Patterns of Labor Demand in sub-Saharan Africa

A Review paper*

Africa Region

Employment Issues – Regional Stocktaking Review

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1. Introduction

In this study we seek to document how labor demand has changed in Africa over the last two decades, suggest reasons for the outcomes that have been observed, show how these outcomes relate to the limited success achieved in reducing poverty, and outline the range of policy options that need to be considered to ensure that growing labor demand impacts on poverty. As the related paper on the investment climate addresses many important issues in labor demand here we will focus on outcomes for employment structure as well as wages and their determinants. The two papers are closely linked. The role wages play in the determination of the demand for labor is conditional on the capital stock in the economy, the productivity of firms and the skill composition of the workforce. While the two papers specialize in how the factors determining labor demand are assessed they need to be seen in conjunction as employment outcomes for given wages depend crucially on factors considered in the companion paper.

Two key facts underlie the problems faced by sub-Saharan African (SSA) economies over the 1990s. The first, which is shown by Table 1, is that while on average across the continent economic growth moved from negative in the 1980s to positive in the 1990s, the rate of growth was still less than 0.2 per cent per annum. Low SSA growth has now been the norm since the 1960s with the result that on average over this four decade period SSA growth has averaged 0.3 per cent per annum, one tenth of the world average.

Table 1. Decadal Growth Rates by Region: Real GDP per capita in US$ (PPP)

	1960s	1970s	1980s	1990s	Average
Australasia	2.95	1.32	1.49	2.27	1.98
East Asia	6.29	2.92	5.23	7.28	5.33
Industrial	4.57	2.61	2.44	1.81	2.77
Latin America	3.21	3.39	-0.68	1.63	1.67
Middle-East	5.54	0.84	1.09	3.28	2.24
South Asia	2.28	0.69	3.61	3.51	2.70
South-East Asia	2.34	4.80	3.27	2.50	3.21
Sub-Saharan Africa	1.67	0.27	-0.37	0.18	0.27
Average	3.23	2.27	3.06	3.76	3.12

Source: PENN World Tables 6.1. Countries are weighted by population.

The second key fact is that the rate of capital investment in Africa in the 1990s has been lower than the rate of population growth. Comparative regional figures are given in Table 2 and show that there was a decline in the capital stock per capita for SSA of nearly 1 per cent per annum over the 1990s. The implications of such macro figures are stark. Without rapidly falling real wages employment demand will stagnate.

Where are those coming onto the labor market to find jobs if wages do not adjust? What are the implications for those increasing number of young people who now have secondary education? What are the implications of falling wages, if they do occur, for household consumption and poverty? We propose to address these questions not by looking at SSA averages but by focusing in detail on a group of African countries which will inform policy as to how the better performers can be emulated and the better improved still further.

Figure 1 shows the growth since 1970 in purchasing power parity (PPP) US$ for countries which cover the range of outcomes for SSA and on which much of this paper will focus. The top part of Figure 1 shows the outcomes for four economies whose per capita incomes ranged from 1,000-7,000 US$ in 1970 - Mauritius, Zambia, Botswana and South Africa. By the end of the 1990s Botswana's income had risen from US$ 1,000 to 7,000 while South Africa's income had stagnated for the whole thirty years. In contrast Zambia which at the beginning of the period had an identical income to that of Botswana had seen a steady decline in income with only the most modest of recoveries in the 1990s. The spectacular success over this period was the performance of the Mauritian economy whose per capita income quadrupled in 30 years. In 1970 Mauritius had half the income of South Africa, by the end of the 1990s it had twice its income.

