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Africa's Changing Farmland Ownership: The Rise of the Emergent Investor Farmer

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Abstract:

Sub-Saharan Africa is experiencing major changes in farm land ownership and use, which are both cause and consequence of the economic transformations that the region is now experiencing. The rapid rise of *emergent investor farms* in the 5 to 100 hectare category represents a revolutionary change in Africa's farm structure since 2000. In most countries examined, the majority of medium-scale farms are owned by urban-based professionals or rural elites, many of whom are also public sector employees. About half of these farmers obtained their land later in life, financed by non-farm income. The rise of investor farmers is affecting the region in diverse ways that are difficult to generalize. Many investor farms are a source of dynamism, technical change and commercialization of African agriculture. In densely populated areas, however, the growth of investor farms may be displacing the potential for agricultural land expansion of small-scale farming communities. Investor farmers tend to dominate farm lobby groups and influence agricultural policies and the allocation of public expenditures to agriculture in their favor. Nationally representative Demographic and Health Survey data from six countries (Ghana, Kenya, Malawi, Rwanda, Tanzania and Zambia) show a sharp rise in urban-based households engaged in agriculture, with about 10% of urban households owning 10% to 35% of total agricultural land. Urban households account for a disproportionately large share of national farm holdings over 20 hectares. This suggests a new and hitherto unrecognized channel by which investor farmers may be shifting the strength and location of agricultural growth multipliers between rural and urban areas.

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Highlights/main contributions of this paper:

- The fastest growing segment of the family farm sector in Sub-Saharan Africa is medium-scale farms. Such enterprises now control more land than large-scale farms in all countries examined. Under *de facto* land policies, this group will continue to grow rapidly. The amount of remaining surplus farmland is rapidly dwindling in most countries in the region.
- With the rise of relative large investor farms in certain areas, Africa's farmland ownership structures and the degree of land inequality are becoming more heterogeneous across space.
- Conceptually, we need to reintroduce the concept of agrarian structure as an important field for agricultural economics research, to better understand how evolving land distribution patterns are affecting the relationship between agricultural growth and poverty reduction in Africa.
- Control for farmland is increasingly in the hands of urban-based investors. The implications of this for rural and non-rural growth are not clear in many respects, although this probably will further reduce the impacts of agricultural growth on localized spillovers in the rural non-farm economy and on rural poverty reduction.
- The current institutional systems and methodological approaches for collection of data on SSA's farm sectors are systematically missing the most dynamic portion of this sector: the emergent farmers. Redressing this will require new kinds of sampling and data collection methods. Correcting this informational blind spot is critical for assessing what is happening in the agricultural sectors, and why, as well as the viability of alternative smallholder-based development strategies.

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1. Introduction

Recent global policy attention to "land grabs" by international investors, while important, has arguably diverted attention from two other processes that may be even more fundamentally affecting Africa's economic development trajectory: the pace of land acquisitions by medium- and large-scale African investors, and the overall impact of land transactions on the viability of African governments' agricultural development plans, which are implicitly based on assumptions of area expansion potential for people living in rural areas.

Rising rural population densities across sub-Saharan Africa, coupled with rural populations that retain family farms regardless of their primary source of employment, suggest an evolution toward smaller farm sizes across the region (Masters et al., 2013). The fact that most farms in the region are becoming smaller is therefore not surprising. Rather more surprising are the indications of rapid and important changes in farm structure associated with the massive expansion in recent years of "emergent" farmers, *i.e.*, medium-scale holders of between 5 and 100 hectares, many of whom reside in urban areas (Jayne et al 2014; Sitko and Jayne, 2014).[2] Many aspects of this emerging picture are not yet in place. Thus, we do not yet know how pervasive these trends are, much less do we fully understand their effects on the broader development processes playing out in the region. Nonetheless, on the basis of the evidence presented in this study, we can start to trace out some answers to these questions.

This paper is motivated by the need to more fully understand the rapid change in farmland ownership and scale of farming in parts of Africa, to identify the causes of this structural change, and to consider its potentially pervasive effects. Our focus is on the recent wave of "emergent" farm investors, defined here as African nationals who may have started their careers in non-farm segments of the economy and who have subsequently acquired relatively large farms, generally over 10 hectares but often much more. We differentiate these emergent investor farmers from Mellor's (2014) full-time, rural-based, small-scale commercial farmers who typically started out in agriculture, cultivate between 5-10 hectares of land, and account for a large share of the marketed output among farmers in the zero to twenty hectare category of farms that are typically covered by standard LSMS-type surveys.

The paper is structured as follows. Section 2 motivates and describes a conceptual framework in which farm structure plays a critical role in shaping the growth processes of primarily agrarian countries. After reviewing the data currently available for our analysis (section 3), we outline the major changes in farm structure as partially observed from data on several countries (section 4). We then discuss the likely

[2] The terms 'medium' and 'large' scale are inherently arbitrary and denote different scales of farming in different regions of the world, but for the purposes of our paper, we will refer to small-, medium- and large-scale farms as those between 0-5, 5-100, and over 100 ha of cultivated land, respectively.

causes (section 5) and consequences of these changes (section 6). We conclude by summarizing our findings and their implications for development strategy within the region (section 7).

2. Conceptual framework: Causes and effects of changing farm structure

This section situates our thinking about changes in farm structure within broader theoretical perspectives on development within agrarian economies. In particular, we anchor our thinking within the conceptual framework of structural transformation (Mellor, 1976; Johnston and Kilby, 1975). Stylized facts about this process include: (i) the structural transformation process will start with agricultural productivity growth at least where farming is the primary source of employment for the majority of the population; (ii) small-scale but productive farmers with sufficient land to produce a surplus will lead this process; (iii) the money that they mobilize from their surplus production and spend stimulates demand for goods, services and jobs in the various off-farm sectors of the economy, which induces rural-urban migration, gradual urbanization, and a slow or negative rate of population growth in rural areas. Agriculture declines in its relative share of total GDP over time. Consolidation of farmland is hypothesized to occur gradually as the more efficient producers rent or buy land from their less efficient neighbors, who leave agriculture and migrate to cities. Labor productivity rises as labor migrates from less-productive agriculture to more productive sectors such as manufacturing and services (inter-sectoral gains), and through productivity growth within agriculture, some of which derive from the exodus of less efficient labor, although other factors may also be important, e.g., economies of scale in production, technical innovation, new opportunities for production specialization associated with growing urban markets (intra-sectoral gains).

Causes of change in farmland distribution

The structural transformation process as it has played out in Asia has for decades provided a framework for considering the rural development stages that sub-Saharan Africa might also expect to experience. Asia, with its predominantly "unimodal" small-scale farming system, has frequently been considered more relevant for Africa than Latin America with its "bimodal" and highly concentrated farm structure. However, it may be increasingly poor fit for much of Africa for several reasons.

First, rural populations are continuing to grow even as most African countries are urbanizing. Sub-Saharan Africa is the only region of the world that is continuing to experience rural population growth, currently at 1.8 percent annually (UNDP, 2013). Despite the general trend toward urbanization, there are projected to be 48% more people in rural Africa in 2050 than in 2015 (Figure 1).[3] Similarly, Green Revolution Asia and most other agricultural growth successes have occurred with steadily rising absolute numbers of rural and agricultural populations for extended periods of time, with Asia's absolute numbers of rural people only beginning to decline very recently (Bezemer and Hazell, 2006, Lipton, 2009, p. 100). Farmland consolidation in most Asian countries has started to occur only very recently, if

[3] Rural populations may be further underestimated due to the tendency of many urban Africans to migrate seasonally to rural areas during the crop growing season even while primarily living and working in urban areas (Low, 1986; Potts, 2012).

at all.[4] Hence, the Asian experience might suggest that Africa should also experience a very slow rate of farmland consolidation.

However, many parts of Africa are experiencing major shifts in the balance of power over land allocation and resulting change in land institutions (Boone, 2014). In principle, customary tenure systems in sub-Saharan Africa were generally designed to hold land in reserve for current and future generations of local people. Yet recent studies of African land issues have pointed to widespread breakdown in these traditional norms.[5] Customary tenure systems have already been abolished in some countries as the modern state has exerted its authority over all land in the country, as in Ethiopia and Zimbabwe. In other cases where customary tenure systems still exist (as in Malawi, Mozambique, and Zambia), local and foreign interests have successfully negotiated with traditional authorities for land, much of which is subsequently converted by the recipient to privately titled land. Generally, these landholdings could be much larger than those held by the majority of local smallholder farmers (*e.g.,* in the 10-100 hectare range). To the extent that willingness to pay criteria has become an increasingly common mode of obtaining relatively large farms in customary tenure areas, then even in spite of continued rural population growth, we might expect to see the scale and structure of farmland ownership changing much earlier and more rapidly in African structural transformation processes than in Asia.

A second stylized fact of Asian structural transformation models that may not generally apply to Africa is that of a uni-directional flow of labor from farm to off-farm sectors of the economy, i.e., that once people find their way into gainful non-farm employment, they are unlikely to return to farming. This perspective does not account for the possibility that under certain conditions, some groups who are urban-based and engaged primarily in non-farm jobs may have incentives to invest in farming and may be in a relatively advantageous position to do so after having overcome constraints related to access to capital, management expertise, social entré, and ability to navigate complex traditional and/or statutory land institutions to acquire land – constraints that generally limit the ability of the vast majority of rural-based farmers to compete for quality land in both customary and statutory tenure systems. We might expect that a relatively small segment of the urban population – those who have accumulated substantial wealth, are well educated, and have become close to the sources of power in the capital cities may have unique advantages to exploit profit opportunities associated with land acquisition (which may include investment in farming, although not necessarily so).[6]

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[4] See Lipton (2009); Bezemer and Hazell (2006). The authors thank David Atwood for this point.

[5] For rich evidence on this point, see Woodhouse, 2003; Colin and Woodhouse, 2010; and Boone, 2014.

[6] We may think of a number of reasons why a domestic "land-grab" may not be associated with investments in farm production:

1) Emergent investors have limited liquidity and need to make investments in a phased-in manner, starting with land and eventually progressing to other investments, both in agriculture and non-agriculture.
2) Expected returns to land market speculation may in some cases be higher than for agricultural activities – this may be the case where there is expected growing demand for a finite resource, even when the resource is not developed.
3) Part of the speculative calculus depends upon future state investments – e.g. land is bought and if the government provides electricity and paved roads, then agricultural investment may begin.

Political economy models may also help us anticipate future trajectories of farmland distribution in Africa. Because of the tendency for politically influential groups to succeed over time in altering government distribution systems to their interests (López, 2005), it may be expected that they would seek to create and utilize state apparatuses to acquire land once the returns to capital in farming or other land-based activities start to become attractive, e.g., possibly since the global rise in food prices. This would imply efforts by the state to negotiate or wrest control of land from local chiefs where significant unutilized land is still under customary tenure, and (in areas where customary lands have already been abolished) efforts to seek preferential access to government-controlled statutory land (Herbst, 2000). Recent land-based initiatives seen in numerous African countries, such as Block Farm schemes and Government Land Bills to support entrepreneurial 'emergent' farmers, are both designed to facilitate the conversion of arable land from customary to statutory tenure systems where it can then be allocated by officials to serve important patronage objectives in addition to agricultural development objectives. Lipton (2009) noted how government officials have been major beneficiaries of post-independence land redistribution in some African countries, especially in "land abundant" countries experiencing little organized pressure from tenants and landless farmers for land.

