

Megatrends and the Future of African Economies

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Executive Summary

Agri-food systems, including those in Africa, are complex and interdependent systems with the following features: (1) they develop endogenously with broader demographic and economic changes in the broader economy, hence it is difficult or impossible to predict their specific growth and income distributional trajectories; (2) their future trajectories are highly dependent on policy choices and public investment patterns and hence can be molded by public action; (3) they evolve through interdependent decisions of many actors such that few emerging patterns can be linked to a particular agent within the system; and (4) the variables influencing their development change over time with the underlying structure of local, regional and international economic systems, and with changes in technologies and institutions. In this dynamic environment, notions of equilibrium may be very short-lived. Nevertheless, we believe that there are identifiable “megatrends” with a high probability of affecting African food and broader economic systems in the coming decades. This paper investigates the evidence of ‘megatrends’ shaping African economic, political and social landscapes and asks which ones depend endogenously on processes that are within the realm of policy influence and which ones are indeed exogenous.

The take-away messages from this analysis are threefold. First, many ‘megatrends’ boldly identified as drivers of change in African agricultural systems are arguably highly dependent on other underlying processes which may or may not occur. A second conclusion is that the pace and force of some commonly identified megatrends are highly dependent on future policy and public investment decisions, and are hence malleable. Our third conclusion is that although some of the most important trends currently shaping African food systems may continue only for a limited duration one trend that is likely to remain constant no matter which scenario unfolds is that the creation of new jobs in the non-farm economy is unlikely to grow fast enough to absorb the rapidly growing young labour force. As a result, smallholder agriculture will remain a fundamental safety valve for absorbing much of the new labour force into gainful employment, at least as a several decades-long intermediate stage in the region’s economic transformation.

Based on this analysis, the authors hope to raise society’s awareness of the potential to shape future outcomes through public sector policy and investment decisions and argue that the state can play a major role in anticipating and ensuring that a ‘good society’ evolves on the African continent.

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Megatrends and the Future of African Economies

1. Introduction

After decades of lethargy, much of Africa is now experiencing rapid economic transformation. Half of the world's ten fastest growing economies are in Africa, south of the Sahara (Kearney, 2014). Africa's dynamism has spawned efforts to identify the 'megatrends'² driving the region's economic growth and anticipate the future opportunities and challenges associated with these trends. Among the most frequently cited trends are the rise of the African middle class (AfDB, 2012; Hattingh *et al.*, 2012; Deloitte and Touche, 2013), rapid urbanisation and consequent shifts in food demand and downstream modernisation of the food systems (Tschirley *et al.*, 2013), a rapid shift in the labour force from farming to non-farm jobs (Fine *et al.*, 2012), and rising global interest in African farmland (Deininger and Byerlee, 2011; Schoneveld, 2014).

This article argues that these projections about Africa's future are a good deal less certain than the new conventional wisdom might suggest. 'Foresighting' exercises are often based on tenuous evidence of key underlying trends and tenuous assumptions about the degree to which these trends are inevitable exogenous forces. Most current trends are neither irreversible nor inevitable. Just as the current, unanticipated trends and transformations being observed in African food systems are the outcomes of the policies and public investment patterns of prior decades, the future will be shaped and transformed by today's policy actions — either those taken proactively or those taken passively as a result of no action (Seidman, 1973). Rather than speaking in terms of inevitable transformations, this point should be appreciated by development thinkers when projecting future transformation.

The evolution of economic systems, including Africa's, ultimately reflects the investment decisions of millions of private sector actors. Yet the pace and composition of private investment is determined by the enabling environment set by governments (consider the difference between North and South Korea, for example).³ Given the strong commitments made by African Heads of State under CAADP, our focus is on what the public sector can do in the first instance to generate the incentives for system-wide private investment in food systems that contribute to broad-based growth.

This article has two objectives. Our first is to clarify how 'megatrends', often considered to be shaping the region's economic, political and social landscapes, are actually quite dependent on other related processes that are either highly uncertain or within the capacity of governments to alter. Towards this

² A megatrend is a large, social, economic, political, environmental or technological change that is slow to form yet once in place, they are the underlying forces that drive trends. They influence a wide range of activities, processes and perceptions, both in government and in society, possibly for decades.

³ By 'enabling environment', we mean the integrity and efficiency of public institutions affecting commerce and trade, the economic policies influencing the returns to investment in particular sectors and areas, the pattern of public expenditures in infrastructure, education, health, R&D, subsidies and taxation policies and the degree of stability and predictability in the political-economic system. Inevitable policy variability across countries poses additional problems for generalised predictions of Africa-wide trends and transformations. Clearly the main features of change in agrifood systems and overall economies will vary greatly across areas of the continent.

end, we consider which of the commonly articulated trends and transformations are indeed exogenous from the standpoint of African policy makers over the next decade and which are endogenously dependent on other more fundamental processes that are within the realm of policy to influence. Remarkably different scenarios are plausible, with very different growth and distributional outcomes, contingent on the policy actions taken by African governments. Time scale matters: there is greater certainty in the near term. The farther forward we project, the more scope for the future to reflect long-term policy choices — those taken either implicitly or explicitly.

This then leads to our second objective, which is to contribute to a greater societal awareness of the potential to shape future outcomes through engagement in the political process within existing policy-dialogue platforms under CAADP. Rather than adopting analytical frameworks that reinforce perceptions of predetermined outcomes being driven by exogenous megatrends, we argue that a major role of the state is to engage the public in determining what a ‘good society’ would look like. The state then implements the policies and investments that will direct private capital towards achieving this vision, anticipating the impacts of the trends that cannot or should not be altered and planning accordingly.

Based on this analysis, we derive four plausible scenarios for future African food systems and discuss how policy choices will influence which of these four scenarios is manifested in the next several decades. This analysis may be of interest to civil society in assisting policymakers to exploit opportunities to promote public discussion of what a good society would look like. It may assist policymakers seeking guidance on how they may ‘bend’ certain trends in directions that may be considered socially desirable. It may also help public and private sector analysts involved in ‘foresighting’ projections.

2. Megatrends affecting Africa

The following eight trends have been highlighted in various studies as being among the most important drivers of change in African agrifood systems.⁴

Trend 1: A higher mean and volatility of food and energy prices. Food prices have risen sharply and become more volatile since the global food price surge of 2007/08. Even though 2015 has witnessed a sharp fall in food prices, international maize, rice and wheat prices in early 2015 adjusted by two different global deflators (the US GDP deflator and the global Manufacturing Unit Values Index) are 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.

⁴ This article focuses on Africa south of the Sahara and uses the term ‘Africa’ as shorthand. These trends are often presented as overarching ones with a pan-African reach, though their relative importance will clearly vary somewhat across countries as will the responses of African governments to them.

However, the long term perspective of the potential rise in food and energy prices will depend on factors that cause food prices to change from one decade to the next (Westhoff, 2010). Factors often cited as driving future food prices include

- Population growth
- Rising income growth and hence demand for food in areas of the world that were historically poor
- Rising global demand for livestock products (which raises the demand for grain used in feed rations)
- An apparent slowing of grain productivity growth in major grain breadbasket regions of the world (Grassini *et al.*, 2013; Cassman *et al.*, 2010) versus the potential increase in productivity in emerging grain and oilseed producing countries that could play a significant role in export markets and therefore world prices. (e.g. Ukraine) , and
- Greater costs in bringing new land under cultivation (eg Chamberlin *et al.*, 2014) and growing scarcity of productive resources (water & land) in Asia.
- Global food prices have become increasingly affected by energy prices. Energy consumption is currently dependent on finite, non-renewable resources and a continuation of this situation is likely to put upward pressure on both energy and food prices over time.

The probability that world food prices will continue to rise over the next several decades depends on the pace of new technologies for generating food and energy. Both of these are major unknowns and highly influenced by policy decisions in the major food and energy producing regions of the world. Projections differ greatly on the long-term direction of food prices; compare for example the *International Food Policy Research Institute's* projections (e.g., Rosegrant *et al.*, 2012) with those of Baldos and Hertel (2014), FAPRI, and the OECD/FAO, which suggest that inflation-adjusted prices of the major grains and oilseed will be constant over the next decade with growing production levels comfortably meeting the growing demand for food.

