Structural Transformation, Employment Creation, and Labor Markets: the implications for poverty reduction in sub-Saharan Africa

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Abstract

In this paper we review the evidence for the links between structural change and poverty reduction in Sub-Saharan Africa. The recent revival of growth in these economies is placed in a longer run context and contrasted with the patterns of more sustained growth that have characterised other countries. It is argued that this growth revival has been associated with some, but very modest, reductions in poverty rates. The extent of structural change over the period since 1980 is documented and it is shown that together with a decline in the share of agriculture in GDP has been an accelerating decline in the share of manufacturing within industry. The possible links from this pattern of structural change to employment creation and the implications for the effects of growth on poverty reduction are then examined. It is argued that the problem lies not in differences in returns across sectors but in a common finding within both the rural and urban sectors of SSA that investment rates are low in high return activities.

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1. Introduction

In his classic study of economic growth Simon Kuznets (1966) suggested generalised patterns of structural change which were an intrinsic part of the growth process. Broadly the key patterns were the rise of an industrial sector at the expense of agriculture, the growth of urban relative to rural areas and the rise of factory based wage employment. The problem was seen as one where the long run of almost zero growth was replaced through a series of stages to take-off, Rostow (1969), into sustained growth rate of some 2 per cent per annum. Given the time he was writing it was the OECD countries which formed the empirical framework for this analysis and Figure 1 shows these countries (classified as Industrial) together with three more recent candidates for Kuznetsian growth – Brazil, China and India. For all there are very clear breaks in their trend growth rates and no sign that this process has not been sustained after the break (in the early 1800s for the industrial countries, for the latter 1800s for Brazil and after the 1970s for India and China). Figure 2 shows three examples of what I have termed non-Kuznetsian growth – sub-Saharan Africa (SSA) (which excludes South Africa), the Middle East and North Africa, and Latin America excluding Brazil. While there have been long periods of rising incomes this growth has not been sustained in the same way as the pattern shown in Figure 1. It is clear that long run steady, and sustained, growth is not necessarily the norm. Many countries grow relatively fast and then either fall back or stagnate. The problem is not simply getting growth started it is keeping it going. The other rather striking aspect of the world economy, which has changed since Kuznets’ study, is that some countries have grown very much faster than the OECD countries. As Figure 1 shows the growth of China is without historical precedent.

In the Kuznet’s analysis growth, structural change and, though it was not a term in use at the time, poverty reduction, were linked through the changes in the price of labor. Again in stylised terms the problem was seen as getting the rate of capital accumulation to rise faster than the rate of population which would increase real wages and thus reduce poverty as, again implicitly, the cause of poverty was the low price of labor. The key was wage urban based employment growth in a context of declining population growth rates so to structural change on the demand side was linked the demographic transition engineering together both changes in the type of jobs economies were producing and the incomes from those jobs.

In the large literature devoted to explaining the transition from zero to 2 per cent growth technology played a major role. The early studies of the industrial revolution in the UK argued the importance of a range of technical innovations which provided the basis for the new factory based system of production. That this process was associated with a sustained growth in world trade and that economies became increasingly linked through trade was recognised but the link between the two was not formalised into the models that have become influential in explaining growth. Indeed both the Solow (1956) model and its reincarnation with human capital due to Mankiw, Romer and Weil (1992) have no explicit role for trade in the growth process.

The empirical literature has sought to understand the role trade plays by linking it to the growth of productivity either through the role of competition or in the transfer of technology. Both may clearly be important but it also seems clear trade plays a simpler and more direct role in that it provides a market enabling the scale of domestic production to far exceed the demand of the domestic market. While trade does not cause the growth – that clearly is driven by the technical innovations that have made the increase in the scale of output profitable – such patterns of trade related growth have been particularly important in sub-Saharan Africa. If growth is linked to this extensive margin of trade then there will be a direct link between the structure of trade and the nature of the employment.
Figure 1: Sustained Long Term Growth

