

# Ethiopian Journal of Economics

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## Editor's note

Agriculture is an important part of the Ethiopian economy. It is frequently argued that agricultural growth is a fundamental pre-requisite for widespread poverty reduction in Ethiopia as the livelihood of the majority of the people depends on it and the majority of peasants have an egalitarian access to the key productive resource, land. However, a sustainable agricultural development demands smallholders' to raise agricultural productivity and integrate into the exchange economy which illustrates the positive role of agricultural commercialization for economic growth.

The growth strategy adopted by Ethiopia also seeks to achieve growth through the commercialization of smallholder agriculture. The Plan for Accelerated and Sustained Development to End Poverty (PASDEP), Ethiopia's guiding strategic framework for 2005/06 – 2009/10 asserts that the plan relies on a massive push to accelerate growth, which rests on two main thrusts: commercialization of agriculture and promoting much more rapid non-farm private sector growth (MoFED, 2005).

However, Ethiopia has still no comprehensive and well-formulated policy on how to commercialize its agriculture. Much remains to be learned, both conceptually and empirically, about the commercialization process, its determinants and the role of transaction costs, especially at the household level. For instance, the question 'what should be the government strategy in different parts of the country where the potentials and constraints for agricultural commercialization vary in response to the variation in agro-ecologies, irrigation potential, population settlement and other socio-economic factors' needs research and informed policy debates both at national and regional levels.

The supply response of Ethiopian farmers and the merits of 'pricism versus structuralism' were not sufficiently debated and clearly emerged in policy documents. However, , Ethiopian policy makers put a higher priority to the former as evidenced by the establishment of the Ethiopian Commodity Exchange and improved agricultural marketing extension services. It has been clear that Ethiopia needs to move beyond improving the operation of its agricultural output marketing system. In addition to output markets; factors market, labor mobility, farm sizes, the type of crop (export and/or domestic crop), the role and extent of participation of the private sector in the commercialization scheme and other technical factors that affect farmers' productivity etc could affect the success and pace of implementing the new policy on agricultural commercialization.

- 1 The research findings and views contained in this journal were conducted by the Future Agriculture Consortium (FAC) and discussed at the forum co-organized by the consortium and the EEA at the Fifth International Conference on the Ethiopian Economy. The papers focused both on conceptual and empirical issues, though the empirical works limited to selected tef and coffee growing areas. Based on a review of past policy and development programs, one of the papers also tried to provide a brief narrative context for the Ethiopian debate and policy-making process on agricultural commercialisation.

The Ethiopian Economic Association believes that the papers will provide some insights and queries to Ethiopian policy makers who have been working to develop policies and strategies on the commercialization of Ethiopian smallholder agriculture. The EEA would also like to thank the Future Agriculture Consortium (FAC) for conducting operational researches on this topical issue and allowing academics, researchers and policy makers to discuss and debate them in a joint forum. The Association encourages such collaborations in the future too.

**Future Agriculture Consortium (FAC)** is a partnership between research-based organisations in Africa and the UK, with work currently focusing on Ethiopia, Kenya and Malawi. The Consortium aims to encourage critical debate and policy dialogue on the future of agriculture in Africa. Through stakeholder-led policy dialogues on scenarios for agriculture, informed by field research, the Consortium aims to elaborate the practical and policy challenges of establishing and sustaining pro-poor agricultural growth in Africa. Current work focuses on three core themes:

- **Policy processes:** what political, organisational and budgetary processes promote or hinder pathways to pro-poor, agriculture-led growth? What role should different actors, including Ministries of Agriculture, have in this?
- **Growth and social protection:** what are the trade-offs and complementarities between growth and social protection objectives?
- **Agricultural commercialisations:** what types of commercialisation of agriculture both promote growth and reduce poverty? What institutional and market arrangements are required?

For further information and news, see [www.future-agricultures.org](http://www.future-agricultures.org)

# COMMERCIALISATIONS IN AGRICULTURE

Jennifer Leavy<sup>1</sup> and Colin Poulton<sup>2</sup>

## 1. Introduction

Accelerated growth in agriculture is seen by many as being critical if the MDGs are to be met in Africa. Although there are debates about the future viability of small farms (Hazell et.al. 2007), the official policies of many national governments and international development agencies accord a central role to the intensification and commercialisation of smallholder agriculture as a means of achieving poverty reduction. According to this thinking, smallholder agriculture is uniquely positioned to deliver broad-based growth in rural areas (where the vast majority of the world's poor is still live). However, others fear that strategies for commercialising agriculture will not bring benefits to the majority of rural households, either directly or (in the view of some) at all. Instead, they fear that efforts to promote a more commercial agriculture will benefit primarily large-scale farms. At best, the top minority of smallholders will be able to benefit.

In this paper, therefore, we discuss what is meant by the commercialisation of agriculture, emphasising the different pathways that commercialisation can take. We also examine what needs to be done if agricultural commercialisation is to be inclusive, bringing benefits to a large proportion of rural households.

The potential benefits of commercialisation and engaging in trade are well-documented. These include stimulating rural growth, which poor people can gain from directly, for example through: improving employment opportunities (depending on the labour intensity of crops grown); increasing agricultural labour productivity; direct income benefits for employees and employers; expanding food supply and potentially improving nutritional status. So-called multiplier effects encompass increased demand for food and services in the local area (von Braun and Kennedy, 1994).<sup>3</sup>

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<sup>3</sup> For work on multipliers and growth linkages see Delgado et al (1998)

But what does commercialisation mean? What does it mean to be commercialised? What kinds of commercialisation are good for the poor? Conversely, under what circumstances are poor people likely to be bypassed in favour of larger farmers and unable to take advantage of new opportunities? Governments have clear ideas of what they would like to achieve in creating and supporting a thriving agricultural sector, not least in the name of enabling agriculture-based economic growth. But do these programmes have the right focus in terms of poverty reduction? What informs them and what are the implications? Are appropriate mechanisms in place for effective implementation, including the right enabling environment and adequate and timely service delivery? What are the policy processes behind a successful pro-smallholder commercialisation policy?

This paper aims to engage in alternative perspectives of agricultural commercialisation to shift thinking and ways of framing the debates, arguing for a diverse range of commercialisations, locally specific trajectories, and differentiated engagement with domestic and export markets. The overarching question here is how to translate pro-smallholder commercialisations policy into practice. Growth-poverty reduction linkages for smallholder farmers through commercialised agriculture do not lie along just one or two channels, and indirect (or multiplier) effects are also key, especially those through labour markets.<sup>4</sup> Focusing on crops, the paper attempts to get away from the idea that there is one, ideal commercial agriculture, following a linear path to some clearly defined end point.<sup>5</sup> Hence the plural: commercialisations. This also allows for concepts of commercial agriculture that go beyond simple distinctions often made, such as those between 'food' and 'cash' crops.

Drawing on existing literature, the paper sets out a framework for describing the different kinds of commercialisation that co-exist. It attempts also to give a sense of what might be emerging in relation to this framework, in terms of diverse forms of commercialisation that respond to distinct livelihood needs and local contexts. This allows a time dimension, in terms of dynamics and future scenarios, and moves away from any presumption of a singular type of transition to a particular type of

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<sup>4</sup> See also: Pretty et al (1996) on sustainable agriculture's links to food security and strengthening rural economies; Swaminathan (1995); IDS work on labour exchange in Northern Province, Zambia (White et. al., 2005). The Commission for Africa report (2005) also cites family farms as the primary source of jobs in Africa, commercialisation of family-farms has important multiplier and employment creation effects going beyond the farm itself. For example, increasing employment in formal and informal trade can have far-reaching poverty reduction effects, giving the example of Benin where poor rural women make up 90 percent of informal traders.

<sup>5</sup> Livestock, aquaculture and other forms of agriculture are not within the scope of this paper, although the arguments presented here is equally valid for these and other sub-sectors.

'commercial' agriculture. This framework can be used to pose questions for empirical studies and to examine potential implications of different policy options, in terms of implementation as well as outcomes.

## 2. What are commercialisations?

Policy discourses around agricultural commercialisations tend to separate producers into different types of farm (small farms, large farms) growing different types of crops (food crops, cash crops) with simple distinctions made between 'subsistence' and 'commercial' or 'export' agriculture. Lack of clarity about what commercialisation actually means may give rise to misconceptions, evoking certain fears that can obstruct the passage of policy into practice. Work by the Future Agricultures Consortium in Ethiopia has identified fears that commercialisation means, amongst other things<sup>6</sup>:

- A focus on non-food crops
- Squeezing out the smallholder farmer
- Expropriation of land, displacement
- Dispossession of peasants
- Increased food insecurity
- Capitalism
- Mechanisation, modernisation
- Capital intensity, rather than labour intensity

In other words, there is a fear that commercialisation essentially means promoting change that is in the interests of larger, more powerful players to the detriment of smallholder farmers.

### 1.1 Defining commercialisation

#### 1.1.1 Production for market

Writing on commercialisation highlights a number of aspects to what it means to be commercialised. However, the lynchpin of most, if not all, definitions of agricultural commercialisation is the *degree of participation in the (output) market*, with the focus very much on cash incomes<sup>7</sup>. One dictionary definition gives a spatial dimension, describing commercial agriculture as "the growing of crops for sale outside the

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<sup>6</sup> See Sharp K, E Ludi and S. Gabreselassie (2007).

<sup>7</sup> For example, Pingali (1997), von Braun (1995), among others.

community” (Encyclopaedia, Colombia University Press). The first question is whether a farm or household sells any of its crop output. After this, some studies consider the degree of commercialisation in terms of amount of crops sales (volume, income). Thus, for example, Integrated Rural Development Program (IDRP) studies in Northern Province, Zambia define commercialised farmers as those who sell more than 30 bags of maize per annum (Sugiyama, 1987; Kakeya and Sugiyama, 1987). However, a better approach is to consider the percentage of crop production marketed by a farm or household. Thus, Strasberg et al (1999) suggest the following simple household crop commercialisation index (CCI):

$$\text{CCI} = (\text{gross value of all crop sales} / \text{gross value of all crop production}) \times 100.$$

Whilst there are computational difficulties, we note that there is no reason in principle why this should not be extended to include livestock (on both the numerator and denominator). However, we do not pursue this idea further here.

A value of zero for the CCI signifies total subsistence, whilst a CCI value approaching 100 indicates higher degrees of commercialisation i.e. a greater percentage of crop production marketed. A big advantage of this approach is that commercialisation is treated as a continuum, thereby avoiding crude distinctions between "commercialised" and "non-commercialised" farms.

This simple index is open to criticism. One possible criticism is that it makes no meaningful distinction between a farmer who produces just one bag of maize and sells that one bag, and one growing fifty bags of maize who sells thirty of them. Based on the CCI, the first farmer, with a CCI of 100, would appear to be more commercialised than the second, who has a CCI of 60. There is some validity to this criticism, as this caricatured example shows. However, for reasons that will become clearer below, in practice there are few tiny farms that sell all of their output (at least, at lower levels of economic development) and similarly few large farms that do not sell most of theirs.

A related criticism concerns “distress” sales, i.e. crop sales by poor households straight after harvest because they are desperate for cash. Where it is food that is being sold, the household may then be forced to buy back the same (or indeed a greater) quantity of food later in the year when the price is much higher. In this case, the crop sale raises the CCI, but is in no way indicative of increasing household welfare. Survey evidence suggests that 10-15% of southern and eastern African rural households are *both* net food deficit (over the course of a typical year) *and* nevertheless sell a proportion of their food output soon after harvest (Jayne et.al.

2006, Poulton et.al. 2006). This shows that there is some substance to this criticism and that interpretation of any empirical results based on the CCI needs to take the phenomenon of “distress” sales into account.

What the CCI does very effectively is to bring subsistence food production to the centre of discussions about commercialisation. CCI falls below 100 to the extent that households devote their land, labour and capital resources to the production of food for own consumption, rather than to the production of crops (food or otherwise) for sale to the market. We discuss the reasons for the persistence of subsistence food production in more detail later in the paper. Even at this early stage, however, it is worth making the point that strategies for agricultural commercialisation should start by seeking to understand why households produce food for own consumption and then to create the conditions that will help them over time to devote less of their resources to this activity.

#### 1.1.2 Additional dimensions to agricultural commercialisation

Whilst the degree of participation in the output market lies at the heart of most definitions of agricultural commercialisation, some literature does address other dimensions of commercialisation (see, for example, the discussion in von Braun and Kennedy 1994). Here we briefly note three additional dimensions.

First, there is the degree of participation in input markets. As farms become more commercial, they tend to rely less on own-produced inputs (e.g. manure, retained seed) and services from mixed farming systems (e.g. animal traction) and instead depend more on markets to supply their inputs (improved seed, inorganic fertiliser, crop protection chemicals) and services (mechanised equipment for ploughing, planting, weeding, harvesting etc – either hired/rented or purchased). Thus, on the input side we might define commercialisation as:

ICI = value of inputs acquired from market/ agricultural production value

As is well illustrated by Pingali (1997), commercialisation on the input side is likely to proceed in tandem with the degree of participation in output markets. We, therefore, do not consider this dimension further in this paper.

Second, it is observed that, as farms become more commercialised, they rely increasingly on hired labour, with family labour focusing more on supervisory and managerial tasks. This may be linked to the opening up of other opportunities for the family’s labour elsewhere in the economy. As farm, production becomes increasingly

business-oriented, rather than a matter of survival, some family members may choose to work in other occupations, with the remaining members hiring in workers to accomplish the necessary tasks. Alternatively, where commercialisation is associated with farm consolidation (see below), additional hired labour may be required to cope with an expanding cultivated area. Note, however, that where farm consolidation is driven by rising real wages elsewhere in the economy, this will also encourage mechanisation (Pingali 1997), such that the increase in total labour input into the farm is limited.

An interesting case of reliance on hired labour at an early stage of agricultural development is provided by the top smallholder producers of cotton in Tanzania and Zimbabwe. These devote half to two-thirds of their land to cotton production and typically rely heavily on hired labour for most tasks related to cotton cultivation. Family labour thus has primarily a managerial role in cotton. However, family labour represents the dominant labour input into the household food production activities, which occupies most of the remaining land on the farm. In this case, the total area of land cultivated is too great for the household alone to supply labour. At the same time, attractive off-farm opportunities for family labour are limited, so family labour is still supplied on the farm. The distribution of this labour between crops reflects intra-household decision-making and division of labour arrangements, but also again highlights the significance of subsistence food production within agricultural commercialisation processes.

So far, we have considered labour hire as an indicator of commercialisation. However, another strand in the literature sees the form of labour used (family vs hired) as an important determinant of comparative advantage in crop production. We return to this in section 4.

Third, some writing on commercialisation highlights the importance attached to the profit motive within the farm business as an indicator of commercialisation. Thus, Pingali and Rosegrant (1995: 171) state that:

“Agricultural commercialization means more than the marketing of agricultural output; it means the product choice and input use decisions are based on the principles of profit maximisation. Commercial reorientation of agriculture occurs for the primary staple cereals as well as for the so-called high value cash crops. On the input side, commercialization implies that both traded and non-traded inputs are valued in terms of their market value”

This is a useful nuance within discussions on commercialisation. As will be discussed below, risk minimisation, rather than profit maximisation, is an important driver of subsistence production. The phenomenon of “distress” sales, discussed above, provides a good example of sale of crops that is not driven by a profit motive, but rather a short-term survival need. Decisions to supply labour off-farm can also have both “push” and “pull” motivations (see below).

### 1.1.3 Broader (household-level) concepts of commercialisation

Looking beyond purely the agricultural activities of a household, von Braun and Kennedy (1994) propose a measure of integration into the cash economy, which they define as:

ICE = value of goods and services acquired through cash transactions/ total income

Alternatively, we might consider a household commercialisation index, where:

HCI = gross income from all market sources / total income

A livelihoods perspective reminds us that, even in rural Africa, many households obtain half or more of their income from non-farm sources (Reardon 1997, Ellis 2000)<sup>8</sup>. For policy makers, an important note of caution is that seeking to increase the market orientation of the agricultural production of households whose comparative advantage lies in non-farm employment may be a fruitless task.

Broadly speaking, the non-farm income of rural households may be derived from casual labour hire, wage employment, private business activity (self-employment) or remittances. There may be complementarities between such activities and agricultural production, for example, where non-farm activities are conducted mainly in the dry season or where small land holdings are insufficient to absorb the entire household’s labour, but they may also compete (Reardon 1997). Can pursuit of these activities be considered as commercialisation? This question takes us beyond the scope of the current paper. However, we offer the following brief observations before returning to our main theme of *agricultural* commercialisation.

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<sup>8</sup> We are interested here in all activities other than agricultural production undertaken by the household on its own account. These include both casual labour hire on the farms of others (“off-farm”, but not “non-farm”) and small business activity such as processing or handicraft making (“non-farm”) that is conducted on the household’s own property.

First, there are important ongoing debates as to whether rising off-farm income shares in rural Africa reflect pull (opportunity) or push (survival) factors (see, for example, Bryceson 1999, Ellis 2000, and Dorward 2003). Whilst, for some households, dependence on non-farm employment may be as much about survival as about comparative advantage, there are other households (e.g. those with above-average educational attainment, but limited land holding) for whom non-farm employment makes more sense as an income maximising strategy than producing agricultural products for market.

Second, we note that hiring out labour onto other farms rarely accounts more than a small fraction of total off-farm income in a community or area (Reardon 1997, Otsuka and Yamano 2006). This is generally low return work. However, there can be exceptions. Maertens and Swinnen (2007) show that employment on large-scale export horticulture enterprises represents a “pull” opportunity for many rural households in the relevant part of Senegal. In the 1990s, smallholder export horticulture developed in Senegal. However, in the latter part of that decade, the inclusion of smallholders within the supply chain was increasingly challenged by the private grades and standards introduced by importers in the major European markets. The industry reoriented itself towards estate production, while retaining a minority of its original smallholder outgrowers (the top producers). It has subsequently grown to the point where the total number of people employed by the industry (estate workers plus remaining outgrowers) far exceeds the total number of outgrowers contracted prior to the reorganisation. Maertens and Swinnen (2007)’s analysis of household survey data divides the population of the export horticulture production zone into three categories: those who have remained as outgrowers, households with one or more member employed on the new export horticulture estates<sup>9</sup> and households with no direct connection to the industry. It shows that those who have remained as outgrowers are the best off. However, households with one or more member employed on the horticulture estates are significantly better off than households with no direct connection to the industry. Moreover, many of the households with one or more member employed on the horticulture estates would not qualify as outgrowers. Whilst they have similar education levels to outgrowers, they have less land and fewer non-land assets. Because of the relatively inclusive nature of estate employment<sup>10</sup>, Maertens and Swinnen (2007)’s simulations indicate that poverty

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<sup>9</sup> In the light of discussions elsewhere in this paper, it is, however, worth noting that, whilst estate farm workers derive more than one third of their income from agricultural wages, own-farm agriculture is the main source of income in the area. On average across the sample, two thirds of household income is derived from own farming.

<sup>10</sup> Migrant families are, however, under-represented as estate employees.

levels in the area are lower under current arrangements that they would have been even had the contract farming form of organisation been able to continue.

When we consider the competitive strengths and weaknesses of different modes of agricultural organisation in Section 4, we might note the following lesson from the Senegal horticulture example. The direct poverty reduction potential from a particular example of “commercial” agriculture is a function of the rate at which the enterprise can grow, its labour intensity (and the type of labour employed) and the returns to labour achieved. In general, although labour intensity varies considerably by crop (with horticulture amongst the most intensive labour users), smallholder agriculture uses labour more intensively than large-scale estates. However, in the Senegal example, the competitive advantages of the estate mode of organisation outweighed the labour intensity advantage of smallholder production, enabling more poor households to obtain higher returns through wage employment on estates than they could through own production.

Even this, though, may only be part of the story – an essentially static comparison. Work on ethical trade and working conditions on commercial farms (see Smith et al, 2004; Tallontire et al, 2005; among others) emphasises *quality* of employment. It calls for a more sophisticated approach to poverty that recognises that enabling smallholders to stay and work in their communities could be more poverty reducing than supporting large scale commercial farms in a fiercely competitive global market place (characterised by downward pressures on prices and increased concentration in markets over time) that offers only low paid, insecure work. Returning to the central theme of this paper, a key issue, of course, is whether smallholder households are forced off their land to make way for expanding estate production or whether sufficient land is available for them to co-exist with estate producers, hiring out some of their labour at the same time as pursuing their own (food and other) production activities.

Third, available evidence suggests that, in Africa, access to non-farm income is unequally distributed, with better-off households acquiring a higher share of their income from non-farm sources than poorer households (Reardon 1997). In absolute terms, the differences are even greater. The diversity of returns from different non-farm activities indicates the presence of barriers to entry into some activities; with education and access to capital, the two most commonly cited ones.

Our discussion about employment on commercial farms notwithstanding, the evidence from reviews such as Reardon (1997) and Otsuka and Yamano (2006) is that it is ultimately growth in non-farm activities within an economy that drives major

falls in poverty. At first sight, this appears to call into question the importance of agricultural intensification and commercialisation to growth processes in Africa. However, this is a premature conclusion. There is some debate as to whether, in a predominantly rural economy, agricultural commercialisation is required to create the initial conditions for growth in manufacturing and service sectors. Haggblade et.al. (2007) argue that the causality can vary by specific case and context. However, even where growth in manufacturing and service sectors responds primarily to external (non-agricultural) demand, Otsuka and Yamano 2006 argue that agricultural intensification may be necessary to permit households to invest in the education necessary to obtain the available employment opportunities. Consistent with the emphasis in this report on food access as a constraint to commercialisation, they note that food insecurity may also discourage investment in non-farm activities: "... according to the long-term panel studies in Asia, increased agricultural income, mostly generated from the Green Revolution, was a major source of funds to invest in children's schooling in the early years, which later led to the choice of lucrative non-farm occupations by children. The last finding raises questions about the sources of investment in children's schooling in Sub-Saharan Africa. In practice, many African farm households lack the financial resources to send their children beyond primary school. The Asian experience strongly suggests that it is the Green Revolution that must be realized to initiate the structural changes towards increasing investment in human capital and greater participation in non-farm activities in Sub-Saharan Africa. Indeed, without increasing crop income and improving food security in Sub-Saharan Africa, farmers will not be able to afford to send their children to schools and **allocate more time to non-farm activities.**" (2006, p30, emphasis added)

## 1.2 Processes of commercialisation

For food production systems, Pingali and Rosegrant (1995) describe farmers' level of market orientation using three classifications: "subsistence systems", "semi-commercial systems" and "commercial systems" (Table 1). Each classification has different farmer objectives, sources of inputs, product mix and household income sources, echoing our discussion above of the multiple dimensions of commercialisation.

At first sight, this typology presents a rather linear trajectory that sees farmers, indeed agriculture sectors, progressing, over time, from subsistence through a state of semi-commercialisation to a commercial system with clearly defined characteristics along the four criteria – each one captured on a scale or hierarchy. The transition is described thus: "as economies grow, households shift away from traditional self-sufficiency goals and towards income and profit-oriented decision making, so farm

output is accordingly more responsive to market trends. The returns to intensive subsistence production systems that require high levels of family labor generally decline relative to production for the market with predominant use of hired labor. The proportion of farm income in total household income declines as family members find more lucrative non-agricultural employment opportunities” (Pingali and Rosegrant, 1995: 172-173).

**Table 1: Characteristics of food production systems with increasing commercialisation**

Level of Market Orientation	Farmer's Objective	Sources of inputs	Product mix	Household income sources
Subsistence systems	Food self-sufficiency	Household generated (non-traded)	Wide range	Predominantly agricultural
Semi-commercial systems	Surplus generation	Mix of traded and non-traded inputs	Moderately specialised	Agricultural and non-agricultural
Commercial systems	Profit maximisation	Predominantly traded inputs	Highly specialised	Predominantly non-agricultural

Reproduced from Pingali and Rosegrant (1995)

Table 1 is a simplification, but it neatly captures some important dynamics. One critique is that it focuses only on those who remain in agriculture; even if there is recognition that even these households will have other income sources beyond agriculture. Those who exit agriculture altogether - either because they specialise in non-farm activities or migrate out of rural areas altogether or end up largely as providers of wage labour to remaining farms – may be a minority at early stages of rural development, but grow to become the majority as both agricultural commercialisation and broader economic development proceed. Moreover, as shown by Otsuka and Yamano (2006), once growth in non-farm employment takes off, this can have a more dramatic impact on poverty reduction than even agricultural growth.

We might also observe that the path sketched out around Table 1 - developed principally in relation to Asia - applies largely to systems that start out as smallholder dominated. Bimodal systems (like those in Latin America and much of Southern and Eastern Africa) may have a quite different trajectory.

### 1.3 Specialisation and diversification

Table 1 above associates the agricultural commercialisation process with a move from production of a very diverse product mix to a more specialised production enterprise. Production decisions are increasingly shaped by market forces in conformity with comparative advantage, rather than by a desire to spread risks in the context of highly imperfect markets.

However, once again, progress is unlikely to be linear. In particular, at the earliest stages of agricultural development, commercialisation may well be associated with diversification. There may be two reasons for this. The first is that diversification in market-oriented crop (and livestock) enterprises may be an important way to spread market-related risks, given both market imperfections and volatility and the lack of other mechanisms for either ensuring against such risks or smoothing consumption when they occur. Leavy (2007) on Zambia and Gabreselassie et al (2007) on Ethiopia provide examples of households deliberately diversifying their market-oriented crop and livestock enterprises, rather than expanding a single enterprise, when they accumulate the resources to do so.

The second reason is that initial production of crops for market – especially non-food crops – represents diversification away from production of basic foods for home consumption. Heltberg (2001:3) observes that, “[s]mallholders produce market-destined crops *in addition to* the subsistence food crops they are growing anyway”<sup>11</sup>. In this case, the inconclusive nature of measuring commercialisation in terms of degree of specialisation can be illustrated using a Herfindahl index. If a farmer starts by allocating 90 per cent of land to maize and the remaining 10 per cent equally to 10 minor crops, the Herfindahl index is 0.811. If the farmer then switches to allocating 45 per cent each to maize (cultivated more intensively) and cotton, and only grows five other minor crops on the remaining 10 per cent, the Herfindahl index drops to 0.41. According to Heltberg, the degree of diversification has increased. According to Pingali (Table 1), the farmer has moved from a “wide range” of crops (eleven) to being “moderately specialised” (seven), with almost half of cropped area now planted with the clear intention to produce for market. Both views of the same shift are defensible.

According to Heltberg (2001:3), the tendency to add cash crops to existing food production activities can be attributed to the “urge for food self-sufficiency in environments of large transaction costs and high risks found in many sub-Saharan

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<sup>11</sup> See also Omamo 1998(a) and (b)

African (SSA) countries”. This contrasts with the belief of economic historians that “gains from specialisation are a key driving force in economic growth” (see North 1991; cited in Heltberg 2001). Heltberg concludes:

“Commercialization and diversification are therefore associated, at least at initially low levels of commercialization. This implies that smallholder agricultural commercialization may not yield the expected gains from specialisation and economies of scale and that it will not, in itself, be a prime engine of agricultural productivity growth. Nevertheless, commercialization is important as a livelihood strategy, source of cash income to farmers, and export revenue to the country, and worth promoting on those grounds.” (Heltberg 2001: 3).

We agree strongly with the emphasis placed here on “food self-sufficiency in environments of large transaction costs and high risks” and that one should not expect specialisation to occur until food markets function much better than they do in most of Africa today. However, we caution against the conclusions drawn on the grounds of economies of scale. Firstly, in Section 4 we discuss the evidence on the competitive strengths and weaknesses of smallholder vs commercial farms. There is very little evidence for economies of scale in agricultural *production* in low wage economies, although there may well be economies of scale in marketing and quality assurance (these are both information-related). Secondly, the expected gains from smallholder agricultural commercialization may not come primarily from the realisation of economies of scale. Instead, they arise when households are freed from producing food for own consumption, often in agro-ecological conditions that are far from ideal, and feel able instead to produce crops in which they have a clearer comparative advantage. Thus, von Braun and Kennedy (1994:3-4) write that:

“Subsistence production for home consumption is chosen by farmers because it is subjectively the best option, given all constraints. In a global sense, however, it is one of the largest enduring misallocations of human and natural resources, and, due to population pressure and natural resource constraints, it is becoming less and less viable.”

## 2 Making agricultural commercialisation as inclusive as possible

Several studies indicate factors that the authors consider important in distinguishing commercialised from non-commercialised growers and/or factors that affect “farmers’ decisions to become more integrated in the market” (vonBraun, 1995:189). So-called

“exogenous” determinants of commercialisation identified by these studies include: population change, availability of new technology, infrastructure, market creation, macro and trade policies.

