend on such work for their livelihoods they may well benefit.

Policy implications

From these studies, what can we conclude about the role of public policy and investments? Two main points can be made.

First, few of the cases seen are the result of direct public programmes to commercialise cropping, the exceptions being the irrigation schemes in Ethiopia and NASFAM in Malawi. Indeed, in most of these cases one might argue that comprehensive *direct* action by the state has not been necessary.

Second, on the other hand, this should not be taken to imply that public investments have not been valuable and indeed critical for the success of the small-scale commercial production observed. Less direct measures have been essential. In all cases, a stable macro-economy has allowed farmers and traders to invest and get on with business. If this seems a minor point to be taken for

granted, then readers need to bear in mind the chaotic economy of Ghana in the late 1970s, the strong restrictions to private enterprise seen in Ethiopia under the Derg, and the macro-economic difficulties of Tanzania in the late 1970s — all cases where subsequent developments observed in these studies would have been difficult if not impossible.

Moreover, road access is critical to all of these cases. The roads exist because governments have built and maintained them. Some could be improved, to be sure, especially in Lumuma and Msowero in Kilosa District, central Tanzania. Similarly, commercialisation has probably been enhanced by public provision of schools and health posts in rural areas since these allow farmers to express their capabilities.

Well-conceived support by ministries of agriculture can also play a role. The small-scale irrigation programme in Ethiopia shows this, as does the upgrading of irrigation intakes in central Tanzania.

What then should governments, and some NGOs, be doing to support commercial production and ensure that it has the greatest benefits with the fewest drawbacks? Five routes stand out, as follows.

F. The general encouragement to rural enterprise that has resulted from the improvements to the rural investment climate — less inflation, competitive exchange rates, trimming back marketing boards and liberalisation of trading in some crops — that resulted from reforms in the 1980s and 1990s has paid off. Governments should both take pride in this, as well as guard against measures that might reverse these gains.

G. Investment in public goods also pays off. The gains from better roads and schools may not be immediate, but there are signs in these studies that there is more positive change in rural Africa than some reports would suggest. The regular programmes of ministries of education, public works and transport may not grab the headlines or appear as the magic bullets that will rescue rural Africans from poverty, but over the medium term they may be more effective than some more eye-catching direct measures to stimulate agriculture.

H. It may seem that ministries of agriculture are peripheral to these processes and have little role. This would exaggerate and mislead. It is clear that well directed efforts to support what farmers are already doing can pay off. Could there be any better use of donor funds in agriculture than the upgrading of existing irrigation schemes operated by locals in central Tanzania? Moreover, farmers in all these schemes face technical challenges in raising productivity, understanding their technical options, getting access to good seed, and so on. When farmers have commercial opportunities, their need for innovations and technical support rises, as does their interest in these. Arguably, extension services might be most effective when working with such farmers.

I. In all these cases, lack of capital limits investment and further gains. Farmers suffer from this, as do many of the traders they deal with. Finding ways to improve rural financial systems matters. A word of warning, however: this does not mean governments re-entering rural areas with public credit and subsidies. In the past such programmes have often been very costly and have had limited benefits. Instead, more innovative ways of providing rural finance need to be found, with governments working to support local, civil society and private initiatives. There are promising innovations of late — M-pesa money transfers using mobile phones in Kenya, expansion of the small loans programme of Kenya's Equity Bank, agency banking — and it is these which governments should look to encourage.

J. Last but not least, these studies repeatedly reveal the disadvantages faced by female farmers. Clearly agricultural policy is not, by itself, going to transform longstanding imbalances in gender relations. On the other hand, there are things that could be done to reduce the disparities. These include looking to acknowledge and support women's rights to land and water, making public investments that help reduce the time women spend on domestic tasks such as drawing water, and providing extension that is directed with female farmers in mind.

Dynamics of commercialisation

Only two of the studies carried out could observe the same population of commercialising smallholders at two points in time, and even then only for the limited period of a couple of years. In some cases, the commercialisation seen comes from changes in the last ten years or so. Hence we have little evidence on the dynamics of commercialisation. Important questions remain unanswered, such as the trajectories of those farmers who have been able to intensify — will they continue to innovate, invest and raise their production further, or have they stepped up but now reached a plateau? Will smallholders continue to diversify as they commercialise, or will some seize the opportunity, but take the risk, of specialisation in cash crops? How much are the communities differentiating, and what is the fate of those who have commercialised?

The literature does not help much, either. Studies that repeat previous enquiries in the same locality and so can observe change are comparatively and surprisingly rare.

Hence the results seen in these studies may reflect some temporary stage that commercialising farms pass through, rather than showing some stable outcome, or, more realistically, some linear trend that points to a future with wider and deeper commercialisation of small-scale farms.

Answering these important questions about dynamics will have to wait, perhaps to be addressed if we have the chance to return to these sites in a few years' time.