Few if any African governments have the ability to affect world food price levels and most have only limited ability to insulate their domestic food markets from secular changes in world market conditions, especially over a sustained period. For example the degree of market integration between world and domestic food prices varies significantly across commodities within Africa. In particular maize prices, relative to wheat prices, are less integrated with global prices due to frequent Government intervention in the domestic maize markets.

This particular trend is therefore largely exogenous from the standpoint of individual African governments, and one that is exceedingly difficult to confidently predict into the future given the wide range of factors involved in determining global food price conditions, most of which are also highly uncertain. For example, few food price projections have begun to incorporate the effects of apparent dwindling supplies of fresh water in the areas of the food-producing breadbaskets (Strzepek and Boehlert, 2010). The trend in global food prices over the coming several decades will be increasingly dependent on another major megatrends, including the availability of fresh water to maintain existing

global breadbaskets and the nature of the trade-offs between future land expansion and adverse environmental/climate change.

Trend 2: Improved macroeconomic management

Macro-economic management has improved dramatically in the post-structural adjustment period. Since 2000, there have been very few cases of African countries being massively in debt, requiring bailouts from international financiers, experiencing hyperinflation or rapid currency depreciation. A report from the McKinsey Global Institute indicates that African countries trimmed their foreign debt by one quarter and shrunk their budget deficits by two-thirds between 2000 and 2008 (Roxburgh et al. 2010). The continent has also experienced rapid economic growth since the mid- 1990s with several countries recording growth rates above or near 7%⁵ (IMF African Economic Outlook, 2013). Even during the crises of the global food and financial markets, African economies maintained average growth rates well above the global average of 3%. This positive growth trend has been attributed to high prices of oil, mineral, and other commodities over the past decade, improvements in macroeconomic conditions, and prudent microeconomic reforms that creates an enabling business environment across the continent (ACET, 2014).

In addition, due to prudent monetary policies, the continent's inflation rate has decelerated since 2009, with variations across countries⁶. Median inflation for Africa, which increased from 3.4% in 2002 to about 10.5% following the global food crisis in 2008, has declined and is expected to fall below 5% by 2015 (AfDB et al., 2014). The relative stability of African countries' macro-economies over the past 15 years has also attracted much greater foreign investment in recent years. Since 2000, external financial flows into Africa has quadrupled reaching over US\$ 200 billion in 2014 and expected to further increase in the coming years (AfDB et al., 2014)⁷. At the same time, tax revenues as a form of internally generated funds continue to rise across the continent. In 2012 low-, lower-middle, and upper-middle income countries in Africa, south of the Sahara, mobilized about 16.8%, 19.9% and 34.5%; respectively of their GDP in tax revenues (AfDB et al., 2014).

As a trend, macro-economic management is largely endogenous from the perspective of African governments. The critical question though is whether these economic growth rates and improved fiscal and monetary conditions can be sustained over time? We expect the positive economic growth rates and renewed investor confidence resulting from the improved macroeconomic stability to remain in the next several years as the global economy continue its recovery. However, armed conflicts and political instability or poor government policies arising from changes in government could halt or even reverse these gains. Hence, potential future growth may depend on the extent to which various countries are

⁵ In fact, six of the world's ten fastest growing countries in the 2000s were in Angola at 11.1% a year, Nigeria 8.9%, Ethiopia 8.4%, Chad 7.9%, Mozambique 7.9%, and Rwanda 7.6% (IMF African Economic Outlook, 2013)

⁶ In 2013, only five countries in Africa, south of the Sahara recorded double-digit inflation (Eritrea, Ghana, Guinea, Malawi, Sudan), relative to 13 countries in 2012 while 16 countries in recorded inflation rates below 3% in 2013.(AfDB et al., 2014)

⁷ The 2014 African Economic Outlook Report projects that foreign investment (both direct and portfolio) particularly in resource-rich African countries, and official remittances could reach over US\$ 80 billion and US\$ 67.1 billion respectively in 2014.

able to anticipate and implement policies that stem the threats to macroeconomic stability and economic growth. For example, for those resource-rich countries whose growth may be driven largely by the commodity boom, the extent to which they invest to diversify their economy could shape their future growth trajectory especially in the face of declining prices of oil and other commodities.

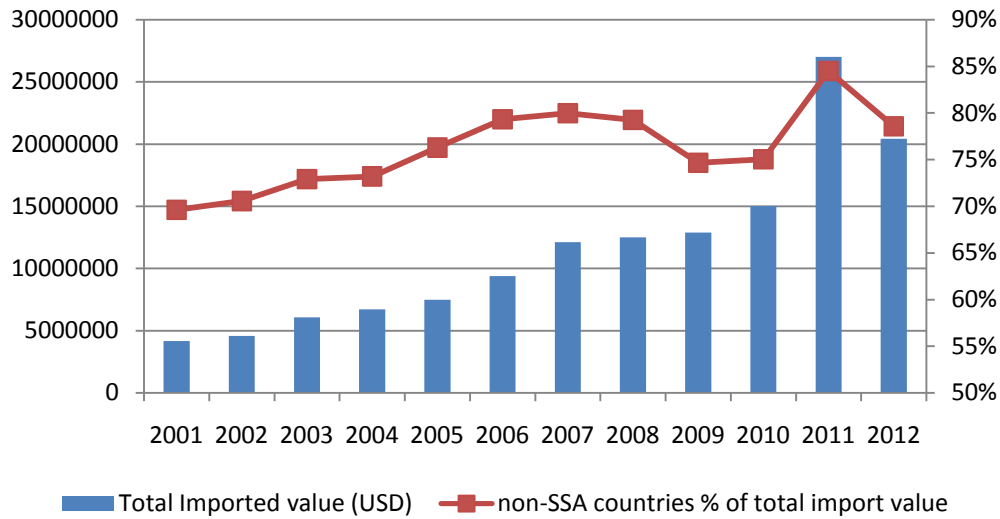
Trend 3: Rapid urbanisation and rising per capita incomes giving rise to an African middle class. A recent proliferation of reports finds evidence of a rising middle class in Africa (for example AfDB, 2011; Kearney, 2014; Deloitte and Touche, 2013; Tschirley *et al.*, 2014). On this basis they project a rapid modernisation of Africa’s food systems and diets, with major employment growth being envisioned in the downstream stages of the food systems. However, these conclusions are highly sensitive to how ‘middle class’ is defined.⁸ Potts (2013) argues that urban income growth is quite narrow in most African countries for which data exist. Jedwab *et al.* (2013) and Gollin *et al.* (2013) indicate that GDP growth in many African countries is driven by narrow growth in natural resource sectors, which contribute woefully little to employment creation and raises the spectre of urbanisation without income growth or economic transformation. An otherwise bullish assessment by the McKinsey Global Institute (Fine *et al.*, 2012) indicates that under the most favourable scenario the supply of wage jobs in manufacturing, services and government is not growing rapidly enough to absorb more than two thirds of the region’s rapidly rising labour force. Other sources argue that urban income growth is robust and relatively broadly based (Young, 2012; Tschirley *et al.*, 2013; McMillan and Harttgen, 2014).

Most crucially, a form of income growth restricted to a narrow segment of society would diminish the income multiplier effects that otherwise might encourage more rapid and inclusive economic transformation. This is evident from examining the composition and source of African food imports. Between 2001 and 2012 a growing proportion of the region’s food import demand for processed and high-valued food products was supplied by the international market (Figure 1).

Figure 1. Imports by African countries of high-value and processed food products and the share of imports originating from outside Africa⁹

⁸ The African Development Bank (AfDB) defined middle class as per capita daily consumption of US\$220 in 2005 purchasing power parity US dollars. Further it found that this group had risen from 27 per cent to 34 per cent of the population between 1990 and 2010. However, about 60 per cent of the middle class in 2010 were in the US\$24 per capita consumption group — barely out of the poor category and in constant threat of falling back into it (AfDB, 2011). If this group is excluded, the rise in Africa’s middle class over the past two decades would have been quite modest. However, there is some evidence of rising incomes among a small segment at the top end of the income distribution.

