32 Changing farm structure in Africa

Implications on agricultural transformation in Southern Africa

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Introduction

National development policy strategies within the region (including the Comprehensive Africa Agriculture Development Programme – CAADP) officially regard the smallholder farming sector as an important vehicle for achieving agricultural growth, food security and poverty reduction objectives. In sub-Saharan Africa, smallholder farmers constitute the bulk of agricultural producers and the majority remains mired in low productivity and poverty. A major lesson for Southern African, and sub-Saharan Africa in general, from the experience of smallholder-led Asia, is that if we want agricultural growth to reduce poverty, it must be inclusive such that a large percentage of the rural smallholder population is able to participate in the process. The key elements of agricultural transformation process include increased productivity and sustainability followed by commercialization. Commercialization is the transition from subsistence to market-oriented patterns of production and input use.

The productivity of farming is a key driver of real incomes and productivity in the rest of the economy. While expansion of area under cultivation, *agricultural extensification*, has been the major source of growth in agricultural production for many decades in this region, the scope for continued agricultural extensification to drive agricultural production growth is increasingly limited in light of growing land scarcity as a result of mounting population growth. *Agricultural intensification*, or raising productivity on existing farmland, has been touted as crucial strategy to improve the continent's agricultural growth. However in a number of recent applied studies, agricultural *intensification* is found to rise with population density up to a point; beyond this threshold, rising population density is associated with sharp declines in output per unit of land (Muyanga and Jayne, 2014; Ricker-Gilbert et al., 2014; Josephson, et al., 2014). These unsustainable agricultural productivity trends are being attributed to factors such as shortened fallows, deterioration in soil quality and land fragmentation. Willy et al. (2019) find presence of a “silent” form of soil degradation as a result of dwindling soil organic carbon and critical soil micronutrients as well

as increased soil acidity due to continued use of inorganic fertilizers on tiny pieces of land.

Rapid growth of medium-scale farms in sub-Saharan Africa

Meanwhile, evidence is emerging showing a changing structure of land ownership in Africa, a major trend that is likely to affect agri-food systems in Southern Africa region and sub-Saharan Africa in general. Africa has witnessed a rise in the number of commercialized medium-scale farmers. This refers to farmers operating between 5 and 100 hectares of land. This group has little in common with large-scale commercial farmers in terms of farm size, access to finance, input application rates and farm management strategies. In Southern Africa, Zambia, for example, while the overall population of smallholders has increased by 33.5%, the number of medium-scale farmers has grown by 103% (Sitko and Jayne, 2014).

Considering Zambia, Tanzania, Kenya and Ghana, only in Kenya is a substantial majority of national farmland, about two-thirds, under small-scale farms. In Tanzania, Zambia and Ghana, the percentages of farmland held by medium-scale farms are, 39, 53 and 32%, respectively (Table 32.1). In every case, including Kenya, land controlled by medium-scale farms exceeds that under the control of large-scale farms above 100 ha (Jayne et al., 2016).

Within the past decade, the amount of agricultural produce that these farms contribute to countries' national output has also risen rapidly. In some Southern African countries, like Zambia and Tanzania, medium-sized farms now account for roughly 40% of the country's marketed agricultural produce (Figure 32.1). This investment appears to be most common in countries with relatively abundant land: Zambia, Tanzania and Ghana clearly fall into this category. Meanwhile, the sector is much smaller in more densely settled countries such as Nigeria, where it accounted for less than 20% of marketed output in 2016, and Rwanda, where its share was well under 5% in 2014. Note, however, that even in these densely populated countries, this sector's share of output has risen substantially since the mid-2000s. This is exactly what we would expect over the course of agri-food system transformation, as long as policy does not create major impediments.

Patterns of medium-scale participation by crop suggest that grains and oilseeds are major focuses for these farmers (Figure 32.1). The sector's highest share across crops is in grains in Nigeria and Rwanda, and grains are a close second to oilseeds in Southern African Tanzania. Oilseeds lead in Tanzania. Involvement in horticulture varies across countries: these crops show the sector's second-highest share in Ghana but the lowest share in Tanzania.¹ Given this sector's apparent growing importance, much more needs to be known about Southern African cropping patterns, sales behaviour and the amount of on-farm employment they generate.