We do not have time to discuss all of these in detail. However, in this section we discuss certain critical conditions that need to be in place if efforts to promote agricultural commercialisation are to benefit a large proportion of smallholder agricultural producers.

## 2.1 Market access

Given the centrality of participation in output markets in our definitions of commercialisation, **market access** is obviously crucial to commercialisation.<sup>12</sup> Market links bring broader benefits to poor people in rural areas, and there is plenty of evidence for this (see Dercon and Hoddinott, 2005, among others). However, households have different relations to markets because of costs associated with market transactions. The key is enabling farmers to access markets for their produce – as evidenced by the various ‘making markets work for the poor’ initiatives that emphasise market access as a major pathway out of poverty and the need to link farmers better up to new markets (DFID, Asian Development Bank, Commission for Africa report 2005; SIDA, 2003; World Bank World Development Report 2000/2001 chapter 10 making markets work better for poor people; Almond and Hainsworth, 2005, USAID). These stress the importance of agricultural growth, but also highlight infrastructure development as necessary to improve access to new markets as well as bringing other benefits to improve welfare overall.

Other aspects of the current orthodoxy include better market information, strengthening farmer organisations and promoting contract farming. However, while many measures implemented in support of increasing market access have value in their own right, there are still questions around who participates. Will it still only be the top few percent of farmers who respond, especially if on the whole smallholders cannot either buy their food reliably and cheaply from a market or intensify their own production?

Successes in various initiatives that fall under the banners of ‘making markets work’ for poor people and ‘linking farmers to markets’ have been mixed. Case studies from

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<sup>12</sup> For example, Heltberg’s study of smallholder farmers in Mozambique finds “to stimulate commercialisation the most important factors appear to be improved access to markets and information, risk reduction, capital accumulation” (Heltberg, 2001).

the DFID/ADB joint initiative focusing on financial, labour, and agricultural markets, and public private partnerships encompass contract farming schemes and other measures to encourage value chain participation by smallholder farmers, mainly in East and South-East Asia.<sup>13</sup> Contract farming schemes implemented in Cambodia encompass production of oranges, vegetables, rubber, tobacco and rice, with the aim to provide to/ achieve for smallholder farmers: price information; new technologies; lower costs of entering market; and access to credit. Of three schemes, two failed (CEDAC, an NGO supported scheme, and AADA, under a local farmer association) because of weak market linkages – even though AADA managed to increase productivity 5-fold. The third scheme - Angkor Kasekam Rongroeng (AKR) – is a rice contract farming scheme of more than 1,000 households. Benefits of the scheme have been to increase specialisation and the adoption of new production methods, as well as access to a stable market and secure income. Participating farmers received higher prices than in the market and on the whole felt that they were better off as a result. However, the scheme has excluded poorer farmers with smaller farm sizes.

A study by Minten, Randrianarison and Swinnen (2005) of smallholder farmers contracted to supply local supermarkets describes how smallholder farmers under micro-production contracts, have received extensive farm assistance and supervision to help them meet the high quality standards and food safety requirements demanded by European supermarkets. Under the scheme, almost 10,000 vegetable farmers in Madagascar are now producing for this market. Benefits of the scheme include higher welfare, greater income stability and shorter lean periods. However, local supermarkets do not demand the same high quality and are reticent about contracts that emphasise higher quality standards.

The contracting farm households tend to be considerably higher educated than the average Malagasy household: “The households that have contracts with the firm are: 64% of them had finished primary schools, and only 1% of them did not do any studies at all. This compares to almost half of the national population that is illiterate” (Minten et al, 2005:9). An area under contract is restricted to 0.01 hectare, but given relatively short production cycles there can be many different contracts on the same plot over the course of the year. Usually there is only one contractor per household, and contractors can have only one contract at a time, but multiple household members can have contracts concurrently. Households also subcontract land to people outside the household.

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<sup>13</sup> For more information see: Cambodia: <http://www.dfid.gov.uk/pubs/files/mmw4p/agcambodia.pdf>;  
Vietnam: <http://www.dfid.gov.uk/pubs/files/mmw4p/agvietnam.pdf> .

On a much smaller scale, smallholder farmers in South Africa have been supplying a local SPAR supermarket, while SPAR supports and maintains market access. The initiative is underpinned by South Africa's Agricultural Black Empowerment (AgriBEE) Policy, introduced in 2004. These smallholder farmers are classified as emerging farmers, and meet 30% of the store's demand for fresh produce, supplying cabbages, spinach, and other vegetables. However, its reach is limited in that this amounts to only 27 farmers in total (Louw et al, 2006), especially given that there are about 3 million small-scale farmers in South Africa, mainly settled in communal areas and farming only 14 per cent of agricultural land, compared with 46,000 commercial farms who produce 95 per cent of marketed surplus on 86 per cent of agricultural land (Sautier et al, 2006: 9). Participation of small-scale farmers in contract farming is still very limited.

These cases illustrate that while market access initiatives are valuable with many benefits to participating farmers, in practice relatively few are able to participate in what, on the whole, tends to be niche markets. That only the top few percent of smallholder farmers can actually benefit highlights the limitations of conventional thinking if it is decoupled from support for staples development. This is always going to hold back their ability to diversify out.

## 2.2 Access to staple foods: food markets and/or food production

It is now a well-attested fact that the majority of smallholder households in Sub-Saharan Africa are net deficit in food production terms and that only a minority sell any food staples at all in an average year<sup>14</sup>. Illustrating this for the case of Kenya, Nyoro et.al. (1999) found that around 70% of households in the high potential maize zone were net sellers of maize, but in none of the other six major agro-ecological zones in their survey did the proportion of net seller households exceed 30%. Yet, almost all households grow staple foods and, in most cases, they devote the majority of their land area to them. It is thus not uncommon for studies of food crop marketing to find that the top 10% of producers account for 50% or more of marketed surplus. Similarly, studies of cash crop systems tend to find that, within a given area of smallholder producers, it is the larger farms that engage more heavily in cash crop production (especially where larger farms also equate to higher land:labor ratios), leading to similar distributions of cash crop sales.

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<sup>14</sup> One of the first articles in the literature establishing this was Weber et.al. (1988).

This subsistence orientation persists because rural food markets in Africa are risky and subject to wide seasonal price variations. In this context, small farm households are rational to prioritise the growing of subsistence food crops, even when growing other crops for market would yield a higher mean return in a normal year. In this section, we develop this argument further. The corollary of this argument is that the expansion of commercial agriculture will generally have to go hand in hand with investments that increase the productivity of food staples.

There are two main strands of literature that investigate the relationship between subsistence and commercial agricultural production amongst smallholders. The first concerns the impacts of cash crop production on food security and nutrition. NGO and other critics of the promotion of cash crops have argued that cash crop production absorbs women's labour and may also justify men taking over land previously controlled by women. It thereby diverts these resources from food production for household consumption. Meanwhile, the resulting income is controlled by men, who prioritise personal consumption (e.g. of alcohol), marrying other wives or investment in fixed assets, rather than providing for the household's immediate food and nutritional needs.

A seminal work in this literature is von Braun and Kennedy (1994). Summarising across their case studies, they found that households that invest in cash crops rarely sacrifice food security to do so. Specifically:

- Farms adopting new "commercial" crops or technologies often devote a considerably smaller share of their land to food crops for own consumption than do non-adopters. In absolute terms, the area that they devote to food crops for own consumption may also be smaller. However, they generally achieve higher yields in their food crop production. As a result, per capita production of food for own consumption was as often higher for adopters than for non-adopters as vice versa.
- Higher incomes as a result of adoption of new "commercial" crops or technologies generally lead to higher calorie intake, although the increase is less than proportional due to increased non-food expenditure shares and a preference for more expensive calories (good for other aspects of nutrition). "Any negative tendencies to spend less for food because of loss of income control by women or because of increased involvement in market (cash) transactions are generally small and are more than compensated for by increased incomes due to commercialization" (p78).
- There is "no evidence for an adverse effect on child nutrition from increased commercialisation, even when income is held constant" (p46). Equally, though, child health indicators rarely improved, despite higher incomes, as (aside from

food) additional incomes were rarely spent on items with short-run health benefits. The authors argued that increased incomes should be combined with public action to deliver improved health outcomes.

Whilst this first strand of literature examines the impact of commercial agricultural production on the food security of those who have already engaged in it, the second considers whether household concerns about food security act as a constraint to adoption of commercial agriculture. Specifically, if food markets are unreliable, inefficient or highly volatile, it is argued that farm households will prioritise feeding themselves and hence will only cultivate very small quantities of crops intended for sale if they expect to experience a food deficit (Fafchamps, 1992; Jayne, 1994). Thus, under production conditions better suited to oil crops than to grains, Jayne (1994) found that, "Controlling for differences in household assets and location, grain-surplus households in five semi-arid regions of Zimbabwe were found to cultivate 48% more oilseed crops for the market than their grain-deficit neighbours" (p388).

Some evidence for this food-security-as-constraint-to-commercialisation view is also found in the studies reported by von Braun and Kennedy (1994). Thus, whilst several of the authors in that volume calculated that returns to land and/or labour were significantly higher under cash cropping than under food production for own consumption, adopting households generally devoted only 40% or less of their land to the new "commercial" crops or technologies, which was less than they continued to devote to subsistence food crops. Meanwhile, the smallest farms in the study areas were under-represented in cash crop schemes for various reasons, including both administrative selections (where this occurred) and their own choice.

The case study by Peters and Herrera (1994) neatly summarises why smallholders in Malawi plant on average around 80% of their land to maize. Prices of purchased maize are both high and unpredictable in the annual "deficit period" (December-January). However, in addition to this there are strong taste preferences for local maize varieties pounded in a traditional way and there are cultural reasons as to why cash resources within the household tend to get exhausted more readily than retained food stocks, hence making the latter more reliable as a food security reserve.

The Mozambique study by Heltberg and Tarp (2002) also highlights the importance of staple food production to agricultural commercialisation. Thus, in their regressions to explain the extent of participation in agricultural output markets, the single most important variable was the mean level of maize yield achieved in the district concerned. This could indicate that maize was readily available for purchase in the

districts concerned or that individual households in such districts were able to devote land and labour to crops other than staple foods because they were also able to ensure a reasonable supply of food through own production.

Of course, the two aspects of the relationship between cash crop production and subsistence food production are not mutually inconsistent. Indeed, if adoption of a cash crop only occurs when concerns related to food security can be allayed, then non-negative outcomes of cash crop production on food security are likely to be observed.

More recently, Pandey et.al. (2006) have carefully investigated the role of upland rice in the farming systems of the northern uplands of Vietnam. Yields of upland rice are lower than for lowland rice, so households that have both upland and lowland plots tend to plant less upland rice in their upland plots<sup>15</sup>, which are better suited to higher value cash crops (tree or horticultural crops) or even maize (a cash crop in this context). In more accessible areas, households can also readily obtain rice through the market from nearby lowland areas, so also produce less upland rice. However, in more remote areas, households cannot rely on obtaining reasonably priced rice through the market and hence plant a much higher proportion of their plots to upland rice. Within the subset (210 households) of their household survey dataset that did not have lowland rice plots, Pandey et.al. (2006) show that higher upland rice yields are associated with a lower proportion of total area planted to upland rice and a higher proportion planted to cash crops. In a similar vein, Poulton and Ndufa (2005) found that, within three subdivisions of Siaya and Vihiga districts in western Kenya, households that achieved higher maize yields in the long rains season had more diversified cropping patterns (away from maize) in the short rains season, controlling for farm size.

Pandey et.al. (2006) argue that, "Rice productivity improvement can thus be an important strategy for escaping from poverty while assuring food security. Improvements in household food security can thus facilitate and reinforce the process of commercialization rather than negating this process, as is believed in some policy circles. [Contrary to these same beliefs] ... a more gradual approach that is based on enhancing food security first before launching a major commercialization program for uplands is likely to be more successful in bringing about the desired change (von Braun and Kennedy 1994). Examples abound where commercialization programs

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<sup>15</sup> Some upland rice is, however, still typically planted, as it is harvested before lowland rice and is available in time for consumption during the main lean period, September-November.

that did not give due consideration to food security have performed poorly in the uplands of Vietnam and elsewhere.” (p77).

In the context of Vietnam, intensification of staple food production for home consumption may be a prerequisite for diversification into commercial agriculture principally in less accessible areas that cannot rely on food purchase from the market. However, basic infrastructure and transport is better in much of Vietnam than in most of Sub-Saharan Africa, whilst local food markets are also generally better developed (assisted by greater population density and the fact that the nation as a whole is rice surplus). In Sub-Saharan Africa, intensification of staple food production for home consumption may be a prerequisite for widespread diversification into commercial agriculture in many areas - not just the more "remote" ones.

We note, however, that policies to promote staple intensification amongst food deficit households with small-medium land holdings, as a means to eventual diversification into production of other crops for market, are likely to be different from policies to (further) expand staples production amongst existing surplus producers. Thus, policies that raise the price of food staples should provide incentives for the latter to further expand their production, but will only worsen the trap that the former find themselves in, reducing the already scarce cash that they have to buy improved seeds or fertiliser. In areas of average or higher agro-ecological potential, but poor market development, a system of input vouchers for staples production might assist diversification into higher value crops, if accompanied by other interventions to simultaneously promote such alternative crops<sup>16</sup>. However, in semi-arid areas significant staples intensification may always be too risky for producers to contemplate. In such cases, widespread commercialisation of agriculture might only come with improved market access, allowing both purchases of staples and opportunities to sell crops more suited to local growing conditions. The Machakos area in Kenya may be illustrative here (Tiffen et.al. 1994).

### 2.3 Asset accumulation

Intuitively, differences in asset holdings are likely to be a big determinant of who responds to incentives to commercialise. This is confirmed by empirical evidence, such as Heltberg's 2001 study of smallholder farmers in Mozambique, which identifies capital accumulation as an important stimulus to commercialisation. In this section, we discuss the key assets for rural households: land, plus livestock and equipment.

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<sup>16</sup> The challenge of providing a coordinated package of support measures to both promote staples intensification and simultaneously assist diversification should not be underestimated, however.

### 2.3.1 Land

Jayne et.al. (2003) present evidence from five countries of southern and eastern Africa (Ethiopia, Kenya, Mozambique, Rwanda and Zambia) of land holding patterns amongst smallholder households in the 1990s, based on nationally representative rural household surveys. Average land holding sizes per household have fallen by one third to one-half since the 1960s, as populations have risen (see also Ellis 2005). Contrary to some stylised facts about the relatively egalitarian nature of land distribution within communal tenure systems, Jayne et.al. (2003) also demonstrate that there is considerable inequality within land holdings – at least as great as in Asia at the onset of the Green Revolution. Only about a third of this inequality can be explained by inter-village effects (for example, differences in agro-ecological potential and local population densities); the remainder is within-village inequality. Observable household variables, such as demographic structure and livestock holding (see below) explain a further 12-20% of total observed variation. Jayne et.al. (2003, p267) suggest that “institutional and governance factors operating within local systems for allocating land” may account for some of the remaining inequality. Thus, for example, the first clans and families to settle an area commonly receive larger land allocations than later arrivals, whilst other studies indicate that those related to the chief responsible for land allocation receive larger allocations than those without such links.

Jayne et.al. (2003) show that around 25% of households in all five surveyed countries have access to less than 0.1 ha of land per capita – near landless. They also show that income per capita rises sharply as land holding rises from this level to 0.25 ha per capita (and more gradually thereafter). In other words, whilst households with lower land per capita obtain a higher share of their income from non-farm sources than households with a greater land endowment<sup>17</sup>, this is insufficient to compensate for lower land holdings in a predominantly agricultural economy.

Jayne et.al. (2003, p254) comment that “the poor generally lack the land, capital and education to respond quickly to agricultural market opportunities and technical innovation”. Thinking specifically about land, we argue that small land holdings interact unhelpfully with poorly developed food markets to keep poor households focused on the production of (often-low value) staple food crops. Thus, at any given yield level, a household with lower land per capita has to devote a higher proportion

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<sup>17</sup> Jayne et.al. (2003) also examine the relationship between share of non-farm income and total income per capita and find that this is positive in all countries except Ethiopia – a finding that is broadly consistent with that of Reardon (1997).

of its land to food production if it is to achieve a given level of self-sufficiency. There is then less land available, if any at all, for production of higher value crops for market.

We note at least two effects of small land sizes on agricultural commercialisation. Firstly, in the absence of efficient food markets, households with smaller land sizes have to be assisted to achieve higher staple yields before they will begin to devote land to production of higher value crops for market<sup>18</sup>. Secondly, lower land per capita means that they will be able to benefit less (in absolute terms) from their commercialisation efforts.

These points are illustrated by Table 2, which is derived from action research carried out in Siaya and Vihiga districts of western Kenya in 2001-2005. Land holding sizes in these districts are tiny, such that in a 2005 survey the 75<sup>th</sup> percentile household only had access to around 0.6ha, albeit land that could be farmed in two seasons per year. (This works out at 0.18ha per capita – below the threshold of 0.25ha per capita highlighted by Jayne et.al. 2003). Table 2 considers possible outcomes from agricultural intensification efforts that permitted an intensification of maize production in the long rains season, so as to permit diversification into other crops in the short rains. In the project in question, intensification of maize production was being promoted through provision of technical advice plus a credit scheme that assisted households to acquire improved maize seed and inorganic fertiliser. Production of soybean was being promoted for cash, food and soil fertility benefits, whilst planting fast growing “improved fallow” tree species on small parcels of land helps restore soil fertility as well as producing firewood, poles or fodder. Kales provide additional cash income. In the “best case” scenarios shown in Table 2, maize and bean yields for the 75<sup>th</sup> percentile farm are double those recorded by the actual 2005 project survey.

According to Table 2, the 75<sup>th</sup> percentile farm household could satisfy all its maize requirements at these enhanced yields (per capita consumption requirement is about 140kg per person p.a.) and devote 80% of its land area to crops other than maize during the short rains season. However, its income per capita from farming activities alone would still only be around half of the international poverty line of US\$1 (PPP terms), meaning that it would require non-farm activities to take it out of poverty. Meanwhile, with lower expected yields, as very poor households are rarely early adopters of new technological packages, the 25<sup>th</sup> percentile farm household would not satisfy its maize requirements, so would be likely to continue devoting most or all of its land to maize and beans for home consumption.

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<sup>18</sup> Note that higher yields for staples also raise the returns to their production, which may discourage diversification into other crops.

**Table 2: “Best Case” Agricultural Incomes for Representative Farm Households in Western Kenya**

Cropping Pattern (ha)	75 <sup>th</sup> percentile Farm		25 <sup>th</sup> percentile Farm	
	Long Rains	Short Rains	Long Rains	Short Rains
Maize/Beans (intercrop)	0.42	0.12	0.2	0.2
Soybean	0.06	0.24		
Kales	0.12	0.12		
Improved Fallow		0.12		
Total (ha)	0.6	0.6	0.2	0.2
Assumed Yields (t/ha)				
Maize (intercrop)	3.0	1.5	1.37	0.7
Beans (intercrop)	0.6	0.4	0.29	0.2
Soybean	1.5	1.5		
Kales	5.0	5.0		
Family Size		6.5		4.0
Maize Production per person p.a.		222kg		104kg
Net Income per person / day:				
KShs		16.63		3.78
US\$ PPP (current)		0.47		0.10

Source: adapted from Poulton and Ndufa (2005)

Jayne et.al. (2003) acknowledge that there are few easy solutions to the problem of limited land access for many African smallholder households. In both Malawi and Ethiopia land redistribution programmes to enforce a floor level of land holding per farm household are periodically floated in policy dialogues. Less radical would be efforts to stimulate land rental markets within customary tenure systems (see Crookes and Lyne 2003 for an example from KwaZulu-Natal) or investment in irrigation. What is clear is that efforts to stimulate intensification and commercialisation amongst farm households with small landholdings will require significant coordination across several services and markets: provision of technical advice; supply of both improved maize seed and alternative high value crops; supply of fertiliser and a mechanism for making it affordable to poor households (either credit or subsidy), and some form of linkage to a market for higher value produce. This may be achieved in a project setting, but is a formidable challenge for regular development administrations (see Section 5). Moreover, the continued absence of a replicable seasonal credit model for small-scale, semi-subsistence farm households in Africa suggests that intensification and commercialisation amongst farm households with small landholdings might only be feasible where the state is willing to invest in a fertiliser subsidy as a way of overcoming the affordability constraint.

Even then, Table 2 suggests that efforts to promote commercialisation should focus on reaching households with middling land holdings<sup>19</sup>, on the assumption that better endowed households are likely to adopt promising technological packages fairly readily. According to Jayne et.al. (2003), the long-term hope for poorer households with tiny land holdings is that eventually agricultural growth will stimulate growth in non-farm employment opportunities. Until then, such households may best be assisted through some form of social protection intervention (e.g. public works programmes, cash transfers, possibly also including fertiliser subsidies as social protection).

### 2.3.2 Animal traction

Another asset that greatly assists smallholder households to respond to market opportunities is animal traction (livestock plus the relevant equipment). Animal traction allows farmers to respond quickly to rains, thereby increasing yields, and to cultivate more land (assuming that they have access to it<sup>20</sup>). In addition, livestock ownership can provide manure for soil fertility, to the benefit either of staples intensification or of cash crop productivity. West African cotton sectors provide an excellent example of a virtuous circle of cash crop production and animal traction investment, with profits from cotton being reinvested in animal traction to the benefit of both food production and cash crop productivity (Savadogo et.al. 1998). Historically, cotton sector policy in West Africa has promoted animal traction adoption, with the result that 30-40% of farm households are considered fully equipped for animal traction use (weeding as well as planting). By contrast, in southern and eastern African cotton sectors, fewer households are equipped even to plough with their own equipment. "Top end" producers in the different regions achieve similar yields, but the much greater proportion of fully equipped producers in West African cotton sectors goes a long way towards explaining the much higher average yields achieved by these sectors as compared with southern and eastern Africa.

## 3. Which crops and markets?

It is clear that - contrary to the fears described in Section 2 that commercialisation means large scale, export-oriented farming, and essentially changes that favour larger, more powerful players to the detriment of smallholder farmers -

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<sup>19</sup> The figures cited by Jayne et.al. (2003) show mean land holdings amongst smallholder households ranging from 0.16ha per capita in Rwanda to around 0.6ha per capita in Zambia.

<sup>20</sup> Jayne et.al. (2003) found that landholdings both per household and per capita were strongly associated with livestock ownership. The causality could work both ways here.

commercialisation as measured by something like the CCI could be relevant for any size of farm and any market. What is important is that farmers' benefit from participating wherever the opportunities are and will respond to any market opportunities that are available. This does not mean exclusively export markets. Indeed, staples markets in SSA are estimated to be worth US\$50 billion per annum and growing at 4 per cent per annum (Diao et.al. 2003)<sup>21</sup>. Further, in reality large-scale and smallholder have different strengths, which give each of them advantages in producing certain crops.

a. Competitive strengths and weaknesses of different farm types

Often, different modes of commercialised agriculture exist side-by-side and interact with each other.<sup>22</sup> These include:

- Small-scale farmers:
- Small-scale 'non-commercial' farmers – might sell some produce but do not or can not make their entire living from farming (Type A);
- Small-scale commercial farmers – tend always to have been market-oriented and make a living from selling their output (Type B);
- Emerging commercial farmers – small-scale investors, often farming as a secondary activity,<sup>23</sup>
- Large-scale 'business' farming.

A long-standing literature (see, for example, Binswanger and Rosenzweig 1986) observes that different farm types have different advantages and disadvantages when it comes to production and marketing. Some of these are summarised in Table 3. Crudely speaking, the competitive advantages of smallholder farms are centred on their low-cost supply of (generally) highly motivated family labour, whereas large-scale farms face lower costs in most other input and output market transactions.

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<sup>21</sup> In a study of maize pricing and policy in Kenya, Jayne et al (2001) also state the case for diversified crop production: "productivity growth in agriculture is likely to be a precondition for injecting purchasing power into rural areas and hence stimulating demand and employment growth in the broader economy. But this will require viewing agricultural income growth as deriving from many crops. Important regional differences suggest that tailoring policies with their regionally dis-aggregated impacts in mind can lead to improved outcomes" (2001: 25).

<sup>22</sup> See for example, White et al (2006) on Zambia, Cromwell et al (2005) on Malawi; Sharp et al (2007)'s Future Agricultures work on Ethiopia.

<sup>23</sup> See work on "New actors in rural land markets" Ouedraogo (2006); Toure and Seck (2005). Work under the Future Agricultures Consortium by Amdissa Teshome, exploring young peoples' aspirations in relation to the agriculture sector suggest that this is the type of farming that many young rural people, the sons and daughters of farmers themselves, would hope to be farming in the future.

**Table 3: Competitive strengths and weaknesses of different farm types**

	Smallholder farmers		Small Investor-farmers	Large-scale farming
	Type 'A'	Type 'B'		
Land	*	**	**	**
Finance / Credit		*	**	***
Inputs: access/ purchase	*	*	**	***
Skilled labour: access		*	**	***
Unskilled labour: motivation, supervision	***	***	**	*
Contacts/networks	*	**	**	***
Market knowledge	*	**	***	***
Technical knowledge	*	**	***	***
Product traceability and quality assurance			*	***
Risk management	*	*	**	***

\* = poorly positioned (no star is worse!); \*\*\* = well-positioned

Table 4 takes the analysis in Table 3 one stage further and assesses the likely competitiveness of different farm types in different crops and markets, given the technical and economic requirements of different crops and the demands made by different markets. This is an area where the predictions of theory and actual experience of commercial competitiveness tally quite closely.

One implication of this sort of analysis is that the dominant type of farm that is observed during agricultural commercialisation will depend at least in part on the types of crops being promoted (in turn, a function of agro-ecological conditions and market opportunities) as well as the markets being targeted. Large-scale farms might flourish because they are the most appropriate mode of commercialised agriculture for particular crops and markets in which the country or region has comparative advantage – not necessarily, because there is a large farm bias in policy. Equally, a country or region may do well in two product groups (say, coffee and export horticulture in Ethiopia), with smallholder production systems dominating in one and large farms dominating in the other.

**Table 4: Predicting Competitiveness of Farm Types in Different Crops and Markets**

	Smallholder farmers		Small Investor-farmers	Large-scale farming
	Type 'A'	Type 'B'		
food staples (local/national/regional markets)	✓	✓		?
high value crops, e.g. horticulture (local/national/regional markets)		✓	✓	
low value export commodities, e.g. cassava, soya, grains				?
horticulture exports		?	?	✓
traditional export commodities		coffee, cotton, tea, groundnuts	✓	sugar, tea, tobacco

#### 4. Documentation versus implementation

However, there may also be other reasons why large farms are seen to do better than smallholder farmers.

Given the diversity of policies at the national level care should be taken when making generalisations. It is necessary, however, to consider how policy narratives, given their in-built assumptions about the way things work, translate in implementation.

At the national level, Poverty Reduction Strategy Papers (PRSPs) are one component of an array of policy instruments and strategies for poverty alleviation and economic development. It is not clear from various PRSP documents (Ethiopia, Kenya, Malawi, among others) that they do in fact focus – either explicitly or implicitly – on large-scale/estate export-led agriculture to the exclusion of small-scale farmers. Most PRSPs see the commercialisation of peasant agriculture as a key pillar of rural development. It is fair to say, however, that most current government policy, backed by donors, appears to promote an essentially dualistic agricultural system, through supporting large commercial farms on one side and the 'small farm sector' on the other.

How policy objectives translate into policy actions is important – a point also made in recent reviews of the rural focus of PRSPs and PRSCs (Poverty Reduction Support

Credits).<sup>24</sup> These found the seeming neglect of rural issues in PRSPs to be “not so much the lack of policies targeting the rural productive sectors but rather the nature and reach of those policies” (Cromwell et al, 2005:3)<sup>25</sup>.

a. Commercialisations in policy discourse

More often than not large farm bias may develop in practice even though policy appears to be pro-smallholder on paper. Why does even the best-intentioned policy not lead to smallholder development in practice? Interventions that actually arise can differ from the stated policies that are supposed to shape them for various reasons, including: i) Individual officials or politicians do not believe pro-smallholder rhetoric of policies (but it is difficult to find evidence for this); and ii) Large-scale farms can prosper when a basic enabling environment (Macroeconomic stability, banking sector, trunk infrastructure, political support for private enterprise, R&D) is in place, as they are able to source critical services themselves. By contrast, smallholders require pro-active service provision, and this is an implementation issue. Smallholders need to be provided with a range of pre- and post-harvest services (market intervention and linkages, extension advice, finance schemes, input markets, capacity building for farmer organisations). None of these will be entirely private sector driven under current conditions in SSA, there nearly always has to be some state role if not in service provision then in its regulation. Thus, where state capacity is lacking, large-scale farms may still perform whilst smallholder systems languish. This is different from a pro-large scale bias, but the outcomes may not look that different. Large-scale farms are also able to prosper even with a non-performing Ministry of Agriculture, while smallholders need the services that the Ministry of Agriculture is supposed to be responsible for.