The consequences of changes in farmland distribution

Concentration of arable land resources may have profound consequences for both the pace and the nature of growth within rural economies. The seminal work of Johnston and Kilby (1975) and Mellor (1976) placed heavy emphasis on the importance of growth multipliers as drivers of the developmental process, i.e. the propensity to spend additional income, the nature of those expenditures, and the higher-order impacts within local rural economies. More recently, empirical work by Deininger and Squire (1998) and Vollrath (2007) have demonstrated that relatively egalitarian land distribution patterns have tended to generate more broadly based growth -- and consequently higher rates of economic growth -- than in cases where land distribution was highly concentrated. The basic reason for this is that broad-based agricultural growth tends to generate greater second-round expenditures in support of local non-tradable goods and services in rural areas and towns. These multiplier effects tend to be much weaker when the source of agricultural growth is concentrated in relatively few hands.

Recent studies have examined the strength of growth multipliers between agriculture and non-agriculture (e.g., Christiaensen et al., 2011; IFPRI CGE modeling work). Many of these studies treat "agriculture" as sufficiently homogeneous across countries and within countries to allow estimation of the effects of agricultural growth on poverty reduction without reference to farmland distribution patterns. However, a wealth of agrarian structure research dating back to the 1960s and 1970s emphasized the importance of how productive assets are distributed within communities affects the rate of economic growth as well as the poverty-reducing effects of the growth that does occur (e.g., Johnston and Kilby, 1975; Mellor, 1976; Binswanger, Deininger, and Feder, 1995; Lipton, 2009). Ravallion and Datt (2002) found that the initial percentage of landless households significantly affected the elasticity of poverty to non-farm output in India. Gugerty and Timmer's (1999) study of 69 countries found that, in countries with an initial "good" distribution of assets, both agricultural and non-agricultural growth greatly benefitted the poorest households with positive poverty reducing effects. In

countries with a "bad" distribution of assets, however, economic growth was skewed toward wealthier households, causing the gap between rich and poor to widen. It is especially noteworthy that in this latter group of countries, agricultural growth was associated with greater increases in inequality than was non-agricultural growth. Mellor, Johnston, Lipton and others clearly documented that productivity growth sufficient to produce a surplus on millions of small farms in Green Revolution Asia was crucial to structural transformation and rapid poverty reduction. They contrasted the Asian experience with parts of Latin America, which also achieved agricultural growth, but not in an inclusive way. *Latifundia* estates expanded production impressively in many cases while millions of small peasant farms remained mired in poverty and were often dispossessed of their land. A major lesson for Africa from these contrasting experiences of smallholder-led Asia and estate-led Latin America was that for agricultural growth to rapidly reduce poverty, it must be inclusive enough to generate strong growth multipliers to kick-start the processes of structural transformation.

Given the importance accorded to multiplier effects in these theoretical and empirical treatments of structural transformation, we propose that the lack of attention to farm structure in recent empirical studies of growth is problematic, particularly for sub-Saharan Africa. It is our contention that the nature (i.e. pace, inclusiveness and poverty-reducing effects) of the growth process in the region is fundamentally linked with the distribution of access to productive farmland. Jayne et al. (2003) showed that the distributions of farmsize and income were highly correlated in a number of SSA countries, with more concentrated land distributions corresponding to more unequal asset bases and income distributions. Hichaambwa and Jayne (2013) use nationally-representative data from Zambia to show that, even after controlling for other household assets and socio-demographic characteristics, initial farm size is a strong predictor of participation in markets, and thus of participation in market-based agricultural growth. Several studies (Ricker-Gilbert et al., 2011, Pan and Christiaensen, 2012; Mason and Jayne, 2013) show that larger and wealthier farmers disproportionally capture government input and output marketing supports. In short, there has been a growing corpus of evidence in recent years that farm size distributions are linked directly or indirectly to the means to participate in broader processes of agricultural growth. Thus, we may reasonably expect *a priori* that agricultural growth will produce different kinds of multiplier effects (with respect to location, strength, and distribution of benefits and costs) in areas with relatively high vs. low levels of land ownership inequality.

3. Data

Most available national datasets (e.g., LSMS) are unsuitable to understand changes in farm structure because (i) they sample proportional to population and tend to systematically under-sample large farms; (ii) they often exclude non-smallholder farming sectors by design;[7] and (iii) they tend not to prompt urban households about farmland they may cultivate or own away from their main urban residences. This suggests that many aspects of the recent and on-going changes in farm structure have gone largely undetected. One of the principle objectives of our paper is to highlight systematic data collection gaps and call for their correction.

Few African governments collect or publish statistically representative data on their large-scale farm sector. One reason for this may be that information on land distribution can be politically sensitive. Other reasons may include the fact that proprietors of large scale farms are harder to enumerate under standard survey methodologies; among other things, such individuals travel often, may be more likely to refuse being interviewed, etc. In any case, we know of no publically available surveys that provide nationally representative estimates of the number and area of farms over 20 hectares in countries with bi-modal farm structure, such as in Kenya, Malawi, Mozambique or Zambia.

A recent study by Lowder et al. (2015) has shown that where it is possible to compare farmland ownership and distribution from Living Standards Monitoring Surveys (LSMS) and national agricultural censes, the former tends to show a smaller proportion of large farms, and more tightly clustered and less skewed distributions (Figures 2 and 3). Others have noted characteristics of LSMS data that provide further evidence of systematic under-reporting of farms over 20 hectares. For example, the quantity of land rented in almost always exceeds the quantity of land rented out (Chamberlin and Ricker-Gilbert, forthcoming; Deininger et al. 2015), often by a large margin. The fact that LSMS data systematically cover more farmland area of households renting-in land than those leasing-out suggests that absentee landowners are under-reported in such data.[8] Furthermore, most surveys are also not well designed to capture land acquisitions by people who have yet to start farming on their land. The Demographic and Health Surveys (DHS) are an exception; DHS instruments ask about 'agricultural land' owned by both rural and urban households. As reported below, the DHS provides some interesting surprises about the extent of national agricultural land owned by urban-based households.

[7] For example, Malawi's LSMS surveys, the Integrated Household Surveys of 2003/04, 2010 and 2013 do not cover the "Estate Sector" which reputedly contains 30,000 farms and over one million hectares of farmland, accounting for over 25% of Malawi's agricultural land. Zambia's Living Conditions Monitoring Surveys of 2002, 2006, 2010 and 2012 similarly exclude from their sampling frame farms cultivating over 20 hectares of land. Out of the 13,212 households sampled in Kenya's Integrated Household and Budget Survey of 2006, only 9 were recorded as farming more than 50 hectares, an exceedingly small number from which to extrapolate to the population of farms of this size category.

[8] Studies of land rental markets in African countries virtually all show that those renting in land own less land, more labor, and are generally poorer than those leasing out land (Jin and Jayne, 2013; Deininger et al., 2015; Chamberlin and Ricker-Gilbert, forthcoming).

In sum, under-representation of larger farms in national survey listings appears to be a major issue in most, if not all, countries in the region. Consequently, official government statistics tend to provide a limited understanding of African countries' current farmland ownership structure and how rapidly it is changing over time.

Hence, our analysis cautiously utilizes data generated from LSMS surveys to characterize recent changes in farm structure, augmented by the following data sets:

i) Integrated Public Use Micro-level Surveys (IPUMS), which are based on 10% random samples of national population censes.[9]
ii) DHS data on the household farmland ownership, which is used to estimate the proportion of national agricultural land controlled by households residing primarily in urban vs. rural areas.
iii) The Large-scale Crop Forecast Surveys in Zambia, which surveys farms cultivating over 20 hectares, but is informally acknowledged by Ministry of Agriculture officials to under-represent farms of this size category.
iv) Recent surveys on medium-scale ("emergent") farmers in Malawi, Zambia, and Kenya, conducted by Michigan State University, the University of Pretoria, and policy institutes affiliated with the Regional Network of Agricultural Policy Research Institutes in East and Southern Africa (ReNAPRI). These exercises involved the compilation of lists of the full population of 5 to 100 hectare farms in selected districts in consultation with local district Agricultural Offices and National Farmer Unions.[10] The population lists serve two purposes. First, they allow us to generate random samples within selected districts/divisions to obtain statistically representative analysis of farms 5-100 and 10-100 hectares in these areas. Surveys of medium-scale farmers included modules on the socio-demographic characteristics of these farmers, where they reside, and the tenure type system of their land, and retrospective life history modules that make it possible to understand how, why, and when in their lives they acquired their medium-scale holdings. We also collect field-level information on inputs and outputs to compare production costs with those of small-scale farms in the same areas. A second purpose of the population lists is to compare our numbers of farms in the 10-100 hectare range with those indicated by LSMS data in the same divisions/districts. Such comparisons typically show our lists to contain considerably more farms of this size category than those indicated by weighted LSMS estimates in the same area.[11]

In this paper, we adopt working definitions of different farm categories based on cultivated land area: we consider *smallholders, medium-scale,* and *large-scale farmers* to be those cultivating 0-5 hectares, 5-100 hectares, and over 100 hectares.

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[9] IPUMS data are available from https://www.ipums.org/
[10] Current surveys following this approach are underway in Mozambique, Tanzania, and Ghana.
[11] For example, in Malawi, the number of 10-100 hectare farms enumerated in 9 divisions of 3 districts in Malawi in 2014 was 61% higher than the weighted estimate in the 2013 Integrated Household Survey. It must be stressed, however, that the LSMS surveys are not intended to be statistically representative at this level of disaggregation, hence we regard this as "suggestive" rather than conclusive evidence that LSMS data may under-represent medium-sized farms.

4. Changes in farmland ownership and control

This section presents recent empirical data documenting a rise in the "emergent" medium-scale farm sector in Africa. While the evidence base is still patchy – drawing upon just a few countries – we do observe changes along several key dimensions. This section first documents changes in farm structure as observed within recent rural household survey data; we show that the fastest-growing segment of the sector is the emergent medium-scale farm. Secondly, we describe the characteristics of medium-scale farmers, as drawn from key informant interviews. Thirdly, we use population censuses data to delineate the extent of control of rural farmland by urban-based households.

Changes in farmland ownership and structure

Data on changes in farm structure compiled for Kenya, Ghana and Zambia (Table 1) indicate that while the absolute number of farms of all sizes is increasing over time, both the number of small-scale farms and the area under cultivation by small-scale farms are growing at a much lower rate than farms in the 5-10 and 10-100 hectare range. In other words, medium-scale farms are accounting for a rising proportion of total farmland. Consequently, the share of small-scale farms in total area under cultivation is falling in some countries even as the numbers of small farms continue to rise.

According to official data, farms over 10 hectares account for 48.7% of total area under cultivation in Ghana, 28% in Kenya, and 27% in Zambia (Table 1). These are conservative estimates, because as mentioned earlier, the weighted estimates of farms in the 10-100 hectare range were generally found to be lower than the number found by our enumeration teams who developed lists for particular study districts/divisions.