Table 32.1 Changes in farm structure in Zambia, Tanzania and Ghana

Farm size “category”	Number of farms		% of farms in Period II	% growth in number of farms between two periods		% of total cultivated area		% growth in area operated between two periods
	Period I (year)	Period II (year)		Period I (year)	Period II (year)	Period I (year)	Period II (year)	
<i>Zambia</i>	2001	2012		2001	2012			
0–5 ha	797,157	1,167,315	83	46.4		79.1	47.9	–39.4
5–10 ha	20,832	165,129	12	692.7		14.3	25	74.8
10–20 ha	2,352	53,454	4	2,172.7		6.6	15	127.3
20–100 ha	–	13,839	1	–		–	12.1	–
Total	820,341	1,399,737	100	70.6		100	100	–
<i>Tanzania</i>	2008	2012		2008	2012			
0–5 ha	5,454,961	6,151,035	91	12.8		62.4	56.3	–9.8
5–10 ha	300,511	406,947	6	35.4		15.9	18	13.2
10–20 ha	77,668	109,960	2	41.6		7.9	9.7	22.8
20–100 ha	45,700	64,588	1	41.3		13.8	16	–
Total	5,878,840	6,732,530	100	14.5		100	100	–
<i>Ghana</i>	1992	2013		1992	2013			
0–5 ha	2,037,430	2,580,685	84	26.7		60.7	45.5	–25.0
5–10 ha	116,800	320,411	10	174.3		17.2	22.8	32.6
10–20 ha	38,690	117,722	4	204.3		11	16.1	46.4
20–100 ha	18,980	37,421	1	97.2		11.1	12.2	–
> 100 ha	–	1,740	0	–		–	3.5	–
Total	2,211,900	3,057,978	100	38.3		100	100	–

Sources: Zambia- Zambia MAL Crop Forecast Surveys, 2001 and 2012; Tanzania – LSMS/National Panel Surveys, 2008 and 2012; Ghana GLSS Surveys, 1992 and 2013

Figure 32.1 Medium-scale (5–100 ha) farms share of national value marketed crop output

Sources: Own presentation; data from Zambia– Zambia MAL Crop Forecast Surveys; Tanzania, Nigeria and Rwanda – LSMS/National Panel Surveys; and Ghana GLSS Surveys

Pathways into medium-scale farming

Much about the processes behind this group's growth has remained unclear. Is this growth driven by land accumulation by relatively productive small-scale farmers who are transitioning to a larger scale production through capital and assets accumulation – a precursor to the smallholder-led agricultural transformation that Johnston and Kilby (1975) and Mellor (1995) talked about? If this is the case, is this evidence of farm consolidation and successful smallholder-led agricultural transformation? Is the growth driven by market-oriented land institutions and policies that encourage investment in land based on willingness to pay and, hence, largely by individuals from outside the small-scale farming sector? Understanding the factors driving the growth of this class of medium-scale farmers has never been more important as many African countries seek to modernize their agricultural sector by transitioning from a subsistence-based to market-driven rural economies.

Ongoing work under APRA-Nigeria Project² shows that slightly more than half of the medium-scale farmers in Ogun and Kaduna states used incomes generated outside of farming to enter this size (Muyanga et al., 2019). From a sample of 1,010 medium-scale farms, 47% of them started as small-scale farms and graduated into medium-scale farming status. In some countries, like in Kenya and Zambia, we also find that many current medium-scale farmers

started out with capital generated from nonfarm sources. For example results from medium-scale farms' data collected by the Tegemeo Institute and Michigan State University in Kenya show that about 41% of the surveyed 200 farms in Western and Rift Valley provinces of Kenya followed farm-led pathways into medium-scale farming status (Muyanga, 2013).

It is important to note that the smallholder farms that grew organically from small-scale into medium-scale status were not typical smallholders. While most rural farm households operated about two hectares of land when they started farming in Nigeria, those who transitioned into medium-scale status owned about four hectares of land when they started. Less than 10% percent of them owned less than one hectare of land. Most of them (52%) owned between two and five hectares while about 28% had over five hectares, even though they farmed less. In Kenya, only about 6% of the group that followed farm-led pathway into medium-scale farming started out owning less than one hectare of land. The results further show that the group that followed the nonagricultural led pathway in to medium-scale farming in Kenya and Nigeria was relatively younger and had post-secondary education attainments. Similar trends will most likely be encountered in many of the countries in Southern Africa.