In some instances, implementation can reflect the priorities of elites, so national governments, and resources allocated to pro-poor activities, do not reflect MPRS priorities (see Chirwa et al, 2006 on Malawi). Taking Malawi as an example, there is a tendency towards seeing the agricultural sector as principally dualistic in nature with the estate sector on the one hand, and small farms on the other. Small farms are further subdivided by type into: commercial small farms (about 10 per cent of small farms); small farmers with commercial development potential (about 50 per cent), and severely resource constrained small farmers (about 40 per cent). For this bottom

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<sup>24</sup> See for example, World Bank (2005). A Review of Rural Development Aspects of PRSPs and PRSCs, 2000-2004.

<sup>25</sup> The study, which examines three PRSPs: Malawi, Nicaragua and Vietnam, also notes the seeming lack of hard evidence of what actually has been or is being implemented (page?). See also Shepherd and Fritz (2005).

cadre of small farms the policy focus is on social safety nets, with little indication of how this links to broader economic growth efforts (Cromwell et al, 2005).

b. Pro-smallholder policies on the ground

What are the components of pro-smallholder policies on the ground? In the class of smallholder farmers, there is usually a 'top' group that tends to make a profit. For example, in West African cotton systems this is, unusually, 40 per cent of smallholder farmers, but fewer than 10 per cent in Southern and East Africa. What is required for such smallholder participation? There needs to be considerable action on the ground, otherwise only the large-scale farmers and the top 10 per cent or so are going to participate and benefit from opportunities. If people are not proactively enabled to get involved then there will always be a bias towards the top end. This leads us to question severely the equality of the focus of policy. Actions to encourage smallholder commercialisations could include:

Attention to food crops. Precarious rural food markets mean that farm households, rationally, will prioritise feeding themselves over selling their crops, even if growing other crops for market would yield a higher mean return in a normal year. Empirically, once a household's food security needs have been met only then does it make sense to invest in producing for the market. The upshot here is the expansion of commercial agriculture would need to be complemented by investments to increase the productivity of food staples, rather than focusing solely on policies that incentivise those already growing a surplus (such as increasing the price of food staples) but only serve to penalise those households who will experience this as a further drain on scarce cash resources.

Pro-actively encouraging asset accumulation processes, for example through promoting investment in animal traction, to create a virtuous circle between cash cropping and assets (see, for example, Savadogo et al., 1998);

Making markets work for poor farmers in poor areas, making the most of and creating market opportunities that are relevant to local producers without resorting to ideological or preconceived ideas about export versus domestic production, or high potential compared with less favourable areas. Localised opportunities have real potential to improve household incomes and food security.

Which markets do present the best opportunities to smallholder farmers? There is an ongoing debate about the relative importance of export and domestic markets for African agriculture. The arguments for paying adequate attention to domestic market

opportunities are: 1) size of domestic markets, boosted by both population growth and urbanisation (estimated at \$50 billion compared with a combined total of just over \$8 billion for agricultural trade over the period 1996-2000; Diao and Hazell, 2004); 2) much less restrictive quality standards and requirements within domestic markets (relatively more smallholder-friendly) compared with export markets; and 3) from a growth perspective, the additional multipliers that come from lowering food prices.

*Smallholder vs large-scale farming:* These have their relative strengths, for smallholders these lie in labour motivation and supervision; for large-scale, commercial farms their advantages are associated with access to market information, extension advice, finance, inputs, fixed costs, and output market linkages. There are also questions around the extent to which one can provide quality assurance and traceability in a cost-efficient way within smallholder systems compared with larger scale operations. Supermarkets and other players in export markets tend to favour the latter.

The relative strengths of different farm types/systems mean that one system tends to perform better in some crops (e.g. smallholders in labour intensive crops where quality assurance and traceability are not yet important) and the other in others. We should not assume that all crops are the same any more than we assume that all farms are. This is an area where the predictions of theory are well borne out by actual experience. It may be difficult to fight the thrust of large farms in some cases. In others, smallholders will do just as well as large farms or better. Therefore, in terms of what a government is to encourage and support, there needs to be in the mix crops that are not all "large farm crops".

We must also remember the degree of heterogeneity within smallholder systems. Realistically not all smallholder farmers are going to be participating. There will be some people for whom it is just far too risky to grow cash crops and buying food.

- c. How do we ensure that pro-smallholder policy documents lead to pro-smallholder policy on the ground?

If there is a disparity between pro-smallholder agriculture policy on paper and what is happening in practice, then we need to identify the channels for policy to reach smallholders on the ground. What do smallholder farmers need to support them in stepping up production for the market that works with and enhances what they are already doing, given that most farmers do sell at least some proportion of their output and the different routes open to farmers to sell into markets.

i. Enabling environment

Creating a good enabling environment is rarely enough for a strong smallholder sector to spontaneously take off. An enabling environment for the agriculture sector, most of it centrally provided, includes:

- Macro-economic stability, favourable real exchange rates;
- Reasonably strong banking sector, not just city-focused;
- National investment promotion policy;
- Core infrastructure;
- Research & Development;
- Political support of private enterprise;

Getting all of these rights might be enough for large-scale agriculture and/or agribusiness development, which might in turn facilitate some smallholder involvement. However, smallholder commercialisation also requires much more active service provision, most of which has to be organised at decentralised (e.g. regional) level.

ii. Service delivery

Service delivery includes provision of:

- Finance schemes;
- Extension advice;
- Input markets/systems;
- Market information and linkages;
- Capacity building for farmers' organisations;
- Asset accumulation of farmers.

Service delivery is crucial. Large commercial farms have the infrastructure (internet, transport, clout) to sell output successfully as long as the enabling environment is there. By contrast, someone has to bring it to smallholder farmers; otherwise, only large-scale farmers are able to take advantage of this enabling environment. Within contract farming schemes some of these services may be provided by agribusiness, but not usually capacity building for independent farmers' organisations and not the support for asset accumulation or staples intensification highlighted above<sup>26</sup> – these still have to be provided somehow, and can be critical to the impact of contract farming on livelihoods and poverty. Moreover, contract farming is not appropriate for

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<sup>26</sup> Historically, WCA cotton systems were again an exception to this rule, as the whole rural development effort in the cotton zones was mandated to the cotton company. (This is ceasing with liberalisation/reform).

all crops – for example those for which independent local markets exist - and in these other cases all the services listed above have to be provided independently if they are to exist at all.

Decentralised/ regional service provision is essential, and is especially important in the domestic sector. But even national export markets still need some implementation at regional (within-country) level. These points to coordination at the local level to give smallholder farmers the package of services they need. Co-operatives and farmers groups have potential roles both as service providers and as participants in local policy processes (such as in advocacy and coordination), but who promotes these groups? In many cases, too much external pressure for the formation of farmer organisations can lead to weak groups forming in response to initial incentives – not strong, independent groups (Stringfellow et.al. 1997).

iii. Policy processes

Creating a good enabling environment and ensuring sufficient, timely and efficient service delivery is crucially dependent on policy processes. How are governments/ ministries of agriculture working to provide and support these, given the distinctions between enabling environment and service delivery?

The enabling environment is not only central, but is handled almost exclusively (perhaps with the exception of R&D) by ministries other than Agriculture – the now common observation is that Ministry of Finance handles more policy relevant to agriculture than the Ministry of Agriculture (see also Cabral and Scoones, 2006). However, if Ministry of Agriculture is not actively committed to ensuring that services are provided to smallholders, then the likelihood is they will not be (with the partial exception of contract farming schemes noted above), and large-scale farms can develop where the Ministry of Agriculture is ineffective. Historically, Ministries of Agriculture have seen their role to be that of providing services – which have rarely reached more than a tiny minority of largely privileged, well-connected farmers. Instead, their role should be to support decentralised service provision and local level coordination mechanisms (effectively, providing a technical input into processes that are actually focused on local government).

This points to reorienting Ministries of Agriculture – specifically, to maintain strong state capacity but as a recent Future Agriculture paper on policy narratives in African agriculture suggests: “refocus attention on key roles – including investment in state-led reforms to help create the structural conditions for kick-starting the agricultural economy” (Cabral and Scoones, 2006, p32). This means on-going investment in

coordination and intermediation functions. Of course, such a shift to substantial state function for ministries is not trivial. A change in agricultural governance setting, against many vested interests, is certain to be challenging in terms of organisation and capacity, not to mention politically. However, if we want to see agricultural commercialisation policy that reflects and promotes pathways that are truly pro-poor, pro-smallholder and pro-‘development’, governments and donors need to move beyond rhetoric to actually recognising and supporting channels and environments through which smallholder farmers can and do participate.

## References

- Albu M and A Griffith. 2005. Mapping the Market: A framework for rural enterprise development policy and practice. Practical Action Markets and Livelihoods Programme. June 005. [www.bdsknowledge.org](http://www.bdsknowledge.org)
- Almond F R and S D Hainsworth eds. 2005. Beyond Agriculture – making markets work for the poor: proceedings of an international seminar. 28 February – 1 March 2005, Westminster, London, UK. Crop Post-Harvest Programme / Practical Action.
- Bellemare M F and C Barrett. 2006. An ordered tobit model of market participation: evidence from Kenya and Ethiopia. *American Journal of Agricultural Economics*. 88(2): 324-337.
- Binswanger, H. and M. Rosenzweig. 1986. "Behavioural and Material Determinants of Production Relations in Agriculture." *Journal of Development Studies* 22(3): 503-539.
- Bryceson, D. 1999.. African Rural Labour, Income Diversification and Livelihood Approaches: A Long-Term Development Perspective. Leiden, Afrika Studie Centrum.
- Chirwa E W, J Kydd and A Dorward. 2006. Future Scenarios for Agriculture in Malawi: Challenges and Dilemmas. Paper presented at the *Future Agricultures Consortium* held at the Institute of Development Studies, Sussex, 20 – 21 March 2006.
- Cromwell E, C Luttrell, A Shepherd and S Wiggins. 2005. Poverty Reduction Strategies and the Rural Productive Sectors: Insights from Malawi, Nicaragua and Vietnam. ODI Working Paper 258, November 2005. London: Overseas Development Institute.
- Crookes, T. and M. Lyne. 2003. "Efficiency and Equity Gains in the Rental Market for Arable Land: Observations from a Communal Area of KwaZulu-Natal, South Africa." *Development Southern Africa* 20(5): 577-591
- Dercon S and J Hoddinott. 2005. Livelihoods, Growth, and Links to Market Towns in 15 Ethiopian Villages IFPRI Food Consumption and Nutrition Division. FCND Discussion Paper 194 July 2005. IFPRI Washington DC
- DFID. 2000. Department for International Development Making Markets Work Better for the Poor A Framework Paper Economic Policy and Research Department and Business Partnerships Department. November 2000
- Diao, X., and P. Hazell. 2004. *Exploring Market Opportunities for African Smallholders*. 2020 Africa Conference Brief No. 6, International Food Policy Research Institute, Washington, D.C.
- Diao, X., P. Dorosh and S. Rahman. 2003.. *Market Opportunities For African Agriculture: An Examination Of Demand-Side Constraints On Agricultural Growth*. Development Strategy and Governance Division Discussion Paper No.1, IFPRI, Washington DC, September 2003, <http://www.ifpri.org/divs/dsgd/dp/papers/dsgdp01.pdf>.
- Dorward, A. 2003. Modelling Farm-Household Livelihoods in Malawi: Methodological Lessons for Pro-Poor Analysis. Paris.
- Dorward, A. R., J. G. Kydd, J. A. Morrison and I. Urey. 2004. "A Policy Agenda for Pro-Poor Agricultural Growth." *World Development* 32(1): 73-89.
- Dorward, A., N. Poole, J. A. Morrison, J. Kydd and I. Urey. 2003.. "Markets, Institutions and Technology: Missing Links In Livelihoods Analysis." *Development Policy Review* 21(3): 319--332.

- Dorward, A., S. Moyo, G. Coetzee, J. Kydd and C. Poulton. 2001. *Seasonal finance for staple crop production: problems and potential for rural livelihoods in sub Saharan Africa*. Working paper, DFID Policy Research Programme project 'Diverse income sources and seasonal finance for smallholder agriculture: applying a livelihoods approach in South Africa'. Wye, Imperial College.
- Doss, C. R., W. Mwangi, H. Verkuil, and H. de Groote. 2003. *Adoption of Maize and Wheat Technologies in Eastern Africa: A Synthesis of the Findings of 22 Case Studies*. CIMMYT Economics Working Paper 03-06. Mexico, D.F.: CIMMYT.
- Ellis, F. 2000. *Rural Livelihoods and Diversity in Developing Countries*. Oxford, Oxford University Press.
- Ellis, F. 2005. *Small Farms, Livelihood Diversification and Rural-Urban Transitions: Strategic Issues in Sub-Saharan Africa*. The Future of Small Farms: Proceedings of a Research Workshop, Wye, UK, June 26-29th 2005, International Food Policy Research Institute.
- Fafchamps, M. 1992. "Cash Crop Production, Food Price Volatility and Rural Market Integration in the Third World." *American Journal of Agricultural Economics* 74(1): 90-99.
- Goetz, S. J. 1992. A Selectivity Model of Household Food Marketing Behavior in Sub-Saharan Africa. *American Journal of Agricultural Economics* May 1992 444-452.
- GOM. 2002 Malawi Poverty Reduction Strategy Paper, Government of Malawi April 2002.
- IMF. 2006. Malawi Poverty Reduction Strategy Paper, progress report. 2004/2005 Annual Review Report).
- Haggblade, S., P. Hazell and T. Reardon. 2007. *Transforming the Rural Nonfarm Economy: Opportunities and Threats in the Developing World*. Baltimore, Johns Hopkins University Press
- Hazell P, C Poulton, S Wiggins and A Dorward. 2007. *The Future of Small Farms for Poverty Reduction and Growth*. IFPRI 2020 Discussion Paper 42. International Food Policy Research Institute, Washington DC, May 2007.
- Heltberg R. 2001. mimeo) Commercialization and specialisation in Mozambican Agriculture. Institute of Economics, University of Copenhagen, 2 January 2001.
- Heltberg R and F Tarp. 2002. Agricultural supply response and poverty in Mozambique. *Food Policy* 27(2002) 103-124.
- Jayne, T. 1994. Do High Food Marketing Costs Constrain Cash Crop Production? Evidence from Zimbabwe." *Economic Development and Cultural Change* 42(2): 387-402.
- Jayne, TS, T Yamano, J Nyoro and T Awuor. 2001. Do farmers really benefit from high food prices? Balancing rural interests in Kenya's maize pricing and marketing policy. Tegemeo working paper 2B, April 28,2001.
- Jayne, T., T. Yamano, M. Weber, D. Tschirley, R. Benfica, A. Chapoto and B. Zulu. 2003. "Smallholder income and land distribution in Africa: Implications for poverty reduction strategies." *Food Policy* 28(3): 253-275.
- Jayne T, B Zulu and J Nijhoff. 2006. "Stabilizing food markets in eastern and southern Africa." *Food Policy* 31(4): 328-341.
- Key N, E Sadoulet and A de Janvry. 2000. Transactions costs and agricultural household supply response. *American Journal of Agricultural Economics* 82 (May 2000): 245-259.

- Kydd J. 2002. Agriculture and Rural Livelihoods: Is Globalisation Opening or Blocking Paths out of Rural Poverty? Network Paper No. 121 (January 2002) Agren Agricultural Research and Extension Network. ODI: London.
- Maertens M and J Swinnen. 2007. "Trade, Standards and Poverty: Evidence from Senegal." Paper prepared for the 106th EAAE seminar on "Pro-poor development in low income countries: Food, agriculture, trade, and environment", Montpellier, 25-27th October 2007.
- North D C. 1991. Institutions. *Journal of Economic Perspectives* 5(1) 97-112.
- Nyoro, J., M. Kiiru and T. Jayne. 1999. Evolution of Kenya's Maize Marketing Systems in the Post-Liberalization Era. Workshop on Agricultural Transformation in Africa, Nairobi.
- Omamo S W. 1998a. Farm-to-Market Transaction costs and specialisation in small-scale agriculture: explorations with a non-separable Household model. *Journal of Development Studies* 35:152-163.
- Omamo S W. 1998b. Transport Costs and smallholder Cropping choices: An Application to Siaya District, Kenya. *American Journal of Agricultural Economics* 80(1) 116-123.
- Otsuka, K. and T. Yamano. 2006. *The Role of Rural Labor Markets in Poverty Reduction: Evidence from Asia and East Africa*. Background Paper Prepared for World Bank World Development Report 2008, Foundation for Advanced Studies on International Development, Tokyo, October 2006.
- Ouédraogo S. 2006. *New actors and land acquisition around Lake Bazèga, Burkina Faso*, IIED, London, Issue Paper 13
- Pandey, S., N. Khiem, H. Waibel and T. Thien. 2006.. Upland Rice, Household Food Security and Commercialization of Upland Agriculture in Vietnam. Los Banos, Philippines, International Rice Research Institute.
- Peters, P. and M. Herrera. 1994. Tobacco Cultivation, Food Production and Nutrition Among Smallholders in Malawi. Agricultural Commercialization, Economic Development and Nutrition. J. von Braun and E. Kennedy. Baltimore, Maryland, The Johns Hopkins University Press: 309-327.
- Pingali P L and M W Rosegrant. 1995. Agricultural Commercialization and diversification: processes and policies. *Food Policy* 20(3) 171-185.
- Pingali, P. L. 1997. "From subsistence to commercial production systems: the transformation of Asian agriculture." *American Journal of Agricultural Economics* 79(2): 628 - 634.
- Poulton, C. and A. Dorward. 2003. *The Role of Market Based Economic Development in Strengthening Food Security*. Paper prepared for the ODI Southern Africa Forum on Food Security, June 2003. London, Overseas Development Institute.
- Poulton C, J Kydd, S Wiggins and A Dorward. 2006. "State intervention for food price stabilisation in Africa: can it work?" *Food Policy* 31(4): 342-356.
- Poulton, C. and J. Ndufa. 2005. *Linking Soil Fertility and Improved Cropping Strategies to Development Interventions: Final Technical Report Annex A*. Report submitted to DFID Natural Resources Systems Programme, Imperial College London / Kenya Forestry Research Institute, Wye, October 2005
- Poulton C, G Tyler, A Dorward, P Hazell, J Kydd, M Stockbridge. 2006. All-Africa Review of Experiences with Commercial Agriculture. Summar Report. First draft, Imperial College London.

- Pretty J N, J Thompson, F Hinchcliffe. 1996. Sustainable Agriculture: Impacts on Food Production and Challenges for Food Security IIED GATEKEEPER SERIES No. 60
- RATES. 2003. Maize market assessment and baseline study for Ethiopia. Regional Agricultural Trade Expansion Support Program. Nairobi, Kenya. July 2003.
- Reardon, T. 1997. "Using Evidence of Household Income Diversification to Inform Study of the Rural Non-farm Labour Market in Africa." *World Development* 25(5): 735-748.
- Savadogo, K., T. Reardon, et al. 1998. "Adoption of Improved Land Use Technologies to Increase Food Security in Burkina Faso: Relating Animal Traction, Productivity and Non-Farm Income." *Agricultural Systems* 58(3): 441-464
- Sharp K, E Ludi and S Gabreselassie. 2007. "Commercialisation in Ethiopia: Which Pathways?" Future Agricultures Consortium Paper, presented at EEA Conference, 8<sup>th</sup> June 2007.
- Shepherd A and V Fritz. 2005. Key issues in sharpening the rural production focus of Poverty Reduction Strategy Processes: Literature Review for IFAD Issues Paper. Overseas Development Institute, London.
- Smith, S., Auret, D., Barrientos, S., Dolan, C., Kleinbooi, K., Njobvu, C., Opondo, M., and Tallontire, T. 2004. 'Ethical Trade in African Horticulture: Gender, Rights and Participation', IDS Working Paper 223, Brighton: Institute of Development Studies.
- Strasberg Paul J., T. S. Jayne, T Yamano, J Nyoro, DKaranja, and J Strauss. 1999. Effects Of Agricultural Commercialization On Food Crop Input Use And Productivity In Kenya. MSU International Development Working Paper No 71, 1999.
- Stringfellow, R., J. Coulter, T. Lucey, C. McKone and A. Hussain. 1997. Improving the Access of Smallholders to Agricultural Services in Sub-Saharan Africa: Farmer Cooperation and the Role of the Donor Community. London, Overseas Development Institute.
- Swaminathan, M.S. 1995. Population, environment and food security. *CGIAR Issues in Agriculture* 7. CGIAR, Washington, DC.
- Tallontire, A., Dolan, C., Smith, S., and Barrientos, S. 2005. Reaching the Marginalised? Gender, Value Chains and Ethical Trade in African Horticulture' *Development in Practice* 15 (3 and 4): 559-571
- Tan S F and B Gueye (ed) 2005 Portraits of family farming in West Africa. Issue paper no. 134 IIED Drylands Programme March 2005
- Tiffen, M., M. Mortimore and F. Gichuki. 1994. More People, Less Erosion: Environmental Recovery in Kenya. Chichester, John Wiley and Sons.
- Toulim C and B Gueye, 2003. "Transformations in West African agriculture and the role of family farms" by Camilla Toulmin and December 2003, IIED Issue Paper 123.
- Touré O and Sidy Mohamed Seck. 2005. *Family and Commercial farming in the Niayes area of Senegal*, IIED, London, Issue Paper 133
- USAID. 2004. Agriculture Strategy *Linking Producers to Markets* U.S. Agency for International Development July 2004.
- Von Braun. 1995. Agricultural Commercialization: impacts on income, nutrition and implications for policy. *Food Policy* 20(3): 87-202.
- Von Braun, J. & Kennedy, E. (eds.) 1994. *Commercialization of Agriculture, Economic Development and Nutrition*, John Hopkins Press, Baltimore, MD.

Weber, M., J. Staatz, J. Holtzman, E. Crawford and R. Bernstein. 1988. "Informing Food Security Decisions in Africa: Empirical Analysis and Policy Dialogue." *American Journal of Agricultural Economics* **70**(5): 1044-1052.

White H, J Leavy, M Mulumbi, G Mulenga, Venkatesh Seshamani. 2005. *Rural labour markets in Africa: a channel for pro-poor growth? preliminary findings from a research project in Northern Province, Zambia*. discussion draft. IDS Mimeo.

# COMMERCIALISATION OF FARMING IN ETHIOPIA: WHICH PATHWAYS?<sup>1</sup>

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## *Abstract*

*The paper considers the various and potential meanings of commercialisation (or market-oriented agriculture) for Ethiopia. Much attention has been paid recently to high-tech, large-scale, export-oriented enterprises such as floriculture: but international evidence and Ethiopian realities demonstrate that this is only one of many complementary pathways to commercialisation. Most of Ethiopia's small farm households are already engaged with markets to varying degrees: improving the terms of that engagement is likely to have a greater and more widespread impact on poverty than a few large ventures, and should be given equal policy attention.*

*Policy debates on commercialisation of agriculture are not new in Ethiopia: various approaches and strategies have been dominant in different periods of history. While improving productivity, increasing foreign currency earnings through export and developing a strong agro-industrial sector were the focus of policy attention in the 1950s and 1960s; accelerating growth and poverty reduction have been much more the focus of recent attempts to increase the commercial orientation of farm households.*

*We suggest that four types of commercial farms can currently be discerned in Ethiopia:*

- *Farming households in marginal or remote areas who have had relatively little interaction with markets until now, but who have the potential and interest to benefit from greater commercialisation or more advantageous interactions;*
- *Farming households living in more productive and market-linked areas, and/ or growing highly commercialised crops (such as coffee and tea), who have a long experience of production for the market;*

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- *Small investor-farmers, mostly educated and town-based, some of them agricultural professionals, who have begun to establish farming businesses in the last few years in response to the freeing up of land regulations; and*
- *Large capital-intensive business ventures.*

*Different policy support is likely to be needed for different agro-ecological and socio-economic environments and for different groups of farming households, but all can benefit from (and contribute to) enhanced market oriented agricultural growth. Whichever pathways are followed, the destination should be increased income and improved quality of life for rural Ethiopians.*

**Future Agricultures Consortium** (FAC) is a partnership between research-based organisations in Africa and the UK, with work currently focusing on Ethiopia, Kenya and Malawi. The Consortium aims to encourage critical debate and policy dialogue on the future of agriculture in Africa. Through stakeholder-led policy dialogues on scenarios for agriculture, informed by field research, the Consortium aims to elaborate the practical and policy challenges of establishing and sustaining pro-poor agricultural growth in Africa. Current work focuses on three core themes:

- **Policy processes:** what political, organisational and budgetary processes promote or hinder pathways to pro-poor, agriculture-led growth? What role should different actors, including Ministries of Agriculture, have in this?
- **Growth and social protection:** what are the trade-offs and complementarities between growth and social protection objectives?
- **Agricultural commercialisations:** what types of commercialisation of agriculture both promote growth and reduce poverty? What institutional and market arrangements are required?

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## 1. Introduction

Agricultural commercialisation has been in the policy spotlight in Ethiopia for the last two years, since it was given a central place in the country's second Poverty Reduction Strategy Paper (MoFED 2006; see also Amdissa 2006). The overall development strategy as set out in the 'Plan for Accelerated and Sustained Development to End Poverty' (PASDEP) for the next five years is built on eight pillars. The second pillar foresees a massive push to accelerate growth aiming at improving people's livelihoods and significantly reducing poverty. The two main thrusts to achieve this are (a) the commercialisation of agriculture, and (b) accelerating the development of the private sector, both within and outside agriculture. A major

transformation of the agricultural sector is envisaged and farmers, both small and large, should be linked more strongly to markets by producing marketable farm products, both for export and domestic markets. The Government is well aware that such an agricultural transformation can only be pro-poor if initiatives to enhance market integration are accompanied by substantial measures to support more subsistence-oriented farm households (such as social protection and the development of non-farm income sources).

Although mentioned in the PASDEP, the meaning(s) of commercialisation, and the question of what type of commercialisation should be pursued, has been relatively little discussed by policy makers and development experts. The issue of small versus large farms, or how small a farm could be for sustainable commercialisation, is one that needs policy debate in Ethiopia. In addition, whether commercialisation focuses largely on non-food or food crops, and on export or domestic markets, has different implications for the economy.

Recent high-profile agri-business investments (notably in large-scale export floriculture) have led some observers to worry that the new emphasis on commercialisation will mean the neglect of the country's approximately 11.5 million smallholders (MoFED, 2006), or the creation of a dualistic agricultural sector. Yet, on paper at least, the government remains committed to "market-oriented" agriculture for smallholders alongside the promotion of large-scale export-oriented ventures where opportunities exist.

Future Agricultures' thematic work on agricultural commercialisation(s) provides a conceptual and international context for the Ethiopian debate. Among the relevant issues Leavy and Poulton (2007) raise in view of current policy discourse around agricultural commercialisation, which are specifically relevant for Ethiopia, are the following.

- There is a tendency to simplification and separation of producers into different types of farms (small versus large farms) growing different types of crops (food versus cash crops) with a distinction made between "subsistence" and "commercial" or "export-oriented" agriculture. In reality, typical farms in Ethiopia, although they tend to be small, combine production both for own consumption and for the market. Even in areas highly favourable for growing export crops such as coffee, farm households usually have a diversified farm, including food crops for consumption and for sale on local markets and cash crops such as coffee, which is destined – depending on the quality – either for the domestic or for the export market.
- Whilst the degree of market participation in the output market lies at the heart of most definitions of agricultural commercialisation, other dimensions are also of

relevance. These include the degree of participation in input markets, the degree of relying on hired labour, and the profit motive.