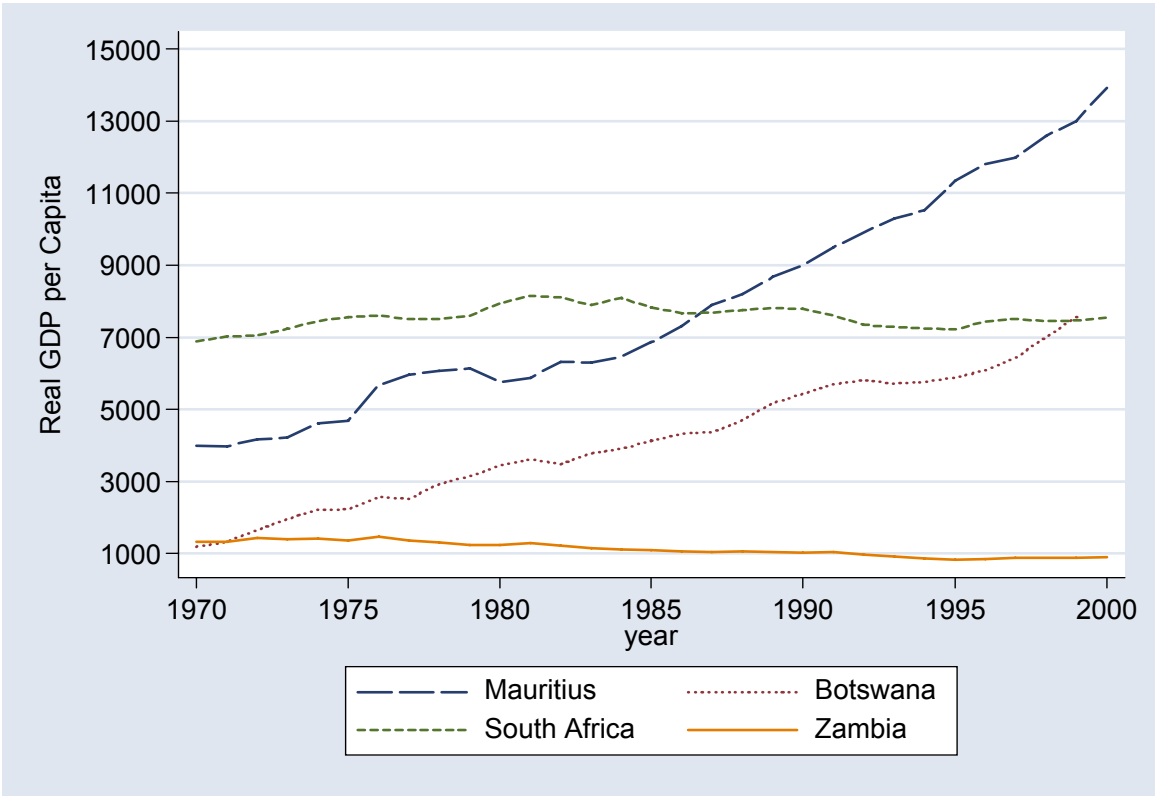
Table 2. Decadal Growth Rates by Region: Real Capital per Capita (1996 US$)

	1970s	1980s	1990s	Average
Australasia	2.41	1.64	1.98	1.99
East Asia	5.00	6.12	7.78	6.40
Industrial|	4.80	3.37	3.08	3.71
Latin America	4.29	1.20	1.61	2.20
Middle-East	6.15	2.36	1.24	2.86
South Asia	2.44	2.80	3.72	3.07
South-East Asia	6.23	5.98	5.14	5.72
Sub-Saharan Africa	2.24	0.13	-0.80	0.33
Average	4.20	3.73	4.24	4.06

Source: PENN World Tables 6.1. Countries are weighted by population. The figures for Real Capital per Capita are imputed from the investment data.

Figure 1. GDP per Capita (in 1996 US$ PPP)