Ln GDP per Capita in 1990 PPPUS$
Kuznets Countries: 1500-2006

Source: Angus Maddison, Historical Statistics of the World Economy, 1-2006AD

Figure 2: Wobbly Growth

Ln GDP per Capita in 1990 PPPUS$
Non-Kuznets Countries: 1500-2006

Source: Angus Maddison, Historical Statistics of the World Economy, 1-2006AD
created. Agricultural exports will create jobs in the rural sector, services and manufacturing in the urban sector. The key word there is link. Static models of trade focus on how the endowment structure will determine the pattern of trade but, if scale can be altered as a result of trade, in the simplest models there is unemployed labor or land which enables the surplus factors to be employed in the expanding tradable sector, then relative factor endowments will change as a result of the trade. Again in the simplest models surplus land or labor will be exhausted and changes in the mechanism will be required if growth is to continue. Such static models treat the underlying factor endowment as exogenous which for labor and land may be a good approximation but clearly growth depends on endogenous change to those endowments in the form of physical and human capital. It is the location of this investment, and in its rate of return, that provides a link from the pattern of trade to structural adjustment to changing patterns of employment.

Another contribution of Kuznets (1955, 1963) to these general issues of growth and structural change was the suggestion that there is an inverse U relationship between inequality and incomes. In the early period of growth inequality rose and then in later periods it fell. If this were to describe the patterns of development then the links between growth, incomes and inequality – in a broad historical sweep – seemed peculiarly transparent. As capital investment in industry (eventually) pushes up real wages the growth in wage employment provides a mechanism by which the price of labor rises, inequality falls and income growth with declining inequality ensures rapid falls in poverty. Such a benign pattern of development seems starkly contradicted by current patterns of rising inequality both across and within countries. One potential source of that inequality is the price of skill, specifically the value of education, and these early studies of growth and structural adjustment were largely silent on its role in affecting patterns of growth.

If we are to understand how growth does link to inequality and poverty reduction then the type of employment, both in terms of skill and sector, that an economy is creating will be centrally important. It is frequently assumed that the path to development, and higher incomes, is through the creation of urban, firm based relatively educated wage employment and that the employment problem in poor countries is the failure to create such jobs. What indeed it means to be employed when such employment is not the norm is the central issue in Amartya Sen’s (1975) study undertaken where he identified three aspects of employment that need to be distinguished if we are to understand the role of employment type in poor countries. Jobs may generate income, output and recognition and these aspects of a job all need to be distinguished.

Sen’s study is concerned with the interaction of technology and employment in poor countries – where small scale rural based employment dominates the economy. It will be argued that this study remain very relevant to the problems posed by labor markets in SSA as employment continues to be dominated by small scale enterprises. In the next section the recent revival of growth in Africa will be examined in more detail and its effects on poverty reduction assessed. Section 3 examines how far the growth has also been reflected in structural change in the economies, in particular the extent of growth in manufacturing. Micro evidence drawing mainly on Ghana and Tanzania is then introduced to provide a link from the macro analysis of aggregate incomes and sectoral composition to incomes and employment outcomes. Whether the focus should be on differences across sectors or differences within them is the subject of section 5. A final section provides an overview and summary.
2. Recent African Growth: Rising Incomes and Falling Poverty?

Few, if any, “facts” in development economics are undisputed and the relationship between inequality and incomes is no exception (see Fields (2001) for an argument that the macro data suggest a positive relationship between growth and inequality). That growth and inequality are largely independent is the basis for a view that poverty reduction will be very directly linked to growth. As the data suggest a marked change in Africa’s pattern of growth since the mid 1990s such a view implies substantial poverty reduction. The empirical finding that growth and inequality are largely unrelated underlies the results is a recent paper by Xavier Sala-i-Martin and Maxim Pinkovsky (2010) whose analysis shows that Africa is well on the way to meeting the MDGs of reducing poverty by half. Figure 3, taken from their paper, shows the clear link between the GDP data and poverty reduction. Since the early 1990s when, on their measure, poverty peaked at some 43 percent of Africa’s population there has been a 10 percentage points fall in the period to 2007. As the Figure shows very clearly this turn round appears to reflect closely the reversal of the previous downwards trend in Africa’s GDP.