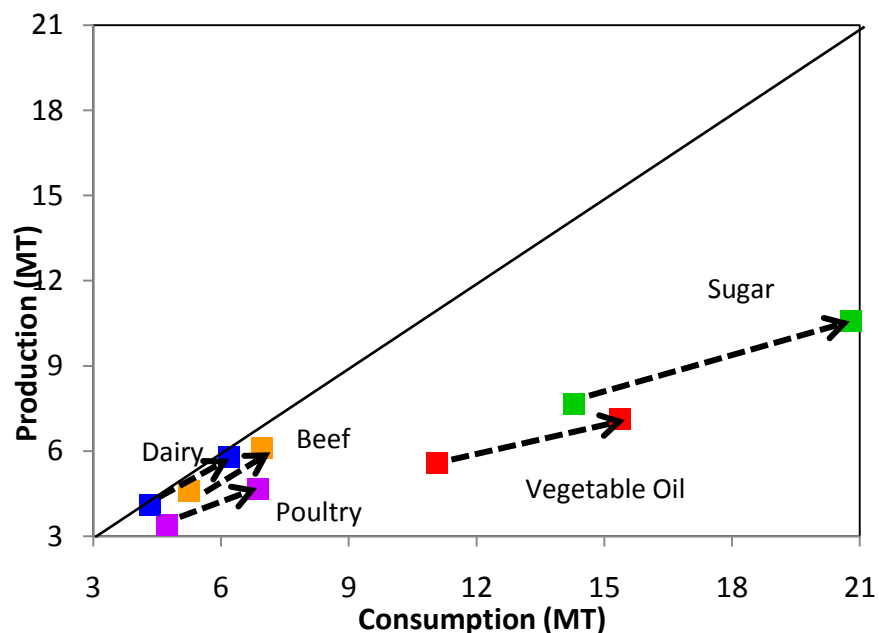
⁹ The food products included in this figure follow Womach (2005) and are divided into three groups: (1) semi-processed products, such as fresh and frozen meats, staple grain meals and flour, vegetable oils, roasted coffee, tea, and sugar; (2) highly processed products that are ready for the consumer, such as milk, cheese, wine, breakfast cereals; and (3) high-value unprocessed products that are also often consumer-ready, such as fresh and dried fruits and vegetables, eggs, and nuts



Source: International Trade Center, Geneva. Trade Map, 2014.

The data in Figure 1 demonstrate that while urban demand for convenience foods (many of which are considered basic food staples) is rising rapidly in Africa, food import demand is increasingly being met by world markets. Projections by the OECD and FAO of Africa’s consumption and production of high valued commodities over the period 2011 to 2023 also indicate that an increasing share of the region’s growing demand for high-value food products associated with rising consumer incomes will be met by imports (Figure 2). Private firms in the region repeatedly warn that while urban populations and hence demand are growing rapidly, there are major concerns over whether adequate supplies can be sourced through local production to meet this demand. Concerns over the scope for local production to respond to rising consumer demand are especially warranted in many countries where the potential for expansion of high-potential cropland is limited (Chamberlin et al., 2014). Export-oriented private sector firms also acknowledge that Africa may be exporting food commodities, but that most of the processing and value added is carried out internationally. The pattern of trade shown in Figures 1 and 2 implies that local employment within agri-food systems may be lost somewhat to overseas suppliers. This employment could otherwise have accrued to local producers and the downstream marketing and processing stages of the food system if urban demand were more effectively met by local production.

Figure 2: Production and Consumption Trends in High-valued food Commodities for SSA; 2011/13 to 2023



Source: FAO Trade and Markets Division, Rome (acknowledgements to Holgar Matthey)

These trends caution us from assuming that urbanisation and urban income growth will necessarily ensure the modernisation and rapid growth of Africa's food systems. To the extent that rising consumption demand is met primarily by imports, it is not clear that urban income growth will stimulate rapid new investment in food value chains linking farms to consumers. Incentives for private investment and the transformation of value chains at the assembly, wholesaling and processing stages of the food system depend on the potential for domestic production growth to keep pace with consumption.

Furthermore, the view that Africa is rapidly urbanising is also highly contested. Prior to 2005, the United Nations concluded that Africa was the most rapidly urbanising region of the world (for example Cohen, 2004), owing in large part to rapid urban-to-rural migration. The UN later modified its projections based on more recent evidence that urbanisation is generally lower and considerably more variable across countries (Bocquier, 2005; Potts, 2012).¹⁰ Furthermore, according to Potts (2014) over the past three decades African urban economies growth rates have weakened, intensifying the economic vulnerability of urban households, ultimately resulting in circular migration as the length of stay of migrants to urban centers reduces overtime.

The rates of migration and urbanisation are responsive to public sector actions that affect the relative returns to labour in agriculture, industry and the informal non-farm sectors (Harris and Todaro, 1970). Policies and investment patterns vary greatly across countries because of the heterodox political and historical conditions. For these reasons, and based on the empirical record to date, we conclude that

¹⁰ In some areas of Africa, rural-to-rural migration appears to be the most common type of migration (Bilsborrow, 2002).

some areas of Africa may experience broad-based income growth and urbanisation over the next several decades. But the pace and extent to which this occurs is likely to vary substantially across countries depending on the specific enabling environment and public investment patterns undertaken in each country.

Trend 4: Africa’s unique demographic structure will rapidly increase the numbers of young people entering the labour force.

Over 60 percent of Africa’s population is currently below the age of 25. Roughly 17 million people will enter the labour force each year over the next decade (Losch, 2012). Fine *et al* (2012) estimate that given current rates of employment growth, roughly half of these people will be absorbed into gainful wage jobs. Only under the most favourable policy and growth scenarios can the urban and non-farm sectors absorb roughly two thirds of this youth into wage employment. Therefore, the viability of family farming is likely to determine whether the remaining youth seeking jobs are productively engaged in agriculture and the informal sector (which is heavily dependent on agriculture as a source of demand), or whether they join the ranks of the unemployed. The latter scenario will bring major political risks. Fortunately, policy and public investments can rapidly improve the incentives and the profitability to engage in farming — a major opportunity for both the youth and for governments.

This trend is perhaps the one with the highest degree of certainty, and one that African governments can proactively anticipate and respond to. Instituting¹¹ an enabling environment that rapidly promotes private investment and job creation in non-farm sectors and labour-intensive forms of agriculture would have high payoffs and raise the likelihood that a country’s economic transformation will be relatively smooth rather than painful and protracted.

Trend 5: Rising non-farm job opportunities, but agriculture is likely to remain the single largest source of employment for at least the next several decades.

Where will these young Africans be employed? Will most Africans continue to be involved in farming as in prior decades or will we see rapid structural transformation¹² towards non-farm employment? Urbanization and income growth (or possibly mainly population growth) do appear to be causing some shifts in the labor force from farming to non-farm sectors as well as the downstream stages of food systems. Tschirley *et al* (2014), for example, projects that the percentage of employed people located in the downstream stages of African food systems will rise from 8% of total employment in 2010 to 12% or more by 2025, and they project that 17% of all new jobs created in the economy over this 15 year period may be in these downstream stages of the food system (retailing, processing, food preparation away from home). They also project that the jobs in the non-farm economy over the same period may rise from 17% to 28%.