Source: PENN World Tables 6.1



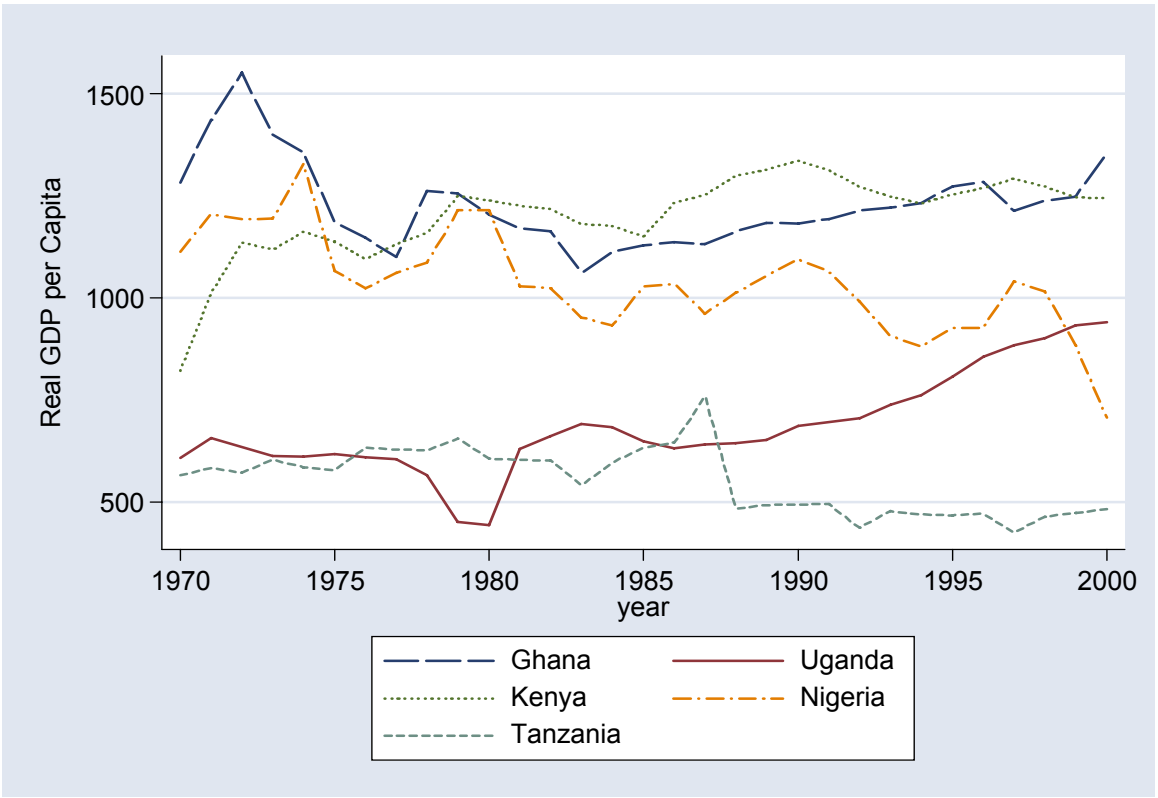
