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Commercialising agriculture in Africa: economic, social and environmental impacts

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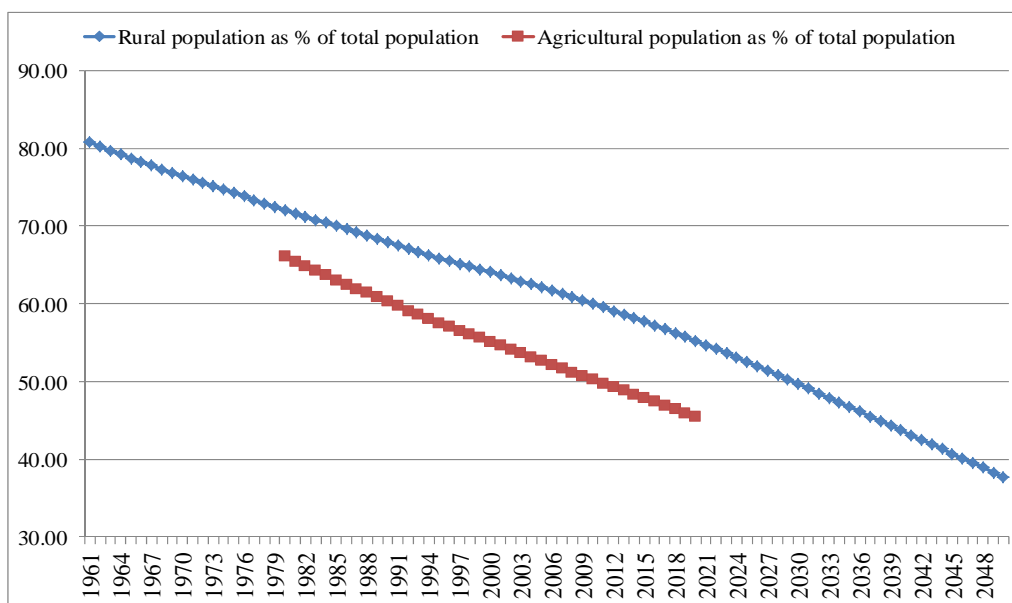
Abstract

The previous Presidential Addresses at the AAAE (Oluoch-Kosura 2007; Adesina 2010) both set out to tell a story about African agricultural development at large, rather than about one particular aspect of the sector, or one particular part of Africa. Both, in other words, tried to give a bird's-eye view without generalising to the point where it becomes meaningless. In this address, I try to follow in their footsteps. I start with a note on nomenclature: Africa is a large continent that is easily recognisable on maps. Sub-Saharan Africa is only a part of Africa, and we should stop outsiders using this as a descriptor of our continent. Furthermore, Africa is not a continent of HIV/AIDS, coups d'état, weak states and corrupt governments. It has all of these, but is a big place that has a lot of other, more positive, features. In this address I discuss elements of two issues that are important to the future of agriculture across the continent: the ways in which the structure of farming is expected to change over time, and the future shape of food retail. Section 3 concludes.

1. Food security in Africa: Availability

1.1 African agricultural production

Africa has long been regarded as the continent whose biggest problem was an inability to produce sufficient food to feed its population, despite the fact, it is averred, that some 70% of the population live in rural areas (World Bank 2013a) and some 32% of the GDP is produced in the agricultural sector (World Bank 2013b) – a sure sign of 'backwardness'. These numbers are wrong. Africa's rural population has dropped to below 60% of the total population (about the same level of urbanisation as Asia), while the agricultural population is less than half of the total population (Figure 1). At the same time, agriculture contributes 17% of the rapidly growing GDP of the continent (Table 1).



Source: FAOSTAT (2013)