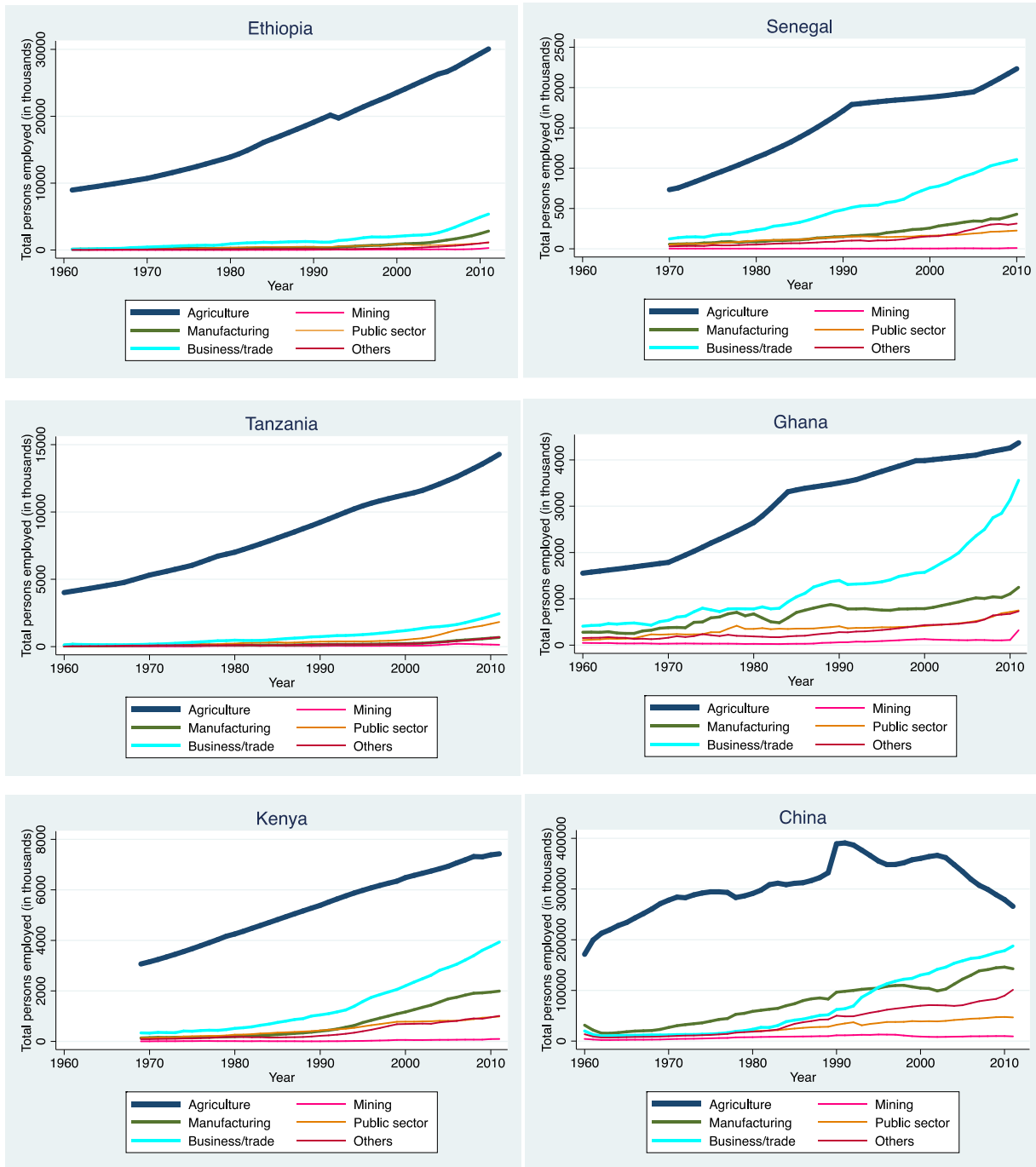
However, in the recent past the number of people employed in primary agriculture¹³ rose in select African countries (Figure 3 below). Relative to China where agricultural labor force peaked around 1990 and has been declining since, none of the African economies examined in the study appears to show any sign of decline.

¹¹ Specific policies and investments, consistent with broad-based agricultural growth and poverty reduction, include; Investments in physical infrastructure (such as roads, rail systems, ports and electrification), Policies favourable to family farming, Agricultural R&D, education, and farm extension programmes (Fan *et al.*, 2008; EIU, 2008).

¹² Structural transformation may be defined as shifts over time in the sectoral composition of the labor force.

¹³ Agriculture is defined broadly to include forestry and hunting activities.

Figure 3. Trends in sectoral employment in various countries



Source: Groningen Global Development Centre, 2013

Consistent with employment trends by Groningen Global Development Centre (2013), a recent flagship World Bank report (Filmer and Fox, 2014) projects that family farming will remain the single largest source of employment for at least the next several decades.

However, analysis of the composition of the employment in select countries revealed a declining share of the people employed in farming¹⁴ out of total employment, which may be indicative of some diversification of employment away from farming into non-farm employment sectors. Results from nationally representative multi-year and multi-country survey data estimates declines of approximately 9 to 17 percentage points in the proportion of people involved in farming out of total employment over a seven-year period (Yeboah and Jayne, forthcoming). At the same time, there is a corresponding growth in the share of people employed in the non-farm sectors (Table 1). This observed growth in the share of non-farm employment is largely concentrated in construction and manufacturing, non-agricultural commerce and transportation, services in the informal sectors, as well as downstream agricultural related wholesale and retailing activities. These findings are consistent with other studies (e.g. Bediane et al. 2012; Mcmillan and Harttgen 2014) suggesting a gradual transformation of African economies from agricultural employment into non-farm employment in the service sector.

The growth in non-farm sectors including the downstream stages of the food system appears to be progressing at a slower pace than estimated by Tschirley et. al. (2014). With the exception of Ghana, where the share of employment in downstream agriculture commerce increased by about 7 percent, growth in the share of non-farm employment in the downstream stages of the food system was less than 2% for the countries considered.

Table 1. Structure of employment over time for Ghana, Tanzania and Zambia

Employment category	% share of the population employed					
	Ghana		Tanzania		Zambia	
	2005	2013	2008	2012	2005	2012
Within agri-food systems						
Farming*	52.91	43.80	64.93	55.74	73.79	56.88
Downstream agro-processing and manufacturing	6.12	3.64	0.79	0.90	1.23	1.57
Downstream agric commerce**	6.69	14.09	4.50	5.00	1.85	6.34
Outside agri-food systems						
Forestry and mining	1.25	1.90	0.79	1.12	1.54	2.83
Manufacturing and construction	7.43	8.74	5.31	8.26	3.52	5.89
Professional and technical services	7.78	8.91	8.38	7.31	5.39	7.75
Financial and real estate	0.47	0.99	0.53	0.37	0.63	0.80
Transportation and commerce	14.12	13.45	12.16	17.05	9.43	9.15
Arts, entertainment and recreation	0.29	0.43	0.30	0.58	0.20	0.16
Communal and personal services	2.95	4.06	2.31	3.67	2.41	8.65
Total employment as % of working-age (15-64 years) population	68.43	79.78	64.57	71.54	79.00	70.36

¹⁴ Farming comprises crop and livestock production activities including fishing, aquaculture and hunting

Source: Ghana Living Standard Surveys 5 and 6; Tanzania National Panel Surveys (2008 and 2012); Zambia Labor Force Survey (2005 and 2012). * Farming comprises crop and livestock production activities including fishing, aquaculture and hunting. **Downstream agric. commerce comprises of wholesale and retail of agriculture related products.

In light of these trends, it is unlikely that the downstream stages of the food system will account for more than 17% of all new jobs in the region by 2025 in the absence of interventions to stimulate growth in this sector. However, we expect opportunities in non-farm employment to continue to rise but agriculture will still remain a key employment sector in the next several decades. The pace of the growth in non-farm job opportunities is amenable to policy interventions. Considering its status as a key employment sector at least in the next several years, agriculture may need to be an integral component of any intervention to stimulate employment creation and inclusive growth. Policies that enhance productivity in agriculture could help stimulate effective demand and growth in the non-farm job opportunities through multiplier effects that may be generated from the productivity gains.

Trend 6: Rapid concentration of farm structure and marketed surplus from agriculture: The demand for agricultural land in Africa has risen dramatically since the surge in global food prices starting in 2007. Agricultural subsidies and land policies in many countries have accelerated the demand for land. Recent evidence indicates that relatively wealthy people (both rural and urban) are investing in land at an unprecedented rate, leading to the rapid rise of medium-scale farmers in Africa. A study of three countries (Ghana, Kenya and Zambia) by Jayne *et al.* (2014a) indicates that medium-scale farms control more land than large-scale foreign investors in all three cases and control even more than small-scale farmers in two of the three cases. Evidence also suggests that existing land policies are leading to increased inequality of landholdings and in some cases may be making it more difficult for area expansion in densely-populated smallholder farming areas (Jayne *et al.*, 2014a; Woodhouse, 2003).

Farm lobbies have also changed their complexion over time and are increasingly dominated by urban-based and politically influential medium/large-scale farmers (most farming in the range of 20 to 100 hectares). This group has progressively steered agricultural policies and public budgets in their favour through input subsidy programmes targeted to ‘progressive’ farmers and through commodity price support programmes and import tariffs that reward those with the greatest surpluses to sell.¹⁵ Ironically, most small-scale farms are net staple-food buyers and are adversely affected by the lobbying of national unions of farmers aimed at raising grain prices (Jayne, 2012).