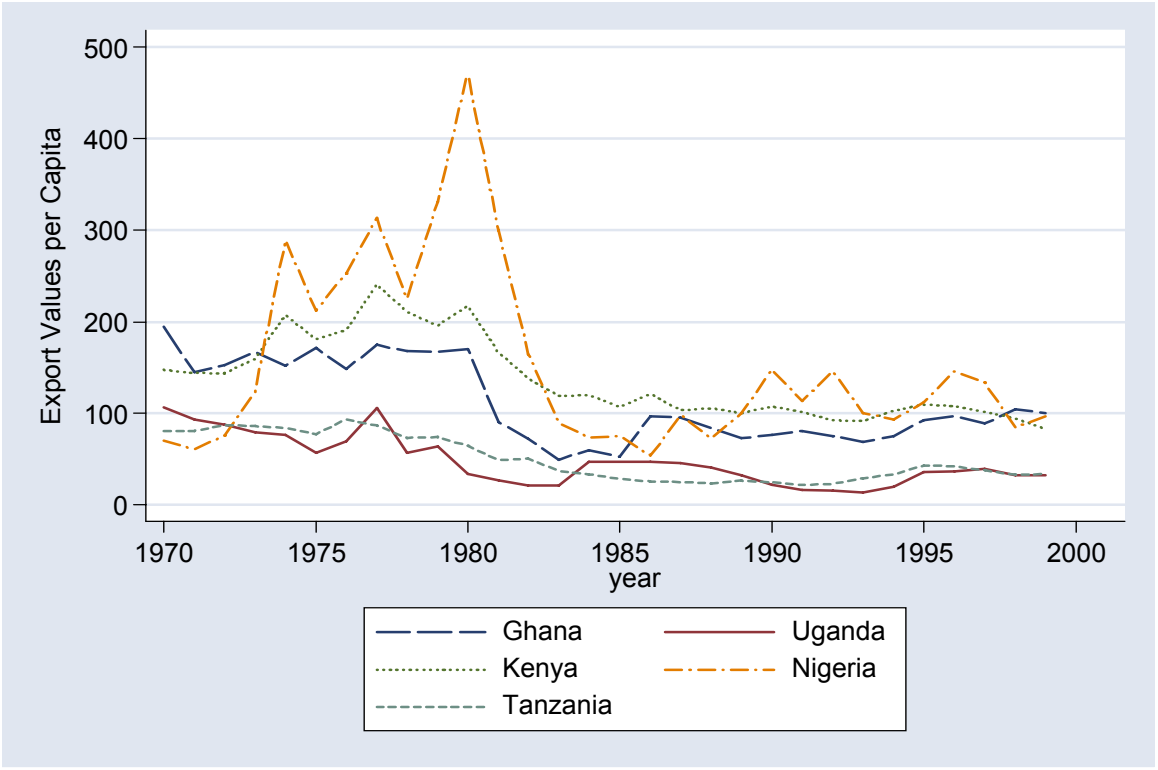
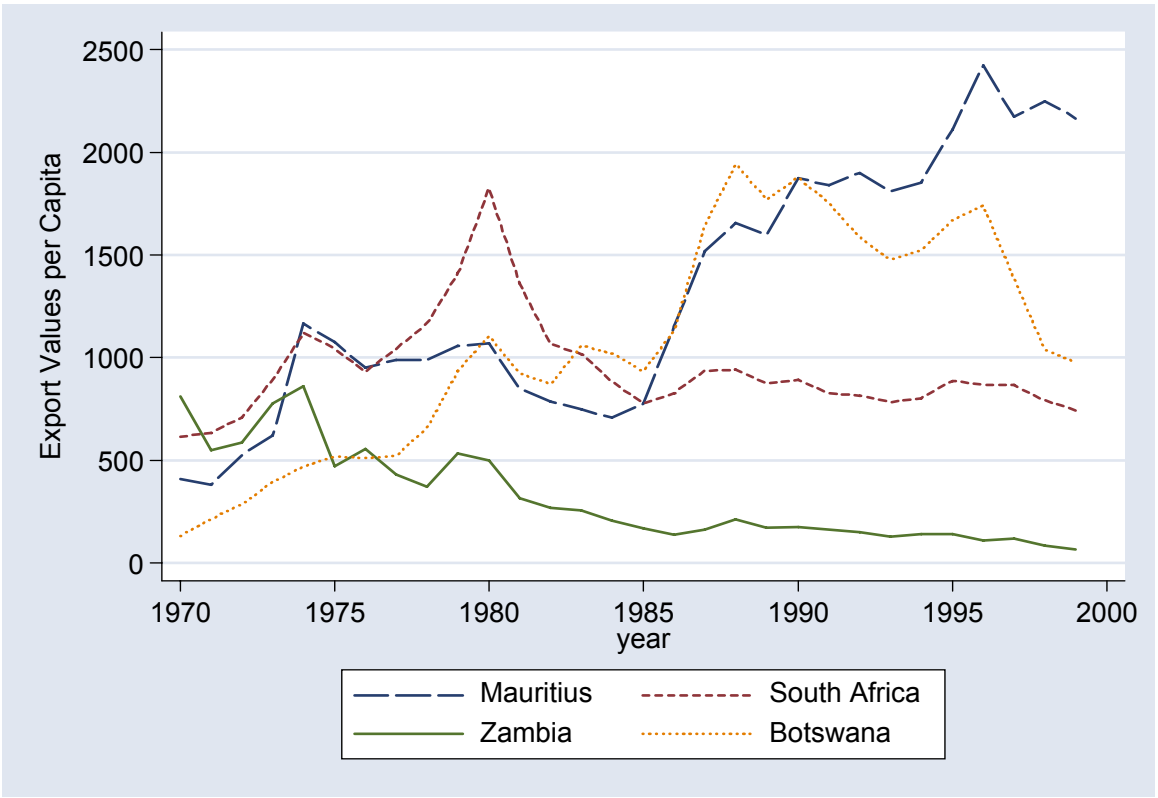