The results in Figure 1 raise three issues. The first is what accounts for the sharp reversal in the pattern of income in the mid 1990s, the second is whether, and how, this can be sustained and the third is whether the reductions in poverty are as dramatic as the analysis in Sala-i-Martin and Pinkovsky (2010) suggests. The first two issues will be taken up in the next section when the links between growth and structural change will be examined in the context of the experience of Africa in the period after 1995. Here the links to poverty are assessed.

How to assess whether, and by how much, poverty has fallen are both complex questions. Broadly the approach adopted by Sala-i-Martin and Pinkovsky (2010) can be contrasted with the approach that uses household surveys. While there are some differences across the various reports of these surveys that have been issued there is a remarkable uniformity as to how best to approach this question. The standard measure that is used to assess poverty is the household consumption either per capita or per adult equivalent. In Figure 4 I present the data that can be obtained from the World Bank web site using PovCal which extracts basic information on the levels of poverty based on the household survey data. The Chart to the left in Figure 4 compares 1993 with 2001 using thirteen African countries which together comprise 52% of the total population of Sub-Saharan Africa. The Chart to the right comprises twenty countries with coverage of 72% of the population.

In comparing the survey based data with the macro it is clear they tell a very different story. Over the period from 1993 to 2001 the macro data shows a fall of some 5 percentage points while the survey based data actually shows an increase in the headcount poverty rate from 49 to 54 percentage points. From 2001 to 2009 they do tell the same story as far as the direction is concerned. The survey based data show a fall in the $1.25 poverty rate of 3 percentage points from 50 to 47 which is broadly consistent with the macro picture in Figure 1 over the same period. However looking at the survey based data over the whole period since 1995 suggest very little, if any, reduction in the poverty rates in SSA. If that is correct then inferring changes in the poverty rates from the macro data linked to distribution data is very misleading. Another important respect in which the two sources of data differ across the whole period is in the level of poverty. The macro data give a figure of about 33 percentage points in 2006, the survey based data give a figure of 47 percentage points in 2009.
Figure 3: Poverty measures from Macro Data

Source: Xavier Sala-i-Martin and Maxim Pinkovskiy (2010)

Figure 4: Poverty Measures from Micro Data

Percentages of Population Below Poverty Lines $1.25 and $2.25
(Weighted by Population)

Comparing 1993 and 2001

Comparing 2001 with 2009

A Note on the Countries in Figure 4

All four comparisons include Burundi, Cote d’Ivoire, Ghana, Kenya, Madagascar, Mali, Nigeria, Senegal, South Africa, Tanzania, Uganda and Zambia, with the total population of 348 million or 52% of the total population of Sub-Saharan Africa. The 2009 versus 2001 comparison also includes Burkina Faso, Cameroon, Ethiopia, Gambia, Malawi, Mozambique, Rwanda and Seychelles, which gives the total population of 481 million or 72% of the total population of Sub-Saharan Africa. The 2001 versus 1993 comparison also includes Mauritania, which gives the total population of 351 million or 52% of the total population of Sub-Saharan Africa.
There are several possible reasons why the two approaches can lead to very different views as to both the level of poverty and how it has been changing. The macro approach has the problem that it is measuring and modelling national income at the aggregate level. There are many problems with doing this within a country, particularly if the country is very poor, as much economic activity occurs in small scale informal markets which it is very hard for national account statisticians to measure. There are even greater problems with rendering these numbers comparable across countries which is the objective of the PENN world tables and which form the basis for the Maxim Pinkovsky and Xavier Sala-i-Martin analysis.

There are at least two reasons why the internationally comparable income numbers from the PENN project can be very different from the consumption numbers that emerge from the household surveys. The first is that consumption and income within a country may move quite differently. One of the reasons countries may be slow growing is that the rates of returns on the investment in the economy are low. In the short term this higher investment turns up as higher national incomes but if the returns are low then there may be no long run gains in consumption and it is increases in consumption that underlie the measurement of poverty based on household surveys. A second reason why national income and consumption measures may diverge is due the importance of primary commodities in the exports of many poor developing countries particularly in Africa. The consequences of these booms depend very much on the nature of the product. If it is an agricultural product where incomes accrue to small sale farmers the results will be very different from an oil boom where the government captures much of the gain from the increases in income.