However, these trends reflect the incentives embodied in land and agricultural policies over the past several decades. Future farm structure and income growth from agriculture are highly malleable to alternative land and agricultural policies. We are inclined to agree with Woodhouse (2003) that farm structure and farm commercialisation are likely to become more concentrated over time in most countries unless land and farm policies are put in place to actively reverse these trends.

¹⁵ Similar processes of elite capture of public agricultural expenditures in Latin America are discussed by Lopéz and Valdés (2000).

Trend 7: Widespread soil degradation in densely-populated African farming systems. Land pressures in the densely-populated farming areas of Africa are causing a gradual shrinking of farm sizes over time (Headey and Jayne, 2014). Smallholder farmers respond by more continuously cropping their fields every year. Fallows have largely disappeared in densely-populated areas.¹⁶ Continuous cultivation of existing plots would not necessarily pose problems for sustainable intensification if soil quality were maintained or improved over time through sufficient use of fertilizers, soil amendment practices and other land-augmenting investments. However, a major body of evidence in Africa points to soil degradation arising from unsustainable cultivation practices in high-density areas of the continent (for example Stoorvogel and Smaling, 1990; Drechsel *et al.* 2001; Tittonell and Giller, 2012).¹⁷ Loss of micronutrients and soil organic matter pose special problems, both because they cannot be ameliorated by the application of conventional inorganic fertilizers and because they tend to depress the efficiency of inorganic fertilizer in contributing to crop output (Shaxson and Barber, 2003; Marenja and Barrett, 2009; Vanlauwe *et al.*, 2011). Because of continuous cultivation and lack of crop rotations,¹⁸ soil organic carbon levels have reached very low levels in high population-density Africa (Powlson *et al.*, 2011; Vanlauwe *et al.*, 2011). Giller *et al.* (2006) and Tittonell *et al.* (2007) conclude that smallholder farmers are largely unable to benefit from the current yield gains offered by plant genetic improvement due to their farming on depleted soils that are non-responsive to fertilizer application. The problem of soil mining has the classic elements of a 'social trap' (Platt, 1973), in which people adopt behaviours consistent with their short-term livelihood objectives, but which produce unsustainable and potentially disastrous long-term consequences. Rising rural population density and associated land pressures are important underlying drivers of these processes, yet they are clearly within the scope of policy to ameliorate. A more holistic approach to sustainable agricultural intensification can succeed in reversing these trends and creating the potential for productivity growth in high-density smallholder environments (Snapp *et al.*, 2010; Powlson *et al.*, 2011).

Trend 8: Greater climate variability. The precise impacts of climate change on African farming systems are likely to vary spatially, but two general predictions are greater variability in agricultural production and possibly a decline in crop productivity (Schlenker and Lobell, 2010).

In the developed world, 31% of total wheat, rice, and maize production has reached a yield plateau and/or experienced an abrupt decline in yield growth rates (Grassini *et al.*, 2013). This has serious implications for global food security, as past projections of global food production were based on exponential yield gains in staple commodity markets for the U.S., Europe and parts of the Far East.

¹⁶ Fuglie and Rada (2013) report that fallowed land as a proportion of total farmland in sub-Saharan Africa has declined from 40 per cent in 1960 to roughly 15 per cent in 2011. Jayne *et al.* (2014b) report that fallows have largely been eliminated in smallholder farming areas containing over 250 persons per km² of arable land.

¹⁷ Common forms of soil degradation include declining nutrient balances ('soil mining'), erosion and loss of topsoil, acidification and loss of organic matter. An important contrasting study by Tiffen *et al.* (1994) argues that population pressures between 1950 and 1980 in the Machakos District of Kenya induced households to make land-augmenting investments that contributed to sustainable intensification. However, in a more recent revisit to these same areas in 2014, Kyalo and Muyanga (2014) note that population densities during the period studied by Tiffen *et al.* were generally below 400 persons per km², about half the current densities in many areas of Machakos where widespread soil degradation and unsustainable forms of intensification are apparent.

¹⁸ On very small farms, households cannot afford to sacrifice a whole year by planting green manures or crops for which there is limited consumption value because they need to produce as much food as possible for the coming year.

In contrast, Africa's low levels of yields, indicates the potential to experience continued growth in food production before reaching the regions biophysical limits. This implies the growing importance of the continent as a source for food to meet increasing global demand. Production growth in the region will be achieved either through expansion or agricultural intensification. However, feeding the global population through expansion of agricultural land will be at the cost of the last remaining natural ecosystems. The alternative, ecological intensification of agriculture would require minimizing the constraints to appropriate technology adoption; focusing on sustainable water use through irrigation; and the implementation of best farming practices. Given the rising competition for water (to date, 70% of available water is used by irrigation farming) it will be imperative that agriculture focus on developing irrigation technology that improves water use efficiency and enhances our ability to adapt to climate change (Cassman et. al., 2010).

Ultimately these effects of climate change are largely exogenous in the short run from the standpoint of African policymakers, but it is quite possible that future land policies affecting the rate at which forest and grass land are converted to farmland may influence the degree of climate variability experienced in some parts of the region. In this way, factors affecting the supply of and demand for farmland in Africa may affect the pace of this trend in the coming decades. Moreover, if global climate change induces greater volatility in world food prices, this may induce public and private investment responses at certain stages of the food system. For example, local storage and a shift towards food self-sufficiency, and/or investments in water-saving technologies and adaptive farm-management practices.

3. Classification of megatrends

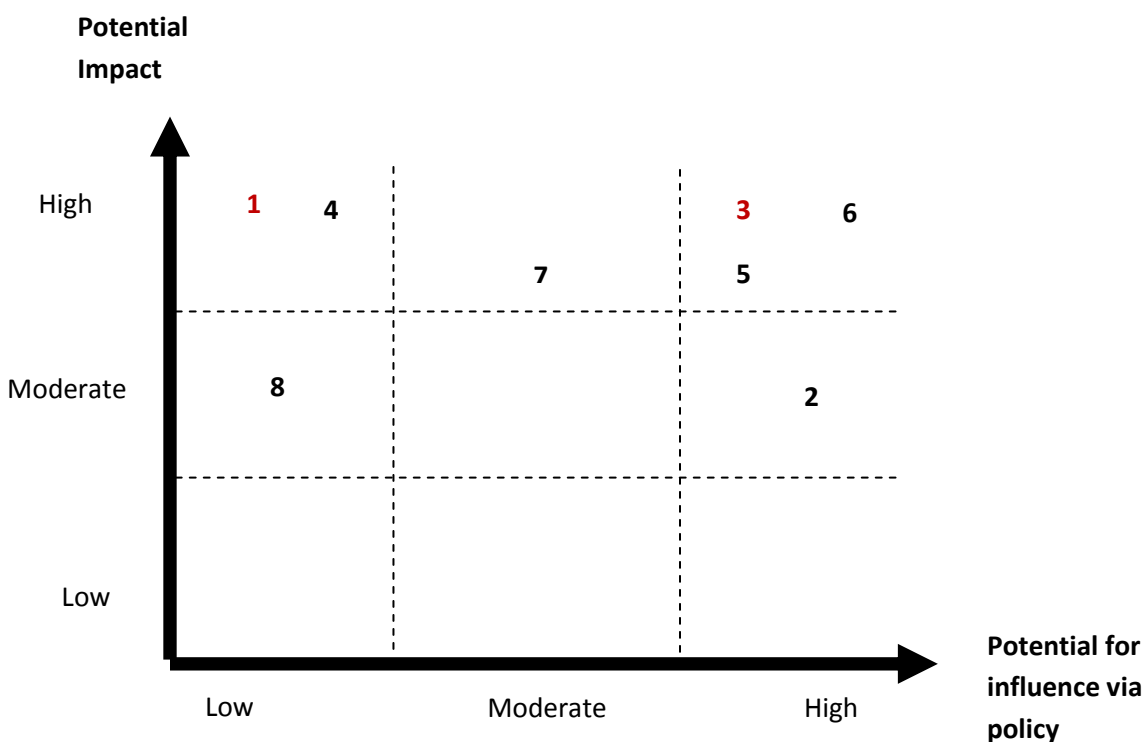
Scenario planning is a Foresighting methodology used to make sense of an uncertain future. It allows for a systematic approach to understanding the possible implications of observed trends and provides a framework that categorizes what is inevitable, what is malleable and in the case of this study the plausible role of public policy in influencing future outcomes. To generate the scenarios, the eight megatrends presented in Section 2 were ranked, through an iterative process, by the authors according to two dimensions — the **relative impact** on shaping the African food system and the degree to which the direction or force of the trend can be **influenced through policy actions**, broadly defined. Figure 4 below illustrates this ranking.