Figure 2. Export Values per Capita in US$ (1995) prices

Source: World Bank Development Indicators





The bottom part of Figure 1 shows the path of GDP for five economies which embarked on major reforms in the 1980s. Reviewing African policy regimes in the mid 1990s, the World Bank (1994) identified Tanzania, Ghana and Kenya as countries where policy progress had been made and argued that these changes had led to improvements in income. Of these countries only Ghana has been viewed as a country which has sustained its reforms since their inception in the early 1980s. Uganda, the final country shown in the bottom part of Figure1, reformed later than Ghana but has grown more rapidly. It is clear from the figure that the two success stories among the economies presented are Ghana and Uganda. The qualified nature of the success is also apparent from the Figure. While Uganda's income has doubled since 1970 it remains much below that of Ghana whose income has still not returned to its level of the early 1970s.

Why have Mauritius and Botswana been so much more successful than all the other SSA countries we have reviewed? A key part of their success had been their ability to ensure exports grew and grew rapidly. Figure 2 shows figures for the value of exports per capita in US$ using 1995 prices for all the countries. From US$ 500 per capita in 1970 Mauritius' exports by the end of the 1990s were over US$ 2000. Until the early 1990s Botswana was equally successful, however since then it has fallen sharply. While the Botswana economy has remained reliant on natural resources, primarily diamonds, Mauritius has diversified its export base initially into manufactures but more recently into services such as tourism. As will be shown in more detail below this was associated with large increases in the demand for labor, much of it female, and substantial rises in real wages. In contrast even the sustained reformers like Ghana and Uganda have had only very modest success with their exports. On a per capita basis for all the countries exports remain at, or below, the level of the early 1970s. As we will show in the next section in these economies labor demand has failed to grow at anything like the rate of population growth.

In the sections that follow we will show that while there are similarities between some African economies there are also very marked differences. In the next section we outline the macro trends that can be found in the development of labor demand and wages across African economies. In section 4 we start to address one of the fundamental policy related questions concerning African economies: how flexible are African labor markets? The determinants of wages are taken up fully in sections 5 and 6 - section 5 focusing on human capital and skills, section 6 on the role of institutions. We continue the theme of the linkage from how wages are set to exporting in section 7 where the issues of skills, productivity and competitiveness are investigated across four countries for which we have directly comparable data. A final section provides a summary and conclusions.

2. Recent macro trends in labor markets

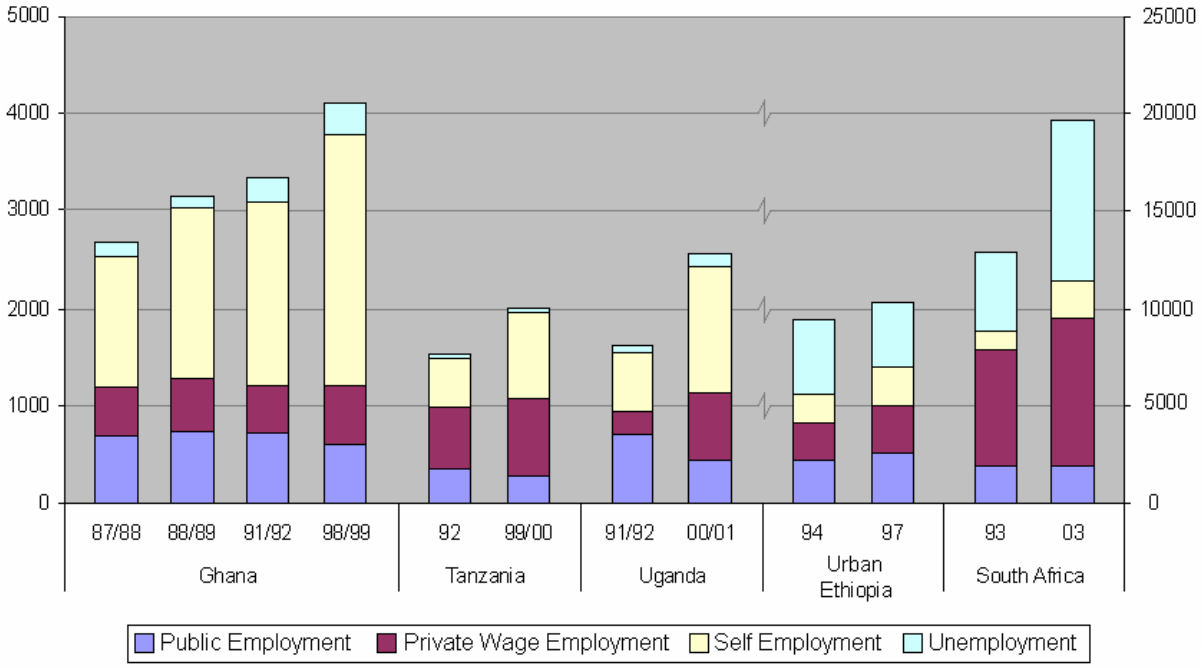
The first step toward identifying policies to promote job creation in the future is to understand how African labor markets have performed in the recent past. Even a basic appreciation of recent trends is often hampered, however, by the difficulty in acquiring comparable information across countries and time periods for many African countries. Thus a major task of this report is to bring together data from diverse sources to provide as comprehensive as possible a picture of labor demand patterns in Africa in the 1980s and 1990s. The data gathered in this section provide an overview of four dimensions of this recent track record: progress in job creation, changes in earnings and expenditures, trends in education, and finally the links between economic growth, real wages, and poverty.