For both these reasons incomes may diverge from consumption so the premise of the macro approach – that income gains are reflected in consumption – is likely to be far from generally valid. In summary it appears that since 2001 poverty rates in SSA have been falling albeit rather modestly on the basis of the survey evidence. As Martin Ravallion (2010) has pointed out in his comment on the macro data falls in poverty rates do not necessarily imply falls in the number of the poor and if the survey data is correct then the number of poor in SSA will not have been falling. Thus a picture of some improvement since 2001 leaves us with an important question: why has the rather dramatic improvement in SSA growth rates since1995 been reflected at best in only a modest fall in poverty rates? Is it that the growth has not been associated with the necessary structural change to create more skilled, wage based, manufacturing employment?

3. Structural Change and Manufacturing

While the macro approach to assessing how fast poverty is falling in Africa produces very different numbers in some respects from the survey based approaches they are in agreement that poverty rates have been falling. Implicitly they are in agreement that incomes have been rising, in particular incomes for the poor. We can now turn to the issues raised above namely how the sharp reversal in the pattern of income in the mid 1990s is linked to structural change and whether, and how, this growth can be sustained.

A very large number of changes occurred both within African countries and in the market for their principal exports so it is unlikely the same factors were present in all countries. Our purpose is not to explain that growth but to ask how far this reversal was reflected in structural change within the economies of Africa.
Structural change has many dimensions. Possibly the most basic is the shift in the share of GDP contributed by agriculture to non-agricultural activities. This shift is widely interpreted as due to a combination of differential productivity across the two sectors and changing demand patterns as the share of food in consumption falls with rising incomes. It is indeed with the possibility that labor could be “costlessly” transferred from “agriculture” to “industry” that the early debate on the role of surplus labor, and in the case of Africa surplus land, was focused. Figure 5 shows this dimension of structural adjustment for sub-Saharan Africa and to provide a context with the now rapidly growing countries of the world China and India. Clearly these countries dominate the map of world poverty.

This dimension of structural adjustment occurred rapidly in SSA from 1960 to 1970 and then reversed over the period to 1995. It does appear that the rise in Africa’s GDP since 1995 has been associated with a fall in agriculture’s share – it fell by nearly 10 percentage points from 37 to 27 per cent – exactly the pattern suggested by Kuznets. The data for China and India puts this fall into context. For China from 1970 to 2008 the share has fallen continuously from 35 to 10 per cent, for India the change has been from 42 to 18 per cent. This recent data continues to suggest that there are links between structural change and growth in underlying incomes. Before considering the nature of those possible links and whether they can explain SSA’s low rates of poverty reduction we consider the mirror image of the decline in agriculture which is the rise in other sectors in Figure 6.

The broad division of GDP we are using classify non-agriculture into industry and services. A possibly surprising result of this comparison is that over the period since 1995 the rise in the share of industry has been higher in SSA than it has in either China or India. Indeed in terms of structural change the periods of rapid growth in China and India since 1980 have been associated with a rapid rise in the share of services in GDP not industry. Clearly industry combines diverse elements specifically mining, manufacturing and construction. As the picture of “industrialisation” is really one of manufacturing industry it is how the share in manufacturing has been changing that is indicative of whether there is any evidence that rising incomes have been associated with “industrialisation”.

What is striking is that for SSA not only is the share of manufacturing in industry far lower than in either India or China but it has declined steadily since 1980. There is no evidence that the recent rises in incomes have been associated with any change in that long run pattern. Indeed it is clear from Figure 6 that his most recent period of growth in SSA has been associated with an acceleration in the declining share of manufacturing within industry.

Once a distinction is made within the industrial sector between its mining and manufacturing components then the broad macro picture shown in Figures 5 and 6 is familiar. For SSA it is wholly consistent with the recent patterns of accelerated investment in their natural resource sectors. It points to the recent revival in Africa’s growth being very similar (if not identical) to earlier period when macro policies ensured a transition from world to domestic prices so that booms in the world economy were translated into booms in SSA natural resource sectors. As noted above in the discussion of the links between such growth and rising incomes for the relatively poor the implication of such booms depends on who owns the resources.