This gap in knowledge suggests that wise policy needs to focus on creating conditions that allow people to respond to opportunity and threat and give them wide options, rather than, for example, vigorously promoting a particular crop. Hence policy for rural areas might prioritise ensuring that roads and power allow people to set up other businesses, and that the schools and health systems mean that rural youth are capable of turning their hands to something other than what may be limited options on the home farm.

It also means making sure that the institutions that govern allocation and use of factors of production, such as land tenure, allow flexible responses. For the case of land, that would mean that if and when people leave the land to take up non-farm jobs and businesses, they get a capital asset from their old farm, rather than it simply being expropriated.

End Notes

1 Several definitions, some with indices, have been proposed for commercialisation — see Wiggins et al. 2011 for a review. While there is debate over how it may be measured, there is general consensus over the concept of increasing engagement with markets for inputs and outputs.

2 In Eastern and Southern Africa the first waves of agricultural exports under colonial rule tended to come from large-scale commercial farms and estates run by European settlers and managers. In Southern Africa, however, several colonial economies were not primarily concerned with agricultural exports, since they were based around mining so that large-scale farming was promoted primarily to feed the mining towns.

3 No ideal index of commercialisation exists. The one used here has the drawback that very poor households who are obliged to sell much of their output immediately after harvest to pay off debts could score highly on the index, although such a household would not normally be regarded as commercialised.

This problem might be avoided by setting the index to zero for households where the total value of production is so low as to leave them destitute — say, farming that generates less than US$100 per adult equivalent per year. That would, however, omit those households who have non-farm income and who till a plot purely for commercial purposes, if the plot is so small that total value of production falls below this threshold.

4 Tanzanian onions were exceptional in travelling several times this distance from Kilosa to Dar es Salaam, while some tomatoes from Brong in Ghana might be delivered to Accra rather than Kumasi, thereby also covering a much longer distance.

5 Onions from central Tanzania were sometimes exported, although only to neighbouring countries such as Comoros, Malawi and Zambia. These deals were conducted by the same traders as seen for domestic marketing; the export chains were just a geographical extension of the domestic chains with no special actors engaged.

6 Compare this to reports that in the UK as much as 40% of field vegetables are rejected by supermarket buyers on the grounds of minor blemishes, unusual shape, size or colour. Milk in Kenya is a good example of preferences of local consumers on low incomes. Most of the milk is sold raw to consumers who boil their milk or cook with it, preferring cheap raw milk to more expensive or unaffordable pasteurised milk.

7 This is one of several examples of indigenous irrigation systems in East Africa. Local history in Kilosa and Kilola recounted by elders attributes the start of irrigation in these villages to the arrival of a settler who had the technical knowledge and skills that he passed on to his neighbours. The original off-takes in Ruaha Mbuyini village were upgraded as early as the 1960s; for the other three villages, upgrading took place in 2002 and 2003.

8 In Tanzania an earlier 2010 study of onion marketing showed that most of the buyers were individual traders who had only enough capital to buy relatively small lots of onions. Most did not own a vehicle; having struck a deal they then called in lorry drivers to lift the onions and deliver them to wholesale markets. These traders were largely former farmers themselves who had used their small savings to set up as traders.

9 An unusual case, of which it is hard to find any other examples in the literature. In other countries ministry staff asked to select farmers for irrigation would typically choose farmers by perceptions of their skills, access to complementary inputs, willingness to participate in new endeavours, and so on.

10 70 to 80 days for growing, after 50 to 60 days for raising and transplanting seedlings.

11 Yield variations may be a key element, but are not the only factor that causes pronounced differences in returns to land and labour: differences in amounts and unit costs of inputs applied, and prices received, also contribute.

12 The high returns to farmers are largely the result of sun, rain and soil that for most small farmers are effectively free inputs.

13 This makes sense: grain yields are typically 1 tonne per hectare, so a 1ha plot would produce enough to provision a family of 5 adult equivalents each consuming 200kg of cereals a year.

[14] That said, some commercial crops and enterprises may be seen as female domains, as may apply with stall-fed cattle or some small plots of tomatoes. In such cases, women may control the income from these.

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Annex A: Detailed research questions