Factors contributing to the growing medium-scale farming

Jayne et al. (2016) identify four reasons behind the striking growth of medium-scale farms:

First, high world food prices. For about ten years, there has been a prolonged surge in global food prices. This ushered in major, and much publicized, investment in African farmland by foreign investors. What happened largely under the radar was very large, in aggregate, farmland investments by African professionals, entrepreneurs and civil servants. The amount of land acquired by these medium-scale African farmers since 2000 far exceeds the amount acquired by foreign investors. Many appear to have started out as small-scale farmers who successfully accumulated land and expanded their agricultural operations. Others are relatively wealthy and influential, often professionals, entrepreneurs or retired civil servants. Many accumulated wealth from nonfarm jobs, invested in land and became either part-time or full-time farmers. Many are based in rural areas and have political or social influence with local traditional authorities. Others are urban "telephone farmers" who retain jobs in the cities, hire managers to attend to their farms and occasionally visit on weekends.

Second, key policy reforms. Reforms in the 1990s, including the removal of restrictions on the private movement of agricultural food commodities across district borders and the related demise of government grain marketing parastatals, improved the conditions for private investment in African agri-food systems. The effects of these reforms exploded after world food prices

suddenly skyrocketed. They enabled thousands of small-, medium- and large-scale private firms to respond rapidly to profitable incentives.

Third, key complementary policy reform related to land markets. Rise of land markets and capture of agricultural policies by urban/rural wealthy persons and farm lobbies/unions. Unlike some 20 years ago, now land sales and rental transactions are mostly legal, even in areas of customary tenure. Agricultural policies have also become more favourable to medium- and large-scale farms interests. Most national farmer unions and lobbies support policies that raise food prices, promote the conversion of land from customary tenure to statutory land to promote access to land through market transactions and input and credit subsidy programmes that allow bigger farms to participate in the programmes. Increased government spending on agriculture, where benefits are related to size, is disproportionately captured by large farms. Common rhetorical themes used to justify this position are that public support should go to “progressive” farmers who view “farming as a business” and have adequate access to capital (Jayne et al., 2016).

Fourth, rapid urbanization Urban growth coupled with rising incomes, the diet transformation and the continuing effects of the commodity price surge of 2007–08 have made farming a more attractive commercial opportunity in Africa.

Medium-scale farms are a source of dynamism, technical change and commercialization

We identify three channels through which medium-scale farms are likely to bring new sources of capital and know-how to African agriculture. First, the rise of this sector is associated with increased large-scale investment in grain wholesaling, often but not only by multinational grain trading companies such as Cargill. The rise of urban areas increases demand for food, but this demand can be satisfied from imports or from domestic production. Investment response by private traders in domestic value chains is at least due to the growing surpluses of medium-scale farms, which dramatically reduce the unit cost of rural assembly. Very high costs of such assembly in systems dominated by many dispersed smallholder farmers are a major impediment to change in scale and technology further down the chain.

Second, by attracting private investment around them, these farmers may improve input- and output market access for surrounding smallholder farmers. Quantitative evidence on this topic is not yet strong, but personal observation of major changes abounds. In one of the only quantitative studies, Chamberlin and Jayne (2017) find some evidence that a higher concentration of farms of 5–10 ha (at the bottom end of the medium-scale farm class) leads to higher rural incomes in Tanzania. Large trading firms are setting up buying depots in areas with many medium-scale farms, which improves output market access for surrounding smallholder farmers. Medium-scale farms attract tractor rental providers who now provide mechanization services to

smallholders that they otherwise would not, since making a trip for a few smallholder farmers would not be profitable. This allows smallholders to farm their land with much less labour input, freeing up opportunities to work off the farm. Van der Westhuizen (2018) shows large increases in smallholder farmer use of tractor rental services in Tanzania between 2008–09 and 2014–15, from an average of roughly 5% to about 15%. Similar synergies might be expected in markets for variable inputs such as fertilizer and plant protection chemicals, though data are lacking on this effect. Evidence from Nigeria show that medium-scale farms are offering extension guide/services to smallholders, sell farm inputs to smallholders, purchase farms inputs together with smallholders and rent tractors and farm machinery to smallholders (Muyanga et al., 2019). Finally, there is much casual information about medium-scale farmers engaging smallholder farmers in out-growing schemes, whether on their own or in the context of donor-funded development programmes. If such arrangements prove profitable for these medium-scale farmers, this could become another channel through which they enhance opportunities for smallholder farmers.

Third, to the extent that these farmers spend in the local economy – hiring labour, purchasing food and services – they will stimulate off-farm employment opportunities for rural people formerly dependent on subsistence farming. Again, quantitative evidence is limited, but Poulton (2018), for example, notes local shop owners in the Kilombero Valley of Tanzania indicating that most of their household goods are purchased by “medium scale farmers who have moved into the area” in response to rural electrification and improved roads. Chamberlin and Jayne’s (2017) finding that it is the smaller end of the medium-scale segment that has the biggest effect on incomes may be consistent with the idea that these farmers are more likely to make most of their expenditures locally, compared to farmers at the upper end of that distribution or large-scale farmers.