- Although farm size can have an important influence whether or not a household adopts a commercialised farming strategy, size alone is not the decisive factor. It is, however, a strong limiting factor in the absence of efficient food markets – in this case, households with smallholdings have to be assisted to achieve higher staple yield before they will begin to devote land to production of higher value market products. Once households can be reasonably sure that they can meet their food needs in a normal year over a longer period of time, investments in producing for the market starts making sense. Attention will thus have to be paid to increase the productivity of food staples alongside support provided to the expansion of commercial agriculture.
- Large farm bias may develop in practice, even when policy appears to be pro-smallholder on paper. Explanations for this are that large farms can prosper when the basic enabling environment (macroeconomic stability, banking sector, trunk infrastructure, political support for private enterprises, research and development) is in place, as they can secure critical services for themselves. Smallholders, by contrast, need a much more pro-active service and support system (e.g. pre-and post harvest services related to extension, finance, inputs, knowledge and capacity). If these support services are not available – and this is an implementation, not a policy issue - then there is little prospect for the development of a viable commercially oriented smallholder sector.
- Lastly – a point that has been at least partly taken into account in PASDEP<sup>4</sup> – geography matters for any agricultural policy. Ethiopia is a vast country with a highly differentiated geography and diverse bio-physical and socio-economic endowments. From an agricultural development perspective, absolute and comparative advantages of different communities are fundamentally important frames for designing development strategies. The original differentiation, mainly based on moisture availability, has recently been expanded by including access to markets and infrastructure and population density resulting in 25 sub-categories based on combinations of four criteria: (i) moisture / rainfall (moisture reliable / drought prone / pastoralist) (ii) altitude (highland / lowland), (iii) access (high / low), and (iv) population density (high / medium / low) (Chamberlin et al., 2006).

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<sup>4</sup> PASDEP (MoFED, 2006) defines four main four main zones: (i) areas with significant potential for commercialisation and diversification (i.e. areas with significant access to markets and infrastructure, high agro-ecological potential); (ii) drought-prone regions (emphasis on food security, reducing volatility of production, diversification away from food crops, increasing off-farm income, voluntary resettlement); (iii) regions with adequate rainfall (emphasis on improving infrastructure and basic input and market systems to facilitate increases in agricultural production), and (iv) pastoral areas (emphasis on providing appropriate infrastructure and social services and tailoring research and extension programmes more towards the needs of dryland agriculture and livestock).

This paper sets out to provide a brief narrative context to Future Agricultures' empirical and consultative work on commercialisation in Ethiopia. For specific analyses of two important but very different crops, tef and coffee, see Samuel Gebreselassie and Sharp (2007) and Samuel Gebreselassie and Ludi (2007), respectively. The issue of commercialisation has also been addressed in the series of regional consultations organised to develop and test an inclusive model of policy dialogue, and to generate indicative policy ideas and trends on the future of agriculture in Ethiopia.<sup>5</sup>

## 2. Historical background

Debates on commercialisation are not new in Ethiopia. Especially since 1957, when various development strategies, economic policies and development plans were introduced in the formal economic planning process, there have been a number of attempts to improve the performance of the agricultural sector and to lower the dependency of the Ethiopian economy on smallholder agriculture. The first Five-Year Plan (1957-61) sought to develop infrastructure and human resources, and aimed to accelerate agricultural development by promoting commercial agricultural enterprises. The second Five-Year Plan (1962-67) signalled the start of a twenty-year programme to change Ethiopia's predominantly agricultural economy to an agro-industrial one. Based on the World Bank's agricultural modernization strategy, large-scale commercial farms were recommended. Increasing agricultural export was also one of the major objectives of the agricultural sector at that time (Dessalegn, 2005; EEA, 2005).

A study by Dessalegn (2005) found that during the Imperial Regime, Ethiopia's agricultural policies became increasingly outward oriented. In the late 1960s, large-scale mechanised farms began to emerge in the southern and eastern part of the country, producing mainly export crops and contributing to the already complicated structure of land tenure regimes.<sup>6</sup> Investors were supported by government policy which emphasised agricultural mechanisation to improve productivity, by offering tax and financial incentives to investors. The government itself was also involved in such mechanised enterprises and was the largest commercial operator at the end of the 1960s.

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<sup>5</sup> Six regional consultations were held in 2006 and 2007, culminating in a national workshop in June 2007 (see [http://www.future-agricultures.org/ethiopia\\_national\\_consultation.html](http://www.future-agricultures.org/ethiopia_national_consultation.html)). The consultations were thematically structured around the scenarios proposed in Devereux et al. (2005), and each included a break-out group and plenary discussion on commercialisation.

<sup>6</sup> Alongside small-scale owner-cultivators, there were landholders who had often obtained their estates through political means. Such landholders were members of the nobility and local gentry. The church and the state itself were also large landowners who had their land worked by sharecroppers.

Many of the major donor agencies were, at least initially, quite enthusiastic about the prospects of commercial enterprises, both as a source of foreign earnings and as a catalyst for the modernisation of agriculture. There were a number of recommendations towards expanding commercial agriculture and greater investments in agro-industries. A favourable policy environment and a strong international demand for specific products provided positive incentives for investments into export-oriented agriculture. In the early 1970s, mechanised large farms were increasingly criticised. The World Bank, which had been a strong advocate of commercial agriculture in the 1960s, became concerned about the inefficiencies of many of the enterprises and saw instead considerable potential in smallholder agriculture by the end of the decade. Insisting that land reform was essential for a rapid increase in agricultural productivity, the World Bank recommended that policy makers provide strong support to the smallholder sector (Dessaiegn, 2005).

Not only investors were engaged in export-oriented agriculture, but also owner-operators who had access to sufficient land. The spread of commercial agriculture in favourable areas (e.g. the Awash Valley, Rift Valley, Humera) in the 1960s opened up opportunities for farmers to engage in export-oriented production. In some areas, farmers were organised into cooperatives to access credit from the Agricultural and Industrial Bank. Commercially oriented farms were also important as they offered seasonal employment. Additionally, contract farming and outgrowing schemes emerged rapidly in some areas such as the Awash Valley (Dessaiegn, 2005).

The revolution in 1974 led to significant institutional and policy reforms, including the nationalisation of all land and subsequent distributions among farmers, who lost whatever ownership rights they had, but were granted use rights. Large commercial farms were brought under state control, and most were transformed into state farms. Also small agricultural investors were affected by the land reform as they too lost their land. Furthermore, renting land as well as employing labourers was prohibited which meant an end to the emerging out grower schemes and contract farming arrangements.

The stylized summary in the table below highlights some elements of commercialisation policy that have dominated, and recurred, in different historical periods.

	Strategic concerns	Policy foci
1950s	Improving <b>productivity</b> Reduce economic dependency on agriculture	<b>Infrastructure &amp; human resources</b> Accelerating agricultural development by promoting commercial enterprises
1960s	Transform predominantly agricultural to <b>agro-industrial</b> economy Increase <b>foreign earnings</b>	<b>Large-scale</b> commercial farms Investments in agro-industries Agricultural <b>mechanisation</b> Increasing export-orientation
1970s	Concerns about inefficiency of many large, mechanised farms, renewed <b>focus on smallholder</b> potential	Proposals for land reform for increased agricultural productivity
1980s (Derg)	Socialist agricultural development Central planning Collectivisation	State farms Suppression of land, labour & commodity markets Land distribution & fragmentation <b>Control of input &amp; output markets</b> Liberalisation of output markets
1990s (Transitional Period)	ADLI (Agricultural Development-Led Industrialisation)	Gradual liberalisation of input, labour, land rental markets Privatisation / distribution of state farms Land policy debate

### 3. Recent policy on commercialisation

With the change of government in 1991, large parts of the agricultural sector were liberalised, most notably price controls over outputs were abolished, and state control over input and financial markets was gradually reduced. The system of state ownership of land, however, was retained, and only long-term usufruct rights were transferred to farmers. Restrictions on renting and inheriting land were abolished, but it is still illegal to mortgage or sell land. Some of the previous state farms were dismantled and distributed to farmers, while others were kept under state control with a view to selling them to private investors under the privatisation programme. The new government maintained a strong focus on smallholder farming and poverty reduction, and supporting agricultural intensification (e.g. stepping up the agricultural extension systems, providing fertilisers and improved seeds for major grain crops). Where options for agricultural intensification reached their limits, social protection programmes were scaled up, mainly supported through donor funding, including cash and food transfers to vulnerable and resource-poor farm households in rainfall insecure areas.

This agricultural-based poverty reduction strategy was the guiding principle in the first PRS and also shaped the second PRS, the Plan for Accelerated and Sustained Development to End Poverty (PASDEP). Alongside a strong growth focus, PASDEP, covering the period from 2005/06 to 2009/10, aims to “*capture the private initiative of farmers and support the shifts to diversification and commercialisation of agriculture*” (MoFED, 2006).

The Agricultural Development Led Industrialization (ADLI) policy framework, pursued since 1994, still guides current policy. ADLI reflects the importance of the agricultural sector for overall economic development, viewing agricultural development as the key driver for industrialisation by providing a market base. ADLI combines various components supporting agricultural growth, including technology, finance, rural infrastructure, internal and external markets and the private sector focusing on (1) improvements in food security, (2) the commercialisation of agriculture, (3) the extension of credit to small farmers and (4) industrialisation.

Although ADLI is widely regarded as generally going in the right direction, a number of problems and constraints have been raised regarding its different components and its implementation. The most important is that ADLI appears linear, beginning with agricultural development, which will contribute to industrialisation further down the line. However, Ethiopia could move on agro-industrial development now, concurrent with agricultural development and commercialisation alongside more subsistence-oriented agriculture, providing basically a safety net for the poor (Guinand, forthcoming).

The Rural Development Strategy (FDRE, 2001) defines in more detail how agricultural-centred rural development should work for Ethiopia and emphasises that rural development needs to be labour- rather than capital-intensive. It also addresses issues of (i) diversification and specialisation of crop and livestock production according to agro-ecological zones and market access, (ii) agricultural marketing (i.e. labelling, creating grades and standards, providing market information, establishing and strengthening cooperatives, and strengthening the private sector's role in marketing), (iii) improving the rural financial system, (iv) encouraging the private sector - both national and foreign - in agricultural development, (v) investing in necessary rural infrastructure, and (vi) strengthening links between rural and urban areas, and the farm and non-farm sectors. Overall, the rural development strategy intends to contribute to the transformation of the productive rural sector from a primarily subsistence-oriented to a more market-oriented sector, contributing to overall economic growth and poverty reduction.

The overall development strategy for the five years to 2010, as set out in the PASDEP, builds on these earlier strategies. As noted in the introduction, the second of its eight pillars is accelerated growth aiming at improving people's livelihoods and significantly reducing poverty. This is to be achieved firstly through commercialisation of agriculture, and secondly through accelerated private sector development.

The strategy depends heavily on transforming the agricultural sector via major efforts to support the intensification of marketable farm products - both for domestic and export markets, and by both small and large farmers. Elements of the strategy include a shift to higher-valued crops, promoting niche high-value export crops, focusing on selected high-potential areas, facilitating the commercialisation of agriculture, supporting the development of large-scale commercial agriculture where it is feasible, and better integrating farmers with markets (both local and global). The strategy is clear about who should drive these efforts - the private sector, which includes the millions of small farmers. However, given current weaknesses of the market, the state sees a clear role at the beginning of this transformation period, by providing public investments and services needed to help jump-start the process.

The Government is well aware that such an agricultural transformation can only take place in parallel with measures to support more subsistence-oriented farm households who lack the resources for substantial investments in alternative enterprises. In these cases, the main goal will remain higher yields of basic food grains. This will be pursued through a combination of intensified extension support at the *kebele* (sub-district) level, establishment of a network of demonstration centres, increased low-level veterinary services, support for small-scale irrigation and better use of ground water, complemented by Productive Safety Net schemes and off-farm income generating initiatives supported under the Food Security Programme. The PASDEP notes that agricultural development - whether by investors or family farms - can only be achieved by sustainably managing the natural resource base and protecting the environment.

Institutions and incentive systems must also be improved in order to transform the agricultural sector and the economy as a whole, according to a study for the Ministry of Finance and Economic Development (Weeks et al., 2004). For example, agricultural marketing remains constrained and inefficient. It is not backed by a strong transport sector, there are too few intermediaries and traders lack adequate capital and storage facilities; there are few links to agro-processing, and input markets have remained stifling rather than enabling. Diversification into alternative crops and expanding production of higher value goods, often for export, are seen as crucially important. Weeks et al. also observe that Ethiopia, thanks to its favourable agro-ecological conditions and rich pool of genetic diversity, has a large opportunity for

diversification which is so far mainly untapped. Currently, successful expansion of horticulture and floriculture and well as dairy and poultry enterprises can be observed in the vicinities of major towns such as Addis Abeba, but there are other products, which show considerable potential such as bamboo, spices, and non-timber forest products.

#### 4. Which pathways?

##### a. *Perceptions of “commercialisation”*

There are various definitions and measurements of commercialisation in the analytical literature: but what does it mean to farmers and agricultural practitioners? The series of regional consultations held by Future Agricultures in Ethiopia encountered some common (mis) perceptions or fears about the nature and effects of commercialisation. Participants in the regional discussions variously understood commercialisation to mean:

- **Large-scale** farming – raising fears of expropriation of land and displacement of small farmers, and even a return to feudalism;
- **Capitalist** farming – that is, extractive, owned by people from outside the farming community or even by foreigners;
- Focusing on **non-food “cash crops”**, which may exacerbate food insecurity by making poor farmers more vulnerable to markets, particularly to volatile or adverse terms of trade between food and cash-crop prices;
- **Export-oriented** – contributing little to the needs of Ethiopians;
- **Mechanised** and “modern” – displacing labour and relying on environmentally un-sustainable imported technologies; or
- **Capital-intense**, rather than labour-intense - again, squeezing out the poor both as workers and investors, and reducing the number of people able to make a living from agriculture.

As Leavy and Poulton (2007:3) point out, all these perceptions amount to a fear, that commercialisation will promote the interests of the rich and powerful, at the expense of small farmers. None of these fears is entirely unfounded, and clearly, they are partly shaped by experience of the various historical periods of commercialisation outlined above. Equally, none of them is necessarily a feature of more commercialised or market-oriented agriculture. Policy-makers need to guard against the risks that commercialisation may indeed disadvantage small farmers, and to promote participatory and inclusive policy-making processes in which such fears can be aired and understood.

A further perception recurring in the regional discussions of commercialisation is that farmers first need to change their attitude to markets and become more business-minded. We would take issue with this. Our experience suggests that farmers, even poor farmers in “subsistence-oriented” areas, are as entrepreneurial as any other group of people when they find opportunities (although, as with any population group, some will naturally be more business-minded and successful than others). Business acumen, like any skill, comes with practice and experience. While there is certainly a role for skills transfer and basic education in strengthening farmers’ market position, the policy priority is therefore to change farmers’ opportunity environment rather than their mentality.

**b. Types of commercial (market-oriented) farmer**

From preliminary research and consultations, we suggest that there are four different categories of farmer in Ethiopia who could benefit from, and contribute to, market-oriented agricultural growth. Different policy support may be needed for each group, representing four potential “pathways” for commercialisation.

**1. Smallholder family farms**

- (Type A) Farmers in remote, drought-prone or low-potential areas, generally regarded as “subsistence-oriented” but in fact interacting with markets as both buyers and sellers. The policy challenge posed by these farmers is to improve their terms of engagement with markets, as well as raising productivity and diversifying livelihoods. Where opportunities exist, farmers in these areas can be as entrepreneurial as anywhere else.
- (Type B) “Traditionally” market-oriented small farmers producing crops partly or wholly for sale, alongside crops for their own consumption. Such farmers tend to be in locations with favourable growing and marketing conditions, and to focus on specific high-value commodities (such as coffee and tef: see Samuel and Ludi (2007), Samuel and Sharp (2007)).

**2. Small investor-farmers**

- Individuals or small groups of partners, often educated and urban-based; sometimes agricultural professionals with a background in government or development agencies or former state farms; often investing in farming as a secondary activity. These farmers are referred to in World Bank terminology as “emerging commercial farmers”, suggesting an expected trajectory from less-profitable smallholder farming towards larger-scale agri-business. However, we suggest that these investors are in fact a separate group. In Ethiopia they have

only started to re-emerge in the last few years, when access to land for such investments has been made possible.

### **3 Large-scale “agri-business”**

- Generally capital-intensive enterprises (though they can also generate employment); private or state-owned. Examples are export-oriented horticulture and floriculture.

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## **5. Conclusion**

Attempts to integrate farmers into the market have a long tradition in Ethiopia. Different strategies to increase the commercial orientation of farm households have been pursued, although with different motivations at different times. Whereas in the 1950s and 1960s productivity increases, agro-industrial development, and foreign export earnings were in the foreground of the debate, recent attempts towards a commercially oriented agricultural sector are more strongly oriented towards accelerated growth and poverty reduction.

We have proposed a typology of commercial farmers in Ethiopia ranging from smallholder family farms selling part of their production on the market to large-scale, generally capital-intensive farm enterprises. This typology is not meant to imply a temporal succession, but our preliminary findings rather show that these four types of farms can exist simultaneously, also based on their different advantages and disadvantages in relation to production and marketing (e.g. while smallholders are assumed to perform better in labour intensive crops where quality assurance and traceability are not yet that important, large-scale commercial enterprises are better able to engage in risky or capital-intensive enterprises). There is also the potential that these groups complement each other. All four groups can benefit from policies aiming at higher market integration or commercialisation, although the policy focus needs to be different for the different groups.

Policy interventions aiming at pro-actively supporting smallholder family farms to improve their engagement with markets are expected to have the greatest impact on poverty reduction. Great care, however, needs to be taken to avoid unintended large-farm bias during implementation. Measures to avoid this are proposed by Leavy and Poulton (2007) to be:

- Paying attention to food crops
- Pro-actively encouraging asset accumulation (e.g. in animal traction)
- Making markets work for poor farmers in poor (remote) areas.

Leavy and Poulton further conclude, based on international experience, that to support smallholder commercialisation, just focusing on creating an enabling environment is rarely enough, but that there needs to be a much more active provision of relevant pre- and post-harvesting services. This is certainly also the case in Ethiopia. Given the highly diverse landscape in terms of agro-ecology, infrastructure availability, market access, population density and farm types, policy orientation and implementation must take into account these differences.

While debating possible ways forward in agricultural commercialisation and devising the most promising policy options, we should not lose sight of the destination of proposed pathways to commercialisation: poverty reduction, improved income and quality of life for the millions of Ethiopia's farmers. There is nothing to be gained by policies aiming at increased commercialisation if commercialisation itself does not contribute to these ultimate goals.

## References

- Amdissa Teshome. 2006. 'Agriculture, Growth and Poverty Reduction in Ethiopia: Policy Processes Around the New PRSP (PASDEP)'. Paper presented at the Future Agricultures Consortium workshop, IDS, March 2006 [http://www.future-agricultures.org/pdf%20files/Ag\\_policy\\_Ethiopia.pdf](http://www.future-agricultures.org/pdf%20files/Ag_policy_Ethiopia.pdf)
- Chamberlin, J., J. Pender, B. Yu. 2006. 'Development Domains for Ethiopia: Capturing the Geographical Context of Smallholder Development Options'. DSGD Discussion Paper No. 43. Washington DC, IFPRI.
- Dessalegn Rahmato. 2005. 'From Heterogeneity to Homogeneity: Agrarian Class Structure in Ethiopia since the 1950s'. Addis Abeba, Forum for Social Studies.
- Devereux, S., Amdissa Teshome and R. Sabates-Wheeler. 2005. 'Too much inequality or too little? Inequality and Stagnation in Ethiopian Agriculture'. IDS Bulletin Vol.36 No.2, pp.121-6.
- EEA. 2005. 'Report on the Ethiopian Economy'. Volume IV 2004/05, Addis Abeba.
- FDRE. 2001. 'Rural Development Policies, Strategies and Instruments'. Federal Democratic Republic of Ethiopia, Addis Abeba.
- Guinand, Y. (forthcoming), 'Policy Issues and Outlook'. In Hurni, H. et al. (forthcoming) Soil Erosion and Conservation in Ethiopia. Bern, CDE.
- Leavy, J. and C. Poulton. 2007. 'Commercialisations in Agriculture'. Paper presented at the Fifth International Conference on the Ethiopian Economy, EEA, June 2007, Addis Ababa.
- MoFED. 2006. 'A plan for Accelerated and Sustained Development to End Poverty (PASDEP) (2005/06-2009/10)'. Volume I: Main Text. Addis Ababa. Ministry of Finance and Economic Development, Addis Abeba.
- Poulton, C., G. Tyler, A. Dorward, P. Hazell, J. Kydd and M. Stockbridge. 2006. 'All-Africa Review of Experiences with Commercial Agriculture'. Summary Report. Draft.
- Samuel Gebreselassie and E. Ludi. 2007. 'Agricultural Commercialisation in Coffee-growing Areas of Ethiopia'. Paper presented at the Fifth International Conference on the Ethiopian Economy, EEA, June 2007, Addis Ababa. [www.future-agricultures.org](http://www.future-agricultures.org)
- Samuel Gebreselassie and K. Sharp. 2007. 'Commercialisation of Smallholder Agriculture in Major Tef-growing Areas of Ethiopia'. Paper presented at the Fifth International Conference on the Ethiopian Economy, EEA, June 2007, Addis Ababa. [www.future-agricultures.org](http://www.future-agricultures.org)
- Weeks, J. Alemayehu Geda, Daniel Zerfu, Dawi Weldeyesus and Jonse Degfa. 2004. 'Source of Growth in Ethiopia'. Centre for Development Policy and Research, SOAS and Economic Policy and Planning Department, MoFED, Addis Abeba.

# COMMERCIALISATION OF SMALLHOLDER AGRICULTURE IN SELECTED *TEF*-GROWING AREAS OF ETHIOPIA

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## 1. Introduction

### 1.1 Commercialisation(s) in Ethiopia

The poverty-reduction strategy adopted by Ethiopia seeks to achieve growth through the commercialisation of smallholder agriculture. The Plan for Accelerated and Sustainable Development to End Poverty (PASDEP), Ethiopia's strategic framework for 2005/06 – 2009/10, relies on a massive push to accelerate growth. This is to be achieved by efforts in two directions: commercialisation of agriculture, based on supporting the intensification of marketable farm products (both for domestic and export markets, and by both small and large farmers); and promoting much more rapid non-farm private sector growth (MoFED, 2005). This study aims to contribute to this plan by identifying factors that can deepen and expand the scope of market participation of smallholders.

Commercialisation of agriculture is also a core research theme of the Future Agricultures Consortium. Future Agricultures' thematic work on agricultural commercialisation has observed that, in various countries, different modes of commercialisation co-exist and interact with each other (Leavy and Poulton 2007:17): hence, the plural term, *commercialisations*. In Ethiopia, we suggest that the following

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existing categories of farmer could benefit from enhanced commercialisation (or “market-oriented agricultural growth”). These four categories represent four potentially complementary “pathways” for commercialisation policy.

**1. *Smallholder family farms***

- (Type A) Farmers in remote, drought-prone or low-potential areas, generally regarded as “subsistence-oriented” but in fact interacting with markets both as buyers and as sellers. The policy challenge posed by these farmers is to improve their terms of engagement with markets, as well as raising productivity and diversifying livelihoods.
- (Type B) Small farmers who are already market-oriented, producing crops partly or wholly for sale alongside crops for their own consumption. Such farmers tend to be in locations with favourable growing and marketing conditions, and tend to focus on specific high-value commodities.

**2. *Small investor-farmers***

- Individuals or small groups of partners, often educated and urban-based; sometimes agricultural professionals with a background in government or development agencies or former state farms; often investing in farming as a secondary activity. These farmers are referred to in World Bank terminology as “emerging commercial farmers”, suggesting an expected linear trajectory towards larger-scale agri-business. However, we suggest that they are in fact a separate category. In Ethiopia they have started to re-emerge only in the last few years, when access to land for such investments has been made possible.

**3. *Large-scale “agri-business”***

- These are generally capital-intensive enterprises (though they also generate employment), and may be either private or state-owned. Examples are the large export-oriented horticulture and floriculture ventures that have multiplied in Ethiopia in recent years.

The empirical research reported in this paper focuses on the “Type B” smallholders that are farming households who are established growers of highly marketable crops, in areas already well linked to markets. Two commodities were selected for the study: coffee and tef. Both are important to the national economy, and both are grown and marketed by millions of smallholders. As summarised in Table 1, the two commodities have both similar and contrasting characteristics. Both are labour-intensive crops with seasonal labour-demand peaks, met partly by migrant workers. Both are produced primarily by smallholders (although there are also a few large enterprises growing coffee). Both commodities command export as well as domestic markets,

although tef has been primarily a domestic product in the past while coffee is a major national export. Most obviously, tef is both a food and a cash crop, and is therefore fungible either for farm consumption or sale. Coffee, by contrast, is a non-food crop grown primarily for the market.

**Table 1: Commodity choice - characteristics of coffee and tef**

Coffee	Tef
Non-food	Food (high value)
Primarily export market	Primarily domestic market
High policy attention & intervention *	Limited policy attention & intervention* (until recent years)
Large and small scale production	Small-scale production
Productivity strategy: niche markets (speciality and organic), low chemical inputs	Productivity strategy: intensification through purchased inputs (fertiliser and seeds)
Labour intensive with seasonal labour bottlenecks	
New institutions: Co-operatives and Unions	

\* *i.e. research and development, market support and control, etc.*

This paper reports the findings from tef-producing areas.

## 1.2 Tef in the Ethiopian economy

Tef (*eragrostis tef*) is a nutritious small-grained cereal, related to millet, which originates in Ethiopia and is thought to have been domesticated by Ethiopian farmers between 3 and 6 millennia ago. It fetches the highest market price of any food grain in Ethiopia and is the preferred staple cereal for the majority of consumers, both urban and rural. *Enjera* (a thin, pancake-like bread), the traditional national food and still the daily staple for most of the population, requires tef flour.<sup>3</sup>

Tef is particularly interesting in the context of smallholder commercialisation and food security, since it has high value as both a cash and a food crop. Many poorer farmers with suitable land grow it almost entirely for sale, using the proceeds to buy cheaper staples; although, as they become more prosperous, they may retain more for their

<sup>3</sup> In lean times and in poorer households, tef is often eked out by mixing it with cheaper grains. However, some proportion of tef is essential for the proper fermentation of the *enjera* batter.

own consumption. It is grown entirely by smallholders, and has been actively marketed for many generations. Until recently, its market was almost wholly domestic, within Ethiopia (and formerly Eritrea): however, a promising niche export market is now developing in Europe and America, based on tef's increasing reputation as a "super-grain", being gluten-free and high in protein and calcium as well as micronutrients such as iron and B vitamins. A Dutch website is currently marketing it (under a profit-sharing contract with the Ethiopian authorities) as "the grain that makes you stronger". It thus has potential to contribute to the PASDEP goal of export diversification, as well as raising food production and farmers' incomes.

Farmers' preference for growing tef is due to production characteristics as well as consumer demand. The crop has a wide altitude range, and its resistance to diverse biotic and abiotic stresses makes it "low-risk" for cultivation (Hailu et al., 2000). It also stores well, since the very small size of the grain makes it resistant to post-harvest damage by insects. Among Ethiopia's 11.3 million small grain farmers, about 46% (5.2 million) grew tef in 2005/06 (CSA, 2006). This makes tef the second most widely-grown annual crop after maize, which was cultivated by 6.8 million farmers. During the same year, tef was grown on over 2.24 million hectares which is a little over one fifth (21%) of the total land planted to grains. The average farmer cultivated tef on 0.43 hectare, on which he or she produced 4.2 quintals<sup>4</sup>, implying an average yield of 9.8 quintals per hectare.

The national production of tef has increased tremendously over the last twenty years, from 11.8 to 21.8 million quintals (a rise of nearly 85%). However, this encouraging performance must be interpreted in the context of high population growth and poor conditions in the base year. *Per capita* production grew by only 23% (1.9% per year) over the same period, and has never exceeded 30 kg.<sup>5</sup> It is also a matter of concern that most (64%) of the growth in production is attributable to area expansion, while improved yields contributed only 12%.<sup>6</sup> This indicates the enormous difficulty of achieving broad-based agricultural productivity growth, which is critical to lift the majority out of poverty. Moreover, yield-induced growth in production is essential to allow agriculture to release land for increasingly important but competing activities such as urban and industrial development, and to prevent agriculture from expanding

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<sup>4</sup> 1 quintal (Qt) = 100 kg.

<sup>5</sup> Per capita national production of all grains was 183 kilogram in the same year (2005/06).

<sup>6</sup> This is despite the availability of tested tef technologies (seed varieties) that could double the existing yield level. The Ethiopian Agricultural Research Institute reported the existence of high yielding varieties even in 2000. There are tef varieties (like DZ-01-974, DZ-01-354 and DZ-Cr-37) which can yield up to 28 quintals under farm conditions and 32 to 46 quintals under experimental conditions. This exceeds the recent best performance (9.7 quintals) by over 3 times (Hailu et al., 2000).

into forest and other unsuitable land (a threat to the long-term sustainability of the farming system).