The fact that the broad picture we observe is of a continuing fall in the share of agriculture in GDP and a rise in the share of non-manufacturing industry suggests that the boom in natural resources is concentrated in the natural resource mineral sector. These macro averages can hide substantial
Figure 5

Share of Agriculture in GDP: 1960 to 2008

Source: World Development Indicators 2010. Shares are weighted by population. Sub-Saharan Africa excludes South Africa.

Figure 6

Sectoral Shares in Non-Agricultural GDP: 1980 to 2008

Source: World Development Indicators 2010. Shares are weighted by population. Sub-Saharan Africa excludes South Africa.
diversity within SSA and we will consider below micro data from Ghana which is an instance where growth within the agricultural sector has been an important element in its relative success. However this macro data alerts us to the fact that a decline in agriculture does not mean the rise of the factory system in manufacturing. It also emphasises how different is the pattern of change in SSA from India and China.

These patterns have implications for both employment growth and how far income growth translates into poverty reduction. Once we move from the structure of GDP to employment our comparative data becomes sparse and in any case less useful given the diversity of outcomes we observe within and across labor markets. However the macro picture we have presented does suggest one possible interpretation of the employment issue in SSA. Growth has not been associated with the kind of structural change that creates higher income wage jobs in manufacturing. Employment there may be but jobs, by which is meant wage jobs employing the newly educated and young labor force in SSA, there are not. A common characteristic across SSA, China and India in figure 6 is the growing share of the service sector in GDP. While elements within this sector may be wage jobs it seems clear that in the context of SSA employment in this sector will be dominated by self-employment and in particular by own self-employment or very small scale enterprises. It is this sector which forms the core of what is often referred to as the “informal” sector. The growth of such “informal” employment is seen as linked to the failure of structural change in SSA to translate into the firm based wage employment. The next section will examine these issues.

4. Incomes and Employment

In linking change in the structure of incomes to changes in the structure of employment the first divide is between rural and urban based employment. The view that labor markets between rural and urban areas are segmented has played an important role in their analysis in how developed countries grow. When seeking to compare incomes across those sectors the gaps looked very large and clearly it appeared something was required to explain these gaps. In an interesting recent study of migration within Tanzania, Beegle et al (forthcoming) find that rural-urban migration led to about a 30 per cent rise in per capita consumption appearing to confirm the crucial role of understanding differences in labor market outcomes related to location. They are careful to point out that that this difference cannot be caused by the migration – if it were why did not all migrate? There must be factors either limiting the gains from migration for some or raising their cost that led a selected group of individuals or households to migrate. It is the role that selection may play in labor market outcomes that is central to distinguishing two fundamentally different views of how labor markets work in developing countries. Is what we observe the result of segmentation or selection determined by unobserved heterogeneity? Not only is this question of importance for which theories are consistent with the data, it is also of great importance for policy makers.

Early tests of the segmented market thesis sought to show that wages for similar types of labor differed across sectors or the size categories of firms or by the profitability of firms. However these tests are problematic for many reasons. Heckman early on pointed out that differences in wage or labor rates across individuals did not necessarily imply segmentation, the Roy (1951) model of occupational sorting implies that treating any sector effect as causal misses the point that the occupation was chosen. Magnac (1991) provides a discussion and one of the first tests. The fact that formal workers earn more than informal ones does not imply that an informal worker who switched to formal employment would earn more. An alternative view to the widely cited Harris and Todaro (1970) explanation for what we observe is due to Lucas (2004) who developed a model in which the
“unemployed” were learning about the application of their skills to urban job opportunities. In such a model migration is not limited by the effects of unemployment on expected wages but by the differing times it takes heterogeneous individuals to learn about, and respond to, their differing abilities in urban markets.