Figure 1: The rural and agricultural population of Africa, 1961 to 2048

Table 1: Selected macroeconomic indicators for Africa, 2002 to 2011

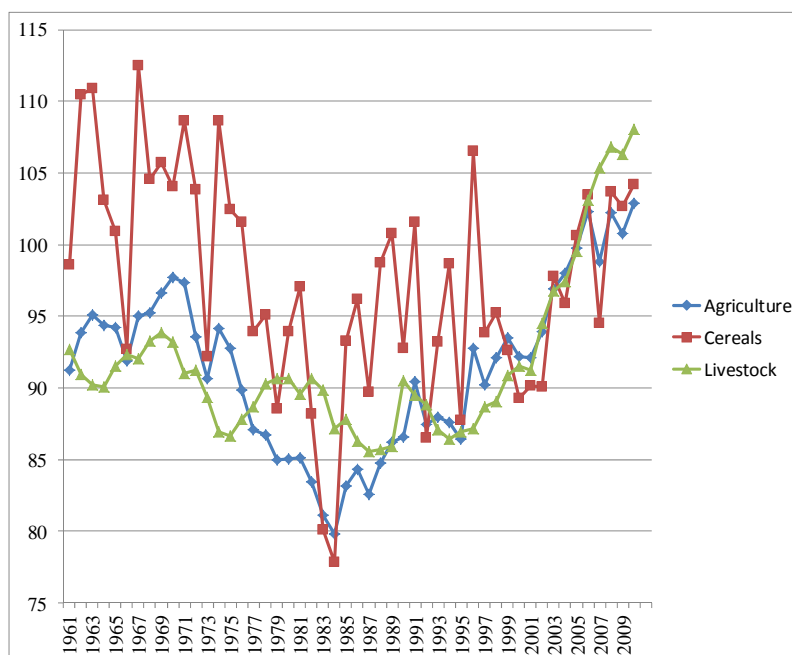
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Real GDP growth (annual %)	5.7	5.2	6.1	5.8	6.2	6.5	5.6	3.1	5.0	3.4
Real per capita GDP growth rate (annual %)	3.3	2.8	3.7	3.4	3.8	4.1	3.3	0.8	2.6	1.1
Agriculture, value added (% of GDP)	17.5	17.8	16.0	15.4	15.6	15.4	15.7	17.2	16.2	17.0
Exports of goods and services (% of GDP)	31.5	32.4	33.6	36.6	38.9	38.3	41.5	32.6	35.4	36.3
Imports of goods and services (% of GDP)	32.2	31.0	30.9	31.6	32.0	35.0	36.7	34.8	33.3	34.1

Source: AfDB (2013)

One of the key criteria for food availability in Africa is agricultural production per capita: whether this is total output, disaggregated by commodity type (field crops, horticulture and livestock) or by region, or whether food items are considered separately. Unfortunately, there is a lot of biased presentation of these data. Table 2 provides some examples, while Figure 2 provides the evidence.

Table 2: Perceptions of per capita agricultural production in Africa

What they say	Who says it ...	The truth ...
This is the only continent where agricultural production <i>per capita</i> has been decreasing for the past 30 years.	Sasson (2012)	On an index basis, agricultural production has increased from around 80 in 1985 (2004/2006 = 100) to 105 in 2010.
Per capita food production in sub-Saharan Africa declined precipitously between the early 1970s and the mid-1980s. While there has been modest recovery over the past fifteen or so years, per capita food production in sub-Saharan Africa remains almost 20% below the levels observed thirty years ago.	Abdulai, Barrett and Hoddinott (2005)	The first sentence is correct, if over-dramatic. The rest is not correct: by 2005, per capita production was in the process of returning to the highest levels of the period 1961 to 1975 after decades of destabilisation by the superpowers.
Consequently, comparisons of per capita production performance across continents during the past 45 years reveal deteriorating agricultural performance in Africa alone ...	Haggblade and Hazell, (2010)	Figure 1 shows increasing per capita agricultural production after 1984; the trend for food production is the same.
... in Africa, per capita production fell back from the mid-1970s and has only just reached the same level as in 1961... Production data per capita ... indicate that the amount of food grown on the continent per person rose slowly in the 1960s, then fell from the mid-1970s and has only just recovered to the 1960 level today ...	Godfray <i>et al.</i> (2010) Also Pretty <i>et al.</i> (2011)	This is correct, but only if “only just” means 1996 (see Figure 1).
But cereal output per capita fell 13% in sub-Saharan Africa while increasing 44% in Asia and 48% in South America [1961 to 2010]. Livestock production has more than doubled in most African sub-regions, but only in West Africa has production per capita risen [1961 to 2010].	UNDP (2012)	Neither of these statements is true (see Figure 2). The decline in all three indexes between 2010 and 2011 is purely because Sudan was excluded in the latter year, and the apportionment between Sudan and South Sudan had not yet been made. Switching from sub-Sahara to Africa changes the magnitudes, not the trends. Disaggregating by region shows that per capita livestock production started increasing a decade later than total agricultural production, but it has increased in all regions since the mid-1990s.
... national estimates of cereal crop productivity show how, after decades of stagnation during the Asian green revolution, African yields have grown steadily over the past decade, so that estimated cereal grain output per capita now equals that of South Asia.	Masters (2011)	He gets it right.



Source: FAOSTAT, 2013

Figure 2: Gross per capita agricultural production in Africa, 1961 to 2011 (2004/2006 = 100)

Table 3 compares the index of per capita agricultural production in 2010 over that of 1961. Ten countries have seen per capita output increase by more than 50% (in Morocco it doubled over this period). Egypt, the second largest producer on the continent, counts among these. A further 14 countries, among them Nigeria and the former Sudan (the largest and fourth largest producers respectively), have seen per capita production grow by between 1% and 50%. Cumulatively, countries that produce more than three quarters (78%) of the continent's agricultural output, and have almost 70% of the continent's population, have seen positive per capita agricultural output growth. Each of the 28 countries where per capita agricultural output growth has shrunk has different reasons for its failure – sometimes home grown (Zimbabwe), and sometimes because of interference from outside (the DRC).