In highly land-constrained Kenya, we see some important differences and some similarities with the general trend. Rural population growth and land subdivision has led to an alarming rise in the proportion of very small farms (Table 1). Between 1994 and 2006, the proportion of Kenya's farms smaller than one hectare rose from 44.8 to 67.2 percent. Over 95 percent of Kenya's farms were below three hectares in 2006, up from 83.3 percent in 1994. We also see a major decline in the number of farms over 10 hectares, possibly due to subdivision. However, within this largest farm size category, we see a curious 230 percent increase in average landholding size over this twelve-year period, from 13.2 to 31.1 hectares, and the percentage of total farmland accounted for by this group actually rose from 24.5% to 28%. While we cannot conclusively identify the reason for this increase, it is consistent with evidence that shows new entries of relatively large landowners, and/or consolidation of farms in this size category, even as the overall number of farms in this size category declines.[12]

In spite of the international media's focus on land grabs by foreign investors, the amount of land controlled by medium-scale farms as shown in Table 1 for Malawi, Zambia, Ghana and Kenya now

[12] In Kenya's case, farmland held by large-scale domestic owners is possibly grossly under-reported. Namwaya (2004) reports that over 600,000 hectares, or roughly one-seventh of Kenya's total land under cultivation, are held by the families of the country's three former presidents, and that most of this land is in relatively high-potential areas; Otsieno Namwaya, "Who owns Kenya?" *East Africa Standard*, October 1, 2004. Last accessed, December 21, 2013, http://www.jaluo.com/wangwach/200709/Otsieno_Namwaya092807.html

exceeds the farmland acquired by foreign and domestic large-scale holdings combined in every one of those countries.[13]

The rise of medium-scale farms seems to have been especially rapid in recent years, since 2005. For example, Anseeuw et al (2015) show that the land controlled by medium-scale holdings (between 5 and 100 ha) in three districts of Malawi has almost doubled between 2000 and 2015, from 2,544 ha in 2000 to 4,726 ha in 2015 (Figure 4). Between 2005 and 2015, the land under medium-scale holdings has increased by 49.1 percent. If the trends documented in these three districts of Malawi provide a general indication of changes in landholdings in the country, Anseeuw *et al*. (2015) conclude that roughly 300,000 hectares has been newly acquired by medium/large-scale holders since 2005, slightly more than 10% of the total area under cultivation in Malawi.[14] The apparent rapid rise in medium-scale farms over the past decade in Malawi is truly remarkable in a country where the majority of rural people face acute land scarcity and where household poverty is highly correlated with very small farm size.

The rise of medium-scale farms has led to a concentration of landholdings. In the study of Ghana, Kenya and Zambia by Jayne et al (2014), the Gini coefficients of landholdings rose in all three countries, e.g., in Ghana from 0.52 in 1992 to 0.65 in 2005. While landholdings in most of Africa are not as concentrated as in Latin America, where Gini coefficients can be as high as 0.90, the Gini coefficients in the three African case studies are substantially higher than most Asian countries and appear to be rising over time (Jayne et al., 2003, Jayne et al., 2014). Clearly, in all three countries, the idea of a "unimodal" and egalitarian farm structure within Africa's indigenous farming population has become extraordinarily outdated.

Characteristics of medium-scale farmers

Who are these new entrants to the sector? Conceptually, we might start by defining two main types of emergent farmer: members of local rural communities who started as small-scale (0-5 hectare) farmers and successfully expanded their operations into medium-scale status, and those who primarily resided outside the area and acquired land either through purchase or agreements with traditional authorities. We refer to the first group as representing cases of *successful small-scale expansion* into medium-scale farming. The characteristics of those farmers are typically quite different from *investor farmers*- what Sitko and Jayne (2014) refer to as lateral entry into agriculture-who obtain land either through purchase using capital earned from non-farm or civil service employment, through negotiations with traditional authorities, or as part of a government land development program.[15]

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[13] Estimates of foreign and domestic large-scale holdings are derived from the comprehensive study of Schoneveld (2014) as well as from the Land Matrix (http://www.landmatrix.org/en/).

[14] Note that Malawi's official data does not indicate a rise in the proportion of farmland controlled by medium-scale farms, possibly because it only covers farms residing in customary tenure areas, which has declined over time from 90% of Malawi's land to roughly 66% in 2014. These gaps are worrying indicators that policy makers and researchers are not able detect potentially major shifts in farmland ownership from existing and purportedly nationally representative data sets.

[15] Examples of the latter include the recent "block farm" programs in Ghana and Zambia. In Zambia's case, the government has negotiated with chiefs to transfer roughly one million hectares of customary land to the state for

Our 'life history' surveys of medium-scale farmers indicates that the growth of medium-scale farms in most areas examined so far is driven by relatively wealthy investor farmers many of whom reside in urban areas. Studies in Zambia, Malawi and Kenya indicate that medium-scale farmers are about 60% urban-based and 35% rural-based 'elites'.[16] Only 5% of medium-scale farms are the result of smallholder expansion (Jayne et al. 2014; Sitko and Jayne 2014; Muyanga 2013; Anseeuw et al., forthcoming). Table 2 presents descriptive information on "life history" surveys of medium-scale farmers in several countries (drawing from Muyanga, 2013 and Sitko and Jayne, 2014). Table 2 reveals that these medium-scale famers are predominantly men; their primary jobs were in the non-farm sector, the majority of these being in civil service employees. Many of these farmers live in urban areas, are relatively well educated, and are current or former government employees. Most of these urban-based emergent farmers financed their land acquisitions from non-farm income. The majority in Zambia acquired their farms after the age of forty. Using their savings from their non-farm jobs, they were able to acquire farms and enter farming during their mid-life stages. This profile fits roughly 60 percent of the sampled medium-scale farmers in Kenya and 58 percent in Zambia. A smaller but still important category of medium-scale farmer is relatively privileged rural-born men who were able to acquire large landholdings as they started out their careers. Only in Chapoto et al's (2013) study of Northern/Central Ghana was it found that a significant proportion of medium-scale farmers started out with less than five hectares of land. The Ghana findings provide at least some room for optimism that small-scale farmers can expand into commercialized medium-scale stature under favorable land access conditions.

What is less clear is the productive orientation of the medium-scale entrants. We do observe that, at least in Kenya, Malawi, and Zambia, larger farm sizes are associated with lower cultivated area shares on average (Muyanga and Jayne, 2015; Sitko and Jayne, 2014). In Malawi, for example, farms between 20 and 40ha cultivate only 40% of their land compared to almost 100% for farms in the 0-5 hectare category (Anseeuw et al., 2015). At the same time, we also observe that medium-scale farms are responsible for an increasing share of marketed surplus in some countries (e.g. Hichaambwa and Jayne 2014). In sum, it is still unclear how much of the medium-scale expansion is associated with productive versus speculative investment aims (see footnote 6).

Rise in farming by urban-based households

In addition to changes in farm structure, there appear to be important changes taking place in the locus of control of farmland. DHS data reveals some surprising facts about the importance of agricultural land held by households residing primarily in urban areas. To some extent, this occurs due to reclassification of localities from rural to urban once a threshold number of households is exceeded. But this is only part of the story. The distribution of agricultural land among urban households shows that, in countries such as Zambia and Kenya, households whose primary residence is urban control 10 to 35% of total

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development of nine block farms, containing a large nucleus farm surrounded by roughly 350 private farm holdings on 86,000 hectares, the majority of holdings being between 25 and 500 hectares, see http://www.afdb.org/en/projects-and-operations/project-portfolio/project/p-zm-aac-005/

[16] We use this term as shorthand for people who, according to the life history surveys, started out with considerable larger landholdings than the majority of rural people and whose parents tended to be relatively affluent and prominent people in the community (chiefs, government officials).

national agricultural land (Table 3). These are likely to be conservative estimates. In the DHS data, respondents' landholdings over a certain size are reported in the data as a maximum size limit, generally 95 hectares (see notes under Table 3). Even with these truncations of reported data, the share of total agricultural land held by 'urban households' was found to be 26.8% in 2008, and 22.0% in Kenya. Countries with two years of data typically show an increase in the share of land held by urban households over time. For example, in Zambia, the share of national agricultural land held by urban households rose from 16.8% in 2007 to 22.0 percent in 2013/14. In Tanzania, this share rose rapidly from 11.8% in 2004/05 to 32.7% in 2010.

This view of rising agricultural land ownership among urban households is corroborated in some countries by data on employment trends in the IPUMS and LSMS surveys. For example, Table 4 show that the number of urban-based working age men and women involved in farming is rising quite rapidly in Kenya, Nigeria, Ghana, Zambia and Tanzania, more rapidly than the overall growth in the labor force in all these countries. In Kenya and Tanzania, the fastest growth in farming among urban residents is in the oldest age categories (45-54 and 55-65 years of age) for both men and women. This pattern is not replicated in all countries. Analysis of employment trends in several African countries by Yeboah and Jayne (forthcoming) show two distinct patterns, where sustained agricultural productivity growth during the 2000-2013 period appears to be moderately correlated with the recent growth rates of employment in farming among both urban households, while sluggish agricultural growth rates is in most cases associated with slow rates of growth in the number of urban people stating their primary employment to be in farming. Countries such as Mali, Malawi and Zambia are in the latter category. Across most of the countries analyzed by Yeboah and Jayne, the number of working age people in rural areas who are primarily engaged in agriculture, while generally growing in absolute numbers, is declining as a share of the total labor force over time.

5. Causes of the rise of domestic investor farms

African "elite" farmers have been around since pre-independence times, often promoted by "master farmer" programs instituted by colonial governments to promote agricultural development in African farming areas (Anseeuw et al., 2015). In the post-independence period, redistribution of white settler farms also gave rise to a small class of medium- and large-scale African farmers in countries such as Kenya and Zimbabwe (Lipton, 2009).[17] In other countries, post-independent governments allocated land to minions to entrench political control and serve patronage objectives, which nurtured the development of an "estate farm" sector, for example by the Banda government in Malawi (Anseeuw et al., 2015).

Hence, while acknowledging that medium-scale African farms have existed for decades, this study documents the rapid rise of medium-scale 'investor farmers' since roughly 2000 and that this phenomenon appears to be associated with several recent developments: (i) the rise in global food prices since 2005; (ii) the related development of markets for agricultural inputs and mechanization; and (iii) a shift in the emphasis of agricultural programs and land policies in some countries favoring commercialized agriculture, which has often been correlated with (iv) the post-structural adjustment multi-party democratic process in many countries that has enabled farm lobby groups to gain greater voice in articulating the interests of domestic investor farmers. There is considerable cross-country variation in these factors, which warrant caution against overgeneralization. Yet in the set of countries examined in this study, most or all of these factors appear to be salient.