In the current policy push for smallholder commercialisation, tef is one of the selected priority crops under the Ministry of Agriculture and Rural Development's 2004 master plan for enhanced market-oriented production.<sup>7</sup> Government support to producers, in terms of agricultural extension services, has grown substantially in recent years: in 2005/06 a little over one million tef growers (21% of the total) participated in the extension programme and received free technical advice as well as guaranteed access to modern farm inputs such as fertilizers, herbicides and improved seeds. In terms of area, 560,000 hectares (25% of the total area planted with tef) was under the extension programme (CSA, 2006).

### 1.3 Scope of the paper

An earlier version of this paper was presented at a parallel session on *Commercialisation of Smallholder Agriculture*, co-organised by Future Agricultures, at the EEA's 2007 Conference on the Ethiopian Economy. It is one of four linked outputs from that session, the other three being:

- a thematic framework paper discussing the meanings and definitions of commercialisation from conceptual and international perspectives (Leavy and Poulton);
- a brief overview of the policy context and the different (alternative or complementary) pathways of agricultural commercialisation in Ethiopia (Sharp, Ludi and Samuel); and
- an empirical paper on smallholder commercialisation in Ethiopia's coffee-growing areas, which parallels the present paper (Samuel and Ludi).

The paper is structured as follows: Section 2 outlines the methodology and objectives of the study. Section 3 discusses the survey analysis, focusing on household-level commercialisation within the selected study areas. Section 4 concludes with a summary of the key findings and a discussion of their potential policy implications.

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<sup>7</sup> The other priority crops in the master plan are wheat, barley, lentil, chickpea, fava and haricot beans, cotton, sesame, coffee and spices. Source: MoARD (FAC key informant interview).

## 2. Objectives and methodology

### 2.1 Objectives of the study

Within the overall purpose of contributing to the understanding of smallholder commercialisation as a means to poverty reduction, the specific objectives of this paper are:

- (i) to assess the current scale of commercialisation in tef-growing areas, and to detect household and farm characteristics which might explain variation in the level of commercialisation among households;
- (ii) to investigate the welfare situation of farmers operating at different levels of commercialisation; and
- (iii) to identify and analyse the factors that determine the extent of smallholders' participation in output markets.

### 2.2. Sampling and methods

Four major tef-producing *weredas* (districts) were purposively selected as the study areas, based on statistical evidence of the dominance of tef in the local farming system. Two of the *weredas* (Ada'a Lome and Bacho) were in Oromia Region, and two (Dejen and Enemay) in Amhara Region. Primary data were collected through a household survey and qualitative fieldwork.

For the household survey, a stratified two-stage sampling design was employed within each *wereda*. First, all *kebeles* (sub-districts) in the selected *weredas* were listed, and two were randomly selected. Twenty households were then randomly selected from each *kebele* (giving a target sample size of 160 households in eight communities). Since the study aimed to investigate gender-related disparities in agricultural commercialisation, the sample was stratified by gender of the household head. The actual sample size achieved was 155 households: the distribution by *wereda* and gender is shown in Table 2 below.

**Table 2: Survey respondents by gender of household head**

Wereda	Female	Male	Total	% FHH
Ada'a Lome	10	28	38	26%
Bacho	4	35	39	10%
Dejen	1	40	41	2%
Enemay	5	32	37	14%
Total	20	135	<b>N=155</b>	13%

A structured household questionnaire was used to collect quantitative data on production, consumption, and marketing of farm produce, as well as demographics, resource ownership, and off-farm activities. The survey was carried out in 2006, and collected data on the preceding agricultural year (the 1997/98 E.C.<sup>8</sup> production cycle, i.e. March 2005 to February 2006).

Both descriptive and econometric methods were used to analyse these household data. Descriptive methods including measures of average and a one-way ANOVA (analysis of variance) were employed to disclose the scale of commercialisation of agriculture and to test the existence of any statistically verifiable difference among farmers operating at different levels of commercialisation. Results from the discrete one-way analysis were further examined through multivariate regression models, which helped to predict the determinants and outcomes of commercialisation.

Following preliminary analysis of the survey data, an exploratory qualitative study was conducted in one of the surveyed tef weredas, Ada'a Lome, in February 2007 (towards the end of the marketing season for tef). This wereda was chosen from among the study areas on grounds of logistics and accessibility, in order to maximise the time spent in field research. The methods used were key informant interviews, semi-structured focus group discussions and individual case interviews. Interviewees and focus group members were identified through local contacts, based on purposive criteria including age, gender, farming experience, and engagement in livelihood activities such as trade and wage labour. The overall purpose of the qualitative work was to investigate some questions raised by the survey, and to identify any important issues, which had not been captured by the questionnaire (with a view to possible further research).

### 3. Findings

#### 3.1 The scale of agricultural commercialisation

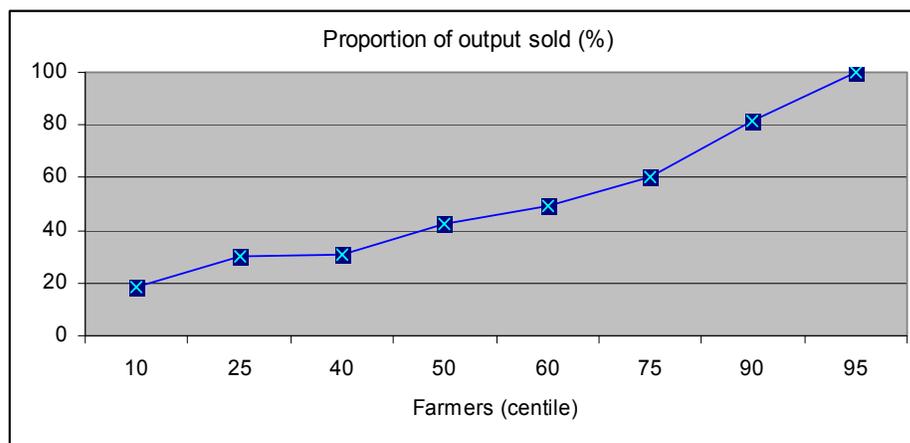
The survey data indicate that the average farm household in the four weredas sold a little over 49% of their total crop output (in value terms). A slight majority (about 58%) consumed more than they marketed, while 38% sold more than they consumed and the remaining 4% consumed and marketed an equal proportion of their output. Farmers operating at full commercial level (i.e. those who sold 100% of their production) constitute 5% of the sample, while another 7% operated at full subsistence level (i.e. consumed 100% of their production). About half of the

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<sup>8</sup> Ethiopian Calendar

surveyed farmers marketed less than 42% of what they produced. If we consider a farmer who marketed at least 50% of his or her output as commercially oriented, then 40% of the sample could be so classified. Figure 1 shows the degree of commercialisation by centile of households.

Figure 1: Proportion of output sold



In general, these data indicate that the level of commercialisation in the study areas is considerably higher than the national average.<sup>9</sup> This is as expected, given the purposive selection of areas renowned for the production of tef (a highly marketed commodity) and with good access to major markets.

Despite this relatively high degree of market participation, the market size (in terms of the volume of transaction per seller) is thin. Fifty-seven percent of sampled households sold farm produce worth 2,000 Birr (about US\$ 222)<sup>10</sup> or less, while the average farmer sold only 933 Birr's worth of produce. Less than a quarter (23%) of farmers sold produce worth 3,500 Birr or above. The marketed commodities were mainly tef, chickpeas and wheat.

<sup>9</sup> According to Gebremeskel et al. (1998) only 28 percent of the total national grain production (cereals, pulses and oilseeds) was marketed in 1996. A more recent study by the Ethiopian Economic Association in 2004, however, found that grain farmers who participated in the recent extension programme marketed on average about 33% of their output (5.7 quintals), while non-participants marketed 36% (4.7 quintals). These figures indicate the gross amount sold, without adjusting for any quantities of grain that farmers might have purchased towards the end of the cropping season.

<sup>10</sup> US\$1 = approx. 9 Birr.

As the grain market is characterised by many small sellers, competition among farmers is likely to be fierce. This problem arises mainly due to low per capita production, as confirmed by a single-equation regression model specifying trade as a function of production (see Box 1). The model indicates a significant and positive association between production and trade (both measured in value terms). The regression coefficient of 0.81 shows that for a unit increase in the value of production, earnings from trade rise by 0.81. The high coefficient of determination ( $r^2=0.63$ ) also shows that about 63% of the variation in trade was explained by the volume of production, keeping other factors constant.

**Box 1: Trade-production relationship among sampled households**

$Y_i = -79 + 0.81X_i$	$P = (0.93) (0.00)$
$t = (0.12) \quad (16.23)^*$	$R^2 = 0.63$

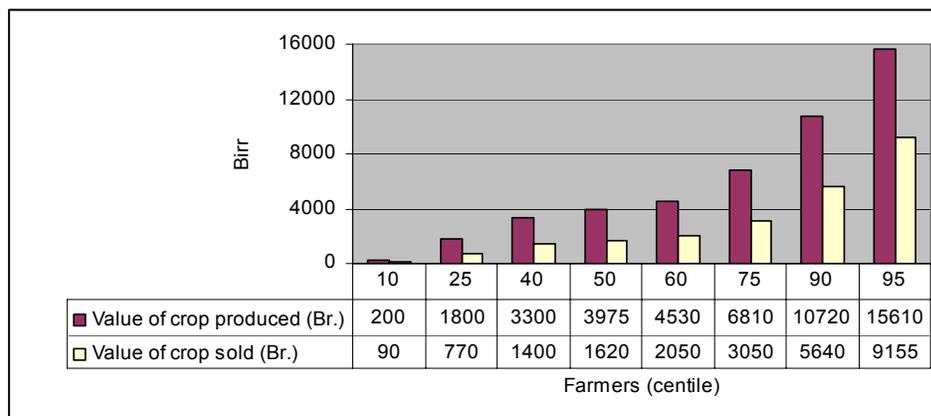
In general, econometric evidence suggests that the higher the level of production the higher will be the probability of farmers engaging in commercially oriented agriculture. However, a simple correlation analysis suggests that the more a farmer sold, the lower the *proportion* of output marketed ( $r=0.12$  or  $r^2=0.1$ ). In other words, as the volume of marketed output increases the volume of output consumed on the farm also increases, but by a higher proportion. This finding, from cross-sectional analysis of households in a given period, is paralleled by observations from the qualitative fieldwork about the pattern of change over time. Farmers in Ada'a Lome observed that both production and marketing of grain crops have risen over the last decade or so, but that the volume marketed has risen less than the volume produced. For tef in particular, they considered this increase in home consumption of farm produce to be a sign of rising prosperity:

“Before, we used to mix chickpeas, wheat, or sorghum for *enjera*, but now this has almost stopped – people here eat tef. Because of the increased production and better standard of living, people don't have to eat these inferior mixtures.”

[Interview with Kebele Chairman]

This type of relationship between marketed and consumed production is not unusual in a farming system dominated by poor smallholders. The potential tensions and synergies between commercialisation and food security for small farmers are particularly important, and deserve further investigation.

Figure 2: The relationship between crop value produced and sold



### 3.2 Outcomes of commercialisation

Commercialisation of agriculture is not an end for farmers, but an intermediate outcome on the way to welfare goals. In the study, smallholders' welfare is represented in terms of consumption of basic food (grains), high-value foods (livestock products) and expenditure on clothes and shoes, durable goods, education and healthcare. Agricultural productivity is also considered as an intermediate outcome, which farmers aim to improve through greater engagement in output markets.

Table 3: Welfare outcomes among farmers at different levels of commercialisation

	Degree of commercialisation			F-test
	Low (<30% of output sold)	Medium (30% -65% of output sold)	High (≥65% of output sold)	
Consumption of basic food (Br/person/week)	15.08	18.33	22.67	3.84**
Consumption of high-value food (Br/person/week)	1.18	1.38	3.03	2.15
Share of purchased food	16.49%	10.54%	16.05%	2.03
Annual expenditure on clothes and shoes (Br)	455.20	724.22	845.60	0.60
Annual expenditure on durable goods (Br)	863.20	1242.31	1795.24	1.42
Expenditure on education (Br/person/annum)	32.26	55.38	83.79	2.18*
Expenditure on healthcare (Br/person/annum)	0.93	6.78	4.58	1.51
Land productivity (Br/hectare)	3376.70	3244.13	4465.98	0.28
Labour productivity (Br/person-day)	31.73	53.80	46.57	0.15
N	22	76	26	

\* and \*\* denote significance at 10% and 5% respectively.

Table 3 shows distinct differences in the welfare of farm households at different levels of commercialisation.<sup>11</sup> The most commercialised households (here defined as those who sold 65% or more of their production) consumed one and a half times as much basic food per person as the least commercialised (i.e. those who sold 30% or less). This difference is statistically significant, implying that (keeping other factors constant) the observed difference in consumption of staple grains or root crops is associated with the variation in market participation. For high-value foods, consumption varies even more markedly between the most and least commercialised farmers, although this difference is not statistically significant. Similar differences are observed in expenditure on clothing and durable goods.

The most commercialised households also spent more on education and healthcare. On average, the least commercialised farmers spent only 32 Birr per person per year on education, while their more commercialised neighbours spent more than twice this (about 84 Birr/person/year). This difference is significant at 10%.

The agricultural productivity of sampled households also varies with their level of participation in output markets. Land productivity increases with the index of commercialisation. Labour productivity is also lowest among the least commercialised farmers, but there is no consistent pattern as the index of commercialisation increases.

Because productivity and other outcomes are determined by multiple factors, multivariate regression analysis is needed to verify these results. Further analysis should also consider the risk of high dependence on markets for food that comes with rising agricultural commercialisation. Keeping these caveats in mind, these initial results suggest that commercialisation of smallholder agriculture should not only be encouraged as a means to boost exports or stimulate local economies, but also as a way to help smallholders achieve welfare goals that can improve their living conditions.

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<sup>11</sup> For the purposes of this analysis, the degree of household commercialisation is measured by a simple index defined as the ratio of the gross value of all crop sales to the gross value of all crop production:

$$\text{Household Commercialisation Index (HCI)} = (\text{gross value of all crop sales} / \text{gross value of all crop production}) * 100$$

A value of zero would signify a totally subsistence-oriented household: the closer the index is to 100, the higher the degree of commercialisation. However, it is recognised that this measure has its shortcomings. The index value itself could be misleading, since a farmer who grows only one bag of maize and sells that bag (HCI = 100) would appear more commercialised than one who grows 50 bags and sells 30 (HCI = 60). It also neglects other components of farm output (such as livestock), the degree of market reliance for inputs, and broader dimensions of commercialisation such as profit motivation and engagement with labour markets. A detailed discussion of these conceptual and measurement issues can be found in Leavy and Poulton (2007).

### 3.3 Determinants of market participation

A smallholder's decision to enter and make use of markets is influenced by many household and macro-level factors. Macro-economic and trade policies, market reform, rural infrastructure improvement and the development of legal and contractual environments in which smallholders and processors may operate are among the major driving forces of increased agricultural commercialisation. However, not all smallholders operating in the same macro environment take part in output markets. Among those who do take part, the degree of participation also varies. This section investigates the microeconomic relationships between market participation (or non-participation) and household-level factors, using the household survey data and assuming the macroeconomic conditions are constant. Two separate questions were posed: why some sampled households did not take part in output markets at all, and why some marketed more of their production than others.

#### 3.3.1 Why do some farmers not participate in output markets?

Small farmers take part in output markets either to capture the gains from specialization or out of necessity (to obtain cash for the purchase of essential consumption goods and agricultural inputs); or both. As it is rare to find a farmer who is not influenced by either of these factors, it is unusual to observe farmers who do not market any of their output. However, this could happen in rare circumstances where a farmer has nothing to sell (e.g. if they produce less than their consumption requirements) or where the household's cash needs are met from non-farming income including remittances or aid.

From a policy perspective, it is important to study smallholders who do not participate in output markets as sellers. The primary occupation of such households might be non-agricultural, or their agricultural livelihood might be precarious. These two possibilities have different policy implications. Understanding the factors that lead some farmers to stay in agriculture but not take part in output markets should enable policy makers to design programmes either to strengthen precarious farming livelihoods or to facilitate the smooth withdrawal of marginal farmers from the agricultural sector, thus allowing more productive farmers to cultivate larger farms.

The survey data indicate that about 7% of sampled farmers were not participating in the output markets as sellers. It is hypothesised that the level of farm production, the degree of household dependence on non-farm income, the cropping pattern (the proportion of subsistence food *versus* cash crops), and the age and health of farmers, could affect their ability or willingness to participate in output markets. As the sample

size for non-participant farmers is small (only 12 households or 7% of the sample), it would be difficult to formulate a meaningful regression model (such as a logit model) which would help to identify factors affecting willingness or ability to participate in output markets.<sup>12</sup> However, a two-way group mean comparison test was made between market participants and non-participants. The results are presented in Table 4.

**Table 4: Characteristics of market participants and non-participants**

	Non-participants	Participants	T-test
Age of household head (years)	59	48	2.39**
Sex (% female headed)	12%	12%	0.04
Literacy (% literate)	38%	60%	1.26
Value of total farm outputs (crops) produced	641	6,602	2.52**
Total cultivated land (ha)	1.3	3.1	2.84***
Household labour size (man-equivalent) <sup>13</sup>	2.9	3.4	1.02
Farm size owned per labour unit (ha/ME)	0.4	0.8	1.65*
Labour spent on farming (man-days per ha)	58	82	1.92*
Value of total livestock owned (Br)	2,100.0	1,138.8	1.19
Specialization in cash crop (% of land planted to tef)	36%	75%	4.24***
Cash expenses for farming (Br)	75.0	639.6	1.86*
Participation in land markets (% participated)	62%	65%	0.16
Size of land rented-in	0.0	0.7	1.93*
Size of land rented-out	1.1	0.1	4.98***
Participation in non-farming activities, 1=yes, 0=no	38%	41%	0.20
Share of non-agricultural income in total income	39%	11%	2.96***
Per capita non-farm income (Br)	102.3	130.7	0.61
Cash income from own non-farming activities (Br)	350.0	295.0	0.31
Cash income from employment (Br)	0.0	359.6	0.93
Days worked for pay in the last 12 months	153.3	129.7	0.29
Value of any remittances, gifts or other transfers received	125.0	59.1	0.54
N	141	12	

\*, \*\* and \*\*\* denote significance at 10%, 5% and 1% respectively.

Farm household heads participating in output markets were found to be younger. The average age of participants is 11 years younger than non-participants, and the difference is statistically significant. This result is not unexpected, as risk-taking behaviour tends gradually to decline as people get older. Moreover, as farmers get older they may be unable to spend the time and energy needed for the production and marketing of cash crops.

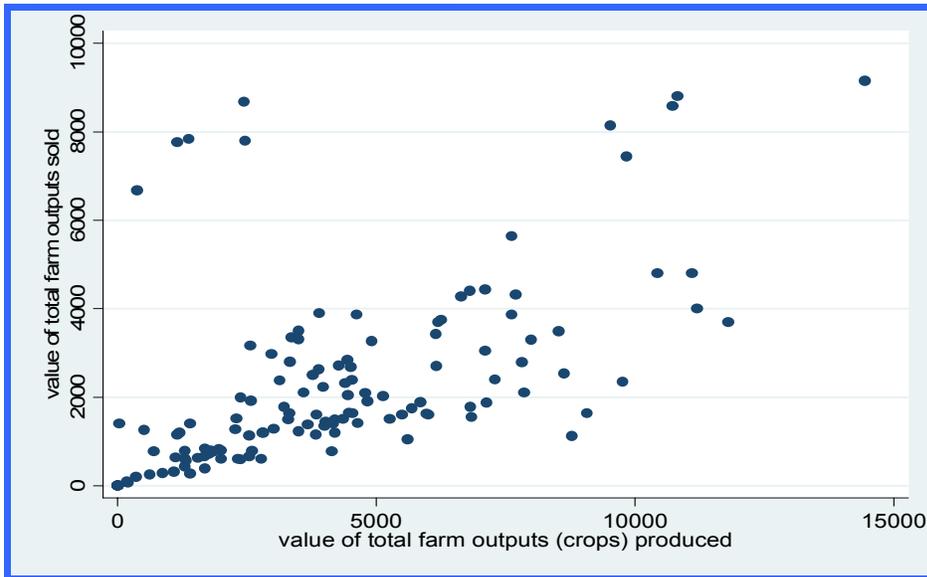
The likelihood of market participation is high among smallholders specializing in tef (the major cash crop produced in the study areas). On average, market participant

<sup>12</sup> This is mainly because of potential lack of variability among such a small number of cases.

<sup>13</sup> See Annex 1 for the conversion factors used in calculating man-equivalent (ME) labour units.

farmers allocated three quarters of their cultivated land to tef, whereas non-participants allocated only one third of theirs. Non-participant households also cultivated only a small proportion of their land: 62% of them rented out a significant part (about 85%, on average) of their 1.1 hectare. By contrast, participant households not only owned more land but also rented in additional plots. On average, they cultivated about 3.8 hectare of land, 22% of which was rented in from someone else. All of these differences between the two groups are statistically significant.

Figure 3: Scatter plot of value sold against value produced <sup>14</sup>



Source: survey data

Another important issue for any study on commercialisation is its effect on employment. Keeping other factors constant, farmers participating in output markets follow more labour-intensive farming. They employ 44% more labour on a hectare of land (82 man-days, compared to 58 man-days/ha for non-participant farmers).

Similarly, farmers who did not participate in the output market (i.e. those who consumed all their output) spent much less money on farming than those who sold part of their production: 75 Birr on average, compared to 640 Birr for market participants. The difference is statistically significant.

<sup>14</sup> Those outliers in the top left of the graph who appear to be selling more than they are producing are due to data errors.

Households' participation in non-farm activities, and especially the share of non-farm income in total household income, also seems to have an impact on their market entry decision. Keeping other factors constant, farmers who do not participate in crop output markets gain a significantly higher proportion of their income from non-agricultural sources. As the agricultural production of these households is low, non-farm activities might enable them to consume whatever they produce by supplying the cash required for other purposes.

The size of land owned and cultivated is very important in determining farmers' participation in output markets. As reported above, those who did not sell crops owned small farms; rented out most of their land; grew a small proportion of the high-value primarily cash crop (tef); and invested relatively little labour or cash in farming.

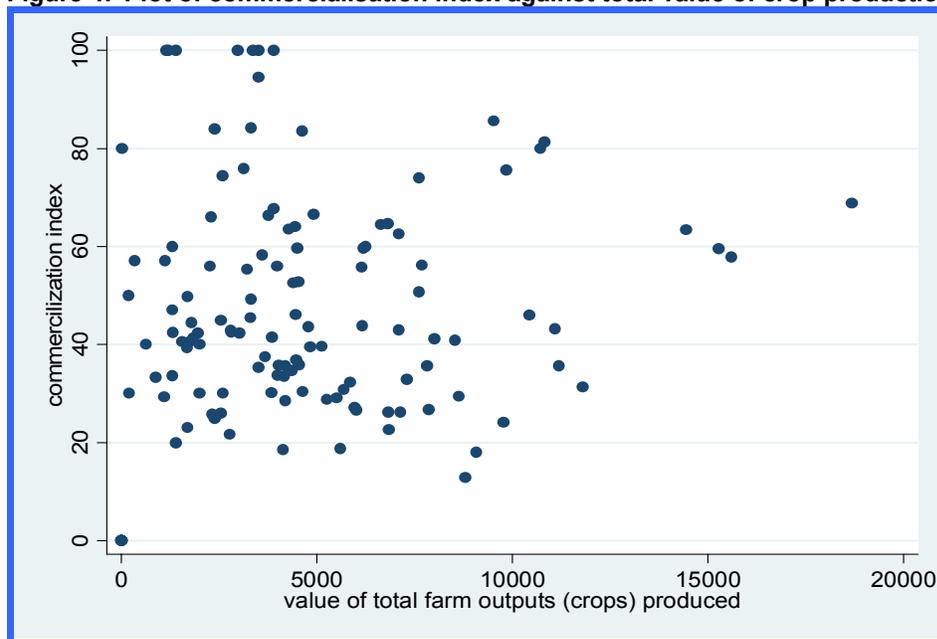
### 3.3.2 Why do some farmers sell more than others?

Although the amount that farmers supply to the market increases as farm production rises, the relationship is far from one-to-one (see Figure 2 above, and Figure 4). This implies that, for the same size of farm production, some farmers consume more on farm while others consume less and sell more. This section focuses on factors causing this variation in the degree of market participation among households who participate in output markets as sellers.

The degree of farmers' participation in output markets could be measured either in terms of the *proportion* of output sold (the commercialisation index used above), or the total *value* of output sold. In Figure 4, there is no clear correlation between the total value of output produced and the proportion sold, and in such circumstances the index could distort the extent of market participation. For instance, a farmer who produces 100 Qt of grain and sells 50 Qt would have a lower commercialisation index than one who produces only 5 Qt but sells most or all of it. As Figure 4 illustrates, this is common in our sample. Therefore, the following analysis uses the value of output sold.

The level of participation in output markets varies considerably among sampled farmers (Table 5). The top 20% of farmers, for instance, sold crops worth over 4,400 Birr, while the bottom 20% sold only about a sixth of this (760 Birr or less). The median gross income from crop marketing was Birr 1,788. The following section focuses on identifying the factors behind this wide variation in market participation.

Figure 4: Plot of commercialisation index against total value of crop production



Source: survey data

Table 5: The degree of market participation of sampled households

Percentile (N=141)	Income from marketing (Br)
10% (i.e. up to 10% of sample earned less than, i.e. over 90% earned more than Br)	290
20% (i.e. up to 20% of sample earned less than, i.e. over 80% earned more than Br)	760
25% (i.e. up to 25% of sample earned less than, i.e. over 75% earned more than Br)	836
50% (i.e. up to 50% of sample earned less than, i.e. over 50% earned more than Br)	1,788
75% (i.e. up to 75% of sample earned less than, i.e. over 25% earned more than Br)	3,725
80% (i.e. up to 80% of sample earned less than, i.e. over 20% earned more than Br)	4,403
90% (i.e. up to 90% of sample earned less than, i.e. over 10% earned more than Br)	9,100
95% (i.e. up to 95% of sample earned less than, i.e. over 5% earned more than Br)	17,500

*Modelling the degree of market participation*

We assumed that the quantity supplied to the market (measured in terms of cash earned from crop sales) is a linear function of a set of household characteristics, after inspecting the distribution of sampled households on a scatter plot of total value of

output sold. As indicated in Figure 3, with the exception of some outliers and allowing for some level of difference among farmers, the general distribution follows a linear pattern. Hence, a linear functional form could reflect the relationship between the dependent and independent variables.

Mathematically, the model or functional relationship is expressed as follows:

$$Y_i = \alpha_i + \beta_i X_i + u_i \quad (1)$$

Where  $Y_i$  is the total value of output sold,

$X_i$  are factors that affect quantity supplied to the market (i.e. the degree of farmers' participation in the output market)

$\alpha_i$  and  $\beta_i$  are estimable parameters, and

$u_i$  is the error term.

The explanatory variables hypothesized to affect the total value of sales include:

- quantity of on-farm production,
- price of the commodity in time period t-1,
- household food self-sufficiency, measured as the proportion of own-produced food in total household food consumption,
- the degree of specialization in the major cash crop (tef), and
- farmers' participation in, and income from, non-farm activities.

Market transaction costs could also be an explanatory variable, but they are not directly considered for lack of data. However, the price received by farmers for their produce is expected to capture some of the effect of variation in market transaction costs, including access to market centres. The farm gate price of the major marketable commodity (tef) was therefore entered into the model as a lagged variable, since farmers' market-oriented production decisions are likely to be affected more by the price in the previous crop year than by the current price.

Farmers engage in non-farm activities to complement their farm income. Their participation and the level of income from non-farm activities could indirectly indicate their level of satisfaction with their farm cash income. Conversely, the level of cash income from non-farm activities could be used as a proxy for farmers' cash need from their farming operations, especially if access to non-farm activities is similar for sampled farm households.

Data on farmers' access to non-farm activities and their willingness to engage in such activities is not available. However, we do have data on whether farmers participated

in non-farm activities and their income from such activities. These are incorporated into the model as independent variables. There are two competing hypotheses on the influence of non-farm earnings on marketed output. One says that if a farmer has sufficient non-farm income, he or she does not need to sell farm output and so will market less. The alternative hypothesis is that non-farm income enables farmers to sell food crops, knowing that they have cash to buy food when needed.