Table 3: Trend in African per capita agricultural production, 1984/1986 to 2008/2010

Increase (2010/1961)	Number of countries	Examples	Share of agricultural output (%)	Cumulative (%)	Share of population	Cumulative (%)
> 50%	10	Egypt	28.45	28.45	22.02	22.02
Positive, < 50%	15	Nigeria, Sudan	49.22	77.67	47.87	69.89
Negative, < 15%	5	South Africa	8.28	85.95	6.4	76.29
Negative, > 15%	23	Zimbabwe, DRC	14.05	100	23.72	100

Source: Adapted from FAOSTAT (2013)

Table 4 looks at the same phenomenon from a different perspective. There were five African countries among the world's fastest growing economies measured by growth in agricultural production in the period 1961 to 2011. The three-year average output around 1961 and 2011 was taken in order to accommodate weather impacts on farm output. These five countries produced just 1% of the output of all 25 fastest growing countries. However, when the change since 1985 is measured (where 1985 is the year in which per capita agricultural production started to increase across the continent), there were 12 African countries in the top 25. These included Nigeria, Egypt and the former Sudan, the continents' largest, second largest and fourth largest agricultural producers. These countries produced 11% of the total production of the top 25 countries. Similarly,

when growth is considered over the 1961/1963 period, there were three African countries that produced a mere quarter of a percent of the total for the 25 weakest growth countries. When measured over the period from 1984/1986, this reduces to two the countries that produced only 0.02% of the total agricultural output for that group. Most African countries have shown respectable average rates of growth in agricultural output since the mid-1980s. African agricultural growth has mostly been impressive over the past almost three decades, and gives every sign of accelerating.

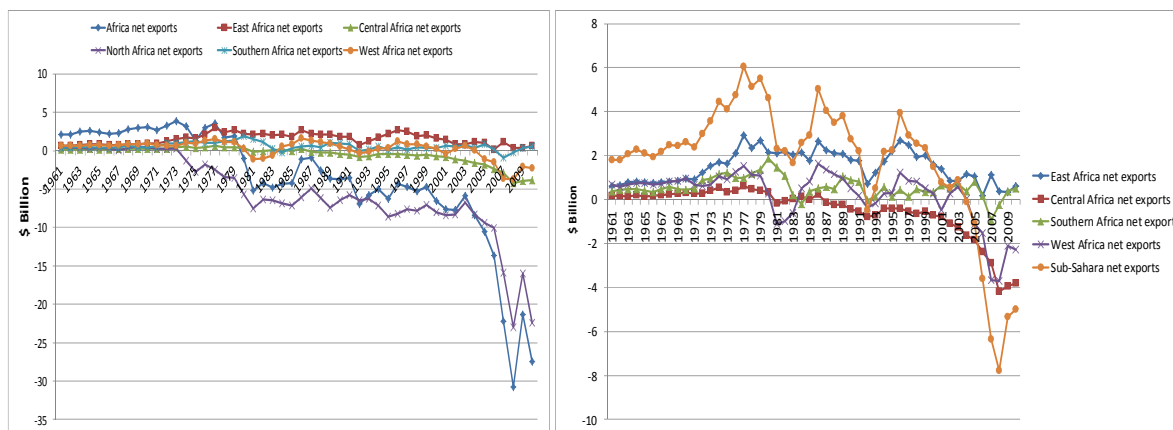
Table 4: African agricultural growth in comparative perspective

Category	Number of countries	Share of output
Number of African countries whose growth in agricultural output has been among the world's 25 fastest since 1961/1963	5	1
Number of African countries whose growth in agricultural output has been among the world's 25 slowest growing since 1961/1963	3	0.26
Number of African countries whose growth in agricultural output has been among the world's 25 fastest growing since 1984/1986	12	11
Number of African countries whose growth in agricultural output has been among the world's 25 slowest growing since 1984/1986	2	0.02

Note: Output measured as gross production value (constant 2004-2006 1 000 I\$) (1 000 Int. \$)

Source: FAOSTAT (2013)

The views on food imports into Africa are just as pessimistic. Net agricultural exports from the continent have declined and have been negative since the early 1980s, but this is largely because of the import surge from North Africa. While the continental deficit of imports over exports is in the region of \$30 billion, more than two thirds of this is of North African origin. The rest of the continent saw negative net imports for the first time in around 2004, and the lowest level (around \$7.7bn in 2008) still represents only 3.5% of total agricultural production, given that annual average output between 2005 and 2009 was in the region of \$220bn.



Source: FAOSTAT (2013)

Figure 3: Net agricultural exports from Africa, 1961 to 2010

1.2 Farm size and efficiency

The ‘modern’ debate on the relationship between farm size and efficiency dates back at least to Sen (1962, 1964, 1966), who argued that, in the absence of a labour market and/or the presence of unemployment, there are too many (unpaid) workers on ‘peasant farms’ (those who use family labour) as opposed to ‘capitalist farms’ (those who use hired labour). As a result, the former will produce more output per unit of land, while the latter will produce more per worker. Sen (1966) traces this argument back to Bauer (1948), and even further back to the writings of Lenin (1893). He also acknowledges the influence of Schultz (1964) with his ‘poor but efficient’ hypothesis.