Higher global food prices

Food prices in Africa have risen substantially since the global food price surge of 2007/08.[18] This has fueled an increased demand for farmland as both global and domestic investors recognized that quality farmland in parts of Africa was highly undervalued.[19] The sustained agricultural productivity growth that many African countries have experienced in the recent period of high local and world food prices (e.g., Brooks, 2015) also suggests that new land acquisitions during this period reflect perceptions of the profitability of agriculture as a business for those able to mobilize sufficient land, capital and management expertise. Reductions in trade barriers in some African countries have enabled domestic food prices to be better aligned with import parity conditions compared with earlier years (Anderson

[17] Toye (1992) was among the first to note that many state officials, especially in East and Southern Africa, have become large farmers with a stake in forwarding the case for selective agricultural subsidies and continued state involvement in the distribution of inputs on credit, and price supports for farm commodities.

[18] Even though 2015 has witnessed a sharp fall in global food prices, the international prices of maize, rice and wheat in early 2015 adjusted by two different global deflators (the US GDP deflator and the global Manufacturing Unit Values Index) are still roughly 42%, 48% and 35% higher in 2015 than their averages between 1995 and 2005. Maize, rice and wheat prices over the 2007-2015 period are 68%, 66% and 55% higher than their inflation-adjusted 1995-2015 averages (based on World Bank Pink sheet data).

[19] Land rental rates in high-potential areas of Kenya, for example, have quadrupled between 2004 and 2014, rising much greater than wage rates or other inputs into agricultural production (Muyanga and Jayne, 2015).

and Masters, 2007). While foreign investor interest in African farmland during the recent period of high food prices has been a feature of the "land grab" narrative for some years now (e.g., Deininger and Byerlee, 2011), the same motivations may equally well apply to the rising interest in African farmland by domestic investors.

Improved access to inputs and technology

In many parts of the region, investment conditions appear to be improving for commercially-oriented agriculture (Deininger and Byerlee, 2011). The Maputo Declaration of 2003 galvanized African governments' commitment to re-investing in agriculture. Many forms of increased government spending to agriculture were in the form of subsidies (inputs, the resurgence of marketing board operations offering high prices for strategic crops, block farms), much of which could be captured disproportionately by relative large and commercialized African farmers (Pan and Christiaensen, 2012; Mason and Jayne, 2013). Higher agricultural prices and rapidly growing urban markets also stimulated improvements in input supply chains and markets for mechanization services.

Relative profitability of larger-scale farming

A third cause of the rise of domestic investor farms is that they appear to constitute a scale of farming that is more profitable for the owner/operator, and which may therefore out-compete small-scale farming for remaining arable land. Larger farms may have advantages with respect to the market as well with respect to navigating both customary and statutory land institutions to access land. Regarding market advantages, the net revenue produced on the farm per family adult is clearly higher on larger farms compared to small-scale farms (Nkonde *et al*, 2015; Muyanga and Jayne, forthcoming). Especially since the rise of world food prices in the mid-2000s, the profitability of commercial farming has increased and this has been associated with the increase in land acquisitions in the region. In prior decades, constraints on access to capital, needed inputs, and management expertise (along with generally lower real agricultural prices) may have limited the ability and incentives of local entrepreneurs and civil service people to venture into commercial agriculture.

These points are not necessarily inconsistent with the literature on the inverse farm size-productivity relationship (IR). The IR literature generally shows that small farms are more efficient per unit land in Asia and Africa (e.g., Lipton, 2009; Larson et al, 2012; Carletto et al, 2013).[20] However, the IR literature generally compares farms of a limited farm size range, generally between one and 10 hectares and to our knowledge has never utilized African data to analyze the efficiency of farm sizes of the magnitude commonly being acquired by domestic investors in Africa. Nkonde *et al* (2015) and Muyanga and Jayne (forthcoming) find that while there are relatively small differences in the net value of crop output per cultivated hectare between 2, 20 and 50 hectare farms, the profits (net value of output to the owner/operator) are overwhelmingly in favor of the relatively large farm. The main factors limiting further expansion in the scale of operation according to the domestic investors themselves are management know-how, inability to find trustworthy managers who will run the farm on their behalf

[20] We may note that this result often rests on not counting family labor input, or valuing it at a very low wage rate (Carter).

without dipping into the profits, access to capital to expand operations, and in some cases not wanting to become so large as to arouse jealously and conflict within the local community (Nkonde *et al,* 2015 Muyanga and Jayne, forthcoming). Therefore, as long as global and local food prices remain favorable, and with continued development of agricultural value chains in the region, both domestic and international investors may continue to put upward pressure on the demand for, and price of, farmland in many parts of Africa, especially as the potential for farmland expansion in other regions of the world is increasingly limited (Headey, 2015).

Farm lobbies and union capture

After roughly a decade of often intense struggle between African governments and international lenders over the course of agricultural policy between 1985 and 1995, local interests regained control over the policy agenda starting in the early 2000s, often within nascent multi-party political systems. This often motivated parties to adopt populist stances offering greater tangible benefits to constituencies, such as input subsidies and support prices for local farmers in the name of food self-sufficiency.[21] These developments enhanced the voice and influence of national farmers unions that ostensibly lobbied for the interests of the farming community. However, farmers are not a homogeneous group and particular policies affect them in different ways. For example, most small-scale farmers are buyers of staple grains, and hence are adversely affected (at least in the short run) by marketing and trade policies that raise food prices. By contrast, most medium- and large-scale farms are grain sellers. Farmer unions in some countries lobby forcefully for a system of agricultural subsidies that channel the majority of public expenditures to agriculture for their benefits (Binswanger, Deininger and Feder, 1995). Most national farmer unions in the region 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, farm block programs, and input and credit subsidy programs that allow bigger farms to participate in the programs. Common rhetorical themes used to justify this position is that public support should go to "progressive farmers who view 'farming as a business' and who have adequate access to capital. These positions tend to represent the interests of larger farmers, and at a minimum suggest the possibility that some of the national farmers unions have been captured by large- and medium-scale farmer interests (Jayne et al., 2002; Sitko and Jayne, 2014).

Changes in the governance of customary land institutions are both cause and consequence of the rise of domestic investor farmers. Where customary land institutions still exist, they appear to be increasingly utilized by wealthy outsiders (German *et al.,* 2011). Acquiring land through negotiations with local authorities is often a relatively easy way for wealthy people to acquire land cheaply compared to buying land in statutory tenure areas where land values have already been bid up to market levels. This often (although not necessarily) results in a transfer of land from customary tenure (under the authority of chiefs or their representatives) to statutory tenure with freehold or long-term lease titles (German et al. 2011; Honig, 2014). One potential outcome of such trends is that less land is available as a birthright of future generations of people born in customary tenure areas (Jayne et al. 2014).

[21] For example, see Jayne *et al.,* (2002) and the November 2014 special issue of Development Policy Review on "The Political Economy of Agricultural Policy in Africa."

6. Consequences of the rise of medium-scale investor farms

Despite evidence of important changes taking place in farmland ownership patterns in Africa, the consequences of these changes are poorly understood. Little research on this topic might be understandable given that official agricultural statistics are often not well suited to detecting or accurately quantifying changes in farmland ownership or structure over time. As a result, the evidence base for quantifying the impacts of changing farm structure is weak, yet the following patterns appear to be emerging: (i) a shift in farmland from customary to statutory tenure systems, with an associated shift in local power from chiefs to state authorities; (ii) changes in rural-urban multiplier effects resulting from agricultural productivity growth; (iii) increased concentration of the marketed surplus for some food crops; (iv) changes in service provision and technologies along agricultural value chains, including the increased use of farm mechanization; and (v) rising land scarcity for smallholders.

Evolution of land markets and governance institutions

Land sales markets are now developing as more land is converted from customary to statutory tenure (Holden, Otsuka, and Place 2009). Perhaps linked with this, a large proportion of land in some countries has shifted over time from customary land, controlled by traditional authorities, to statutory tenure systems with formal title. In Malawi, 87% of the country's total land was customary land at independence but this has declined to 66% in 2014 (Anseeuw et al., 2015). In Zambia, the proportion of the nation's land under customary tenure is widely acknowledged to be declining and is almost certainly smaller than frequently cited statistics indicate (Chamberlin and Sitko *forthcoming*, Honig *forthcoming*). Already, about 10% of the land within Zambia's smallholder sector is titled (Sitko et al. 2014).

Land rental markets appear to be developing rapidly. Evidence to date indicates that rental markets are transferring land from relatively large to small farms (Deininger et al., 2015), although computed gini coefficients of operated farm size tend to be only slightly smaller than ginis of land ownership from the same data sets Moreover, even where there are vibrant rental markets, concentrated land ownership structures can result in important income distributional and growth effects through how the surplus income from farming is divided up. Landlords received 30-40% of the net value of crop production on rented plots in Kenya, Malawi and Zambia (see, Jin and Jayne, 2013; Chamberlin and Ricker-Gilbert, forthcoming), which may have important effects on where the money is recirculated and the strength and location of the multiplier effects. The broader general equilibrium effects of the rise of land rental markets in parts of Africa would be an important area for further research.

A major policy question here is how the "modernization" of land institutions is affecting access to land by local rural communities that contain the vast majority of smallholder farmers. There is some evidence that land markets rental markets may be improving access to land by the relatively land poor (e.g. Chamberlin and Ricker-Gilbert 2015). However, there are major concerns that land sales markets and the alienation of land from customary tenure systems (through title conversion) are improving relatively wealthy investors' access to land at the expense of the smallholder majority. There are both static and longer-term considerations: displacement of local people in the process of domestic investor land acquisitions appears to be a problem in some areas (e.g., in Anseeuw et al's Malawi study, where

39% of the medium-scale farm acquisitions were reported by the respondent to entail some land dispossession of former claimants) but not in Chapoto et als (2013) study of northern Ghana. However, growth and income distributional effects can also result from future displacement as land transferred to private titled land can no longer be allocated as an inheritance to people living in customary tenure areas. A greater portion of land converted to statutory land tenure may make it more difficult for rural-born people to acquire land in the future and hence increase the rate at which young people born in rural areas must migrate to seek work elsewhere (Bezu and Holden, 2014). Today's land deals affect tomorrow's livelihood options.

Multiplier effects and rural growth

The rise of medium-scale domestic investor farms in the region produce complex impacts likely to vary substantially across countries and pose major difficulties for quantitative *ex ante* assessment. Woodhouse (2003), over a decade ago, documented cases of land scarcity leading to land markets and a consequent reallocation of land from local people to commercially-oriented buyers. There are obvious income-distributional effects when land is reallocated from a unimodal small-scale structure to a large-farm structure, including the conversion of many former owner operators controlling their means of production into reservation wage laborers creating producer surplus for a large owner-operator and the release of surplus agricultural labor to other sectors. In areas where non-farm employment opportunities and access to education are favorable, the negative consequences of such a scenario will be mitigated.

National survey data indicate that changes in farm structure are associated with rising Gini coefficients of farmland ownership as mentioned earlier. In the study of Ghana, Kenya and Zambia by Jayne *et al* (2014), the Gini coefficients of landholdings rose in all three countries substantially, e.g., in Ghana's case from 0.52 in 1992 to 0.65 in 2005 to 0.69 in 2013. Survey data also shows a high degree of correlation between district-level gini coefficients, landlessness and the percentage of cultivated area under holdings over 10 hectares.