The propensity to sell could, however, vary according to the type of crop produced. Farmers' supply decisions for non-food cash crops (such as coffee) might be different from those for a food cash crop (such as tef), which can be either sold or consumed on the farm. Although the level of on-farm production and the farm gate price have a direct effect on supply to the market, in semi-subsistence farming, the degree of household food self-sufficiency is also a key factor in the degree of their participation in output markets. The assumption is that households that have already met their food requirement will be more willing to sell their output. However, this does not apply in farming systems dominated by a non-food cash crop. The level of household food self-sufficiency was incorporated into the model as an explanatory variable and hypothesized to affect the degree of smallholders' market participation positively or negatively.

We can estimate equation 1 by OLS under the condition that the error term and the regressors are not correlated. In our model, however, the value of output produced could be correlated with the error term, and, if so, it is potentially endogenous<sup>15</sup>. The literature indicates that the probability of correlation between the error term and a regressor (in our case, total value of output produced) is high when some factors explaining the variation in the dependent variable (in this case, total value of output sold) could also affect the regressor. Applying standard least squares (OLS) to equation (1) under these circumstances results in inconsistent estimates, that is, as the sample size approaches infinity the estimates of the parameters on average will not equal the population estimates. To remedy this problem we applied a two stage least squares, 2SLS (also called the instrumental variables (IV) procedure), where instead of the value of output produced another variable that can correlate with it but not with the disturbance term was substituted.

Because one of the possible causes of correlation between regressors and disturbance term is a simultaneous equation bias, it is also important to check for simultaneity between output sold and produced. In other words, output sold is

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<sup>15</sup> On the other hand, the set of the regressors (explanatory variables) should not be perfectly collinear as the classical linear regression model assumes. A collinearity test indicates the existence of weak collinearity among the regressors, especially between household food self-sufficiency and per capita food production, and non-farm income and its share in total household income.

determined by, among others things, the level of output produced; but is there any possibility for the level of output produced to be affected or determined by the amount of output sold? As the decision on the amount to produce precedes that on the amount to sell, the amount sold is unlikely to determine the amount produced in the same time. However, the amount sold in the previous year (t-1) could be a strong determinant of the level of production in time 't'. In other words, there is no need to use a simultaneous equation. In time 't' the cause-and-effect, relationship runs from output produced to output sold, and not the other way; but in time t-1, the likelihood for a reverse relationship is high.

Before proceeding with the 2SLS model, we tested empirically whether the value of output produced is indeed correlated (asymptotically) with the disturbance term or not. We followed a three-step procedure. In the first step, we replaced  $X_1$  (value of output produced) by instruments selected in the original regression (Equation 1); estimated the model ('instrumenting regression') by OLS; and saved the residual. In step two the original model was estimated, and in step three we estimated the original model but using the residual from step one as an explanatory variable. The coefficient of the residual was found to be significantly different from zero, i.e. there is evidence in favour of the hypothesis that the value of output produced is correlated with the error term. Therefore, the 2SLS estimator is preferred.

In selecting instruments for the value of output sold, two equations were considered as simultaneous equations (i.e. the equation we are going to estimate and another equation for the value of output produced), Any 'exogenous' variables in the full system of equations were selected as instrumental variables for the total value of output produced. All variables hypothesized to explain the size of farm production (i.e. land, labour, ox power, cash expenditure on inputs, age, sex and literacy of household head) were considered as instruments to replace the value of output produced (which was found to be correlated with the error term). The validity and relevance of these instrumental variables was tested using an F-test and a Sargan or J-test. While the F-test validates whether these instruments are themselves endogenous or not, the Sargan or J-test checks whether they are highly correlated with the variable they are instrumenting for (amount of farm production). The null hypothesis for the F-test was that the parameters associated with the selected instruments are jointly zero. The F-value with 6 and 97 df is 11.95 ( $F(6, 97) = 11.95, \text{Prob} > F = 0.0000$ ), implying that all instruments are exogenous. But the Sargan or J-test with a computed chi-square (12.33) exceeding the critical chi-square indicates that at least one instrument is correlated with the error term. A systematic procedure identified household labour size as the variable which had a high degree of correlation with the error term. The chi-square was 1.478, which is lower than the

critical chi-square either at 1%, 5% or 10%. The model estimation procedure continued with the remaining variables.

As the name suggests, in the 2SLS two OLS regressions were run to obtain the parameter estimates. The first stage estimates what is called a 'reduced form' relationship to obtain the predicted values and the second stage estimates the 'structural' relationship where the endogenous variable was replaced by the predicted values. By forming predictions for output produced (x) in the second stage through the instruments z we corrected for the correlation between the error term and output produced (x). The actual estimation, however, was not performed in two steps. Modern econometric software (in this case Stata version 9) allows the whole procedure to be estimated in one step.

$$Y_i = a_i + \gamma_1 Z_{1,t} + \dots + \beta_1 X_{1,t} + \dots + u_i \quad (2)$$
$$T = 1, \dots, T$$

where Z indicates the six instrumental variables and X the explanatory variables which are as defined in equation 1. Table 6 presents estimates from this (2SLS) regression model. The model was run for all weredas together and then separately for each wereda after testing whether these four weredas actually represent four distinct samples<sup>16</sup>.

In Table 6, the explanatory variables affect the degree of market participation of sampled households differently. The regression for all weredas indicates that the size of farm production and farmers' specialization in tef (the major cash crop) had a positive and significant impact on the degree of market participation, measured in terms of the amount of income from marketing. On the other hand, the effect of household food self-sufficiency was negative. This implies that households with a high dependence on markets for their food access also participate more in output markets. In other words, their participation in commodity markets is high both as sellers and buyers.

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<sup>16</sup> A chow test was carried out to see whether or not we do indeed have four different samples, as the significant variables on the location dummies would suggest. An insignificant F-statistic on the hypothesis testing the equality of these coefficients shows that the four areas do indeed represent four different samples.

Table 6: Determinants of the degree of participation in output market

	All	Sample Weredas			
	weredas	Ada'a	Bacho	Dejen	Enemai
Size of output produced <sup>17</sup>	0.67 (13.3)***	0.81 (13.61)***	0.57 (7.60)***	0.44 (3.16)* **	0.36 (2.2)8**
Farm gate price (lagged variable)	0.01 (0.04)	1.72 (0.97)	0.01 (0.09)	0.14 (0.07)	0.32 (0.12)
Household market dependence for food	-16.11 (2.21)**	-48.71 (3.93)***	-8.47 (0.59)	-2.55 (0.18)	-16.39 (0.71)
Participation in non-farm activities	-277.39 (0.72)		-70.99 (0.07)	119.73 (0.15)	-1291.42 (1.50)
Income from non-farm sources (per capita income)	-0.93 (1.87)*	-1.85 (3.12)***	37.14 (1.62)	0.39 (0.13)	0.11 (0.06)
Specialization in major cash crop (tef)	10.25 (1.74)*	26.43 (2.38)**	23.91 (0.179)*	2.55 (0.18)	17.04 (0.95)
Ada'a dummy	486.00 (1.11)				
Bacho dummy	874.31 (2.21)**				
Dejen dummy	177.72 (0.54)				
Constant	1176.09 (1.40)	3478.01 (2.13)**	512.27 (0.22)	457.20 (0.23)	1343.21 0.51
N	112	29	27	33	25
R-square	0.81	0.93	0.85	0.56	0.62
Adj R-squared	0.79	0.91	0.81	0.43	0.48

*Model results*

The quantity of farm production has a positive effect on the quantity supplied to market, conforming to prior expectation. The impact of non-farm activities is mixed. While the coefficient for farmers' participation in non-farm activities was statistically insignificant, the coefficient for income from these activities was negative and significant. These results imply that participation in non-farm activities alone is not sufficient to have any impact on a farmer's market participation (as a seller). However, as farmers earn more from non-farm sources, they are likely to sell less of their farm output. In other words, the likelihood of on-farm consumption of own

<sup>17</sup> This variable was instrumented by land, ox power, farm expenditure on inputs such as fertilizer, age, sex and literacy of farm household head as discussed above. Labour was a relevant instrumental variable but was not considered as it was found to be correlated with the structural error term.

products increases as farmers obtain more cash from non-farm sources. This finding supports the first of the competing hypotheses outlined above. The invalidity, in this case, of the alternative hypothesis (that non-farm incomes enable farmers to sell more of their crops because they can buy food on the market) may indicate problems or risks in food markets: farmers may not be confident of buying food easily when they need it.

Except for Ada'a wereda, regression estimates indicate only weak explanatory power of most of the aforementioned variables. The exceptions are the size of farm production (which was consistently significant and positive in each regression model run for all sample weredas), and farmers' specialization in tef (which was positive and significant in Bacho Wereda). The exceptionality of Ada'a is likely to be associated with its easy access to major markets and non-farm employment (due to its closeness to major industrial locations).

### 3.4 Determinants of output in tef areas

As the quantity or value of output produced was found to be very important in determining both market entry and the degree of market participation across all sampled weredas, it is important to investigate separately the factors affecting the volume of farm output.

To estimate the determinants of farm output, the Cobb-Douglas (C-D) production function was employed. The C-D function is a multivariate nonlinear relationship between outputs (production) and inputs used in the production process. The C-D model enables us to transform the original non-linear relationship between output and inputs into a linear form that can be estimated within the framework of the classical linear regression model.

The C-D production function, in its stochastic form, may be expressed as

$$Y_i = \beta_1 X_i^{\beta_1} Z_i^{\alpha_i} e^{u_i} \quad (1)$$

Where  $Y$  is farm output expressed in terms of the value;  $X_i$  is a vector of physical inputs including land, labour and ox (draught) power;  $Z_i$  is a vector of other factors that affect a farmer's work (such as age, sex, engagement in the land rental market, and off-farm activities); and  $u$ ,  $e$  and  $\beta_i$  are the stochastic disturbance term, the base of natural logarithm and the parameters to be estimated, respectively.

Equation 1 is non-linear, but if we log-transform this model, we obtain<sup>18</sup>

$$\begin{aligned} \ln Y_i &= \ln \beta_1 + \beta_i \ln X_i + \alpha_i \ln Z_i + \mu_i \\ &= \beta_0 + \beta_i \ln X_i + \alpha_i \ln Z_i + \mu_i \end{aligned} \quad (2)$$

where  $\beta_0 = \beta_1$

Thus, equation 1 is non-linear in the variables Y, X and Z, but linear in the log of these variables. Thus, the model is linear in the parameters  $\beta_i$  and  $\alpha_i$ , and is, therefore, a linear regression model. The properties of the C-D function are quite well known:  $\beta_i$  and  $\alpha_i$  are partial elasticity of output with respect to physical and non-physical inputs such as age and sex. The sum of the parameters  $\beta_i$  and  $\alpha_i$  gives information about the response of output to a proportionate change in the inputs.

The independent or exogenous variables that are expected to affect the level of production are broadly classified into four groups:

1. Conventional or physical inputs, including land, labour and draught (ox) power for ploughing.

Non-conventional inputs, classified into:

2. Factors affecting the quality or effectiveness of the physical inputs, mainly farm labour. These include literacy, age and sex of the household head who is assumed to act as manager of the farm<sup>19</sup>. While sex and farmers' literacy were measured as dummy variables, the age of the farm manager (household head) is a continuous variable.
3. The use of modern farm inputs such as fertilizers, improved seeds and pesticides (measured by cash expenditure on the purchase and transport of these inputs).
4. *Area dummies* – included to capture the effects of living in a given wereda when compared to the other three weredas.

The results of the regression model are reported in Table 7. The first column presents the estimate of the simple CD production function in which only physical inputs are included. Land and oxen, which could be used as proxies for capital stock, are found to be important in explaining the variation in the level of production among sampled households. The coefficient for land is statistically significant at 1%, while the coefficient for oxen ownership is relatively high but significant only at the 5% level.

<sup>18</sup> This model building is adopted from Gujarati (2003).

<sup>19</sup> These are not the only factors to affect the quality or efficiency of labour. Others important but not considered for lack of data are farmers' access to information, health centres or electric power etc. Similarly, differences in the quality of farm land were not considered.

Cash expenditure on inputs such as fertilizer, pesticides, and peak-season hired labour also significantly affects the total value of farm output.

All three-location dummies were significant, albeit with some differences in the level of significance. This implies a marginal difference in the effect of living in a specific wereda compared to the other three weredas. Farmers living in Ada'a district, which is nationally famous for the quality of its tef and has the best access to major urban markets including Addis Abeba, gained the most significant location-related benefit.

**Table 7: Determinants of output in selected tef growing areas**

	Physical inputs and location dummies (column 1)		Column 1 plus the nature of farm manager, and participation in credit market (column 2)	
	Coefficient	t-statistics	Coefficient	t-statistics
Constant	4.182	3.42***	3.526	1.91
ln (land)	0.525	1.89*	0.526	1.86*
ln (labour)	0.356	1.65*	0.294	1.35*
ln (oxen)	0.004	0.05	0.011	0.12
logcvpfi <sup>20</sup>	0.202	1.70*	0.164	1.35
Ada'a dummy	0.976	3.08***	1.105	3.33***
Dejen dummy	0.722	2.22**	0.709	2.17**
Enemay dummy	0.654	2.23**	0.635	2.15**
logage			0.204	0.50
Sex (dummy)			0.221	0.67
Head education (dummy)			0.374	1.63*
Participation in credit market (dummy)			0.479	2.08**
	F( 7, 124) = 4.72		F( 10, 120) = 3.66	
	Prob > F = 0.0001		Prob > F = 0.0003	
	R-squared = 0.5203		R-squared = 0.5514	
	Adj R-squared = 0.4725		Adj R-squared = 0.4962	

\*, \*\*, \*\*\* indicate significance level at 10%, 5% and 1% respectively.

Among the personal characteristics of the farm manager (usually the head of the household), age and sex were insignificant in explaining the observed variation in the level of farm output. However, the coefficient for literacy of the household head is positive and significant, which implies a high probability of better production among farm households with an educated head (compared to households with illiterate heads). Participation in the credit market (defined as having received a loan of 100

<sup>20</sup> Cvpfi represents cash expenditure for the purchase modern farm inputs (fertilizers, improved seeds and pesticides).

Birr or more) also appears to play a significant role in enhancing the level of farm production.

As indicated earlier, our intention in modelling the production function is principally not to identify the factors affecting farm production, but to uncover additional factors having an indirect effect on farmers' marketing decisions. The assumption is that any variable affecting farm output will also affect farmers' participation in output markets, as our analysis shows that the former significantly explains the latter.

There is strong evidence for the positive effect of improved access to factors of production (agricultural land, peak season labour and draught power) as well as working capital for the purchase of inputs on farmers' marketing decisions. Similarly, the positive effect of participation in financial markets suggests the importance of credit in helping to boost production, and, consequently, smallholders' participation in output markets.

## 4. Conclusions

### 4.1 Summary of survey findings

#### *The degree of agricultural commercialisation*

- The level of commercialisation in the study areas is far higher than the national average. The average farmer sold almost half (49.7%) of his or her crop production in value terms, compared to a national average in 2004 of about 33% (EEA 2006).
- The degree of commercialisation, however, differs widely across sampled households, which implies a correspondingly wide variation in the potential and constraints for further commercialisation. Therefore, any agricultural commercialisation strategy should be customized for different groups of farmers.

#### *Production, consumption and trade*

- Despite the relatively high degree of market orientation in the study areas, the size of market (per seller) is very thin.
- The volume of trade is constrained by low per capita production. Over 63% of the variation in trade among sampled households is explained by variation in production, keeping other factors constant.
- Although the amount that farmers supply to the market increases as the volume of production increases, the relationship is far from one-to-one. A simple correlation analysis suggests that the more a farmer sells, the lower the *proportion* of output marketed ( $r=0.12$  or  $r^2=0.1$ ). In other words, as the volume

of marketed output increases the volume of output consumed on the farm also increases but by a higher proportion, so that the degree of commercialisation (measured in terms of the proportion of output sold) actually falls.

#### *Commercialisation and farmers' welfare*

Commercialisation of agriculture is not an end in itself for farmers, but an intermediate outcome on the way to welfare goals. A two-way analysis was carried out to shed some light on the welfare effects of commercialisation. Some of the findings are:

- The most commercialised farmers (here defined as those who sold 65% or more of their production) consumed one and a half times as much staple food per capita as the least commercialised (those who sold less than 30%). This difference is statistically significant.
- Households in the higher commercialisation category also spent more on education and healthcare. Households in the least commercialised category spent on average only 32 Birr per annum on education, while the most commercialised spent more than twice this (about 84 Birr/person/year). This difference is statistically significant at 10%.
- Agricultural productivity also varies with the level of participation in output markets (although this is not statistically significant). Land productivity increases with the index of commercialisation. Labour productivity is also lowest among the least commercialised category of farmers, but the trend lacks consistency as the index of commercialisation rises.

These initial results suggest that commercialisation of smallholder agriculture should be encouraged not only as a means to boost exports and to stimulate or monetize local economies, but also as a way to help smallholders achieve welfare goals.

#### *Determinants of market participation*

About 7% of sampled farmers were not participating in the output markets as sellers. Although it is difficult to run a regression model on such a small sample size, results from a two-way analysis reveal significant differences between market participant and non-participant farmers:

- Household heads who participated in output markets were found to be younger - 11 years younger, on average - than their non-participant counterparts. This difference is statistically significant.
- The likelihood of market participation is high among smallholders specializing in the major cash crop, tef.
- The size of farmland owned and cultivated is very important to farmers' participation in output markets. In general, those who did not sell owned small farms (1.1 ha on average, about one-third the size of market participants'

landholdings). Moreover, non-participant households cultivated only a small proportion of their land: 62% of them rented out a significant part of it (about 85% on average). By contrast, market-participant households not only owned more land but also rented *in* about 22% of their average cultivated area of about 3.8 hectares. All these differences between the two groups are statistically significant.

#### *Determinants of the degree of household market participation*

Regression estimates show that:

- Both the total value of farm production and the proportion of land allocated to tef (the major cash crop) had a positive and significant impact on a household's degree of market participation, measured in terms of gross income from crop sales.
- The effect of household self-sufficiency in food (measured as the percentage of consumption that is self-produced) was negative. This implies that households who depend more on the market for their food access also participate more in output markets. In other words, their participation in food markets is high both as sellers and buyers.
- The impact of non-farm activities on market participation is mixed. While the coefficient for farmers' participation in non-farm activities was statistically insignificant, the coefficient for income from these activities was negative and significant. These results imply that participation in non-farm activities alone is not sufficient to impact on a farmer's market participation (as a seller). However, the level of income from non-farm sources does impact on market participation.
- The likelihood of lower crop sales and higher on-farm consumption increases as farmers obtain more cash from non-farm sources. This finding disproves (in this case) the alternative hypothesis that non-farm income encourages farmers to sell *more* of their crops and rely on market purchases for their food access.

#### 4.2. Policy issues and further research needs

The findings of this study broadly support the PASDEP's dual strategy of increasing agricultural commercialisation while promoting non-farm economic growth. Higher levels of household commercialisation appear to be associated with better standards of welfare (including food consumption), confirming that smallholders can benefit directly from greater engagement with markets. At the same time, a minority of farmers even in these relatively commercialised areas are leading marginal and largely subsistence-oriented farming livelihoods, supplementing their production income through renting out land. Combined with the finding that higher non-farm incomes are associated with lower agricultural commercialisation, this underlines the

importance of developing sources of non-farm employment alongside intensification of agriculture, in order to provide favourable conditions of exit from farming for some less productive farmers and landless youth. The suggested direction of change is towards a more diversified rural economy, aiming for higher returns from agriculture alongside a wider range of local income and livelihood options.

Land size and means of accessing land emerge, not surprisingly, as critical factors in household-level commercialisation. The survey findings show that there is a very active land rental market in the tef-producing areas, and the qualitative discussions in Ada'a highlighted both an absolute shortage of land and a rapid rise in rental prices. An open and well-regulated rental market is essential to ensure both adequate land access for commercialising farmers and a secure income for those (mostly poorer) landowners who are renting out their fields.

Further research into the factors that lead some farmers to stay in agriculture while not engaging with output markets would be useful. For example, given the finding that non-market participants are older, is this a lifecycle effect (meaning that the current generation of young farmers may also withdraw from marketing when they are older), or a generational shift? Would these farmers want to move out of agriculture if better options were available? Investigating such questions could assist policy makers in designing strategies to improve currently precarious farming livelihoods, while facilitating a smooth exit from farming for those who wish to take it.

It should of course be borne in mind that the study areas are not, and were not intended to be, "typical" or representative of the very varied Ethiopian smallholder sector. The findings presented here will not necessarily hold true in other areas or other farming systems, where conditions and opportunities may be very different. Continuing research into commercialisation(s) in Ethiopia should take careful account of relevant geographical factors, and of the various potential commercialisation pathways for different categories of farmer.

## References

- Befekadu Degefe and Berhanu Nega (eds). 2000. Annual Report on the Ethiopian Economy. Vol I. 1999/2000. The Ethiopian Economic Association. Addis Ababa, Ethiopia.
- Byerlee, Derek, Xinshen Diao and Chris Jackson. 2005. Agriculture, Rural Development and Pro-poor growth. Country Experiences in the post-reform era. Agriculture and Rural Development Discussion Paper 21. The World Bank.
- CSA. 2006a. Agricultural Sample Survey 2005/2006: Report on Area and Production of Crops. Vol. I, Statistical Bulletin 361. Central Statistical Agency, Addis Ababa, Ethiopia.
- CSA. 2006b. Agricultural Sample Survey 2005/2006, Vol.II, Statistical Bulletin 361. Central Statistical Agency Addis Ababa, Ethiopia.
- EEA. 2002. Second Annual Report on the Ethiopian Economy. The Ethiopian Economic Association. Addis Ababa, Ethiopia.
- EEA. 2004: Report on the Ethiopian Economy. Vol. III, 2003/04, Addis Abeba, Ethiopia.
- EEA. 2005. Report on the Ethiopian Economy. Vol. IV, 2004/05, Addis Abeba, Ethiopia.
- EEA. 2006. Evaluation of the Ethiopian Agricultural Extension with Particular Emphasis on the Participatory Demonstration and Training Extension System (PADETES), Addis Abeba, Ethiopia.
- Eleni Gabre-Madhin and Tadesse Mezgebou. 2006. Prices and Volatility in the Ethiopian Grain Market. Paper submitted for ESSP Policy Conference 2006. Ethiopia Strategy Support Programme. International Food Policy Research Institute and Ethiopian Development Research Institute. Addis Ababa, Ethiopia.
- FDRE. 2006. Plan for Accelerated and Sustained Development to End Poverty (PASDEP). Federal Democratic Republic of Ethiopia, Ministry of Finance and Economic Development, Addis Ababa.
- Gebremeskel Dessalegn, T.S. Jayne and J.D. Shaffer. 1998. Market Structure, Conduct and Performance: Constraints on Performance of Ethiopian Grain Markets. Working Paper 8, Grain Market Research Project, Ministry of Economic Development and Cooperation, Januray 1998, Addis Abeba.
- Govereh, J. and T.S. Jayne. 1999. The Effects of Cash Crop Production on Food Crop Productivity in Zimbabwe: Synergies or Trade-offs? Policy Synthesis Number 40. Michigan State University <http://aec.msu.edu/fs2/polsyn/No40.htm>
- Gujarati, Damodar N. 2003. Basic Econometrics. Fourth Edition. Tata McGraw-Hill Publishing Company Limited, New Delhi, India The McGraw-Hill Companies, Inc.
- Hailu Tefera and Seifu Ketema. 2000. Production and Importance of Tef in Ethiopian Agriculture. In: Hailu Tefera, Getachew Belay and Mark Sorrells (eds) (2000). Narrowing the Rift: Tef Research and Development. Proceedings of the International Workshop on Tef Genetics and Improvement, Debrezeit, Ethiopia. 16-19 October 2000. Ethiopian Agricultural Research Organization, Addis Ababa, Ethiopia.
- Hailu Tefera, Getachew Belay and Mark Sorrells (eds). 2000. Narrowing the Rift: Tef Research and Development. Proceedings of the International Workshop on Tef Genetics and Improvement, Debrezeit, Ethiopia. 16-19 October 2000. Ethiopian Agricultural Research Organization, Addis Ababa, Ethiopia.

- Kenea Yadeta, Gezahegn Ayele and Workneh Negatu. 2000. Farming Systems Research on Tef: Smallholders' Production Practices. In: Hailu Tefera, Getachew Belay and Mark Sorrells (eds) (2000). *Narrowing the Rift: Tef Research and Development. Proceedings of the International Workshop on Tef Genetics and Improvement, Debrezeit, Ethiopia. 16-19 October 2000.* Ethiopian Agricultural Research Organization, Addis Ababa, Ethiopia.
- Leavy, J. and C. Poulton. 2007. Commercialisations in Agriculture: a Typology. Paper presented at the Fifth International Conference on the Ethiopian Economy, EEA, June 2007, Addis Ababa. [www.future-agricultures.org](http://www.future-agricultures.org)
- Lerman, Zvi. 2004. Policies and institutions for commercialization of subsistence farms in transition countries. Department of Agricultural Economics and Management, Faculty of Agriculture, The Hebrew University, Rehovot 76100, Israel.
- Oczkowski, Eddie. 2003. Two-Stage Least Squares (2SLS) and Structural Equation Models (SEM). <http://csusap.csu.edu.au/~eoczows/home.htm>
- Samuel Gebreselassie and E. Ludi. 2007, Agricultural Commercialisation in Coffee-growing Areas of Ethiopia. Paper presented at the Fifth International Conference on the Ethiopian Economy, EEA, June 2007, Addis Ababa. [www.future-agricultures.org](http://www.future-agricultures.org)
- Seifu Ketema. 1989. Production trends, germplasm resources, breeding and varieties improvement of small millets, with special emphasis on tef in Ethiopia. Pp 167-172. In: Seetharam A., Riley K.W. and Harinarayna G (Eds.) *Small Millets in Global Agriculture.* IDRC, Oxford & IBH Co., India.
- Storck, H., Bezabih E., Berhanu, A., Andrzej, B. and Shimelis W/ Hawariat. 1991. *Farming Systems and Farm Management Practices of Smallholders in the Hararghe Highlands.* Farming Systems and Resource Economics in the Tropics. Vol. 11. Wissenschaftsverlag Vauk Kiel, Germany.
- von Braun, Joachim. 1994. Production, Employment, and Income Effects of Commercialization of Agriculture. In: Joachim von Braun and Eileen Kennedy (eds) (1994). *Agricultural Commercialization, Economic Development and Nutrition.* The Johns Hopkins University Press, London.
- von Braun, Joachim and Eileen Kennedy (eds). 1994. *Agricultural Commercialization, Economic Development and Nutrition.* The Johns Hopkins University Press, London.
- von Braun, Joachim, Howarth Bouis and Eileen Kennedy. 1994. Conceptual Framework. In: Joachim von Braun and Eileen Kennedy (eds) (1994). *Agricultural Commercialization, Economic Development and Nutrition.* The Johns Hopkins University Press, London.

## Annex 1: Conversion factors for household size and labour-force

### 1. Adult equivalents (household size)

To compute household size in Adult-Equivalent (AE) based on consumption needs the following standard conversion factors were used. A male adult is assumed to require 3,000 kcal/day.

<i>Age group (years)</i>	<i>Male</i>	<i>Female</i>
< 10	0.6	0.6
10 – 13	0.9	0.8
14 – 16	1	0.75
17 – 50	1	0.75
> 50	1	0.75

Source: Institut pan-Africain pour le Developpement (1981) as quoted in Storck et al. (1991).

### 2. Man equivalents (labour-force)

To compute household labour force in Man-Equivalent (ME) the following standard conversion factors were used.

<i>Age group (years)</i>	<i>Male</i>	<i>Female</i>
< 10	0.0	0.0
10 – 13	0.2	0.2
14 – 16	0.5	0.4
17 – 50	1	0.8
>50	0.7	0.5

Source: These conversion factors were developed comparing between Here (1986), Johnson (1982), Ruthenberg (1983) and Nair (1985) as quoted in Storck et al. (1991).