While we cannot be sure of their source just how large are these differences between rural and urban incomes within SSA? In a recent study looking at the household surveys in Ghana and Tanzania Owens, Sandefur and Teal (2011) show that with controls for the education of the household head, gender and household size the gap in consumption per capita across household in rural and urban sectors was 40 per cent in Ghana and 22 per cent in Tanzania. In neither country was there any evidence this differential had change over the period from 1988 to 2006 for Ghana and from 1991 to 2007 in Tanzania. The paper also attempts to measure incomes, as distinct from consumption, and with all the necessary caveats for the problems that exercise posses the differences in income between rural and urban sectors is very much greater than the differences in consumption, 100 per cent in Ghana and 80 per cent in Tanzania. It needs to be noted these differentials are with controls for education and household size which are assumed to be the major observables which account for differences in incomes across sectors. While the role of unobservables is undoubtedly of great importance it does however seem to stretch credibility to breaking point not to think that these numbers imply that something about urban sectors generates higher returns to factors than rural ones in SSA.

In summary, the facts are not in dispute. What we observe are large and persistent income differences across rural and urban sectors and such difference may reflect selection or they may reflect segmentation (or some mixture of the two). The analysis we have presented for differences across urban and rural sectors in Ghana and Tanzania control for education but clearly leaves open the possibility that the return to education is higher in urban than in rural areas. Much, if not most, of the work on education has focused on the “return” to this investment.

This literature has two crucial limitations. One discussed by Heckman, Lochner and Todd (2009) in a recent review of this literature points out that the coefficient on education in a semi logarithmic earnings function does not, in general, measure the variable in which we are interested which is the rate of return on investment in education. The second is that education is not a very important determinant of earnings. Mortensen (2005, p. 1) writes: “Although hundreds if not thousands of empirical studies that estimate so-called human capital wage equations verify that worker characteristics that one could view as indicators of labor productivity are positively related to wages earned, the theory is woefully incomplete in its explanatory power. Observable worker characteristics that are supposed to account for productivity differences typically explain no more than 30 per cent of the variation in compensation across workers in these studies”.

Moretensen draws attention to the fundamental empirical fact about labor markets which is that there remains substantial heterogeneity across individuals however many controls we put into the equation. In almost all the literature the empirical analysis has been confined to wage employment. In extending it to developing countries that is a rather serious limitation as most employment in such countries is not wage but self-employment. In order to assess how important heterogeneity is within urban Africa Falco, Kerr, Rankin, Sandefur and Teal (2010) report the results of a panel study of such markets. One of the issues in seeking to assess the relative importance of segmentation and heterogeneity in determining the distribution of earnings is that it is not clear across what dimensions segmentation
occurs. In Figure 7 we reproduce the results for the distribution of earnings in urban Ghana and Tanzania drawing a distinction between labor outcomes among the self-employed (between those with and without employees) and among wage employees in small, medium and large firms. In both countries while it is clear that larger firms pay more it is far from clear that self-employment with employees is an inferior outcome to most forms of wage employment. It is also clear, and wholly consistent with Mortensen’s arguments which relate almost entirely to developed country data, that the overlap across these categories is substantial. Many self-employed worker (even if they have no employees) earn more than wage workers.

The data is Figure 7 exclude the public sector which has been in both Ghana and Tanzania, and many other countries, a major source of wage employment. It is also possible that with controls for human capital some of these differences shown in Figure 7 will either disappear or be mitigated. Falco, Kerr, Rankin, Sandefur and Teal (2010) proceed by asking how far controls for observable human capital can explain these differences and ask how important are unobservables, relative to observables, in explaining the distribution of earnings. While controls for human capital do diminish these differentials such reduction are modest. They also find that while if a fixed effects estimator is used the size effect is mitigated it is far from removed and that unobservables, which in this context is an empirical measure of the importance of heterogeneity, are a major factor in explaining the distribution of earnings. They also find that there is a substantial premium for working in the public sector. Rather strikingly, with a full set of controls, there is no evidence that wage workers earn more than the self-employed.

How can that be? Why if self-employment pays more, as if often does, does anyone want to be a wage worker? One possible answer is from the Fields’s (1975) model in that self-employment may be limited by access to capital. What this data for urban Ghana and Tanzania suggests is that that restriction may apply at very low levels of capital.