The conversion of land from customary to statutory tenure as noted earlier may, other things equal, speed up the rate at which the work force shifts from farm to non-farm sources of employment and encourage land to be transferred from less productive to more productive users (Holden, Otsuka, and Place, 2010). Holden and Bezu (2014) find that young people's probability of migrating to urban areas in search of jobs is inversely related to the amount of land owned by their parents and the number of siblings competing for their parents' land. Migration to towns and cities and from farm to non-farm activities is generally found to be associated with a rise in returns to labor (McMillan et al, 2014), but there is a limit to the degree of urban migration that is possible without saturating the non-farm job situation, and a recent study by McCullough (2015) indicates that farm and non-farm returns to labor are already largely equalized after accounting for the greater number of work hours spent by laborers in non-farm jobs. A better understanding of how changes in farmland ownership and land scarcity affect migration and labor markets within the broader structural transformation process is a major area for future research.

Another important way of thinking about the multiplier effects of agricultural growth filtering through a changing farm ownership structure involves considering the implications of growing rates of non-local farm ownership. Given that a sizeable minority of national agricultural land is controlled by households that are primarily based in urban areas as shown in Table 3, it is possible that the relationship between agricultural growth and urban employment/income growth is growing stronger. Surveys of medium-scale farmers in Malawi and Zambia indicate that between 25% and 40% of the area under their cultivation is owned by absentee landholders living in urban areas (Anseeuw et al., 2015). Extrapolating from these numbers, one could argue that a sizeable proportion of revenue from agriculture, despite being generated in rural areas, is spent in urban areas in these countries. Such a situation would generate potential stronger agricultural multiplier effects on urban-based employment and income growth and weaker ones in rural areas. Collecting more accurate data on large farms and their expenditure patterns would be the first step in more accurately understanding the potentially complex and variable multiplier effects from agricultural growth.

The shape of supply chains and supporting infrastructure

We would anticipate that the growth of medium- and large-scale farms lead to greater concentration in the marketed grain output, where large farms specialize in cereal crops with low labor to land ratios. We might also anticipate greater specialization by small farms in crops requiring relative high labor/land ratios (e.g., horticulture, tea). This, however, has not been uniformly the case across countries in the region. As shown in Table 5, between the mid-1990s to the mid/late 2000s, Zambia, Ghana and Mozambique witnessed an increase in the share of marketed maize output among medium-scale producers. This trend was particularly evident in Zambia, where farms of 10-20 hectares increased their control of the total maize surplus from 1.1% in 1991 to 10.4% in 2012. Yet, conversely, in Kenya and Malawi, where rural population densities are high, the share of marketed maize has actually increased among small-scale producers of less than 2 hectares, although as mentioned before, official survey data may systematically under-report farms over 20 hectares and in Malawi's case, the entire estate farming sector (Sitko et al forthcoming).

Differences in the pace and direction of grain market concentration in many cases reflects underlying domestic policy choices in grain markets, rather than comparative advantages associated with scales of production. As argued in Sitko et al (forthcoming), the rapid concentration of maize surplus in Zambia among large scale producers appears to be a direct consequence of input and output market subsidies that disproportionate support larger scale producers. Conversely, fertilizer market deregulation in Kenya and input subsidy programs and improved rural infrastructural investments in both Kenya and Malawi, supported growth in marketed maize surplus among small-scale producers in those countries (Sitko et al forthcoming). In Ghana and Mozambique, where the role of the state in maize markets is less pronounced, grain markets have concentrated among larger producers, but at a slower pace than in Zambia.

Medium-scale farm growth and smallholder mechanization

The rise of medium-scale farms appears to be associated with new farm technologies, in particular mechanization. Figures 5 and 6 show a high correlation between district-level measures of concentration of medium-scale farms and measures of agricultural mechanization. The Spearman correlation coefficients between district-level numbers of tractors owned by medium-scale farmers, number of households owning tractors, area under cultivation by 5-100 hectare farmers, and hectares where tractors were used for land preparation were over 0.35 in all cases in Zambia. We find generally statistically insignificant correlations between these measures and the share of small-scale farms (0-5 hetare) utilizing tractors on their land, suggesting that tractor ownership by medium-scale farmers does not necessarily influence land preparation technologies among proximate small-scale farmers or promote the development of local tractor-hire markets.

Rising land scarcity and reduced potential for smallholder expansion

The conversion of land from customary to statutory tenure may be hemming in the scope for area expansion by smallholder farmers, particularly in densely populated regions. Woodhouse (2003) refers to an "African enclosures" process in some areas. Rising land scarcity, in turn, may be contributing to forms of unsustainable land intensification such as elimination of fallows, increased cropping intensities with attendant soil mining, reduced crop rotations due to pressures to produce enough staple maize each year, and other forms of land degradation. It may be regarded as somewhat naïve to expect agricultural growth strategies in smallholder areas to rely exclusively on intensification pathways; historically and even in recent years, most of the region's agricultural growth has taken place via area expansion (Fuglie and Rada, 2013; Traub *et al.,* 2015). Thus, a major concern is how changing farm structure may be affecting access to land by households residing in densely populated rural areas facing land scarcity.[22]

Of Sub-Saharan Africa's total land area of 23.6 million square kilometers, estimates of the potentially available cropland (PAC) vary from 2.0 to 4.3 million km^2 (Deininger and Byerlee, 2011) to 1.0-1.5 million km^2 (Chamberlin et al 2014), to even less (Young 1999). The concept of quantifying PAC has sometimes been criticized because land available for agriculture is somewhat elastic with respect to the price of food and energy (Hertel, 2011). But it is equally true that there are limits to how much land in any given country can be converted to cropland given fixed land endowments. By all estimates, PAC in Sub-Saharan Africa is highly concentrated in 6-8 countries. Over 90% of the unforested land categorized as unutilized in SSA is concentrated in 9 of the region's 54 countries (Chamberlin et al., 2014). The implications of this concentration is that surplus stocks are, at best, most easily available to agricultural populations already residing within those countries where such stocks are found. This excludes the vast majority of the region's agricultural populations, many of which are located within land constrained countries with limited access to surplus land in other areas (e.g. Malawi, Rwanda).

[22] Just 1% of Africa's rural land area contains 21% of its rural population, while 20% of its rural lands contain 82% of its rural people. The most densely populated 20% of Africa's lands contain 25 times more people than the least densely populated 20% (Chamberlin et al., 2014).

The upshot of all this is that the observed patterns of expansion by medium- and large-scale emergent investors will likely exacerbate land access constraints by smallholders in many parts of the region, even outside of the obvious hotspots. Jayne et al (2014) estimate that a sizable share of the remaining stock of unutilized arable land has already by claimed by non-local investors (both national and foreign) in Ghana, Kenya and Zambia. While there is great heterogeneity within the region, we know that many countries will soon exhaust their land frontiers (e.g. Uganda, Nigeria) if they have not done so already (e.g. Kenya, Rwanda, Burundi, Malawi). This means that agricultural development strategies that tacitly or explicitly expect production growth to come from area expansion will be increasingly untenable in many areas.

7. Conclusions

For decades, conventional perceptions of African agriculture were based on the premise of unimodal, small-scale farming systems. Severe land inequalities were well known to exist in former colonial settler economies such as Zimbabwe, Zambia and South Africa, but even here the smallholder farm sectors were typically characterized as small and relatively unimodal and equitably distributed land holdings situated within a bimodal distribution of land between large-scale and small-scale farming sectors. However, despite widespread acceptance that "pro-poor" agricultural growth is strongly associated with equitable asset distribution, surprisingly little attention has been devoted to quantifying land distribution patterns within Africa's small-scale farming sector.

This synthesis of our analyses to date in four countries (Malawi, Kenya, Zambia and Ghana) provides indicative evidence of major changes in farmland ownership and use over the past several decades in sub-Saharan Africa. In the four countries examined, more land is today under the control of medium-scale domestic farms than the sum of foreign and domestic large-scale farms. Moreover, medium-scale farms are growing rapidly – much faster than small-scale or large-scale holdings. In at least some areas, the majority of these farms are controlled by urban-based investors. While there are some indicators that this group accounts for a disproportionate share of marketed output, it is still too early to say much about the nature and magnitude of the investments being made by emergent farmers.

We do not yet know how generalizable these trends are across the region. However, it is probably safe to say that existing platforms for collecting nationally representative data collection on SSA's farm sectors are systematically missing the most dynamic portion of this sector: the emergent farmers. While this omission is understandable, it has profound implications. Under the status quo, African governments cannot monitor, much less understand, how farm structure is changing over time. Similarly, policymakers cannot adequately address such routine questions as the magnitude and location of marketed surplus. These questions are of fundamental importance for guiding strategic decisions related to stimulating agricultural growth, reducing rural poverty, guiding trade policy decisions and managing strategic food reserves.

Redressing this informational blind spot will require new modes of data collection and will certainly not be cost-free. We advocate for the expansion of sampling frames in farm household surveys to better capture the magnitude, location and other characteristics of this growth. We also advocate for systematic collection of data on non-local land control, *i.e.,* ownership or other usufruct rights over rural agricultural land held by urban households. This will require new approaches to sampling, listing, and enumeration, as well as questionnaire designs which explicitly capture non-local holdings.

With better information in place, a number of key research questions become more easily assailable. For example, how does farm structure condition rural poverty, economic growth, and the interplay between the two? How is the net geographic shift in the locus of control of farmland – i.e. from rural to urban-based households – affecting development outcomes? What is the productive orientation of the majority of emergent farmers? What spillovers are there between investor farms and "tradition" smallholder farms in nearby areas? And how are changes in rural farmland ownership affecting private sector investments in agricultural value chains? While recent work has documented how changes in urbanization and consumer incomes are affecting investment in the downstream stages of the food systems (*e.g.,* Tschirley *et al*. 2015; Reardon et al., 2014), our work suggests that downstream food systems dynamics may be greatly affected by changes in farmland ownership structure and the multiplier effects resulting from such changes. Particularly relevant is our finding that a sizeable share of national agricultural land is controlled by urban-based households, many of whom are medium-scale investor farmers who may be altering the relationship between the location of agricultural growth and the strength and location of growth multipliers with the non-farm economy.

The dynamic long-term effects of changes in the control over farmland and the means of agricultural production are ultimately empirical questions. At present, we can only speculate about these effects. In this paper, we have emphasized one outcome that seems particularly likely: the multiplier effects generated from surplus agricultural production are likely to be attenuated – particularly for local rural economies -- as greater shares of farm surplus are produced by fewer and relatively wealthier households, many of whom live outside the local community. To the extent that this is something we should be concerned about (and our contention is that it is) then we should be paying closer attention to monitoring changes within Africa's farm sector and the forces that are shaping such changes.

It is important to acknowledge that there may be some countervailing factors which may offset the negative impacts of increasingly concentrated farm structure. First of all, we might expect Boserupian intensification to take place as a consequence of increasing relative land scarcity. However, empirical evidence for such intensification in Africa is decidedly mixed, suggesting constraints to land intensification (Heady and Jayne 2014). Second of all, new evidence is starting to challenge the inverse farm size-productivity hypothesis, based on incorporation of data on larger farm sizes than are typically observed in farm household surveys (Nkonde *et al*. 2015; Muyanga and Jayne *forthcoming*). The upshot of this work is that returns to scale may be an important source of intra-sectoral growth. Other recent scholarship has also questioned the cost-effectiveness of promoting small-scale agriculture in Africa (e.g., Dercon & Gollin, 2014; Collier & Dercon, 2014).