Similarly, Eastwood *et al.* (2009), in Volume 4 of the *Handbook of Agricultural Economics*, argue that, because there are transactions costs, "... efficient farm size is not independent of household endowments of labour and capital". If labour supervision costs are so high that only family labour is used, "...efficient farm size increases with the number of family members of working age". A similar argument is followed in the case where households have working capital with little opportunity cost. But, under normal conditions, Eastwood *et al.* agree with Berry and Cline (1979) and a host of others, who find strong empirical support for an inverse relationship between farm size and efficiency. This then is used as a major argument in favour of redistributive land reform, and in some circles anyone who critiques the inverse relationship is regarded as being opposed to land reform – this has certainly been the case in South Africa since 1994.

Table 5 provides some quotes from this genre over the past decade.

Table 5: Perceptions on the inverse relationship in Africa

Quote	Source
... we've reviewed the data from every country for which it's available, comparing the productivity of smaller farms versus larger farms... For every country for which data is available, smaller farms are anywhere from 200 to 1,000 percent more productive per unit area.	Multinational Monitor (2000)
We calculate partial land and labor productivity, total factor productivity, and technical efficiency scores ... for the two categories of small individual farms and large corporate farms. Our results demonstrate with considerable confidence that small individual farms in Moldova are more productive and more efficient than large corporate farms.	Lerman and Sutton (2006)
There are two potential reasons for this: 1) inverse-productivity analyses routinely show that small farms tend to be more productive than larger farms ...	Sitko and Jayne (2012)

The critique against this literature has taken three forms that are of interest here, namely a) the problem of missing variables; b) a bias against any literature that does not show a strong inverse relationship; and c) the issue of what happens beyond the farm gate.¹ The most obvious missing variable is soil quality. Especially in Africa, with its ancient soils, soil quality differs even across small distances. At the one extreme, more is produced per hectare on small irrigation farms than on large cattle ranches, regardless of who farms them and with what mode of production. At the other extreme, even in a single irrigation scheme too little is known about the carbon, nitrogen and potassium in the soil, for example, as well as soil pH, to be able to assess soil quality. It is no wonder then that the literature is ambiguous on the impact of these factors once measured: some argue that it turns the inverse relationship around, some that it leaves it scale neutral, and some that it only weakens it but does not disprove it (e.g. Carter 1984; Heltberg 1998). Unfortunately there is too little literature on how to measure soil quality in a manner that makes it amenable to techniques of economic analysis.

Feder (1985) argued that the reason for the inverse relationship should rather be sought in the fact that small-scale farms tend to rely on family labour and that the supervision costs of hired labour are high, giving family farms a (transaction) cost advantage. In this same regard, the World Bank recognises that the productivity advantage has more to do with the greater effort of family labour and management than with the size of the farm (World Bank 2009). Family farms are defined in the *Handbook* as farms on which family labour contributes at least a third of the permanent labour. The problem with this argument is that it fails to work with any recognisable definition of family labour, something that is especially relevant among poor people, where their extended families are

¹ The arguments about the impact of the Green Revolution on scale economies (as a land-augmenting technical advance) and the possibility of scale economies in on-farm processing (largely with plantation crops) are not included here.

changing composition all the time. It also fails to recognise that the use of family labour has much to do with highly problematic intra-family relationships of dominance and power (e.g. Doss 1999; De Lange 2010; Thorsen 2012), and should hardly be advocated by aid agencies as a solution to agricultural problems. After all, the ILO estimates show that a large proportion of the world's forced labour is to be found in agriculture (ILO 2012), and child labour has been closely associated with poverty (Basu *et al.* 2010).

Another missing variable that gets less attention in the literature is management quality. An early example is Van Zyl (1995), who showed that ALL large commercial grain farms in his South African sample were relatively efficient, while only SOME small-scale commercial grain farms were efficient (with the latter **on average** slightly more efficient than the former, despite the wide variation in TFP scores for the smaller farms). Eastwood *et al.* (2009) recognise management as a 'lumpy input' because the farm owners need to be remunerated for their work on the farm. In the presence of an active market for skilled workers, the best managers will exit from farming unless they can earn an owners' remuneration above their opportunity cost. Under these circumstances, restrictions on operating size will result in an exodus of good managers from the industry. It is for this reason that Eastwood *et al.* (2009) argue that family farms tend to get larger and to lose their efficiency advantage as economic development takes place.

As with land, the quality of management is also an important missing variable that receives little attention in the literature. Using years of schooling as a proxy is just not good enough, especially given the large management literature in this genre, starting with Drucker (1955).

Of course, if anyone were to attempt to measure the inverse relationship empirically and they were to correct for differences in the quality of land and of management, they would still be assuming that farming requisites (seed, fertiliser, etc.) and working capital (tractors, animals) were of homogeneous type and quality, over and above the usual economists' assumptions that they are perfectly divisible and perfectly substitutable.