A further implication is that using averages to compare incomes across sectors as was done above in the comparison of Ghana and Tanzania household data will be to miss these substantial income overlaps across sectors. Incomes which accrue to workers in small scale enterprise will comprise not simply their labor but their capital stock and their land. Imputing incomes to these factors is not straightforward and without some means of doing so the view that market segmentation in the sense that factor prices differ across sector still needs to be established with comparative rural and urban data.

5. Rates of Return within Sectors

The results of the previous section suggest two major points. The first is that it was far from clear that there are substantial differences in returns to factors across sectors relative to the differences within sectors. That of course is not to argue that incomes do not differ across sectors but that is due to the differential assets owned across sector and the returns on those assets. The second point is that these differences within sectors suggest that the problem posed for the prices of labor within sectors are as, or more, important than explaining differences across sectors.

If this view of the importance of heterogeneity within sectors is correct it suggests that the policy problem is one of understanding the reason that differential returns exist within sectors rather than a focus of why they differ across sectors, if indeed they do.
The problem in other words is not expanding manufacturing relative to agriculture it is in understanding the rates of return on investment within those sectors and the factors that prevent investment in high return activities. It is rather unlikely there will be one answer to that question but across the sectors the problem has the same form. Why do not the more productive firms or farms expand relative to their less efficient competitors? Or put rather more bluntly. Why does a process of creative destruction not create a mechanism for rising productivity and incomes within sectors? A finding that is common across work on both firms and farms is that it appears that the rate of return on investment can be high but investment rates are low. Before considering the range of explanations that have been offered for this finding it is useful to point out its implications for employment outcomes and poverty reduction – if it is indeed correct.

If high return activities exist in an economy and remain unexploited then the basic mechanism by which investment increases the capital stock and thereby the demand for labor – whether skilled or unskilled - is not operating. Indeed if this pattern of unexploited high return investment is
characteristic of poor countries then the policy problem is not to increase investment resources but to understand the mechanisms which limit the use of current resources. It has been argued that such high return unexploited investments exist in both the rural and the urban sectors within SSA.

That there exist agricultural technologies with high expected returns in many Sub-Saharan contexts has been supported by numerous studies. Esther Duflo, Michael Kremer and Jonathan Robinson report experimental evidence of a mean seasonal return of 36 percent to fertilizer use among maize farmers in the Busia District of Kenya (Duflo, Kremer, Robinson (2008)). And yet rates of fertilizer use are low: fewer than 24 percent of farmers in Duflo and coauthors’ study had used fertilizer in the preceding year. Even where supposedly high-return technologies do get adopted, many farmers abandon them. In a distinct sample of Kenyan maize farmers, Tavneet Suri documents that 30 percent of farmers switch into and out of the use of hybrid seeds in a given year (Suri (2011)). In Ethiopia, Stefan Dercon and Luc Christiansen find that, while only 22 percent of farmers use fertilizer in a given year, a further 14 percent of farmers in the final round of their survey were not using fertilizer in spite of having done so in previous survey rounds (Dercon & Christiaensen 2007).

In parallel with this work looking at investment in the rural sector has been work on manufacturing firms in SSA which have found high returns and very low rates of investment, Bigsten at al (1999) and (2000), and Udry and Anagol (2006). In these studies effects of profits onto firm investment can be found but they are small. While the focus of the concerns in the firm studies has been the role of credit constraints in restricting investment the implications of the estimates, either of production or investment functions, is that returns to capital are high on average and vary a lot across firms and that high profit firms do not use these funds to expand.

This common findings across both rural and urban sectors in SSA presents us with a puzzle. Why if the returns on investment are so high does not more investment occur? Economists have not been short of ideas for answering that question and the answers they have advanced have differed by sector. In the work on the rural sector several mechanisms have been put forward to explain observed patterns of agricultural technology adoption. Processes of social learning have been much studied, Conley and Udry (2010), Foster and Rosenzweig (1995). If social learning is sufficiently important, low-adoption equilibria may persist in spite of potentially high returns. Alternative theories include credit and supply-side constraints, Moser and Barrett. (2006), In Kenya, Duflo and co-authors find evidence consistent with the view that time inconsistency in farmers’ preferences causes inefficient adoption decisions. Another explanation is in terms of the role of treatment effect, Suri (2011). Using a panel dataset of Kenyan maize farmers, Suri estimates a model that allows for heterogeneous returns to fertilizer. Suri’s econometric method allows her to estimate a mean return to fertilizer use for four subgroups, which are defined by their adoption histories in each of the four waves of her data. There is a non-monotonic relationship between the adoption rates and expected returns of these subgroups in her data. Suri argues that transaction costs are particularly high where returns are highest.