Yet even with generous assumptions about productivity returns to scale, overall growth of the system will still depend upon reasonably inclusive forms of agricultural productivity growth. This is especially true given the likely limited scope for absorption of labor in the region's non-farm sector (Losch, 2012: Filmer and Fox 2014), combined with what we know about growing rural populations over the next 50 years. In spite of the pace and significance of urbanization within sub-Saharan Africa, agriculture is not expected to decline rapidly in importance as a source of livelihood for the majority of the region's populations. Recent surveys show that a high proportion of urban households still depend on farming for some of their livelihood, and there is pervasive circular migration of urbanites to rural areas during the crop growing season to generate income and reduce dependence on the market for food.

A looming policy question is, therefore, whether agricultural and land policy should focus on promoting efficiency and productivity in land use and seek to achieve poverty reduction goals through some other means (such as hoping for sustained growth of non-farm employment opportunities over time) or whether agricultural policy should retain poverty reduction as a primary goal alongside productivity and national food security. While there has been increasing attention devoted to how to best utilize Africa's vast unexploited land resources, this focus is arguably diverting attention from the longstanding and more central development issue regarding what kind of strategy is necessary to reduce rural poverty and promote broad-based rural income growth. Given that the changes in farmland structure documented in this paper are likely to continue, there would be major value in better understanding how the dynamism and technical skills of the more productive investor farmers can be harnessed to promote spill-over benefits for smallholder farmers to the extent possible. A better understanding of the impacts of different land distribution patterns on the multiplier and employment effects of agricultural growth is needed in the African context. Obtaining such estimates from agricultural sector surveys are likely to be thwarted in many countries by current under-sampling of relatively large farms by national statistical organizations. Hence, we call for an upgrading of the listing and sampling approaches taken by national statistical systems to accurately capture the full distribution of farm sizes in their countries. Until such time, African policy makers may have only a rough idea of their current farmland ownership structure, how rapidly it may be changing, and its effects on their development priorities.

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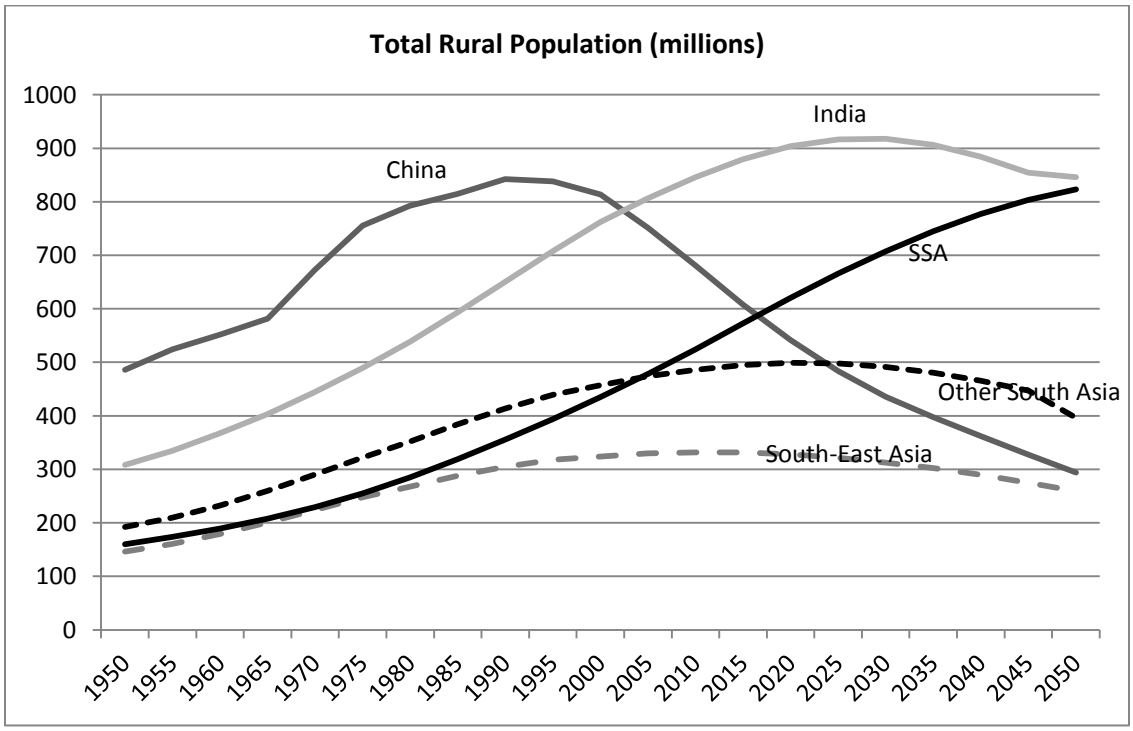
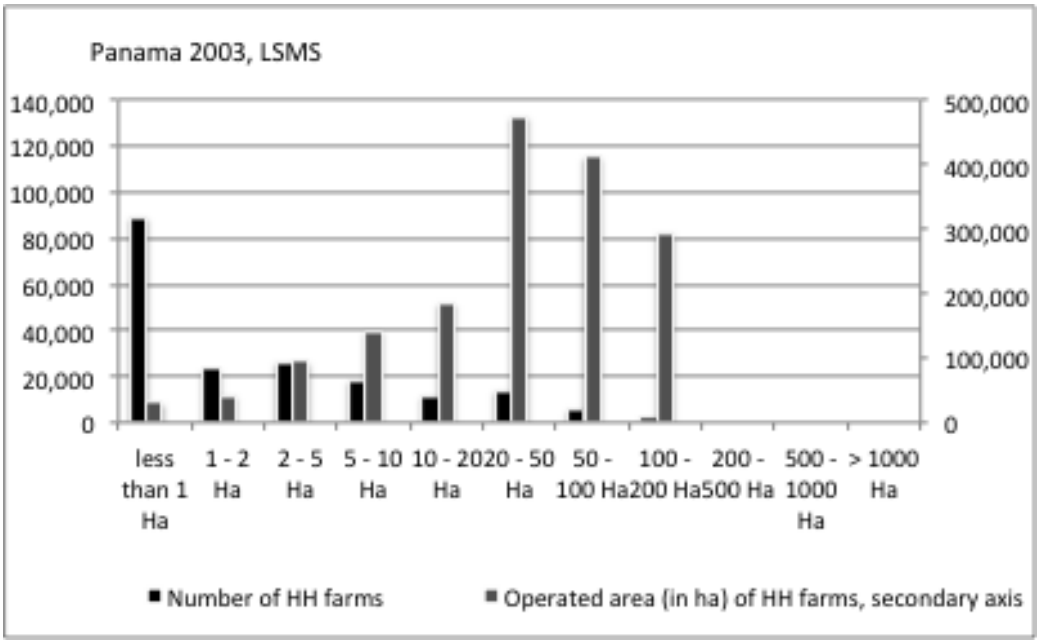


Figure 1: Rural population trends (millions) in Africa and other developing areas

Source: United Nations, 2014.



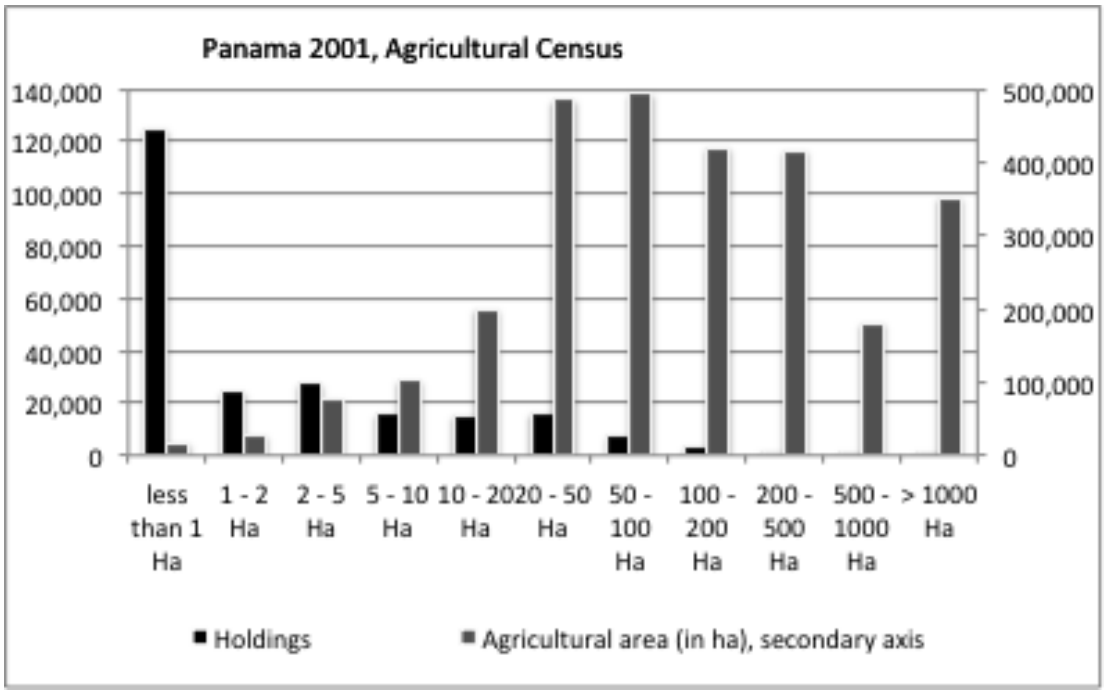
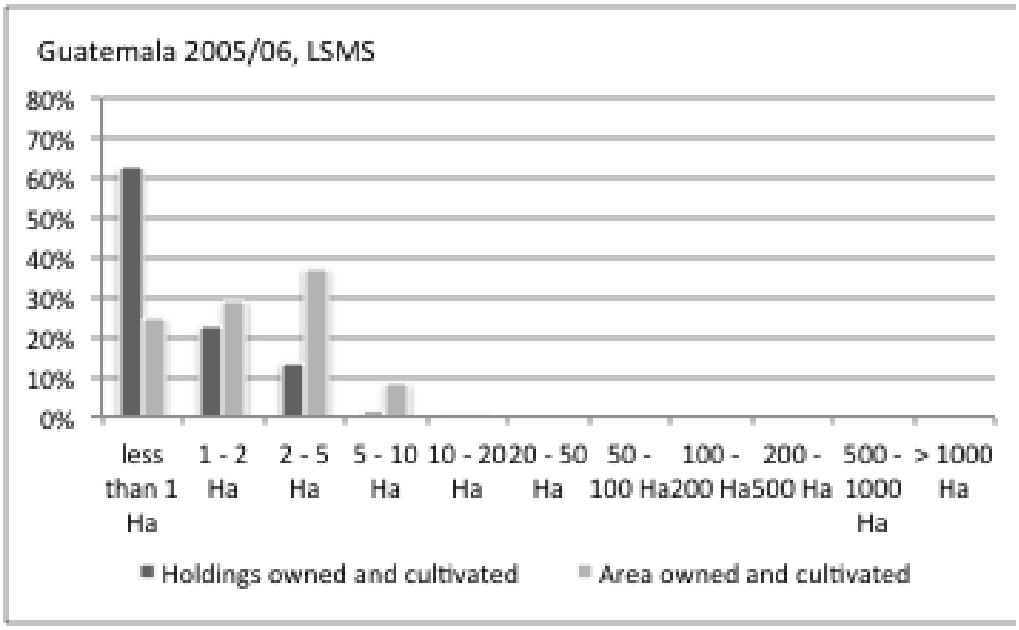


Figure 2. Farmland distribution in Panama, LSMS survey versus agricultural census, reproduced from Lowder et al (2015).