The second main problem with this literature is that it tends to ignore any empirical work that does not find strong evidence of the inverse relationship. Four examples, from commercial wine grape farmers in South Africa to small-scale farmers in Burundi and India, suffice to illustrate that such evidence does actually exist.

Townsend *et al.* (1998) found that most commercial wine grape producers in South Africa operated under constant returns to scale, with a weak inverse relationship between farm size and both land productivity and total factor productivity. However, the relationship is not always negative and differs between wine-producing regions. Foster and Rosenzweig (2011) model the agency cost advantage of small-scale farmers that results from family workers, and accommodate the advantages of contiguous land area and lower credit costs for those who own land. They find that small farms have lower unit labour costs, but that large farms use less labour per unit of land, are more mechanised, and are more efficient when the shadow price of labour is taken into account. In India, Rawal and Swaminathan (2011) used survey data across seven agro-ecological regions and showed that the inverse relationship does not hold. In their case they measured gross and net farm incomes across different economic sizes of farm household units, with the latter measured in terms of the value of the means of production, level and sources of income, and pattern of labour deployment rather than land size. Verschelde *et al.* (2012) analysed the relationship between 640 mixed-cropping farm households in Burundi. While the inverse relationship is not rejected, returns vary substantially with farm size. They also find a positive relationship between food security and farm size, but it is not clear in what direction the causation works. These authors generally also argue against policies that will result in increases in farm size in the absence of alternative

employment opportunities, or opportunities to hold and build assets. Finally, Allen and Lueck (1998) showed the conditions under which some farms are expected to gravitate towards factory processes, based on a trade-off between the gains from specialisation and moral hazard.

Nevertheless, the general sentiment of the *Handbook* (Eastwood *et al.* 2009) is that the inverse relationship holds in most circumstances, that soil quality does not matter all that much, and that management quality is not an issue in poor countries where the opportunity cost of skilled people is low. What is important is that land reform should take place, especially in countries where there is a highly skewed distribution of land holdings.

However, this fails to take into account the third main critique of the debate on the inverse relationship, namely that larger farms face lower transaction costs in accessing farmer support such as financial services, farming requisites, new technologies, market information, and market access. The possibility that small farmers will be excluded from access to supermarkets was first raised by Dolan and Humphrey (2000) in the context of Kenyan farmers supplying supermarkets in Europe. Neven *et al.* (2009) considered whether this was also true of supply to domestic supermarkets in Kenya, where agriculture is dominated by small farmers. They found that there is a threshold of capital required to get into this fast-growing market, and that most of the farmers who have succeeded are a new cohort of 'medium sized, fast growing commercial farms managed by well-educated farmers' who rely on hired workers. Similarly, Rao and Qaim (2011) show that farmers in Kenya who supply fresh produce to supermarkets benefit by gains in per capita household income of 48%, and that smaller and poorer farmers benefit disproportionately. They then argue that small farmers require access to infrastructure and institutional support to exploit these potential gains, but do not specify who should deliver the support.

These three studies from Kenya are part of an emerging literature that, for the first time in a long while, is looking at the agrarian structure across Africa, at the ways in which this is changing, and at the pathways by which these changes are influenced by the wider environment, and specifically by public policy and private action. Deininger and Byerlee (2012), for example, argue that the operational size of farms across the continent may be more flexible than previously believed (arguably, therefore, that it may be more susceptible to being influenced by changes in the environment, including government policy), and that a wide range of farm sizes can be globally competitive – not only large farms, or not only small farms. Poulton *et al.* (2010) point out that smallholders face difficulties in gaining access to support services such as farming requisites, markets, the results of research etc., and that the incentives for commercial delivery are not the same for farmers producing staples, cash crops and high-value fresh produce.

This research has two main implications in terms of this discussion. First, there do not seem to be any empirical studies that compare the cost advantages of small-scale farms that result from the assumed increased effort of family labour and high cost of hired labour supervision on the one hand, and the lower costs of market access for large farmers on the other hand. Even if small farms are more efficient than large farms up to the farm gate, public policy that fails to support market access for small-scale farmers will leave them vulnerable to food insecurity. Second, the inverse relationship, attempts to prove its existence, and its usefulness in addressing issues of agrarian structure in the African context must be questioned. At best it may be true that it exists in non-functional economies where there are no labour markets and where farms use either family or hired labour (not both) and where market access is not an issue. What we really need to know more about is the complex relationship between public policy, private actions and agrarian structure, and how this relationship can be used to better effect in the process of transforming traditional agriculture. A good start is the recent OECD publication by Brooks *et al.* (2012), who model the impact of the high transaction costs of market participation together with market linkages between rural producers

and consumers, the multiple role of farm households as both producers and consumers of food crops, and the imperfect convertibility between different land uses.