Job Creation and Employment Trends

How is the African labor force distributed across sectors and which sectors, if any, are producing job growth? To answer these questions Figure 3 summarizes a wide range of data from

Figure 3. Trends in Non-Agricultural Employment by Sector (Absolute No. of Workers in Thousands)

Sources: Table A2 in the Appendix, based on national household and labor surveys. The right hand axis refers to Ethiopia and South Africa and the left hand axis to the other countries.



individual household and labor force surveys to provide an overview of the distribution of employment across sectors at two points in time for five African economies: Ghana, Tanzania, Uganda, Ethiopia, and South Africa (details of the data sources are found in Table A2 of the appendix). These countries have been chosen as representative cases to illustrate the three part typology of labor market outcomes developed in the following section: structural unemployment in South Africa, search unemployment in urban areas of Ethiopia, and a large informal sector serving as the employer of last resort in Ghana, Tanzania, and Uganda. Looking across all of the countries some common patterns can be observed.

#1. The level of wage employment has increased in absolute terms, but failed to keep pace with a growing labor force. Figure 3 shows that in all five countries formal wage employment has increased and that this very gradual trend in job creation has been driven primarily by the private sector, with the proportion of wage employees in the public sector declining in each country. However, expansion in the formal sector has not kept pace with population growth and/or growth in the size of the labor force, meaning that the relative proportion of workers in formal wage employment has either remained constant or declined in each country.

#2.The share of the informal sector in total employment has grown rapidly. The failure of formal sector jobs to keep pace with labor force growth implies an excess supply of labor to be allocated to other sectors. In all five countries the absolute numbers of self-employed persons increased greatly during the time span documented here, and in contrast to formal sector growth, this indicates that the informal sector has increased as a proportion of the work force as well.[1] Thus the familiar stereotype of the informal sector absorbing excess labor during a period of labor force growth seems somewhat accurate for the countries listed here. This also conforms with recent evidence presented by Calvés & Schoumaker (2004) for Burkina Faso, documenting a growing tendency for entry-level workers to turn to the informal sector.

#3. African economies with high unemployment rates have relatively small informal sectors. Figure 3 illustrates the great disparity in unemployment rates and the size of the informal economy across countries within SSA. If the data is to be believed, Ghana, Tanzania and Uganda display extraordinarily low unemployment rates, while Ethiopia and South Africa have among the highest unemployment rates in the world. In terms of the size of the informal sector, the pattern is essentially the mirror image. It will be argued in later sections that both of these outcomes—unemployment and