Lowder et al notes: For the LSMS data operated area equals hectares of agricultural land owned by the household plus land share cropped in and land rented in minus land sharecropped out and land rented out. Source: Authors' compilation using Government of Panama and UNDP, 2003 and FAO, 2013.



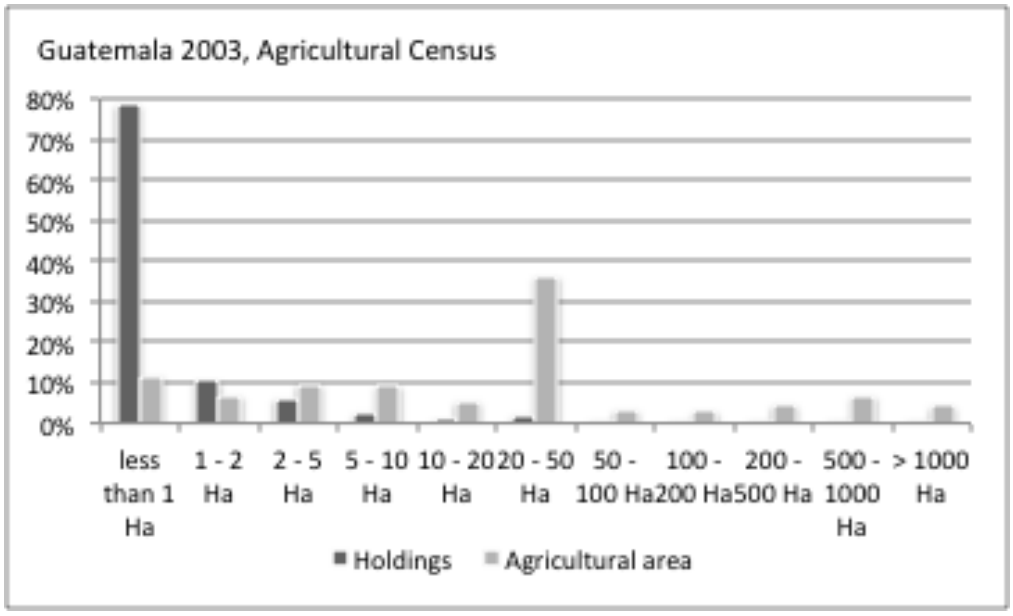


Figure 3: Farmland distribution in Guatemala, LSMS survey versus agricultural census

Lowder et al notes: For the LSMS survey agricultural land includes holdings that are both owned by the household and under cultivation.
Sources: Government of Guatemala, 2006 and FAO, 2013.

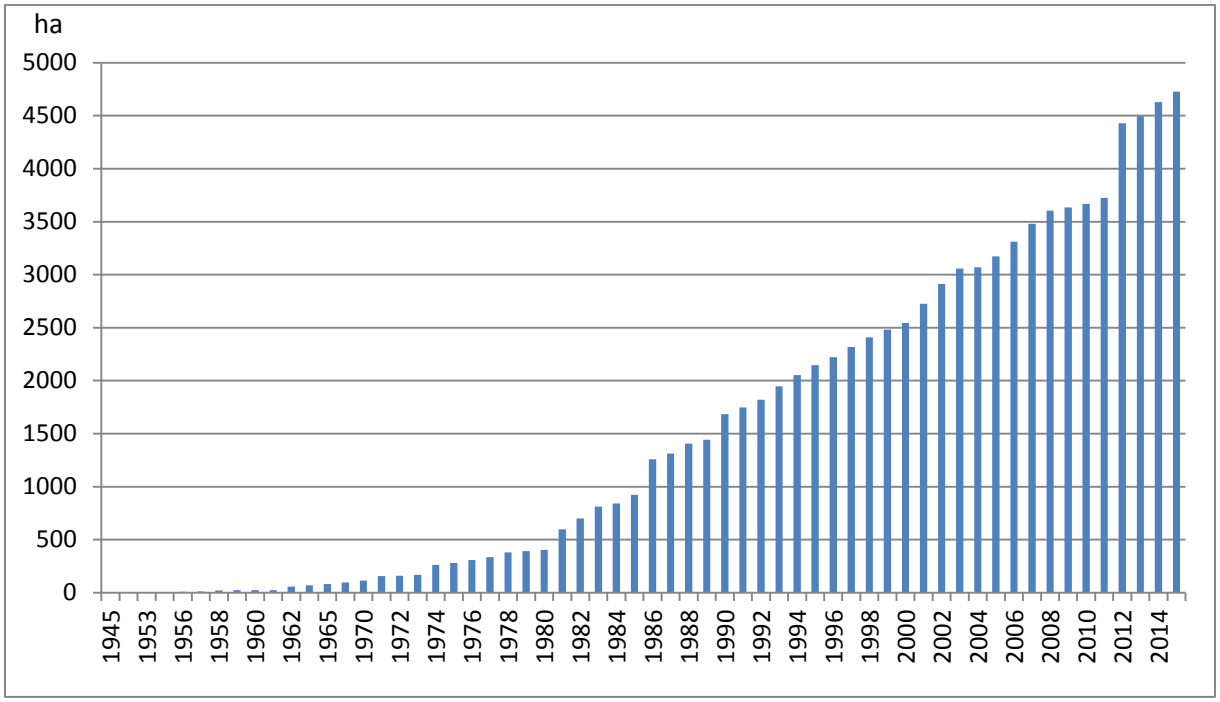


Figure 4: Cumulative land acquisitions by medium-scale holdings among sampled farms in Mchinji, Kasungu and Lilongwe Districts, Malawi (hectares per year)

Data source: Medium-scale farm survey in Mchinji, Kasungu and Lilongwe Districts undertaken by LUANAR, UP, and MSU (2014-2015).

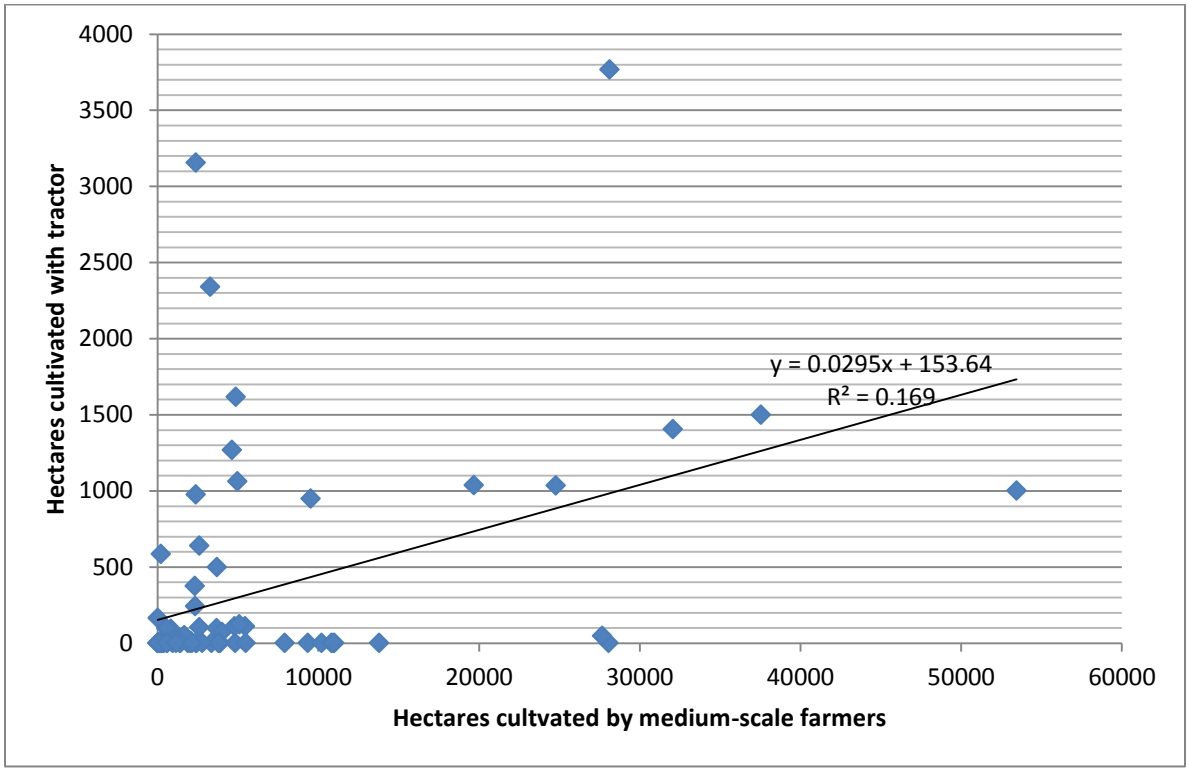


Figure 5. Correlation between district medium-scale landholdings and measures of tractor use, Zambia (n=54)

Data sources: IAPRI Zambia Rural Agricultural and Livelihoods Survey, 2012.

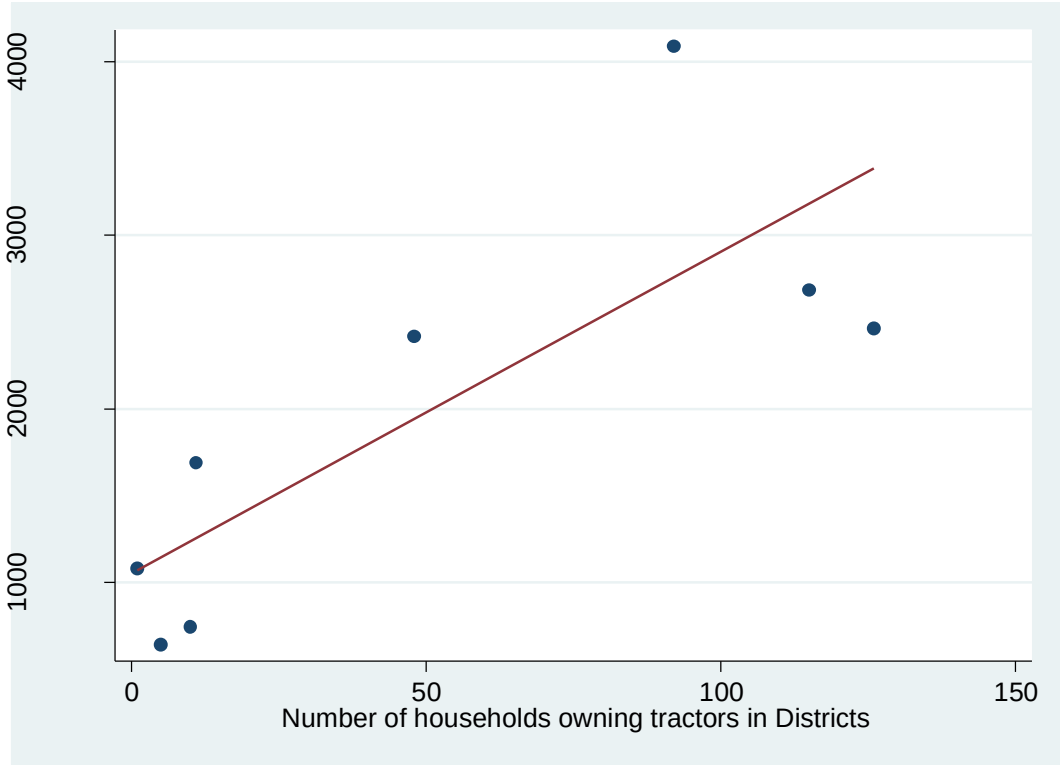


Figure 6: Correlation between district medium-scale landholdings and measures of tractor use, northern/central Ghana (n=8)

Data sources: IFPRI/SARI Survey on medium and large-scale famers and mechanization survey, 2013, Ghana.