There are some negatives associated with growing medium-scale farming

While there are many positives associated with growing medium-scale farming, there are some negative changes too. The rapidly growing share of land in the medium-scale holdings is leading to concentration of landownership and use, as represented by the Gini coefficient, is rising in many sub-Saharan countries. Jayne et al. (2014) report that Gini coefficients on land cultivation from the early 1990s to the mid-2000s rose from 0.51 to 0.54 in Kenya, and from 0.54 to 0.65 in Ghana. In Zambia in Southern Africa, the Gini on landholdings rose from 0.42 to 0.49 between 2001 and 2012. They report that these levels of concentration “far exceed those of most Asian countries in the 1980s”. The rising concentration of land is driving increased land scarcity that may be constraining the growth of small-scale farm holdings and raising entry barriers into farming to new entrants, like the youth.

Medium-scale farms get their land from traditional chiefs or by purchasing land from others, including small-scale farm households. Though data are scarce, a strong trend over the past ten to 15 years in Africa has been engaging in programmes to move land from customary to statutory tenure, sometimes leading to the loss of land by smallholder farmers.

Policy implications

Medium/large-scale farm investment in Africa is injecting important sources of capital and expertise into underperforming current farming systems. There are significant potential positive spillover benefits from medium- to large-scale cropping activities to adjacent smallholder communities (assuming appropriate institutional arrangements exist or are designed). One such benefit is increasing access by smallholder communities to agricultural technologies, credit, extension and marketing services, thus improve the food security and welfare of smallholders in those communities. Medium/large holders may also provide a valuable source of off-farm agricultural wage employment (and thus additional income) for an adjacent smallholder community.

In terms of differences in agricultural productivity, evidence is emerging indicating that medium-scale farms are in fact more (land and labour) productive than smallholdings (Muyanga and Jayne, 2019). Medium-scale farmers are more capitalized and educated compared to their smallholder counterparts. This productivity advantage is largely driven by mechanization and input use intensity. Consequently, improving medium-scale farms' access to land can help the countries increase their domestic production of key staple crops.

The much-awaited smallholder-led agricultural transformation in sub-Saharan Africa seems uncertain with ever-shrinking farm sizes. Smallholder farms have become "too small" to generate meaningful production surpluses and participate in broad-based inclusive agricultural growth processes given existing on-shelf production technologies. Thus, the smallholder-led agricultural transformation process is unlikely to occur, and structural transformation will require sources of vigour that can generate money flows in rural areas, enabling smallholder households to find viable employment in off-farm activities. This chapter emphasizes the difficulty for farmers, starting with small landholding sizes, to expand their scale of production and eventually graduate into medium-scale and more commercialized systems of farming. Landholding size is a critical policy issue given that a majority of smallholders in sub-Saharan Africa own or control less than one hectare of land. Land availability and access to capital are among the most important factors that enabled transition from small to medium-scale farming.

Even though much remains unknown and the story is still unfolding in Southern Africa, medium-scale farms may be one of the important sources of rural dynamism. We believe that medium-scale farms are an important driver of rural transformation in Southern Africa just like in other regions of sub-Saharan Africa. Medium-scale farms have contributed to Africa's 4.6% annual

rate of agricultural production growth between 2000 and 2015 (Jayne et al., 2018). Similar trends will most likely be observed in many of the relatively land abundant countries in Southern Africa.

It is true that the rise of land markets is creating a new class of landless workers who are dependent on the local nonfarm economy for their livelihoods. Land administration policies in Southern Africa seem to be lagging behind to support more sustainable and inclusive land dynamics in particular, agriculture and rural transformation in general. Policymakers will need guidance on how to minimize these hardships –protecting those who are most vulnerable as the processes of economic transformation gradually raise living standards for the majority of the population.

Notes

- 1 The analysis uses LSMS/NPS panel data and the agricultural census data. Even though these datasets are nationally representative, datasets based on population-based sampling miss information on urban households that are likely to be engaged in less land intensive and high value enterprises such as horticulture. The surveys are also conducted during the short and long rain seasons, meaning they are likely to miss the bulk of horticultural production that tends to take place in the dry season.
- 2 www.future-agricultures.org/apra/

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