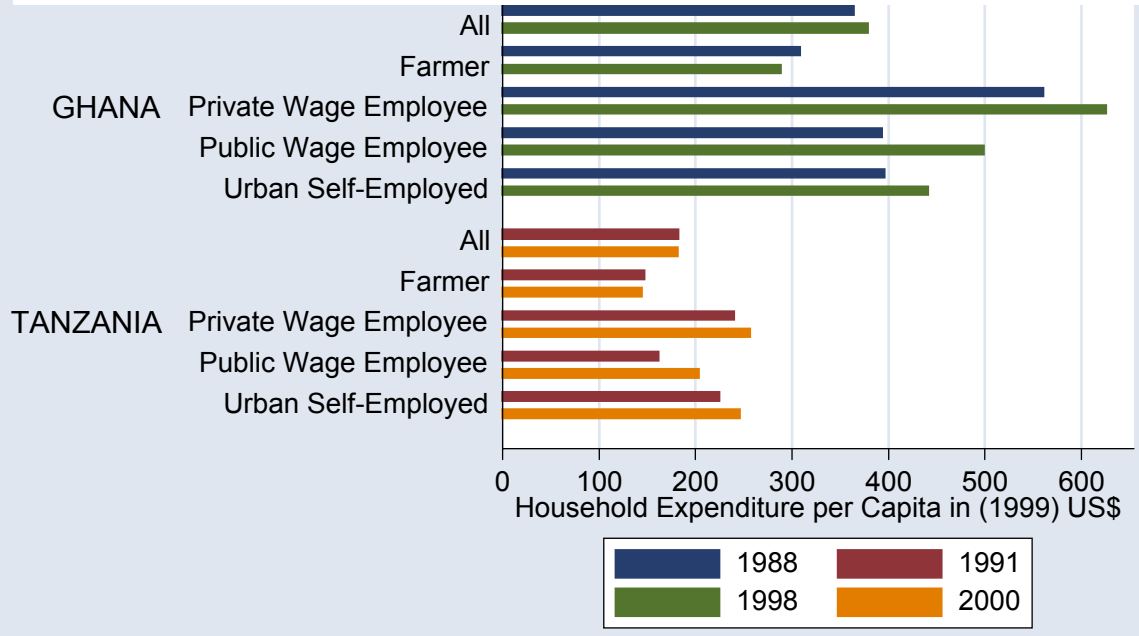
[1] The category of non-agricultural self-employment is taken to be synonymous with the urban informal sector in interpreting these data. Clearly this is inaccurate for at least two categories of workers: entrepreneurs and business owners in the formal sector who constitute a very small share of the total, and high-income professionals such as attorneys, independent financial service providers or doctors. Inclusion of both groups implies that earnings data for self-employment will over-estimate earnings in the informal sector. Nevertheless, it should be stressed that the special attention given to wage employment in the following sections is targeted only at identifying sources of high-earnings opportunities, rather than at giving preference to wage employment over self-employment or informal activities per se.

informality—can be viewed as manifestations of excess labor supply, due at least in part to wage distortions in the formal sector. However, Figure 3 makes clear that in addition to understanding the causes of insufficient formal sector demand, it is also necessary to address the large divergence between economies dominated by unemployment and those dominated by the informal sector. In any case, it is clearly misleading to speak of a "typical" African labor market with respect to unemployment and the informal sector.

How well off are households headed by wage earners?

A major concern of this report is the relative importance of creating wage jobs as a primary means for African economies to lift a large share of the labor force out of poverty. To inform this issue Figure 4 presents data from household surveys in Ghana and Tanzania to show how household expenditures have evolved through the 1990s.[2] Ghana and Tanzania are presented together as they capture the range of incomes among the most important reformers. In Figure 4 we control for household composition and the age and education of the household. While the differences in

Figure 4. Changes in Consumption per Capita for Households with Unchanged Composition



Note: Household composition and education are held constant

[2] GSO (1995, 2000) Ghana Living Standards Surveys and Household Budget Survey, Tanzania (2002).

education across the households will generate differences in income in the base period we hold this constant over time. In doing so we provide a means of assessing how households with given attributes have fared over the period. The household average numbers presented in poverty reports, while informative of overall trends, conflate two distinct labor market mechanism driving changes in household consumption: first, changes in the human capital assets of younger household members (discussed in section 5 below) and second, changes in labor market conditions affecting outcomes for those whose educational investments are complete, which are observed in the figure.

In both countries households headed by private sector wage workers have the highest per capita consumption and farmers the lowest. The gap between rural per capita expenditures and private sector wage workers is at least 50 per cent and is as high as 100 per cent for Ghana for the 1998 period. Not only is there a substantial gap between rural and private wage worker headed households but it has been growing in both countries as while private sector households have seen rises in their per capita consumption farmers have seen falls (recall we are focusing here on households where education does not change over time).

Jamal and Weeks (1993) have argued that the gap between rural and urban incomes declined substantially between 1970 and the early 1980s. In the case of Ghana they argue that the fall in real wages between 1970 and the mid 1980s "wiped out whatever rural-urban gap had existed" (p. 103). In the case of Tanzania they show in 1982 a gap of two times between farmer and urban incomes (p.49). While their calculations are inevitably approximate given their data, such a figure for Tanzania is remarkably close to that shown in Figure 4. Jamal and Weeks use the size of the gap between rural and urban incomes to argue that a focus on rural urban inequalities of income opportunities is misleading. However the size of the gap in household expenditure *per person* is uninformative of the size of any gap between earnings *per unit of labor supplied*, an issue we return to below.