The debate on the inverse relationship is somewhat stale and does not really provide any useful information to policy makers. As researchers in the pathways of agricultural development we have failed to throw much light on what kinds of households are blessed with greater effort and lower supervision costs, under what circumstances an inverse relationship would be expected to hold and then to disappear (but see Hazell 2011), and how the off-farm transaction cost advantages of large-scale farmers compare with the on-farm transaction cost advantages of small-scale family farmers. Even worse, we ignore the reality that most farms use both family and hired labour and that these farms can get quite large, and we perpetuate a dichotomy between small-scale farmers and corporate, industrial factory farms as if the ‘missing middle’ is inevitable and immutable.

2. Food security in Africa: access

2.1 The supermarket revolution continues

Almost a decade ago, Weatherspoon and Reardon (2003) asked:

Why are we writing about supermarkets – traditionally viewed by development researchers, policymakers, and practitioners as the rich world’s luxury and place to shop – in the context of one of the poorest regions in the world? It is because in the past 5-10 years there has in fact been an extremely rapid rise of supermarkets in parts of Eastern and Southern Africa, and the same process appears set to take off in the balance of that sub-region.

The truth is that things are changing even more rapidly than they predicted. The McKinsey Global Institute (2010) and the Centre for Global Development reports (Radelet 2010) are well known. More recently, Devarajan and Fengler (2013) have confirmed that high rates of economic growth are transforming the continent:

- Twenty states in sub-Saharan Africa that do not produce oil managed average GDP growth rates of four percent or higher between 1998 and 2008
- Private capital flows are now \$50 billion a year and exceed foreign aid, which was less than \$30bn in 2009 (Barrett 2009: 20, citing OECD data).
- Since 1996, the average poverty rate in sub-Saharan African countries has fallen by about one percentage point a year
- Between 2005 and 2008, the portion of Africans in the region living on less than \$1.25 a day fell for the first time, from 52% to 48%
- If the region’s stable countries continue growing at the average rates they have enjoyed for the last decade, most of them will reach a per capita gross national income of \$1 000 by 2025, which the World Bank classifies as ‘middle income’

It is evident from Tables 6, 7 and 8 that more than a decade of high and sustained economic growth across Africa has been accompanied by growing investment in food retail outlets.

Weatherspoon and Reardon (2003) reported that Shoprite had 77 retail stores in 13 African countries (excluding South Africa) in 2002. A decade later, this had increased to 168 stores in 18 countries (see Table 6)². In the earlier period, Pick n Pay was reported to have 79 stores in four countries (including 53 stores in Zimbabwe through its 25% shareholding in TM Supermarkets).

² By August 2013 this had increased to 193 outlets, or by a store every two weeks.

This shareholding has since been increased to 49%, and the stores are being rebranded to the Pick n Pay name (Biz Community.com 2012). Pick n Pay now has 90 stores in eight countries (Table 6). Spar South Africa is licensed to operate in Botswana, Mozambique, Namibia and Swaziland in addition to South Africa, and has 57 outlets in these countries (Table 6). Spar also operates in Angola, Mauritius, Zambia and Zimbabwe under separate licenses (included in Table 6).

Table 7 shows the split between investment by South African retailers in the neighbouring Botswana, Lesotho, Namibia and Swaziland (BLNS countries), i.e. within the Southern African Customs Union (SACU) as opposed to investment further afield. The BLNS countries are small – their combined population is little more than half that of Zambia or Zimbabwe, but some 40% of the stores are in these countries, with Namibia making up more than half these stores.

Table 6: Investment by South African and Kenyan retailers in African markets

Country	Stores	Year first opened	Number of stores	Sub-totals	Cumulative total	
Angola	Shoprite Group	2003	14			
	Spar		26	40	40	
Botswana	Shoprite Group	1998	8			
	Pick n Pay		9			
	Woolworths		21			
	Spar		26	58	98	
DRC	Shoprite Group	2011	1	1	99	
Ghana	Shoprite Group	2003	3			
	Woolworths		1	4	103	
Kenya	Woolworths		7			
	Nakumatt		30			
	Uchumi		21			
	Tuskys		37	85	188	
Lesotho	Shoprite Group	1997	8			
	Pick n Pay		1			
	Woolworths		1	10	198	
Madagascar	Shoprite Group	2002	7	7	205	
Malawi	Shoprite Group	2001	5	5	210	
Mauritius	Shoprite Group	2002	3			
	Pick n Pay		2			
	Woolworths		1			
	Spar		7	10	220	
Mozambique	Shoprite Group	1997	8			
	Pick n Pay		1			
	Woolworths		3			
	Spar		1	13	233	
Namibia	Shoprite Group	1990	71			
	Pick n Pay		17			
	Woolworths		5			
	Spar		26	119	352	
Nigeria	Shoprite Group	2005	5			
	Woolworths		2	7	359	
Rwanda	Nakumatt	2008	3	3	362	
Swaziland	Shoprite Group		9			
	Pick n Pay		10			
	Woolworths		4			
	Spar		4	27	389	
Tanzania	Shoprite Group	2001	3			
	Woolworths		4			
	Nakumatt		2011	1		
	Uchumi		2	10	399	
Uganda	Shoprite Group	2000	3			