Table 1: Changes in farm structure in Ghana (1992 to 2005), Zambia (2001-2012) and Kenya (1994-2006) based on official national survey data

	Number of farms		% growth in number of farms	% of total cultivated area	
Ghana	1992	2005		1992	2005
0-2 ha	1,458,540	1,725,024	18.3	25.1	12.5
2-5 ha	578,890	957,722	65.4	35.6	24.1
5-10 ha	116,800	256,620	119.7	17.2	14.6
10-20 ha	38,690	110,076	184.5	11.0	12.0
20-100 ha	18,980	46,143	143.1	11.1	11.7
>100 ha	--	6,958	388.6*	--	25.0
Total	2,211,900	3,102,543		100.0	100.0
Zambia	2001	2012		2001	2012
0 – 2 ha	638,118	748,771	17.3	34.1	16.2
2 – 5 ha	159,039	418,544	163.2	45.0	31.7
5 – 10 ha	20,832	165,129	692.6	14.3	25.0
10 – 20 ha	2,352	53,454	2272.7	6.6	15.0
20 – 100 ha	--	13,839	53.3**	--	12.0
Total	820,341	1,399,737	70.6	100.0	100.0
Kenya	1994	2006		1994	2006
0 – 2 ha	1,692,343	2,640,020	56.0	29.2	46.4
2 – 5 ha	525,363	332,011	-36.8	32.3	23.5
5 – 10 ha	93,871	17,451	-81.4	21.4	2.1
> 10 ha	92,498	19,493	-78.9***	24.5	28.0
total	2,404,075	3,008,975		100.0	100.0

Sources: Ghana Living Standards Surveys 1992/3, 1999/2000 and 2005/2006. * Percentage change from 1999 to 2005. na: data not available. Source: Ministry of Agriculture Crop Forecast Surveys, 2009, 2012. *2001 figures are land under cultivation. ** Growth rate computed from 2009-2012 only. "na" means not available. Kenya Central Bureau of Statistics, *Welfare Monitoring Survey II, 1994: Basic Report* (Kenya: Central Bureau of Statistics, Office of the Vice-President and Ministry of Planning and National Development, 1996). Kenya National Bureau of Statistics, *Kenya Integrated Household Budget Survey 2005-2006* (Nairobi, Kenya: Kenya National Bureau of Statistics - Ministry of Planning and National Development, 2006). *** For reasons explained in Section 3, we believe that the official Kenya data sets underreport farms over 10 hectares (see also footnote 8).

Table 2: Characteristics of Medium-Scale Farmers

	Mode of entry into medium-scale farming status			
	---------- Zambia ----------		---------- Kenya ----------	
	Growth from small-scale farming (=118)	Acquisition of land from non-farm employment (n=164)	Growth from small-scale farming (n=120)	Acquisition of land from non-farm employment (=180)
% of cases	42	58	40	60
% men	92.9	91.4	82.5	80.0
Year of birth	1966	1960	1945	1947
Years of education of head	8.2	11.0	7.5	12.7
Have held a job other than as a farmer (%)	32.9	100.0	17.5	83.3
Formerly or currently employed by the public sector (%)	5.8	59.6	12.5	56.7
Initial landholding size when started farming (ha)	28.8	106.6	14.0	22.6
Current landholding size (ha)	38.2	74.9	32.7	50.1
% of land currently under cultivation	46.9	24.7	54.1	46.6
Decade when land was acquired				
1969 or earlier	3.9	1.1	29	6
1970-79	6.7	5.1	24	18
1980-89	14.8	7.4	20	20
1990-99	32.2	23.8	18	32
2000 or later	42.0	63.4	9	25

Source: Sitko and Jayne (2014); Muyanga (2013)

Table 3. Agricultural Landholding Distribution Patterns (Demographic and Health Surveys, various years)

	Ghana	Kenya	Malawi*		Rwanda	Tanzania		Zambia*	
	2008	2009	2004	2010	2010	2004/05	2010	2007	2013/14
sample size, unit of observation=household (HH)	11,777	9,057	13,664	24,825	12,540	9,735	9,623	7,164	15,920
% of urban HHs owning agricultural land	23.4	35.3	31.4	38.6	48.6	41.7	37.9	27.4	24.8
% of rural HHs owning agricultural land	66.7	78.1	86.6	87.4	86.8	92.3	87.4	88.3	88.1
% of HHs (nationally) owning land	46.0	67.0	77.4	79.3	81.5	79.0	74.5	67.2	61.7
% of national landholdings held by urban HHs	26.8	22.0	11.2	18.3	10.9	11.8	32.7	16.8	22.0
% of national landholdings > 20 ha held by urban HHs	36.9	41.2	1.4	7.6	29.9	17.2	55.0	21.7	26.3
Distribution of land size (ha) among urban households									
25th percentile	0.5	1.0	1	1	0.2	0.4	0.4	1.0	0.8
50th percentile	1.6	2.0	2	3	0.5	0.8	0.8	1.0	1.5
75th percentile	3.2	4.0	2	5	1	1.6	1.6	3.0	4.0
90th percentile	7.2	9.0	4	10	2	2.8	3.2	10.0	10.0
95th percentile	12.0	13.4	5	12	4	4	4.2	18.0	20.0
99th percentile**	38.0	40.0	13	30	10.1	9.2	20.8	76.0	95

** For Zambia Malawi and Kenya, landholdings over 95 hectares were reclassified as 95 hectares in the DHS data.

** For Ghana, landholdings over 38 hectares (95 acres) were represented in the DHS data as 38 hectares. These caps on reported landholding size result in under-estimates of the land controlled by urban households

Source: Demographic and Health Surveys

Table 4 Changes in employment structure of working age population

	Ghana 2005-2013	Kenya* 1999-2009	Malawi* 1998-2008	Mali* 1998-2009	Nigeria* 2006-2010	Tanzania 2008-2012	Uganda 2005-2012	Zambia 2005-2012
Total # of working age individuals in base year	12,531,725	14,979,080	5,195,510	4,957,820	77,170,563	19,017,377	13,779,475	6,236,683
% of working age in urban area	41.7	28.2	16.0	29.4	26.0	26.8	20.0	39.6
% of working age in rural area	58.3	71.8	84.0	70.6	74.0	73.2	80.0	60.4
Total # of working age individuals in last year	14,679,955	20,543,290	6,802,300	7,021,500	95,866,202	24,113,058	16,027,014	7,478,049
% of working age in urban area	53.4	36.0	16.7	26.0	22.4	31.1	19.6	44.6
% of working age in rural area	46.6	64.0	82.5	74.0	77.6	68.9	80.4	55.4
% change in # of working age individuals from base to last year								
Farming								
Urban	79.7	69.1	7.4	-56.8	83.1	39.5	76.1	53.2
Rural	5.0	1.6	-33.2	17.5	59.5	0.7	3.7	-19.4
Overall	13.5	7.1	-32.2	10.3	61.0	3.1	7.5	-13.9
Non Farm employment								
Urban	84.4	76.8	33.5	81.7	12.0	64.7	-0.8	62.7
Rural	23.1	31.7	160.2	221.7	26.7	99.7	45.7	204.9
Overall	62.9	52.3	94.9	121.7	19.5	77.5	24.6	86.1
Unemployed								
Urban	-36.9	34.1	108.5	188.6	16.9	183.3	-74.9	209.0
Rural	-28.9	17.4	917.7	193.6	41.5	1148.4	-80.4	742.7
Overall	-35.3	24.8	547.9	190.3	31.4	413.0	-77.1	266.8
Economically inactive								
Urban	6.5	99.3	4.7	12.1	-6.3	15.2	18.5	-11.0
Rural	-55.8	75.0	88.3	72.4	4.6	12.0	55.4	144.2
Overall	-25.5	83.0	63.4	48.5	1.8	13.2	43.0	27.0
Total # of working age individuals								
Urban	50.1	75.1	36.3	25.5	7.4	47.0	13.9	35.1
Rural	-6.4	22.3	28.7	48.4	30.1	19.4	16.9	10.0
Overall	17.1	37.1	30.9	41.6	24.2	26.8	16.3	19.9

Sources: Ghana Living Standard Survey 5 and 6; Zambia labor force surveys 2005 and 2012; Tanzania National Panel Survey; Uganda National Panel Survey; General Household survey in IPUMS.

Notes: *10% random sampling of national Population and Housing Census data in IPUMS

Table 5: Composition of surplus maize production by land size in Zambia, Mozambique, Kenya, Ghana, and Malawi, 1990s-2000s

Country	Farmland (Ha)					
	0 – 1	**1 - 2**	**2 – 5**	**5 - 10**	**10 - 20**	**>20**
Zambia						
% of marketed surplus						
1991	42.1	27.2	23.6	6	1.1	n/a
2012	13.6	23.6	34	18.5	10.4	n/a
% change	-28.5	-3.6	10.4	12.5	9.3	n/a
Mozambique						
% of marketed surplus						
1996	9.62	20.42	38.43	18.29	12.28	0.96
2008	5.88	17.92	42.12	23.93	8.9	1.25
% change	-3.74	-2.5	3.69	5.64	-3.38	0.29
Kenya						
% of marketed surplus						
1997	6.8	14	30.1	16.6	19.3	13.1
2006	18.37	22.59	34.49	10.11	8.87	5.57
% change	11.57	8.59	4.39	-6.49	-10.43	-7.53
Ghana						
% of marketed surplus						
1997	17.25	17.27	40.75	12.22	7.5	5.01
2010	10.93	16.23	36.24	22.68	9.49	4.42
% change	-6.32	-1.04	-4.51	10.46	1.99	-0.59
Malawi						
% of marketed surplus						
1998	8.78	19.02	50.18	14.17	7.75	0.10
2011	17.16	30.01	38.12	11.87	2.78	0.07
% change	8.38	10.99	-12.06	-2.30	-4.97	-0.03

Sources: Zambia 1990/91 PHS and 2012/13 CFS; Mozambique TIA 1996 and 2008; Kenya TAPRA 1997 and KHIBS 2006; Ghana GLIS 1997 and 2010; Malawi IHS 1998 and 2011.