According to our subjective rankings, there is little scope for African policymakers to alter Trends 1 (global food and energy prices), 4 (youth bulge) and 8 (climate change), at least in the next decade. In contrast, policy and public investment patterns can do much to 'bend' Trends 2 (macro-economic management), 3 (urbanisation and rising middle-class) and 6 (changing farm structure) in socially desirable directions. Taking Trend 3 for instance, major public investment in infrastructure and education, would be likely to stimulate private investment in industry and manufacturing and hence encourage the growth of wage employment in urban areas.

Two of these megatrends are of special importance because they are both highly uncertain and because they will determine the pace of other trends if they do materialise. These two megatrends are the

direction of world food prices and the rate and breadth of urban income growth (Trends 1 and 3). From the standpoint of private and public sector stakeholders in the agricultural sector, the first trend is largely exogenous in the sense that they can do very little to influence the time path of global food prices. However, there is great scope – both through agricultural as well as industrial policy – to influence the pace and breadth of urban income growth. The extent to which urban income growth is broadly based will also depend in part on the nature of future agricultural growth. The contribution of agricultural growth to non-farm employment through growth multiplier effects are well established and are considered to be one of the central pathways leading to non-farm growth in green revolution Asia (for example Mellor, 1976; Lipton, 2006; Fan *et al.*, 2007).

Figure 4: Classification of megatrends according to impact and potential influence via policy



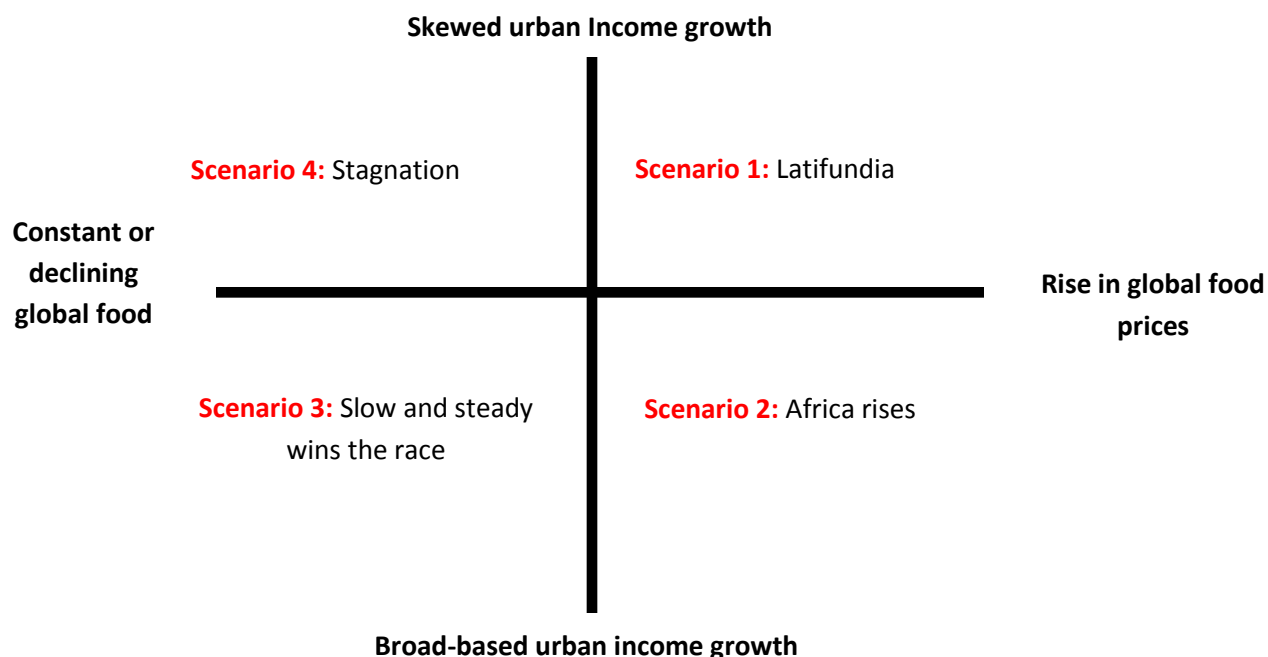
Note: the megatrends corresponding to the numbers in Figure 1 are: (1) higher mean and volatile food and energy prices; (2) improved macroeconomic management (3) rapid urbanization and emerging urban middle-class; (4) youth bulge demographic effects on expansion of the labour force; (5) growth in non-farm wage employment (6) concentration of landholdings and marketed surplus; (7) soil degradation; and (8) climate change and variability.

4. Four possible trajectories of economic transformation

For the purpose of analysis, megatrend 1 and 3 (the rate of growth in world food prices relative to prices in the rest of the economy, and the pace and breadth of urban employment and income growth) were selected as the key uncertainties underpinning the resulting scenarios. The selection was determined by the high-impact potential, the contrasting degree of policy malleability, and the internal and external

consistency exhibited by these trends relative to megatrend 4 and 6. In particular, these drivers describe uncertainties that could generate probable scenarios that are relevant to all the key stakeholders. Four possible scenarios emerge (Figure 5). The projected impacts for each scenario are discussed from the perspective of five stakeholder/interest groups: (1) African governments; (2) traditional authorities; (3) rural communities (the majority of who are small-scale farmers); (4) urban consumers; and (5) private sector firms and investors.

Figure 5: Four future scenarios of the African food system



Scenario 1: The emergence of Latifundia

Assuming that global food prices continue to rise over the next several decades and that urban income growth is quite skewed, with the top 20 per cent of urban households realising a rapid rise in income while the remainder experience little or no growth, we project the following broad outcomes:

Rise of an urban elite: Even if only 10 to 20 per cent of urban Africa becomes ‘middle class’, the sheer size of Africa’s cities will be sufficient to attract major foreign investment in food retailing and other upper- and middle-class consumer goods. Consumption patterns among wealthy consumers will slowly shift away from starchy staples and towards animal products, fresh fruits and vegetables, and more convenient processed foods. Rising food prices driven by the rising demand will attract increased private investment in the development of local value chains to produce and process these products more cheaply than imports. However, whether domestic production indeed becomes a cheaper source of meeting rising domestic demand depends decisively on government policies and public investment patterns. For example, state investment in rural electrification, roads and irrigation can provide cost advantages to local production and stimulate private investment. Farm lobbies representing the

interests of commercialised sellers (many of whom are influential urbanites in government and/or the private sector) may become quite powerful under this scenario and effectively lobby for public funds to be used in support of domestic food self-sufficiency to protect the nation against foreign competition and the vagaries of a volatile world food market.¹⁹

Concentration of agricultural land: This scenario may accelerate the pace at which wealthy and influential people in both urban and rural areas acquire prime agricultural land. Farm lobbies are increasingly being represented by medium-scale farmers, many of whom are educated people with urban-based jobs and who are relatively new entrants into commercialised farming (Sitko and Jayne, 2014; Jayne *et al.*, 2014a). Such circumstances appear to encourage efforts through the political process to convert large tracts of land from traditional tenure structures to statutory tenure systems where land can be privately owned through title deeds acquired through land markets. A skewed pattern of income growth confined to the top 20 percent of urban households would most likely increase their demand for land and accelerate pressures on the state to convert customary land to statutory tenure (where this process has not already been completed). Such changes in land tenure would accelerate already profound shifts in farm structure, featuring rising inequality in land distribution. The Gini coefficients of land distribution in African countries where data is available appear to be rising quite rapidly over time, are now much higher than those in green revolution Asia, and are in some cases approaching those of the latifundia agricultural systems of Latin and South America (Jayne *et al.* 2014a).²⁰

The impacts on farm productivity are unclear. New technologies may provide efficiency advantages to medium and large-scale farms. While the evidence to date shows an inverse relationship between farm size and efficiency over the range of one to ten hectares (for example Larsen *et al.*, 2013; Carletto *et al.*, 2013), there is very little evidence on efficiency differences between small, medium (20 to 100 hectares) and large-scale farms (over 100 hectares). In any case, the relationship between farm size and production efficiency is a reflection of prior policies and patterns of public investment (for example, water rights and irrigation investments having been made for the benefit of particular groups at the expense of others).