	Woolworths		3		
	Nakumatt	2009	5		
	Uchumi		4		
	Tuskys		5	21	420
Zambia	Shoprite Group	1995	20		
	Pick n Pay		4		
	Woolworths		3		
	Spar		7	34	454
Zimbabwe	Shoprite Group	2000	1		
	Pick n Pay		50		
	Spar		69	120	574
South Africa	Shoprite Group	1979	1091		
	Pick n Pay	1967	847		
	Woolworths	1931	370		
	Spar		859	3167	3741

Notes:

- Shoprite Group refers to Shoprite, Checkers, Usave and OK stores
- OK Bazaars, the genesis of the Shoprite Group, was incorporated in 1929
- SPAR South Africa operates under a license agreement with SPAR International in Amsterdam. This license agreement covers South Africa, Botswana, Namibia, Swaziland and Mozambique (SPAR 2011)
- These data include only self-reported foreign investments by South African and Kenyan retailers, with the exception of the home country investments of these retailers in South Africa and Kenya respectively. The density of supermarket penetration in both countries is thus underreported, as there are supermarkets there with no regional footprint.

Sources: Shoprite (2013); SPAR (2011); Tuskys (2012); Uchumi (2012); Wikipedia (2012)

Table 7: Investment in SACU vs. further afield by South African retailers

	Shoprite	Pick n Pay	Spar	Woolworths	Total
BLNS	72	37	56	31	196
Rest of Africa	96	57	110	24	287
Total	168	94	166	55	483
% in BLNS	42.86	39.36	33.73	56.36	40.58

Sources: Shoprite (2012); SPAR (2011); Tuskys (2012); Uchumi (2012); Wikipedia (2012)

Table 8 rounds off the analysis by showing the store density per country and region. In South Africa there is one store for every 16 000 people, as opposed to one per 875 000 people in the rest of the sub-continent, although Nigeria with its one store per 23 000 000 people distorts the average. These are crude measures (they ignore domestic supermarkets, they aggregate different store sizes, etc.), but they do convey some idea of the vast potential that exists in this sector.

Table 8: Store density in Africa

Country	Number of stores	Population	Population per store
Angola	40	20 163 000	504 075
Botswana	64	2 053 000	32 078
DRC	1	69 575 000	69 575 000
Ghana	3	25 546 000	8 515 333
Kenya	95	42 749 000	449 989
Lesotho	10	2 217 000	221 700
Madagascar	7	21 929 000	3 132 714
Malawi	5	15 883 000	3 176 600
Mauritius	13	1 314 000	101 077
Mozambique	13	24 475 000	1 882 692
Namibia	119	2 364 000	19 866
Nigeria	7	166 629 000	23 804 143
Rwanda	3	11 272 000	3 757 333
Swaziland	27	1 220 000	45 185
Tanzania	10	47 656 000	4 765 600
Uganda	20	35 621 000	1 781 050
Zambia	34	13 884 000	408 353
Zimbabwe	120	13 014 000	108 450
Africa excluding South Africa	591	517 564 000	875 743
South Africa	3167	50 738 000	16 021
SACU excluding South Africa	220	7 854 000	35 700
Total	3758	568 302 000	151 225

Sources: Shoprite (2012); SPAR (2011); Tuskys (2012); Uchumi (2012); Wikipedia (2012)

In the modern retail sector, food suppliers take their product to a distribution centre of a supermarket chain, from where the produce is sent to the individual stores. This includes dry goods from food processors and wholesalers, as well as fresh produce from farmers, which is often already packed, labelled and bar-coded. In South Africa, for example, Shoprite Checkers operates distribution centres in all the major cities, while in the rest of Africa they still make use of smaller logistics centres and warehouses. Major distribution centres are currently being planned in Luanda, Angola and Lagos, Nigeria (Road Ahead 2012). It is the adoption of this more centralised distribution strategy, the information technology that goes with it and the proper management of these assets that made it possible for Shoprite Checkers to overtake Pick n Pay as South Africa's largest retailer (Davids 2012). As Davids argues: "An investment of R100 in Pick n Pay from calendar year 2000 would have grown to R733 (including dividends) by the end of April 2012. In contrast, an investment in Shoprite would have grown to a staggering R2 843 (also including dividends)."