The focus of the work on firm has been rather different. Research on firms in developed countries, specifically the U.S. and the UK, argues that aggregate productivity growth is driven primarily by a churning process in which less efficient firms exit and more efficient ones enter the market (Foster et al., 2001; Disney et al., 2003). Similar evidence of ‘survival of the fittest’ has been reported by Liu (1993) on Chile, and Liu and Tybout (1996) on Columbia and Chile. Söderbom, Teal and Harding (2006) provide some evidence that this process may be at work for lager firms but there is no evidence it is for smaller ones. While survival of the fittest is likely in competitive economies where
instruments (e.g. financial ones) designed to manage shocks are available, the link between efficiency and firm churning may well be weaker in environments without these characteristics. It is possible for instance that in Africa, because of limited availability of smoothing mechanisms, a temporary negative demand shock may force efficient and economically sound firms to close down. If this is so, company churning will be associated with a welfare loss and result in modest or no aggregate productivity gains.

The reason for these differences in focus between work on rural and urban technologies is clear. While a process of churning may underlie a rise in firm level productivity within agriculture the assumption is that land is fixed so the process must be one of rising land productivity within that given endowment of land. Indeed that logic underlies almost all the discussion about how to improve incomes within rural areas in SSA. While such logic must be true in all countries in the longer run and may well be true of most countries in SSA now its general validity needs to be treated with caution. Recent work on the cocoa sector in Ghana shows levels of land productivity little above those measured decades ago although levels of output have roughly doubled over the last decade. How much of this growth has occurred on the extensive, rather than the intensive, margin is still a matter for conjecture.

6. **Summary and Overview**

Why has growth in SSA been so far from the pattern in other countries? Both macro and micro data point to the same answer to that question. Firms and farms in SSA have failed to adopt technologies that offer higher incomes from the ownership of both labor and land outside of the mining sector. Such a failure would not be puzzling if the technologies with higher returns did not exist but there is a large body of evidence now pointing not only to their existence but the apparent unwillingness of farmers and firm owners to adopt them. The large range of possible explanations for this finding have already been reviewed and as it is unlikely that the same explanation holds in all places so the existence of numerous explanations may simply reflect the diversity of reasons why apparently high return investments do not get adopted.

While the reasons may be diverse it can be argued that the consequences are common across the countries of SSA. The underlying driver of growth for the non-mineral sector in these economies is missing. If high return investments do not get undertaken then growth in output and labor demand will not occur. If this is a correct way of looking at the problem then the focus on structural adjustment is to mistake the consequence of a successful growth policy with its cause. The problem is not expanding manufacturing relative to agriculture it is in understanding the rates of return on investment within those sectors and the factors that prevent investment in high return activities. If history is any guide the investment rates will be such that agriculture’s share will contract as investment grows faster in the non-agricultural sector. It is precisely because the declining share of agriculture in SSA does not reflect a pattern of rapid growth in other sectors that the structural change that has occurred has been so weakly linked to a pattern of employment generation that could have a major impact on poverty.

SSA economies have returned to growth after two decades of falling incomes. The return to growth after 1995 has reduced poverty rates although, if the estimates from the survey data are correct, these reductions have been very modest. It has been argued that SSA is an example of non-Kuznetsian growth in that the periods of growth have not been sustained. The policy problems that have to be
solved are clear. The rate of growth needs to be sustained, it needs to be increased and its impact on the incomes of the poor needs to be increased. This challenge is sometimes translated into the need for more and better quality jobs. There is clearly a link. Unless more, better paid jobs for the relatively unskilled are created then the impact of aggregate growth rates on poverty will continue to be very limited. However it is far from clear that the problem of creating such jobs lies in the labor market. It may well lie in whatever are the sources of the failure of firms and farms in SSA to invest.

References


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