Greater income inequality: Greater concentration of both consumer demand and land ownership may restrict the breadth of economic growth in Africa, and retard the poverty-reducing benefits of whatever agricultural growth does occur (Ravallion and Datt, 2002). Most crucially, a form of income growth restricted to a narrow segment of society would diminish the income multiplier effects that otherwise might encourage more rapid and inclusive economic transformation.

Stubbornly high poverty rates: Greater concentration of land would be expected to contribute to landlessness and accelerate the rate of outmigration from rural areas experiencing land scarcity. Other things being equal, this would contribute to urbanisation. However, if the form of non-farm employment growth is not broadly based, it will be exceedingly difficult for the non-farm sector to absorb the 330

¹⁹ Despite producing questionable income distributional effects, this line of argument in favour of farm price supports above world market prices has been successfully employed in the past throughout Africa, first by colonial settler farm lobbies and more recently by their African successors (for example Jayne and Jones, 1997; Jayne, 2012).

²⁰ For example, the Gini coefficients of landholdings have increased in Zambia from 0.42 in 2001 to 0.49 in 2012, and in Ghana from 0.54 in 1992 to 0.65 in 2005 (Jayne *et al.*, 2014a).

million young Africans who will be entering the labour force between now and 2025 (Losch, 2012). This could be a politically volatile scenario (Beehner, 2007).

Agribusiness firms and investors: A continued rise in global food prices would be expected to elicit continued strong interest in large-scale land acquisitions by agribusiness firms and speculators, as well as domestic investors, especially for commodities priced at import parity levels. We might also expect large investment firms to approach domestic landowners (many of whom appear to be speculators and not experienced farmers)²¹ to engage in cooperative production schemes through land lease agreements, and so on. Such arrangements could promote major gains in agricultural production, though it is unclear whether this would be sufficient to keep pace with rising consumer demand without sustained public sector commitment and expenditures in support of farm productivity growth.

Rural communities/small-scale farmers: High food prices would provide incentives for small farmers to increase their productivity and expand their use of land. Intensified land pressures in densely-populated areas will make it difficult for many rural households to do either. A continuation of land allocations to medium- and large-scale investors will indirectly exacerbate land pressures in densely-populated rural areas by restricting the supply of unused land in other areas that would otherwise support voluntary rural-rural migration. Continued rural population growth and land subdivision will intensify land constraints in the more densely populated smallholder areas and contribute to forms of unsustainable intensification featuring land degradation. These can be reversed by aggressive state actions to put in place holistic programmes of soil rehabilitation and sustainable land intensification (Drechsel *et al.*, 2001; Powlson *et al.*, 2012; Tittonell and Giller, 2012).

Traditional authorities: High food prices coupled with a concentration of economic and political influence in urban areas would be anticipated to intensify pressures to convert land from customary to state titled land and hasten the demise of traditional governance systems in rural areas.

Scenario 2: Africa rises

Our second scenario assumes that per capita income growth will be relatively high and broadly based, and that global food prices will continue to rise over the next 10 years.

Urban elite: As with the latifundia scenario, we anticipate that rising incomes will hasten changes in food consumption patterns along the classic Engel curve. However, unlike Scenario 1, we anticipate that a growing proportion of this demand will be met by local industries as the more broadly based multiplier effects of broad-based income growth stimulate local investment at various stages of the food systems.

In terms of land acquisitions, increased disposable incomes and investment potential among urban households, combined with expectations of rising global food prices, are likely to increase the rate of new investment in land. Unmet demand for land will create pressures for conversion of land from customary to state titled land accessible through market purchases. However, unlike in the latifundia

²¹ See Sitko and Jayne (2014) for evidence in Zambia, and Schoneveld (2014) for Africa-wide evidence.

scenario, a broad-based pattern of urban income growth will generate growth multipliers that are both stronger and better distributed through the local economy. This would, in turn, allow rural household to remain in agriculture while gradually increasing the share of their livelihoods earned from rural non-farm employment, both through informal businesses and wage employment. Greater non-farm income-earning opportunities will also provide the capital to enable relatively productive smallholders to break through the barriers of subsistence agriculture into a more commercialised medium-scale stature. As a result, this scenario is likely to produce more equitable patterns of farmland use and more widely dispersed benefits to be derived from a high food price environment.

Urban poor: Broadly based growth in urban incomes will reduce the numbers of urban poor. Recent evidence indicates a long-term inverse correlation between food price levels and overall poverty, resulting from the multiplier effects associated with food production incentives (Headey, 2014). Urbanisation with income growth will result in more profound shifts in consumer demand patterns than in the latifundia scenario. In the latifundia case, demand expansion is driven mainly by population growth, meaning that more of the same commodities are demanded by more poor consumers. Major shifts in consumer preferences for quality, convenience and sanitary conditions for shopping occur only among a relatively small percentage of consumers who are experiencing significant income growth. In contrast, when urban income growth is broadly based, the composition of demand shifts as per Engel's Law in addition to greater demand for the same goods driven by population growth. This growing urban demand will stimulate a greater supply response in local production and private investment in the food system, contributing to efficiency gains and employment generation. Such investments may help local food production keep pace with domestic demand growth and hence mitigate the trend towards increased food import dependence as shown in Figures 1 and 2. High food prices may also become less politically sensitive with broad-based urban income growth, thus enabling more of the public budget to be shifted from general consumer food subsidies into other areas with greater payoffs to long-run productivity.

Rural communities/small-scale farmers: Under this scenario we anticipate that a greater number of smallholder farmers will be well positioned to meet the growing urban demand for food through informal markets. Improved market access conditions and increased private investment in food value chains will enable many of these farmers to adopt productive farm technologies, acquire more land and move away from subsistence farming towards commercialisation. Over time, some farm consolidation will occur as non-farm employment opportunities pull the more marginal farmers out of agriculture and into more remunerative non-farm jobs.

Agribusiness firms and investors: The interest of foreign investors will remain high, driven by strong demand growth through the food systems. Because income growth reaches further down to the urban poor, there will be greater incentives for investment by African entrepreneurs in the informal markets that cater to the shopping habits of the poor, as well as in the more modern aspects of the food system that are preferred by high-income consumers. Broad-based income growth will also raise the incentives for local business investments along the food value chain as the demand for all categories of food boosts demand.

Traditional authorities: The relevance of traditional authorities derives largely from their control over a stock of land to allocate to subjects, and the political power of those subjects in the modern state (Herbst, 2000). In some countries, traditional authorities have been stripped of their authority to allocate land through the conversion of customary land to statutory land. If smallholder farming is viable for many households residing in areas of customary tenure, this may stave off the pace at which customary land is converted to state titled land. The viability of smallholder farming is most likely to be decisive; if the returns to labour in smallholder agriculture become too low, there will be little incentive to farm, which then creates greater political pressure to change the tenure structure to enable others to take control of it. Agricultural policies and public expenditure patterns will largely determine the future returns to labour in smallholder agriculture.

Scenario 3: Slow and steady wins the race

Under the third scenario we assume a broadly based pattern of urban income growth (for example from investment and employment growth in industry and manufacturing) yet, unlike Scenario 2, global food prices remain relatively constant or decline.

Urban consumers: We would anticipate food demand patterns would shift in ways similar to those described for Scenario 2, with similar virtuous cycles and multiplier effects being created between income growth in towns and private incentives to invest at the various downstream stages of the food system. High-income household demand will be increasingly met by imported food as shown in Figure 1 because lower food prices may dampen the returns to investment in local production for crops without a clear competitive advantage vis-à-vis the world market. Low-income household demand will be met by local small-scale production and informal value chains, yet the returns to labour for those engaged in those sectors may be quite modest without significant public investment in support of infrastructure and agriculture (for example crop R&D, extension systems, soil health programmes, subsidisation of inputs needed to make inorganic fertilizer more profitable to use, etc).