# AGRICULTURAL COMMERCIALISATION IN COFFEE GROWING AREAS OF ETHIOPIA<sup>1\*</sup>

Samuel Gebreselassie<sup>2</sup> and Eva Ludi<sup>3</sup>

## *Abstract*

*The coffee sub-sector is very important to the Ethiopian economy – in 2005, coffee export generated 41% of foreign exchange earnings – and provides income for approximately 8 million smallholder households. Policy attention to the sector was always considerable, and its importance has been renewed in the latest Poverty Reduction Strategy, the Plan for Accelerated and Sustained Development to End Poverty (PASDEP). PASDEP puts forward a development strategy based on accelerated economic growth, part of which is hoped to be achieved via increased smallholder commercialisation and market integration.*

*This paper addresses commercialisation in selected coffee growing areas in Ethiopia. The objectives of the study were (i) to assess the scale of commercialisation in coffee growing areas and to detect household and farm characteristics which might explain variation in the levels of coffee commercialisation among households; and (ii) to answer two separate questions: why some sampled households didn't take part in output markets (i.e. identify determinants of market entry) and why some households*

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*sold more products than others (i.e. determinants of market supply). Answering these questions will help to identify policy options promoting market participation and commercialisation of smallholder agriculture.*

*Agricultural commercialisation was found to be comparatively high in the studied Weredas (Districts). On the average, farmers marketed 84% of their farm production. Overall, coffee contributed 70% to the total value of output sold. There is, however, a high inter-household differentiation: the 25% highly commercialised smallholders generated over 95% of their cash income from coffee sales, while the bottom 25% earned 63% of their cash income from selling food crops. Keeping other factors constant, the total volume of farm production explained about 72% of the variation in the degree of commercialisation among sampled farm households. Demographic and household factors, wealth and total farm size had no effect on the observed variation in the degree of coffee commercialisation among sampled households. A negative and significant association between the level of household coffee commercialisation and land productivity in non-coffee crops was found, indicating potential trade-offs between the production of coffee, the major cash crop, and other, mainly food crops. No evidence was found of increasing labour intensity as a result of increased coffee production. Similarly, the degree of coffee commercialisation was found to have a statistically insignificant effect on household-level food consumption.*

*Overall, the findings demonstrate the integrated nature of the farming system in coffee growing areas. Despite an overall high level of coffee commercialisation, diversified farming is a strategy pursued by the majority of the surveyed households. The study findings, however, suggest that further specialisation in coffee could enhance overall agricultural commercialisation in the study areas.*

*As the propensity to supply more coffee is significantly higher among households depending more heavily on purchased food, minimising the trade-offs in the production of coffee and non-coffee staple food crops, especially in the short-term, is very important, which signifies the importance of addressing risks associated with food supply and price. In general, increasing smallholder coffee commercialisation is expected to be a viable pathway for agricultural development in coffee growing areas of Ethiopia, if the problem of low productivity, barriers for production expansion (e.g. shortage of farm land or constrained access to farm land) and addressing market risks in both the food and coffee market are addressed by increased research and policy attention.*

## 1. Introduction –Coffee in the Ethiopian economy

Ethiopia produces and exports one of the best highland coffees in the world. The coffee sub-sector is very important to the Ethiopian economy, and generated about 335 million USD or 41% of the foreign exchange earnings in 2005 (NBE, 2006). The coffee sub-sector is also important in terms of providing income for a large number of households: it is estimated that between 7.5 and 8 million households depend on coffee for a considerable share of their income, and provides jobs for many more people in coffee-related activities (e.g. coffee processing, transporting or marketing). It is estimated that the sub-sector impacts on approximately 15% of the population, and around 20% of the land area (McMillan et al, 2003).

In Ethiopia, coffee is primarily cultivated by smallholders, either cultivating coffee on their own farms or picking semi-wild/wild coffee. Of the estimated 600,000 hectares of land cropped with coffee, over half is semi-forest/forest, or semi-wild/wild land. Approximately 235,600 hectares are under smallholder cultivation, ('garden' or 'cottage' coffee), which is generally inter-cropped with food staples. Smallholder coffee accounts for approximately 95% of total coffee production. There are about 20,000 hectares of plantation coffee, consisting mainly of state farms, but increasingly also of plantations under private ownership (McMillan et al, 2003).

Coffee growers in Ethiopia have been exposed to price fluctuations and impacts of unpredictable and uncontrollable shocks. Despite some improvement of producer prices in the past two years, domestic and world coffee prices have declined and remained very low for much of the late 1990s and early 2000s. The effect of this price decline was manifested in increasing poverty among coffee growers, who previously were able to reap good benefits from their coffee sales. At household level the impact of depressed prices has been considerable, leading to distress sales of assets such as cattle, or to uprooting coffee plants and replacing them with annual food crops (Oxfam, 2002) or cash crops such as *Chat*<sup>4</sup>. Other strategies included giving up traditional shade coffee production to create space for intercropping and income diversification (McMillan et al, 2003).

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<sup>4</sup> Chat is a plant with stimulant properties.

## 2. Government policy on agricultural commercialisation

Smallholders cultivate over 96% of the total agricultural land. The average smallholder cultivates less than one hectare of arable land, and consumes more than 65% of total production within the household (EEA, 2006). In many parts of the country, market participation of smallholder family farms (measured either in terms of per capita market share, the volume of farm output supplied to markets or their profit motive) is limited. Agricultural markets are fragmented and not well integrated into a wider market system, which increases transaction costs and reduces farmers' incentives to produce for the market. Government policy - or the lack of it - has contributed to this general characteristic of the smallholder agricultural sector in Ethiopia. Agricultural commercialisation was not high on the policy agenda until recently, as Government rather prioritised ensuring food security and poverty reduction at household level.<sup>5</sup>

The second PRS, the Plan for Accelerated and Sustained Development to End Poverty (PASDEP), formulates a more pronounced strategy towards smallholder commercialisation. Commercialisation of agriculture and the growth of the non-farm private sector are two main thrusts of the initiative to accelerate growth for the next five years (2005/06-2009/10). PASDEP also recommends specialisation both at farm and community level, a shift to high-value crops, promotion of niche high-value export crops, a stronger focus on selected high-potential areas, supporting the development of large-scale commercial agriculture where it is feasible, and facilitating the commercialisation of agriculture, among others, through improved integration of farmers with markets - both local and global (MoFED, 2006).

Current Government policy on commercialisation focuses both on small and large farms. An earlier policy document published by the government in 2003 making reference to commercialisation (see Demese Chanyalew, 2006) has substantiated this strategy which revealed two broad paths for the commercialisation of Ethiopian agriculture: commercialisation of smallholder agriculture through market-led production, and commercialisation via the emergence, growth and expansion of modern agricultural enterprises. Despite the various challenges that could hinder further development (e.g. those related to the land policy, shortage of farmland, high

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<sup>5</sup> Some criticism has been directed towards the exclusive government focus on poverty reduction and food security at household level at the expense of a more balanced and broad economic growth strategy including urban development, increased agricultural commercialisation and labour productivity (Cour, 2003; Dessalegn Rahmato, 2005; Samuel Gebreselassie 2006).

population growth and lack of non-farm employment), some progress is being made in both cases. The second type of commercial farm is indeed emerging and expanding especially with investments in horticulture and floriculture.

Beyond marketing support, which is elaborated in more detail in PASDEP, government policy is not very clear on how the potential benefits of increased smallholder commercialisation could be maximised and the potential damage minimised. What is called for is a stronger focus on creating an enabling economic environment in which smallholders can take advantage of commercialisation opportunities and progressively move away from the widespread subsistence orientation towards a more viable and market-oriented smallholder sector.

The challenge for government policy is to identify and facilitate strategic pathways and driving forces of commercialisation. These include macro and trade policies, market reform, rural infrastructure improvement, and the development of a legal and contractual environment in which farmers and other actors along the value chain may cooperate. Moreover, policies and institutions are required to deal with the risks of policy and market failures, deficiencies in the knowledge and information of actors in production, processing and marketing at all levels, and household- and community-level complexities including shortage of farm land, high population growth, lack of alternative employment, and the challenges related to state ownership of rural land (i.e. inability to mortgage land and generate capital for its development, unfair and non-transparent land confiscation for large investments or public use, etc.). Policies and institutions related to these driving forces will strongly influence the nature and speed of the agricultural commercialisation process and the transformation of the current agricultural system.

This study does not focus on the broad policy debates with regard to smallholder commercialisation (for further details see Leavy & Poulton, 2007), but concentrates on the commercialisation of smallholder agriculture in Ethiopia's coffee growing areas. Smallholder coffee farming, which has been an important pillar of the Ethiopian economy for centuries, has been confronted with various problems both internal (e.g. weak markets, insufficient infrastructure, insufficient research and extension, shortage of farmland) and external (e.g. global coffee price decline, increasing food and oil prices), which threaten the further expansion of a dynamic and commercially oriented smallholder coffee sub-sector.

### 3. Context, objectives of the study, conceptual framework and methodology

#### 3.1 Context: Future Agricultures and Commercialisation(s)

Research on coffee commercialisation in selected Weredas was carried out in the framework of the **Future Agricultures Consortium (FAC)**. FAC is a partnership between research-based organisations in Africa and the UK, with work currently focusing on Ethiopia, Kenya and Malawi.<sup>6</sup> The Consortium aims to encourage critical debate and policy dialogue on the future of agriculture in Africa. Through stakeholder-led policy dialogues on scenarios for agriculture, informed by field research, the Consortium aims to elaborate the practical and policy challenges of establishing and sustaining pro-poor agricultural growth in Africa. Current work focuses on three core themes:

- **Policy processes:** what political, organisational and budgetary processes promote or hinder pathways to pro-poor, agriculture-led growth? What role should different actors, including Ministries of Agriculture, have in this?
- **Growth and social protection:** what are the trade-offs and complementarities between growth and social protection objectives?
- **Agricultural commercialisations:** what types of commercialisation of agriculture both promote growth and reduce poverty? What institutional and market arrangements are required?

The third theme is entitled *commercialisations* (plural) to reflect the view that there are several possible types or pathways of commercialisation. Similarly, the plural in the Consortium's name (Future Agricultures) expresses a conviction that pro-poor agricultural development is complex and takes varied locally specific forms.

As part of this overall programme of work, Future Agricultures (Ethiopia) co-organised a parallel session on *Commercialisation of Smallholder Agriculture* at the 2007 EEA Conference. This paper is one of four linked outputs from that session, the other three being:

- a thematic framework paper discussing the meanings and definitions of commercialisation from conceptual and international perspectives (Leavy and Poulton, 2007);
- a brief overview of the policy context and the available (alternative or complementary) pathways of agricultural commercialisation in Ethiopia (Sharp, Ludi and Samuel Gebreselassie, 2007); and

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<sup>6</sup> For further information and news, see [www.future-agricultures.org](http://www.future-agricultures.org)

- an empirical paper on smallholder commercialisation in Ethiopia's tef-growing areas (Samuel Gebreselassie and Sharp, 2007), which closely parallels the present paper and draws on the same methodology and framework outlined below.

### 3.2 Objectives

The objectives of the study are

- to assess the scale of commercialisation in coffee growing areas and to detect household and farm characteristics which might explain variation in the levels of coffee commercialisation among households;
- to answer two separate questions: why some sampled households did not take part in output markets (i.e. identify determinants of market entry) and why some others sold more products than others (i.e. determinants of market supply).

Answering these questions will help to identify policy options promoting market participation and commercialisation of smallholders' agriculture.

### 3.3 Conceptual framework: smallholder commercialisation in Ethiopia's coffee and tef areas

The study focuses on smallholder farmers producing coffee or tef, both important to the national economy, and both grown and marketed by smallholders for generations. Some contrasting and overlapping characteristics of these commodities are summarised in Table 1.

**Table 1: Commodity choice - characteristics of coffee and tef**

Coffee	Tef
Non-food	Food (high value)
High policy attention & intervention*	Limited policy attention & intervention*
Mainly small scale production, some large estates	Small-scale production
Productivity strategy: niche markets (speciality, organic), low chemical input	Productivity strategy: purchased fertilisers (and seeds)
Labour intensive with seasonal labour bottlenecks	
New institutions: Cooperatives and Unions	
*Research & Development, market support and control, etc.	

Commercialisation of smallholder agriculture involves a transition from subsistence-oriented to increasingly market-oriented patterns of production and input use.

Agricultural commercialisation is defined in terms of the degree of participation in the market. This can be measured either in terms of the total volume or proportion of output sold in markets, or the total volume or proportion of purchased inputs in total inputs utilised on the farm, or both. The vast majority of studies on smallholder commercialisation measure the level of commercialisation in terms of the proportion of output sold in markets. A value of zero would imply a totally subsistence-oriented household; the closer the index is to 100, the higher the degree of commercialisation<sup>7</sup> (for details see Leavy and Poulton, 2007).

**Box 1: Household commercialisation and household coffee commercialisation indices**

**Household Commercialisation Index**

$$\text{HCI} = \frac{\text{gross value of all crop sales}}{\text{gross value of total crop production}} * 100$$

**Household Coffee Commercialisation Index**

$$\text{HCCI} = \frac{\text{gross value of coffee sales}}{\text{gross value of total crop production}} * 100$$

### 3.4 Methodology

This paper is based on data collected in 2006 and early 2007. Quantitative data on production, consumption and marketing activities and resource ownership were collected from 160 farm households in four major coffee growing Weredas (Districts) in Oromia (Gomma and Gimbi Weredas) and Southern (Yirgachefe and Aleta Wondo Weredas) Regions. For the qualitative scoping study in early 2007, one Wereda was chosen purposively (primarily on grounds of logistics and accessibility, given severe limitations of time).

For the household survey, a stratified two-stage sampling design was employed within each Wereda. First, Kebele Associations (communities) found in the selected Weredas were listed and two associations were randomly selected. Then, in the

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<sup>7</sup> However, this index could be misleading: a farmer who grows only 1 bag of maize and sells that bag could be considered as more commercialised than the one who grows 50 bags of maize and sells 30 of them. Under ideal conditions, the two measures (the total volume of crop sold and the proportion of crop sold) should be used together through development of a composite index.

second stage, twenty households were randomly selected from each Kebele for the interview. As the study aimed to look also at gender-related disparities on agricultural commercialisation, it was decided to include at least 25% female-headed households in the survey. The survey applied both a purposive and random sampling method. Using structured questionnaires, households were also interviewed about demographics, non-farm activities, asset holdings, and attitudes and perceptions about different issues related to the subject of the study. Interviewees and focus group members in the scoping study were identified through local contacts, based on purposive criteria provided by the researchers.

After preliminary analysis of the survey data, a qualitative scoping study was conducted in one surveyed coffee Wereda (Gomma), in February 2007. The purpose was to follow up some questions raised by the survey, and to identify important policy-relevant issues which had not yet been explored. The methods used were open-ended, semi-structured focus groups and individual interviews around the following themes:

- **Opinions and perceptions** – e.g., what do people consider the advantages and disadvantages of producing for the market, compared to producing for their own consumption?
- **Reasons for selecting specific strategies** – e.g., why do some farmers sell more of their produce than others? What factors encourage or discourage increased market engagement (selling of outputs, buying of inputs)? What kind of people are succeeding in making a profit from farming? What kind of support do farmers need from the government and other organisations, in order to increase their access to markets or to improve their terms of engagement with the market so that farming becomes more profitable for them? Do people *want* to sell more of their produce in the future? Why, or why not?
- **Employment effects** of different commercial crops – e.g. what kinds of people are employed on marketed crops? What type of work is done by local people, or by migrants? By men, women, or children? How much do they earn? What are the conditions of work? Are these considered good jobs, do people want to do them?
- **Changes over time** – e.g. what changes in farming and marketing conditions have people seen in their lifetimes? Has the market become more or less important for farmers than it was in the past? What hopes and expectations do they have for the future? Do they think farming in this area will become more market-oriented, and if so, what will the effects be?

Both descriptive and econometric methods were employed for the quantitative data analysis. Descriptive methods including measures of average and a one-way ANOVA were employed to estimate the scale of commercialisation of agriculture and to test the existence of any statistically verifiable difference among farmers operating at different levels of commercialisation. Results from the discrete one-way analysis were further examined through multivariate regression models which helped to predict the determinants of commercialisation and its impacts on the consumption and productivity of smallholders.

#### 4. Survey findings

##### 4.1 Cropping pattern and crop mix

The average farm size in the study areas was about 1.2 hectare, of which on average 0.63 ha was under coffee. Survey data indicate that about three-quarters of the smallholders in the study areas planted coffee. Coffee is the dominant crop in the surveyed areas - no other crop occupies a similarly large area of the farm. About 38% of coffee plots were intercropped with annual crops like maize, tef, wheat, peas, and vetch, and perennial food and cash crops such as *Chat* and *Enset*. When intercropped, coffee occupied only about one third of the plot. This result confirms earlier findings on the small sizes of coffee plots in Ethiopia. For instance, McMillan et al. (2003) found that 36% of coffee is grown on coffee plots less than 0.10 hectares, and another 59% is grown on plots between 0.10 and 1.00 hectares.

Next to coffee, *Enset* (false banana) and maize were grown by the majority of surveyed farmers. Other crops in the cropping pattern include spices, *Chat*, root crops, fruits and vegetables. Most of these non-coffee crops provide coffee growers with products that can be either consumed directly or marketed occasionally on local markets. *Enset*, which is planted by about half of the surveyed households, plays an important role in the livelihood strategies of coffee growers as it serves as an insurance crop, especially in times of coffee price declines or shortage of food grains in local markets, mainly because of its high productivity, resistance to drought and availability almost all year round.

Despite a high degree of coffee commercialisation, crop diversification is an important livelihood strategy of farmers<sup>8</sup>. The average farmer cultivated four to six crops.

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<sup>8</sup> The high degree of household coffee commercialisation could obscure the widespread crop diversification that coexists in the farming system of the study areas. This is mainly due to our definition of agricultural commercialisation which, for the purpose of this study, is measured in terms of the value of output sold (but

Coffee, maize, *Enset* and different kinds of fruits were the most common crops in the cropping pattern. Diversified production reduces smallholders' vulnerability to market and production risks and provides them with the opportunity to select a particular crop or crops in order to increase farm-generated income while improving household food security. Smallholders' simultaneous adoption of coffee commercialisation and crop diversification as a household livelihood strategy could be a response to unreliable food markets, high transaction costs and risks associated with increased specialisation in coffee.

**Table 2: Cropping pattern among sampled coffee growing households (N=160)**

Crop	Number of plots		Number of growers	% of growers	Average plot size under specific crop per grower (ha)
	Overall	Per farmer			
Coffee	346	2.8	123	77%	0.63
<i>Enset</i>	159	1.9	83	52%	0.40
Maize	275	3.5	78	49%	0.58
Fruits	171	3.2	54	34%	0.20
Chat	110	2.6	43	27%	0.34
Eucalyptus	57	2.8	20	13%	0.26
Vegetables	59	4.9	12	8%	0.40
<b>N</b>	160		160		

Source: Own survey, 2006

Despite apparently higher returns to land and labour from coffee production (see Table 4), farmers do not necessarily aim at higher degrees of coffee specialisation at the cost of a diversified cropping system. Results from a number of discussions held with farmers revealed that risks related to specialisation are considered to be too high. Coffee producers try to achieve as diversified an income portfolio as possible. It was pointed out that being highly specialised in coffee production (understood mainly in area terms, i.e. having all of the farmland under coffee) is mainly a result of insufficient land resources. Young farmers inheriting only a plot suitable for coffee cultivation are in a specifically vulnerable position and their high degree of specialisation is rarely by choice.

not in terms of the volume of marketed output or size of farm land planted by different cash and food crops).

## 4.2 Household income and income diversification

Household income is relatively high in coffee growing areas compared to the national average<sup>9</sup>. The average household generated Birr 5,408 (approx. US\$ 600)<sup>10</sup> from farming and non-farming activities. Crop farming contributes 90% to the household income in the study areas, while the remaining income comes from livestock, remittances or aid, and agricultural and non-agricultural employment (see Table 3). Household income from non-agricultural employment was on average 7.4%, which is very low even compared to the national average. A recent publication from the World Bank (2007) indicates that about 24% of rural income in Ethiopia is generated from non-farm income sources<sup>11</sup>. Despite this low level of income diversification, the structure of household income is very similar among different households and was neutral to the level of coffee commercialisation.

**Table 3: Household income and income sources**

	Household coffee commercialisation <sup>12</sup>				Average
	low <20%	medium 21-60%	high 61-80%	Very high ≥80%	
Total household income (Birr)	4,048	6,429	6,829	5,228	5,408
Per capita income (per adult equivalent) (Birr)	704	1,204	1,196	1,021	1,003
Diversification of income sources (% derived from ...)					
Crop farming (coffee and non-coffee crops)	94.8	93.0	91.8	91.8	90.4
Coffee					70.0
Livestock*	-3.7	2.9	0.9	0.5	0.5
Remittances and aid	0.1	0.0	0.1	2.0	0.7
Agricultural employment -	3.0	0.6	0.0	1.6	1.0
Non-agricultural employment	5.8	3.5	7.2	4.1	7.4

\* Income from livestock includes income from sale of livestock products, livestock and livestock renting minus any expense for purchase of livestock.

Source: Own survey, 2006

<sup>9</sup> According to a recent study by the EEA the average household and per capita income for rural Ethiopia was Birr 3,303 (US\$ 367) and 540 (US\$ 60), respectively (EEA, 2006).

<sup>10</sup> US\$ 1 = approx. 9 Ethiopian Birr (June 2007)

<sup>11</sup> According to the World Bank, this level of non-agricultural income is very low when compared to countries like Bangladesh (52%) or Ghana (43%), though close to Uganda (26%). The report recommends policy makers to increase this low rate through the creation of opportunities for non-farm activities.

<sup>12</sup> Cut-offs were chosen on the grounds of observing marked differences among interviewed households with regard to commercialisation levels and a skewed distribution with a high number of farmers producing at the higher end of the commercialisation spectrum. A division in three groups (low, medium, high), which is fairly common in the literature, would thus not have made sense.

The average household income seems insufficient to satisfy the minimum consumption expenditure for food and basic non-food items. The average per capita income of about Birr 1,000 is close to the Birr 995 the Government of Ethiopia fixed a decade ago (in 1995/96) as the point of reference for rural poverty. Once again, the lowest per capita income was observed among the least commercially-oriented households, implying the importance of coffee in household income, at least in years when coffee prices remain stable or are high. However, despite their low level of income, the least commercially-oriented households could be better off in terms of coping with shocks, as they have a substantial income from (low-value) food crops and are thus able to minimise long-term vulnerability associated with the risks of fluctuating coffee prices and unreliable food markets.

#### 4.3 Coffee and agricultural commercialisation

Many factors have contributed to the commercialisation of smallholder agriculture. It started as farmers and village communities were incorporated into wider economic networks and political units, often in close relation with the development of infrastructure, expansion of long-distance trade and state formation and government intervention. Other factors that have contributed to the commercialisation of agriculture include variation in ecological conditions which stimulated some degree of specialisation and favoured exchange, the external demand for foodstuff in urban and food deficit areas, migration of people, government policies and technological innovations which facilitated surplus production<sup>13</sup> (Hinderink and Sterkenburg, 1987).

Households in the study areas are heavily dependent on coffee, both as a source of cash income and livelihood. Compared to the national average, they operate at a relatively high level of agricultural commercialisation. In value terms, the average farmer in the surveyed Weredas marketed about 84% of what he or she produced.<sup>14</sup> Ten percent of the sampled farmers operated at full commercial level, i.e. they marketed 100% of their production. At the other end of the spectrum, about 4% of the surveyed farmers consumed all that they produced on the farm. Despite a high degree of commercialisation or market orientation, the value of marketed produce (per household) is small. Fifty-three percent of sampled households sold farm products worth 2,000 Birr (approx. US\$ 225<sup>15</sup>) or less, and the average household

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<sup>13</sup> The Italian occupation of the country from 1936 to 1941 may also have played some role.

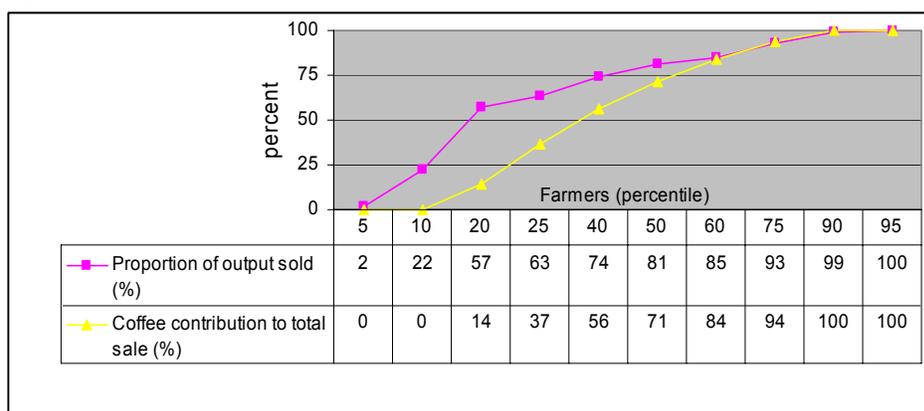
<sup>14</sup> Because the value of coffee is high compared to food crops produced by sampled households, the commercialisation index (measured in value terms) might be overestimated. In other words, if the commercialisation was measured in terms of the output volume farmers supplied to markets, the figure could be closer to the national average.

<sup>15</sup> US\$ 1 = approx. 9 Ethiopian Birr (June 2007)

sold products worth only 586 Birr (approx. US\$ 65). Only 32% of farmers sold products worth 3,500 Birr (approx. US\$ 393) or more.

Household coffee commercialisation was found to be high. The index of household coffee commercialisation, which is defined as the ratio of the value of coffee sold to the value of overall crop produced on the farm, ranged from zero (for 16 households or 10%) up to 100% (for 17 households or 10.6%) across the sampled households, with the mean value being 59%. There is a small variation in the degree of coffee commercialisation among surveyed Weredas (districts). In Gimbi and Gomma Weredas (both Oromia Region), the value of coffee sold comprised 66% and 63%, respectively, of the total value of output produced; whereas in Aleta Wondo and Yirgachefe (both Southern Region), the coffee commercialisation index is 53% and 56%, respectively.

**Figure 1: Proportion of output sold and coffee contribution to total sale**



Overall, coffee contributed 70% to the total value of output sold in the market by the average farmer. There is, however, a high inter-household difference in coffee's role as a cash-earning crop. The top 25% of highly commercialised smallholders, for instance, generated over 95% of their cash income from coffee sales, while the 25% least commercialised households earned only 37% of their cash income from coffee and the remaining 63% from sales of non-coffee food crops like maize. The data suggest that some of the farmers are producing food crops to sell to their fellow farmers who are highly commercialised in coffee production.

A single-equation simple regression model specifying sales as a function of production (see Box 2) indicates a significant and positive association between production and amounts sold, both measured in value terms. The regression

coefficient of 0.75 indicates that for a unit increase in the value of production, earnings from sales go up by 0.75. The high coefficient of determination ( $r^2=0.72$ ) demonstrates that about 72% of the variation in sales can be explained by the volume of production. Section 5 presents further analyses of factors that play a role in farmer's decision whether or not to participate in markets and on the extent of market participation.

**Box 2: Sales - production relationship among sampled households**

$$Y_i = 1,710 + 0.75X_i$$

$$t = (2.20) \quad (19.23)^*$$

$$P = (0.03) \quad (0.00)$$

$$R^2 = 72.1$$

Despite a high degree of commercialisation, farmers pointed out that diversification (of both crops grown and income sources) is an important livelihood strategy in view of reducing risks. This strategy is feasible because of a diverse agro-ecological environment, and necessary because of high risks resulting from unpredictable climatic, economic and socio-political events. Because coffee is a high-value crop compared to other food and non-food cash crops, it can generate a cash income that otherwise can not be achieved. This could be one explanation why, despite declining and highly fluctuating prices for coffee for the past decade, farmers in the survey areas did not uproot coffee trees. Nonetheless, coffee growers allocated a substantial portion of their land to low risk, but also low value food crops as a hedge against price risks related to coffee, despite some short-term financial loss.

#### 4.4 Characteristics and comparison of highly and less commercially-oriented farmers

One issue for this study was to investigate the effect of farm-size on the level of commercialisation, or whether farm households with smaller farms commercialise disproportionately less than those with larger farms. Results from the bivariate statistical analysis indicate that the total farm size owned and cultivated by the surveyed farmers was not important in explaining observed variation in household coffee commercialisation. More important was the proportion of land planted with coffee. This result highlights two points: (i) the homogeneity of farm sizes among surveyed households, which makes the probability of commercialisation among different farmers comparable, and (ii) the difficulty smallholders face to expand their coffee and non-coffee (notably food crop) production simultaneously.

Table 4 highlights the importance of demographic and household factors for the level of coffee commercialisation. The degree of coffee commercialisation was higher among households with smaller families, households headed by women and households headed by older persons. Households with a higher commercialisation level were smaller (average 5.1 members) than those with a lower commercialisation level (average 5.8 members). About 12% of highly commercialised households were headed by female household heads compared to 4% among the least commercialised. Similarly, the mean age of heads of households with a high coffee commercialisation level was 51, compared to 46 years for the head of a household with a low commercialisation level. However, none of these observed differences was statistically significant. That is, neither the demographic and household factors considered (gender, age, and family size) nor farm size had any significant effect on the observed variation in the degree of coffee commercialisation among sampled households.