2.2 Traditional markets and alternative food networks

Africa's middle class is growing rapidly and consumption expenditure is also growing rapidly across the continent, and these changes are driving changes to the supply chains that link farmers to consumers locally and further afield. An understanding of how these supply changes operate, and how they are changing, is fundamental to understanding how this demand for food is going to translate into structural changes in the agricultural sector, and hence in the wider economies of Africa. Understanding how these supply chains work also means greater recognition of the need for multidisciplinary, problem-solving research in collaboration with disciplines as disparate as logistics and engineering. In this process there are three mistakes that we should avoid:

- We should not confine a discussion on the future of supply chains in Africa to the role that supermarkets are playing in their development. Important as they are in managing supply chains and as a fast growing segment of food retail, supermarkets still make up less than 5% of food retail sales. Diaz *et al.* (2012) place Nigeria amongst countries characterised by

“predominantly traditional markets”, where small proprietors constitute 97% of the retail market, and South Africa amongst those with “predominantly modern markets”, where modern trade accounts for more than half of sales.³ Jayne and Anriquez (2013) argue that even in Kenya with its relatively modern retail sector, traditional outlets are responsible for 97% of food retail. Tessier *et al.* (2010) warn that people often use more than one form of retail outlet according to their shifting needs for convenience, entertainment and low prices, so that growth in per capita income and in disposable income will not automatically translate into supermarket sales. Similarly, Abrahams (2009) and Crush and Frayne (2011) caution against over-optimism about the speed of the spread of supermarkets, and also caution against their potentially disruptive impact on traditional forms of retail.

- We should recognise the important role of traditional markets, but they should not be homogenised, nor should their role be relegated to that of a residual. Traditional markets cover a wide spectrum of formal and informal activity in urban and in rural areas, and in different forms across different countries. As stated above, supermarkets do not merely replace traditional markets. People who buy at supermarkets do not stop patronising traditional markets, and so they remain an important component of the retail landscape.
- While Africa is not commonly associated with alternative food networks, people across the continent have also shown a growing interest in all the components of ‘food away from home’, including the hospitality industry (restaurants and catering), fast foods and institutional food (military, prisons, hospitals, hotels) etc. There is virtually no research on this phenomenon in developing countries in general (but see Gómez *et al.* 2011), and none in Africa, even though there are an increasing number of examples of activity in this arena across the continent (see Mulupi 2013). These alternative food networks also include a focus on high-value products, usually lightly processed products with a distinct identity (e.g. organic, FairTrade, local and quality, premium specialty foods) that go directly from the farm to the consumer in various forms of physical marketplaces: slow food, local food, fresh food markets, etc. (Goodman & Goodman, 2007). Variants of these markets have become commonplace in most cities and towns in South Africa, while the formal slow food movement has a presence in nine countries across the continent (Bakewell-Stone 2009).

3. Conclusion

The main message of this Address has been that we need to change the focus of Agricultural Economics research in Africa. Table 9 shows that the language and regional distribution of papers follows a predictable pattern, favouring the place where the conference is being held. It also shows, unfortunately, that some 85% of the almost 500 papers submitted as contributed papers to the last two conferences of our Association address farm-level production issues, while most of the rest address micro-level consumption and consumer issues and only a small minority include more than one country.

Table 9: Subject matter research in Agricultural Economics in Africa

	2010 Conference	2013 Conference
Papers submitted	199	294
French language %	8.04	11.22
East Africa: %	28.64	29.93
North Africa: %	3.02	5.44
Southern Africa: %	34.17	17.69
West Africa: %	34.17	44.22
Multi-country studies: %	2.01	6.12
Farm level production: %	87.44	84.01

³ It can be assumed that this refers to retail of ‘food from home’ only.

In my experience in dealing with these papers on both occasions, and from managing the flow of articles submitted to our Journal, I have found that almost all of the papers address small farmer issues but never define what a small-scale farmer is. Similarly, there is a growing literature (mostly from outside of the continent) that says that its focus is commercial farming but that ends up addressing corporate, industrial-scale farming.

To my mind, this brings into question the validity of the input that academic agricultural economists in Africa and elsewhere are making to real-world policy debates, policy formulation processes and implementation. This in turn begs the question: what kind of policy-relevant research should agricultural economists be doing? I believe the following priority areas should be on the agenda:

1. We need to know more about the different modes of production that actually exist and about how they are changing. Without such knowledge we can make no contribution to the vital decisions that have to be made around where hard and soft infrastructure should be placed, what types of infrastructure, and how it should be maintained.
2. We need to know more about how the changes that are affecting agriculture globally and across the continent (food and energy prices, urbanisation, and growth in disposable income, etc.) play out at regional and sub-regional levels as opposed to only at country level. Because agricultural economists are not focussing on these issues, our voice has largely been missing in the design of regional integration schemes.
3. We need to understand how the private sector in agriculture envisages the future of markets for their products and services (input suppliers, processors, distributors and retailers of outputs, and suppliers of services throughout the many value chains across the continent). It is becoming clear that agricultural change is being triggered by the interaction between government action (e.g. fertiliser subsidies) and private sector provision, and these relationships need to be understood if they are to be turned to the advantage of broad-based development.
4. Finally, we need to know more about how the provision of farmer support services can be used to bring the advantages of broad-based development to the poorest and most vulnerable sections of society. It is clear that large-scale farmers will benefit most in the absence of public provision (or at least participation) of support services, as they can afford to buy their own support. Public intervention must help to afford smaller farmers access to markets, to input supplies, to the results of research, etc., and agricultural economists need to be able to provide advice on the best ways of doing this, rather than just shoot down any thought of subsidies and other forms of direct support.

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