Rural communities/small-scale farmers: The demand of international and domestic investors for agricultural land is expected to be lower under this scenario as a consequence of the relatively lower returns to agriculture in a low, world food price environment. Local informal/formal businesses may have less competition from international capital and the rate of investment and innovation in the food systems may be less dramatic than in Scenario 2, but still be favourable over the long run. These farm households will experience somewhat less competition from foreign investments in land. In other words, their access to land will not be as constrained as under Scenarios 1 and 2.

Foreign investors: The appetite for investment will decline as returns on investments fall. However, Africa will remain an attractive investment relative to the rest of the world owing to the rate of population growth and relatively broadly based income growth.

Traditional authorities: Lower world and domestic food prices are anticipated to reduce the competition for land from foreign investors and relatively wealthy urban people and slow down the dynamic changes in farm structure described in earlier scenarios. There will be less intense political

pressure to convert customary land to state title land. Consequently, traditional authorities may retain their influence in rural areas for a longer duration.

Scenario 4: Stagnation

As with Scenario 1 we assume a skewed distribution of growth in urban incomes and a constant or declining trend in global food prices relative to the general price level. While government policy decisions and the composition of its public investments are important in all cases, this scenario in particular may require a progressive and committed 'development state' to manage the transformation to a thriving and relatively egalitarian society.

Urban consumers: Under this scenario, the natural resource industries, such as oil and mining, will continue to be the main engines of growth with relatively small growth multipliers emanating from agrifood systems and little potential for employment expansion in urban areas. Unlike Scenarios 1 and 2, the savings of the urban elite will be directed towards either non-agricultural growth sectors, such as mining, or to off-shore banking and the like.

Rural communities/small-scale farmers: As in Scenario 1, continued rural population growth and land subdivision will intensify land constraints in the more densely-populated smallholder areas, with median farm sizes decreasing over the next 10 years. However, low agricultural prices may depress incentives to invest in sustainable agricultural intensification without major public programmes to address soil fertility issues in a holistic manner.

Agribusiness firms and investors: We anticipate a slow rate of foreign direct investment in food systems except perhaps in retailing. The phenomenon observed in Figure 1, whereby a high share of consumer food imports come from international markets, may characterise this scenario as well owing to the concentration of disposable income among a relatively narrow segment of high-income consumers. Low world and domestic food prices would also reduce the competition for land from foreign investors and relatively wealthy urban people and retard the dynamic changes currently being seen in land markets and farm structure.

Traditional authorities: As in Scenario 3, low food prices would reduce the intensity of the pressure put on the political system to pass sweeping land acts that convert customary land to state titled land. Traditional authorities would be likely to retain their influence in rural areas for a longer duration.

5. Conclusions

The take-away messages from this analysis are threefold. First, many 'megatrends' boldly identified as drivers of change in African agricultural systems are arguably highly dependent on other underlying processes which may or may not occur. Our projections for the future are highly contingent on the predicted time paths of numerous variables. Two such variables of central importance in the context of predicting the future of African food systems are the direction of future world food prices and the rate and breadth of income growth in urban areas.

A second conclusion is that the pace and force of some commonly identified megatrends are highly dependent on future policy and public investment decisions, and are hence malleable. We highlight this point as a counterpoint to analyses couched in terms of inevitable transformations. The risk of conceiving of global food systems as irreversible exogenous shocks on developing countries is to neglect the role of proactive public policy to moderate and shape the way international forces affect local agricultural sectors. Therefore, achieving socially equitable outcomes in food systems does not stop at technical solutions for getting the prices right, or the markets right (as important as these are), but fundamentally getting the political institutions and political processes right (Rodrik *et al.*, 2004) since these processes determine the policies and, in turn, the market and pricing outcomes. In response to views that the widening social inequality of the United States might be an inevitable outgrowth of capitalist economies, Stiglitz (2014) remarked that, "Widening and deepening inequality is not driven by immutable economic laws, but by laws we have written ourselves." While the question of how to get the political process right is obviously complex, situation-dependent and beyond the scope of this analysis, major features of such a process are that it is transparent, participatory and one that can be defended as reflecting the long-term interests of the majority.

Our third conclusion is that some of the most important trends currently shaping African food systems may continue only for a limited duration. This is both because they are part of a system that co-evolves with related processes that may assume new trajectories and because some can be bent by policy. Hence, we believe that 'foresighting' studies might be most useful if they would consider a range of plausible scenarios of the future in order to anticipate the various plausible challenges that African leaders might face. Our analytical framework considers four general scenarios contingent on the direction of global food prices and the pace and breadth of income growth in Africa's rapidly growing urban areas, given both the uncertainties and endogeneity of both to other important economic processes. A conclusion that is likely to remain constant no matter which scenario unfolds is that the creation of new jobs in the non-farm economy is unlikely to grow fast enough to absorb the rapidly growing young labour force. Because of this, smallholder agriculture will remain a fundamental safety valve for absorbing much of the new labour force into gainful employment (Losch, 2012) at least as a several decades-long intermediate stage in the region's economic transformation. While only a fraction of smallholder farmers currently possess the requisite entrepreneurial ability and productive assets to thrive, this sector still plays a crucial role in successfully managing the transition to a modernised Africa. It must remain viable at least over the next several decades for two reasons.

First, we must acknowledge that even in 2014, most African countries are primarily inhabited by unskilled and semi-skilled²² rural people who are primarily engaged in farming. While most rural people might wish to put down their hoes and walk into white collar office jobs tomorrow, their levels of education and skills will prevent this from happening quickly. Under such conditions, much greater public investment directed towards making two-hectare farms productive may have high payoffs. Secondly, the growth of non-farm sectors and employment opportunities will rely on effective demand. When a country's population is 60 per cent rural, it is difficult to generate effective demand for non-farm goods and services without at least some portion of the countryside having enough money to

²² At least with respect to the types of job skills being demanded in the modern and globalised economy.

participate in the cash economy. The literature on growth linkages indicates that the first-round beneficiaries of agricultural growth generate important multiplier effects by increasing their expenditures on a range of local off-farm and non-farm activities that create second-round benefits for a wide range of other households in the rural economy (Johnston and Mellor 1961; Mellor 1976). The extent and magnitude of these second-round effects depend on how broadly spread the first-round growth is. The distribution of land and other productive assets will clearly affect the size of these multipliers. If dynamic labour and services markets can be developed, then other employment opportunities should be easier to create in the very locations where the larger smallholders are investing and raising their output and productivity. Proactive public sector investment and policy support in developing these labour and service markets will be a key determinant of the magnitude of the growth linkages to be derived from agricultural growth. Education, which played a crucial role in Asia by allowing households to exit agriculture into more lucrative off-farm jobs, is relatively low in most areas of rural Africa by world standards. Investments in rural education and communications are likely to become increasingly important to facilitate structural transformation under any of the future scenarios envisioned.

So, what should governments do? While Dercon and Gollin (2014) rightly warn that the empirical evidence is often not strong enough to warrant confident prescriptions, governments cannot wait for academics to conclusively agree on the priority list. Governments are acting today, and to be useful, academics must provide guidance based on the weight of the evidence. To these authors, the priority list would look something as follows. First, invest strongly in the education value chain — from higher universities to vocational schools to primary and secondary education — to upgrade the skill levels of young people entering the labour force. Second, implement policies to promote broad-based agricultural growth, including investments in R&D that are scale-neutral, agricultural extension programmes, and programmes designed to restore long-term soil fertility. Third, invest in physical infrastructure (roads, ports and electrification) to reduce the costs of production in both industry and agriculture and thereby promote competitiveness and job creation. Fourth, institute an industrial policy that promotes private investment and job growth in local non-farm sectors, which simultaneously acts as a stimulus to investment in local agrifood systems (see Fan *et al*, 2008; EIU, 2008; and Fulgie and Rada, 2013 for evidence in support of these types of investments). And fifth, invest in urban planning (housing, sanitation, health facilities and green spaces) in anticipation of the near certainty that an increasing proportion of Africa's population will be living in urban areas in the decades to come.

These challenges are formidable but manageable. While private investment will largely determine the quality and pace of job creation in the region, it is the enabling environment and the underlying political process that determines the quality and pace of private investment. Hence the role of governance and institutions is decisive and will largely determine whether the region's economic transformation is a relatively smooth, robust and peaceful process or a painful and protracted one.

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