1. The degree to which the need to achieve food security for the household influences participation in initiatives to commercialise smallholder farming	Is there a relation between degree of participation and household food security prior to intervention? **1.1 Participation: — seen in terms of commitments of land, labour and capital, thus:** How large an area has been planted to new crop or method? What additional inputs have been applied to the commercial crop? (fertiliser, seed, crop protection chemicals, etc.) Has additional farm labour been hired or otherwise obtained (exchange, for example) to work the commercial crop? Have other investments been undertaken, for example in irrigation, tools, land works or tree planting, that are associated with the commercial crop? **1.2 Food security status:** ***Before intervention:*** What area did the household have planted to food crops in the two seasons before the intervention? How many months were they able to provision the household with their own production of staples — typically maize and beans, but may include other staples such as matoke (banana)? If and when domestic supplies of staples ran out, how did the household provision itself? If staples were bought in from store or market, from what source did the cash come? Distinguish between: income from regular paid job or business; intermittent income from informal employment or petty business; use of remittances; or other source. Was the household able to buy in as much staple food as needed to assure normal consumption of staples? If not, did the household experience a hungry season in which they had to (a) reduce the number of meals or reduce quantities eaten per meal; (b) switch to eating non-preferred staples; or (c) collect and consume bush foods? ***Current situation:*** What area is currently planted to food crops? How many months' supply of staples does the household expect to produce? If not 12 months, then how does the household plan to cover the deficit?
2. The relationship between initial access to assets and participation	**2.1 Physical assets** How much land does the household access? For each parcel, note area and whether owned or whether the plot is rented, borrowed or on exchange. What livestock does the household own? Milk cows, oxen, younger cattle; sheep; goats; pigs; hens; donkey; other (specify). Farm tools and equipment: plough; cart; pumpset; vehicle; etc. Housing: number of rooms (Choose one or two proxies for housing status — e.g. GCI 'tin' roof, latrine, means for cooking — as appropriate for area). Any other property — e.g. business premises, tools and equipment for artisan work, vehicles. **2.2 Human assets** Household composition: number of members in following ages: 0–5; 6–14; 15–55; >55; male/female; resident or migrant. Highest level of education of each of those over 5 years: attended primary; completed primary; attended secondary; completed secondary; tertiary education; completed university. Health of members: note if there are persons who are disabled (and unable to work), chronically ill, or too old to work. **2.3 Social assets** To what groups or societies does the household belong? Has anyone in the household held an office — elder, lay-priest, chief, secretary of co-op, etc.?

3. The degree to which the intervention resolves potential failures in factor and product markets	**3.1 Credit** Before the intervention, did the household ever obtain credit in cash or kind for farming? If so, for what was the credit? What was the source of the credit? Were they able to repay? How often were they able to obtain credit? Did they ever apply for credit and were refused? Does the new scheme offer credit in cash or kind? If so, how much? What are the terms of repayment? Does participating in the new scheme make obtaining credit from formal or informal sources easier than in the past? **3.2 Labour** Before the intervention, did the household hire labour or otherwise recruit additional help (exchange, etc.)? If yes, roughly how much labour and for what tasks? Were they able to bring in as much labour as they wanted or needed? (No need to ask about additional labour: covered under 1.1) **3.3 Inputs** Before the intervention, what additional inputs did the household use? Purchased seed, fertiliser, chemicals, etc. (additional inputs covered under 1.1) **3.4 Marketing** How much of the household's production did they typically sell before the intervention? Crop/animal; Qty; Frequency. Where did they sell and to whom? Did they ever find it difficult to find a buyer? What do they understand about the marketing of the commercial crop? To whom will it be sold, where, and under what terms? Do they know what price will be offered/what price do they hope to get? How does this compare to prices seen in the past?
4. How does the intervention affect the resilience of the household?	Resilience is the ability to withstand shocks ('stressors') and is thus the inverse of vulnerability. Analysis will consist of assessing: • Exposure to shocks before and after intervention • Ability to withstand shocks ***Exposure to shocks*** will be assessed by constructing simple models of representative households, before and after intervention, showing the returns to the main farming activities. These models will then be tested for sensitivity to physical shocks such as drought and to price changes. The frequency of these and thus their probability can be taken from existing records of droughts, price fluctuations and any other shocks identified in the scoping work. It should then be possible to assess whether the new system is more or less resilient to shocks. ***Ability to withstand shocks*** will be estimated by incomes, assets and diversification. In the *medium term,* improved incomes will probably lead to increased assets — physical items that can be liquidated in hard times such as livestock, and financial savings — and possibly also to obligations built on generosity that can be recalled. Households with additional incomes may be able to undertake new areas of livelihoods that improve their resilience: for example, investing in the schooling of children, or providing the funds for a household member to open a business. *In the short term*, then, enhanced incomes stand as a proxy for these processes on the grounds that higher incomes allow households to invest in new opportunities.
5. The early outcomes of such initiatives	*Only applies if a crop cycle has been completed …* How much of the commercial crop has the household produced? How much have they sold? What price did they get? If incomes have risen, how have the funds been used? E.g. to buy more or better food, make housing improvements, save income, spend on celebrations and ceremonies, buy household goods, send children to secondary school, invest in other farming activity or invest in off-farm business. Does the household intend to continue with the commercial crop? To further expand or intensify production? Has anything else noteworthy happened to the household that is related to the commercial crop?

Future Agricultures

This **Working Paper** was written by **Steve Wiggins, Gem Argwings-Kodhek, Samuel Gebreselassie, Samuel Asuming-Brempong, Ephraim Chirwa, Mirriam Muhome Matita, Ntengua Mode and Khamaldin Mutabazi** for the **Future Agricultures Consortium.** The FAC Working Paper series publishes work in progress by FAC members. All papers are technical research papers which have been peer reviewed, and are available in open access format. The series editors are **Paul Cox** and **Beatrice Ouma**. Further information about this series of Working Papers at: **www. future-agricultures.org**

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