**Table 4: Household characteristics by degree of Coffee commercialisation**

	Household coffee commercialisation				F-test
	<20% (Low)	21-60% (Medium)	61-80% (High)	≥80% (Very high)	
Total cultivated land (ha)	1.12	1.23	1.41	1.09	0.83
Proportion of land allocated to coffee (%)	34	50	54	57	2.77**
HH size (adult equivalent)	5.75	5.34	5.71	5.12	0.86
Age of household head	46	47	52	51	1.16
Sex of household head (% male)	96	92	87	88	0.62
HHs with radio/tape recorder (%)	4	8	20	19	1.61
Number of rooms in house	2.8	2.7	3.3	2.9	0.68
HHs with corrugated iron roof on house (%)	60	73	53	72	0.97
Non-land farm asset ownership (Birr)	688	766	761	1,745	1.38
Labour intensity (person-days/ha)	115	153	147	134	1.02
Share of hired labour (%)	14	16	12	11	0.13
HH commercialisation index (see Box 1)	74	70	91	98	11.58***
N	26 (20%)	26 (20%)	15 (11%)	64 (49%)	

\*, \*\* and \*\*\* denotes statistical significance at 1, 5 and 10%, respectively.

Source: Own survey, 2006

Focus group discussions with young and older male farmers and female farmers revealed that young farmers often only receive one plot with coffee trees from their

fathers when they set up their own household. Female headed households obtained their land either during the land distribution during the Derg regime or after the death of their husbands. Women in the focus group discussion mentioned that they leased out crop land because of labour restrictions (women are not allowed to use oxen for ploughing), but kept land under coffee as they could more easily employ labourers during coffee harvest than for other field-work related tasks. The higher level of commercialisation among female-headed households and households with younger heads could thus be explained by their specific land ownership and labour availability situation.

Another key issue is whether household coffee commercialisation had any association with wealth-related variables. The bivariate statistics in Table 3 indicate that highly commercialised households are generally better off in terms of ownership of various non-farm assets (e.g. radio, type of house, non-farm assets), though these differences were not statistically significant. Similarly, household coffee commercialisation was not associated with gross per capita crop and non-farm income, though descriptive statistics indicate that per capita income among households operating at a higher level of commercialisation was high. Despite the high probability of reverse causality between smallholder's wealth and their engagement in potentially risky farming activities such as coffee production, the lack of statistically significant associations in the study areas appears to contradict evidence from elsewhere that commercialisation in non-food crops increases agricultural income. A multivariate regression model was carried out to verify some of these results from bivariate analysis, and this is discussed later in the paper.

Although the difference in ownership of non-land farm assets (mainly livestock and farm tools) among the four groups of farmers operating at different levels of coffee commercialisation is not statistically significant (see Table 4), the least commercialised coffee growers owned only 40% of what the highly commercialised coffee growers owned. This positive relationship between household coffee commercialisation and asset ownership could indicate a positive effect on smallholders' capacity to invest or own more assets. However, the cause-effect relationship could be either way. A high degree of commercialisation in coffee might generate sufficient cash income to allow coffee growers to invest some of this income in assets. An alternative explanation could be that because a high level of commercialisation bears significant market and price risks, coffee growers are forced to acquire assets which can be easily liquidated to finance subsistence needs in times of low coffee prices.

Based on our analysis, we could find no clear indications that would point in the direction of enhanced farm employment as a result of higher levels of commercialisation. Compared to farm households operating at the highest or lowest level of coffee commercialisation, labour intensity was highest among households with a medium commercialisation level (see Table 4). The bivariate statistics indicate that farmers operating at a high level of coffee commercialisation employ more labour (about 20% more) per hectare of farm land than those operating at the lowest level of coffee commercialisation, though the share of hired labour was high among the latter group (Table 4). These differences, however, are statistically insignificant. Explanations for this could be that farm sizes in general and area under coffee in particular are so small that only limited extra-household labour is required even if the area under coffee is increased. Results from the qualitative scoping study, however, raise some different aspects of the employment issue. Extra-household labour demand during peak seasons (e.g. harvesting, processing and selling red coffee cherry, and land preparation and harvesting of grain crops) was mentioned as a constraint to the further expansion of coffee production. A vibrant rural labour market exists in coffee growing areas, with seasonal workers from neighbouring areas migrating to coffee growing areas during peak labour times. Female household heads, however, mentioned that they face increasing difficulties in recruiting sufficient (migrant) labourers during peak times. One reason could also be that young local farmers prefer to work in coffee processing facilities (e.g. washing stations) or to migrate themselves to other areas in search of employment. Further research is needed to establish employment effects – positive and negative – of increased levels of commercialisation of coffee growing households.

**Table 5: Productivity and loans among coffee growers operating at different levels of coffee commercialisation**

	Household coffee commercialisation				F-test
	<20% (Low)	21-60% (Medium)	61-80% (High)	≥80% (Very high)	
Land productivity in coffee (kg/ha)	225	546	602	450	2.8**
Gross margin in the production of non-coffee crops (Birr/ha)	1,813	1,504	1,479	911	4.35** *
Share of purchased food (%) <sup>A)</sup>	73	78	78	72	0.23
HHs taken loan (% yes)	60	54	47	31	2.71**
Average amount of money borrowed (Birr)	376	514	486	561	0.16
N	26 (20%)	26 (20%)	15 (11%)	64 (49%)	

\*, \*\* and \*\*\* denotes statistical significance at 1, 5 and 10%, respectively.

Source: Own survey, 2007

<sup>A)</sup> As the survey was conducted towards the end of the cropping season, the reported expenditures on basic food (here expressed as a percentage of total consumption) for one week prior to the survey may overestimate the annual average.

Survey data indicate that participation in the credit market is high among the least commercialised households, but that they received, on average, only small loans. About 60% of the least commercialised farmers had taken loans averaging Birr 376 (approx. US\$ 40), while only 30% of the highly commercialised households took loans averaging Birr 561 (approx. US\$ 60) (see Table 5). This difference suggests the positive role of a high degree of coffee commercialisation in reducing the need for borrowing (as shown in the lower percentage of households borrowing money), while enhancing the capacity to borrow larger sums.

## 5. Determinants of participation and extent of participation in output markets: Econometric analysis

Smallholders participate in output markets either to capture the gains that arise from specialisation or because of necessity (i.e. to get cash for the purchase of essential consumption goods and services and agricultural inputs not produced on the farm). In making the decision to participate in markets, they are believed to make a rational choice that can maximise their utility or benefit. The decision to enter markets is influenced by many household (micro) and macro level factors. As discussed earlier, macro- and trade policies, market reform, rural infrastructure and a conducive legal environment are all required for beneficial interaction among the different market players and therefore for advancing the degree of agricultural commercialisation of smallholders.

However, even in situations where farmers operate under the same policy and market environment, not all smallholders participate in output markets. And those participating in output markets do so to a different degree. This study investigates which household-level factors are important for defining market participation and the degree of market participation based on household survey data.

### 5.1 Modelling market participation

We investigate the factors that influence smallholder's decisions whether or not to participate in output markets. For this we constructed a logit model. Logit models are widely used for predicting the [probability](#) of an occurrence of an event. It uses several predictor variables that may be either numerical or categorical. The logistic regression model is used extensively in medical and social science as well as marketing (e.g. predicting a customer's propensity to purchase a product (Gujarati, 2003).

In this study, the model is, however, used to examine factors playing an important role in the observed decision of surveyed farmers to participate or not to participate in output markets. For each household  $i$ ,  $i=1, 2, \dots, N$ ,  $y_i = 1$  if the household participates in output markets and  $y_i=0$  otherwise. This is conditioned by a  $K$ -vector of household-specific covariates,  $x_i$ . The decision rule is to participate when the utility of doing so,  $U_i(x_i)$ , exceeds utility  $V_i(x_i)$ , which is the utility reaped in return for not participating.

Logistic regression analyses binomially distributed data where the numbers of Bernoulli trials  $n_i$  or observations are known and the probabilities of success  $p_i$  or occurrence ( $p_i$ ) are unknown. An example of this distribution is the probability of a farmer to sell or not to sell his/her output from a group of farmers ( $n_i$ ) surveyed. We assume that this probability can be expressed by the logistic function:

$$P_i = \frac{1}{1 + e^{-(\beta_0 + \beta_i X_i)}}$$

We do not actually observe the latent variable  $P_i$ . What we observe is a dummy variable  $Y_i$  defined by

$$Y_i = \begin{cases} 1 & \text{if } P_i > 0 \\ 0 & \text{otherwise} \end{cases}$$

Since each  $Y_i$  is a Bernoulli random variable, we can write

$$\begin{aligned} \text{Prob}(Y_i = 1) &= P_i \\ \text{Prob}(Y_i = 0) &= (1 - P_i) \end{aligned}$$

The logits of the unknown binomial probabilities (*i.e.*, the logarithms of the odds) are then modelled as

$$\text{Logit}(P_i) = \ln \left( \frac{P_i}{1 - P_i} \right) = \beta_0 + \beta_i X_i + u_i$$

The left-hand side of this equation ( $\ln(P_i/(1-P_i))$ ) is called the log-odds ratio. The log-odds ratio is a linear function of the explanatory variables. For the linear probability model it is  $P_i$  that is assumed to be a linear function of the explanatory variables. The logistic model was estimated using maximum likelihood estimation technique.

Another commonly used transformation is the probit transformation. In many practical situations, probit and logit give very similar results. The logistic model is used in this study because it is computationally simpler to estimate and interpret. Moreover, the problem of disproportionate sampling is better handled by logit models which don't

demand to weight observation of groups sampled at different rates as the coefficients are not affected by the unequal sampling rates for the two sample groups (it is only the constant term that is affected) (Maddala, 2001).

## 5.2 Modelling the degree of market participation

Once households have made the decision to participate in markets as sellers, they have to make another decision on how much to sell and at what time (i.e. supply decision). Survey data indicate a wide disparity of the quantity supplied to the market by respondents. Average sales quantities of the top 25% farmers, for instance, exceed by three times what was sold on average by 50% of sampled households. It is important to investigate the factors behind these wide variations. This helps to identify alternative market promotion policy options for different segments of the rural population.

We assumed that the quantity of output sold on the market (measured in terms of cash earned from marketing) is a linear function of a set of household characteristics. Mathematically, the econometric model or functional economic relationship is expressed as the reduced form equation:

$$Y_i = \alpha_i + \beta_i X_i + u_i \quad \text{(Equation 1)}$$

Where  $Y_i$  is total value of output (or the proportion of output) sold,  $X_i$  are factors that are hypothesised to affect quantity supplied on the market  $\alpha_i$  and  $\beta_i$  are estimable parameters, and  $u_i$  is the error term.

The explanatory variables assumed to affect the total value of sales (or the degree of farmers participation in the output market) include quantity of on-farm production, price of the commodity in time period t-1, household food security measured in terms of the proportion of own food in total household food consumption, the degree of specialisation in major cash crop (coffee), per capita income from non-farm activities and share of non-farm income in total household income. Market transaction costs could be one of the explanatory variables but it is not considered for lack of data, though the price farmers received (farm gate price) for their major output is supposed to capture the effect of variation in market transaction costs including the effect of farmers' access to market centres.

Farmers engage in non-farm activities to complement their farm income. The level of income from non-farm activities could indirectly indicate farmers' satisfaction with

their cash income from their farming activities, especially if sampled farm households have comparable opportunity or access to available non-farm jobs. Conversely, the level of cash income from non-farm activities could be used as a proxy for farmers' dissatisfaction with their cash income from their farming operations.

Data on farmers' access to non-farm activities and their willingness to engage in such activities is not available. But we have data on income from non-farm activities and we use this as one of the explanatory variable in the regression model. The assumption is that those with non-farm incomes will be selling more of their output when compared with those who have no additional income. This is measured in terms of the level of household income from non-farm sources and its share in total household income. These two variables, therefore, are assumed to affect positively the total value of output sold as the propensity to supply more could increase with higher income from non-farm activities.

On the other hand, the propensity to sell could vary according to the type of major crop produced. Supply decision of farmers who produce non-food cash crop and those who produce food crops which can be sold or consumed on the farm could vary. To reveal any effect associated with this, the degree of farmers' specialisation in coffee was considered as an explanatory variable.

While the level of farm production and farm gate price have a direct effect on the amount of crop sold, in semi-subsistence farming the degree of household food self-sufficiency (here expressed as the proportion of own food in total household food consumption) plays a key role in the degree of their participation in output markets. The assumption is that households that have met their food requirement will be more ready to sell their output. But, this would only be the case in systems where both food crops and cash crops are cultivated. The level of household food security was incorporated into the model as explanatory variable and is assumed to affect the extent of smallholders' market participation positively or negatively.

We estimate Equation 1 by ordinary least square estimator (OLS) after testing whether the error term and the regressors are uncorrelated, which is important for OLS to yield consistent estimates. But in the model specified above (Equation 1), one of the regressors (total value of output) could be endogenous to the specified model which could cause the error term to be correlated with this regressor and thus make OLS an inconsistent estimator.

The Hausman specification test was used to test for the exogeneity of this variable and to determine the suitability of OLS in estimating the above equation or the need

to employ another estimator like the instrumental variables (IV) procedure (also called two stage least square (2SLS)). In order to implement the test, the reduced form equation where the potentially problematic variable (total value of output) is specified as a function of all exogenous variables in the structural equation (Equation 1) and the two proxy or instrumental variables (the size of cultivated land and the number of working adults in the household) was run using the OLS and we retrieve the residual from this regression. Then, the following expanded equation is formulated where the original structural equation (Equation 1) is augmented by the inclusion of the reduced form residual ( $v_i$ )

$$Y_i = \alpha_i + \beta_i X_i + \gamma v_i + u_i \quad (\text{Equation 2})$$

The Hausman specification test was implemented by testing the coefficient of the residual ( $\gamma$ ) (i.e. to test whether the coefficient is significantly different from zero or not). A simple t-test was used and the coefficient was found very close to zero and t-test indicates that the coefficient is statistically significant (model results from these regressions are not reported here) so we fail to reject the null hypothesis of exogeneity. Therefore, we used the standard OLS as it could yield consistent estimates.

**Table 6: Characteristics of market participants and non-participants**

	Market position		
	Participant	Non-participant	T-value
<i>Household characteristics</i>			
Household head			
▪ age	49	55	1.1505
▪ sex (% male)	91%	82%	1.0446
▪ basic education (% literate)	65%	64%	0.0614
Household size (adult equivalent)	5.4	4.5	1.513
<i>Farm resource and expenditure</i>			
▪ total cultivated land (ha)	1.15	0.69	2.058**
▪ labour spent on farming (person days)	149	77	2.635***
▪ cash expenditure for farming (Birr)	163	49	1.148
<i>Farm production</i>			
▪ Value of output produced (Birr)	6,194	1,818	2.164**
<i>Specialisation in coffee</i>			
▪ Proportion of land allocated to coffee (%)	63%	49%	0.685
<i>Household food security</i>			
▪ Share of purchased food (%)	78%	47%	2.686***
<i>Importance of non-farm income (NFI)</i>			
▪ Share of NFI in household income (%)	12%	0%	1.528
▪ Per-capita income from non-farm activities (Birr.)	86	0.99	1.047
N	128	11	

\*\*\*, \*\* and \* indicate statistical significance at 1%, 5% and 10%, respectively.

The estimates of the two regression models are presented in Table 8 and discussed in Section 5.3.

### 5.3 Results

Despite a high degree of specialisation in coffee production in the selected Weredas, survey data indicate that about 9% of sampled households did not participate in output markets as sellers. These farmers were unable to take advantage from participating in output markets because of either insufficient production and high market transaction costs, or alternative cash income (e.g. non-farm wage labour, remittances), which may weaken their incentive to participate in output markets as sellers. The degree of household food security measured in terms of the proportion of purchased food which also indirectly indicates the cropping mix (staple versus cash crops) is also important in influencing the decision of smallholders' market participation.

Descriptive statistics indicate that heads of households not participating in output markets are relatively older (on average 6 years). We also find a higher percentage of female headed households and smaller households with fewer members among those households not participating in output markets (Table 6). These differences in household-level characteristics, however, were statistically not significant. Conventional farm inputs, like land and labour, were found positive and statistically significant. The likelihood for non-participation in output market is high among farm households cultivating small farms and spending less time for farming activities. Similarly, the total value of farm output produced is significantly higher among households participating in output markets. Households selling a larger share of their production also buy a larger share of their food from markets: 78% in comparison to only 47% of food bought the week before the survey by households not participating in output markets.

**Table 7: The degree of market participation among farmers participating as sellers in output markets (N=128)**

Percentile (% of household)	Income from marketing (Birr)		
	Average	Minimum	Maximum
10%	6	--	53
20%	159	22	435
25%	364	120	600
50%	1,860	1,049	2,552
75%	5,600	3,539	10,208
80%	7,963	5,191	13,494
90%	18,531	11,510	47,044

Not surprisingly, econometric analysis reveals that farmers' decision on market entry is significantly related to the amount of farm production and the degree of household food security. While the amount of farm production affects the decision to participate positively and significantly, household food security which is measured in terms of the households dependence on purchased food was found negative and significant (at 10%). The result is consistent with results obtained from the descriptive analysis and indicates that the probability for market participation as seller is high among households depending more on purchased food (i.e. those with limited own food production). This is not surprising as the major crop in the study area is coffee, a non-food cash crop. On the other hand, the farm gate price for coffee was found to be positive but insignificant in explaining differences in the amount farmers supplied. The three dummy variables incorporated in the model to test the relative effect of living in a given Wereda compared to the other three Weredas were found to be statistically insignificant. This indicates that area-based differences among the sampled farmers are not important.

**Table 8: Determinants of participation and extent of participation in output market**

Explanatory variables	Market entry/participation		Extent of market participation (Value of output sold)	
	Coefficient	z-statistics	Coefficient	t-statistics
Value of output produced <sup>16</sup>	0.016	2.59**	0.843	2.81***
Farm gate price (lagged)			0.637	0.18
Household food security (Proportion of purchased food)	-0.013	1.61*	-60.161	1.97**
Per capita non-farm income	0.007	0.14	0.234	0.96
Proportion of non-farm income	45.693	0.27	391.81	0.06
Specialisation in coffee production	0.014	0.92	5.38	0.18*
Aleta Wondo Wereda dummy	-32.79	16.85	-383.74	0.91
Ghimbi Wereda dummy	-33.98	22.42	662.84	2.12**
Gomma Wereda dummy	-33.93	23.33	291.24	0.09
Constant	0.16	0.18	0.43	0.14
No. of observations		120		105
Log likelihood		-28.0231		
Pseudo R-square		0.2859		
R-square				0.67

<sup>16</sup> We estimated determinants of output using a Cobb-Douglas production function as total value of farm output is found significant in influencing farmers' decision on market participation. Model estimates (results not reported here) indicate the positive impact of farm size and total labour input per hectare of land. Other factors like age and sex of household head and use of purchased inputs were not found significant to explain household-level differences in total value of farm outputs.

On the other hand, regression result on supply decision among farmers participating in markets indicate that supply increases with the value of output produced and the degree of households specialisation in coffee production. Similar to the case of market entry (decision to participate), household food security is found negative and significant in affecting supply decision. The propensity to supply more is significantly higher among households depending more on purchased food. Except for the degree of specialisation, the determinants of market participation and the degree of commercialisation (as indicated by differences in the amount of supply) do not appear to differ substantially.

## 6. Conclusions and implications

In this paper, we have applied logit and OLS regression models to assess what determines the likelihood and the extent of market participation among smallholders in major coffee growing areas of Ethiopia. The value of total farm output appears crucial both for agricultural market expansion (in terms of increasing the number of sellers) and the extent of participation, i.e. amount sold per household. Substantial supply response could be attained if barriers for production expansion (both technological and resource-related constraints) can be overcome. On the other hand, households depending only to a limited degree on purchased food (which implies a small amount of coffee in the cropping mix) have a low degree of market participation.

Descriptive statistics show that coffee is the major source of cash income and employment for smallholders in the study areas. Coffee production also has a multiplier effect that could lead to increased demand for food and services in the local economy leading to higher levels of monetisation of the local economy and its better integration into the wider economy.

However, the process of commercialisation involving non-food cash crops carries substantial risks for smallholder farmers, in relation to the market and prices of both cash crops and staple food crops. As witnessed recently in Ethiopia, the capacity of small coffee growers to withstand the adverse effect of a drastic decline in international coffee price is limited. Coffee price declines have an immediate effect on their livelihood through the shortage of cash income or savings to buy fertilisers (mainly used for food crops), clothes, medicines or food. Because of a lack of institutional arrangements to insure against risks associated with coffee price fluctuations or unreliable food marketing system, small-scale coffee growers in the study areas usually follow a diversified production pattern. Even in the studied Weredas, where agro-ecological factors are highly favourable for the production of the best quality coffee, growers usually do not allocate more than 60% of their total

land to coffee. The strategy of diversification might have supported and insured smallholder coffee growers against unexpected falls in world coffee price. However, this benefit is not without its cost. Coffee growers forego income that might accrue to them if they shifted their crop mix more towards coffee, a comparatively high value crop.

The emerging picture indicates the benefits of attempting to address the risks and market failure aspects necessary to make increased coffee-led agricultural commercialisation a viable pathway for agricultural development in coffee growing areas of Ethiopia. The following policy implications are derived from the findings discussed above.

### ***Policy implications***

(i) As the propensity to supply more is significantly higher among households having a higher dependency on purchased food, minimising the trade-offs in the production of coffee and staple food crops, especially in the short-term, is very important. To improve the complementarity of coffee and other crops, the productivity of food crops needs to be increased first; secondly, risks associated with specialisation in coffee and unreliable food markets need to be minimised. It may also need interventions in the coffee market towards managing high price fluctuations and developing institutional mechanisms (like insurance) that can help coffee growers to better deal with market risks.

(ii) In the longer run and once food markets are better developed, stronger policy attention is needed towards supporting farmers to achieve a higher degree of specialisation in coffee. It is also important to improve the current coffee yield, which is very low in comparison to international levels. Improved productivity is expected to lead to higher levels of specialisation in suitable coffee growing areas.

(iii) Support towards developing the non-farm sector should be strengthened, as there is structural under-employment in coffee growing areas and substantial employment generation via increased coffee commercialisation cannot be expected.

### ***Implications for further research***

In general, the case study presented in this paper indicates the benefits of further smallholder commercialisation in coffee growing areas and thus provide support for the current government policy aiming at increased smallholder commercialisation and support of the agricultural export sector. However, it also shows the existence of

major limits to further commercialisation at household level associated with expanding production and increasing specialisation in coffee production. One hypothesis emerging from the quantitative analysis is that limitations to further commercialisation are linked to the structure of the food crop market. Findings from the qualitative field work support this hypothesis, as farmers repeatedly pointed out that risks related to high levels of commercialisation and specialisation are too high to abandon a diversified farming system. Not enough, however, is known about the relationship between markets for food and cash crops and how they influence the investment decisions of smallholder farmers in coffee growing areas.

Increasing open and disguised unemployment rates are a characteristic of many rural areas. More research into effects of commercialisation on employment and potential production-related barriers to further commercialisation seems appropriate.

## References

- Befekadu Degefe and Berhanu Nega (eds). 2003. The Role of Urbanization in the Socio-Economic Development Process. Ethiopian Economic Association, Addis Abeba.
- Cour, Jean-Marie. 2003. A Demo/economic Analysis of Long-term Structural Changes in Ethiopia: In Berhanu Nega and Befekadu Degefe. 2003. The Role of Urbanization in the Socio-Economic Development Process. EEA/Ethiopian Economic Policy Research Institute, Addis Abeba, Ethiopia.
- Damodar N.Gujarati. 2003. Basic Econometrics. Fourth edition. Tata McGraw-Hill Publishing Company Limited, New Delhi, India.
- Demese Chanyalew. 2006. Policies for Commercial Transformation of Ethiopian Agriculture. In Edilegnaw Wale, Demissie G/Michel, Bezabih Emanu and Tassew W/hanna (eds): Commercialisation of Ethiopian Agriculture. Proceedings of the 8<sup>th</sup> Annual Conference of the Agricultural Economics Society of Ethiopia. Agricultural Economics Society of Ethiopia, Addis Abeba.
- Dessalegn Rahmato. 2005. From Heterogeneity to Homogeneity: Agrarian Class Structure in Ethiopia since the 1950s. Paper presented at conference on 'Land and the challenge of sustainable development: a public dialog', co-hosted by Forum of for Social Studies (FSS), the Ethiopian Economic Association (EEA) and the Agricultural Economics Society of Ethiopia (AESE), held on August 5, 2005, Hilton Hotel Addis Ababa.
- Eddie Oczkowski. 2003. Two-Stage Least Squares (2SLS) and Structural Equation Models (SEM). <http://csusap.csu.edu.au/~eoczkw/home.htm>
- EEA. 2006. Evaluation of the Ethiopian Agricultural Extension with Particular Emphasis on the Participatory Demonstration and Training Extension System (PADETES), Addis Abeba.
- Goetz, S. J. 1993. Interlinked Markets and the Cash Crop Debate in Land-abundant Tropical Agriculture. *Economic Development and Cultural Change* 41, 343-361.
- Govereh, J., T.S. Jayne and James Nyoro. 1999. Smallholder Commercialisation, Interlinked Markets and Food Crop Productivity: Cross-Country Evidence in Eastern and Southern Africa. Department of Agricultural Economics and the Department of Economics, Michigan State University.
- Govereh J. and T.S. Jayne. 1999. Effects of Cash Crop Production on Food Crop Productivity in Zimbabwe: Synergies or Trade-offs? Department of Agricultural Economics and the Department of Economics, Michigan State University.
- Hinderink, J. and J. J. Sterkenburg. 1987. Agricultural Commercialisation and Government Policy in Africa. Monographs from the African Studies Center, Leiden.
- Leavy, J. and C. Poulton. 2007. Commercialisations in Agriculture: A Typology. Paper presented at the 5<sup>th</sup> International Conference on the Ethiopian Economy. Addis Abeba, June 2007.
- Maddala, G. S. 2001. Introduction to Econometrics. 3<sup>rd</sup> Edition. John Wiley & Sons Ltd, Chichester.
- McMillan, M., Assefa Tigneh, Yohannes Agnofir, Kibre Moges and Amdissa Teshome. 2003. ETHIOPIA: Trade and Transformation Challenges. Agriculture and Trade Diagnostic Trade Integration Study. Annex 8, Volume 2, Addis Abeba, Ethiopia.

- MoFED. 2006. A Plan for Accelerated and Sustained Development to End Poverty (PASDEP) (2005/06-2009/10). Volume I: Main Text. Addis Ababa. Ministry of Finance and Economic Development.
- NBE. 2006. Quarterly Bulletin, Vol. 21, No.2. Addis Abeba, Ethiopia.
- Oxfam. 2002. Crises in the Birthplace of Coffee. Oxfam International Research Paper. September 2002.
- Samuel Gebreselassie. 2006. Intensification of Smallholder Agriculture in Ethiopia: Options and Scenarios. Paper Prepared for the Future Agricultures Consortium Meeting at IDS, Brighton, 20-22 March 2006.
- Samuel Gebreselassie and K. Sharp. 2007, Agricultural Commercialisation in Tef-growing Areas of Ethiopia. Paper presented at the Fifth International Conference on the Ethiopian Economy, EEA, June 2007, Addis Ababa.
- Sharp K, E. Ludi and Samuel Gabreselassie. 2007. Commercialisation in Ethiopia: Which Pathways? Future Agricultures Consortium. Paper presented at the Fifth International Conference on the Ethiopian Economy, EEA, June 2007, Addis Ababa.
- Tadesse Kuma. 2006. Coffee Marketing Chain and Producers Price in Ethiopia. Paper Presented at the 9<sup>th</sup> Annual Conference of Agricultural Economic Society of Ethiopia, April 2006, Addis Abeba, Ethiopia.
- von Braun J. 1994. Production, Employment, and Income Effects of Commercialisation of Agriculture. In: Joachim von Braun and Eileen Kennedy (eds) (1994). Agricultural Commercialisation, Economic Development and Nutrition. The Johns Hopkins University Press, London.
- World Bank. 2007. Ethiopia: Accelerating Equitable Growth. Country Economic Memorandum. Part I, Report No. 38662-ET. Poverty Reduction and Economic Management Unit, Africa Region. April, 2007.