Households involved in urban self-employment lag somewhat behind private wage workers, but their levels of consumption remain higher than those of rural farmers. A more surprising effect of controlling for education and household composition is that consumption by households headed by a private sector wage worker exceeds those headed by a member of the public sector, despite the fact that public sector wages are generally as high, or higher, than private sector wages. As with the discussion above there is no one-to-one link from household per capita consumption to the income source of the household head. The fact that expenditures are lower in public sector headed households across all four surveys used in Figure 4 suggest some systematic factors related either to the composition of income earners in these two types of household or some other factor related to household composition. As they stand the findings may explain the perception among public sector workers in both these countries that their living standards are lower than their private sector peers. How this can be so is a matter that awaits investigation.

Looking at changes in the distribution of consumption over time, the pattern is consistent across the countries: small average increases in consumption during the 1990s have accrued disproportionately to private wage earners. Meanwhile, consumption by rural farmers has declined slightly.

Links between growth, wages, and poverty

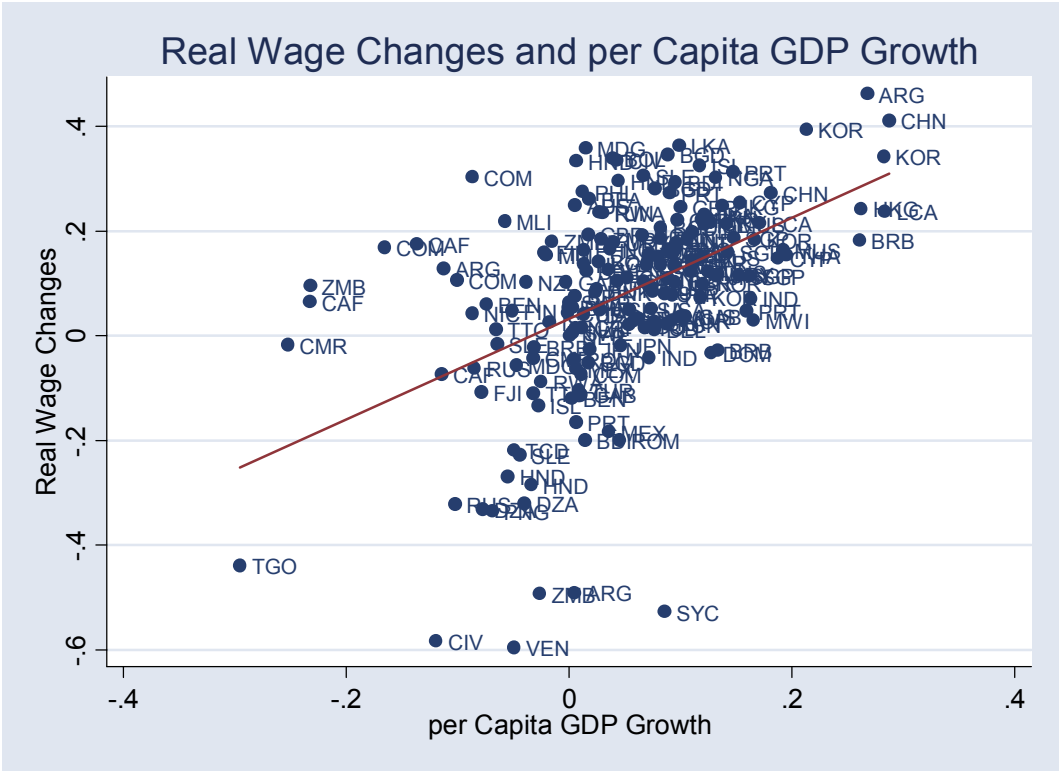
In the previous sub-section we focused on household expenditures where the head was classified by their source of earnings. We now turn to consider how *wage* earnings have changed in SSA and how closely they are related to growth and poverty. It is important to keep in mind that increases in private sector average wage earnings may come about in two broad ways:

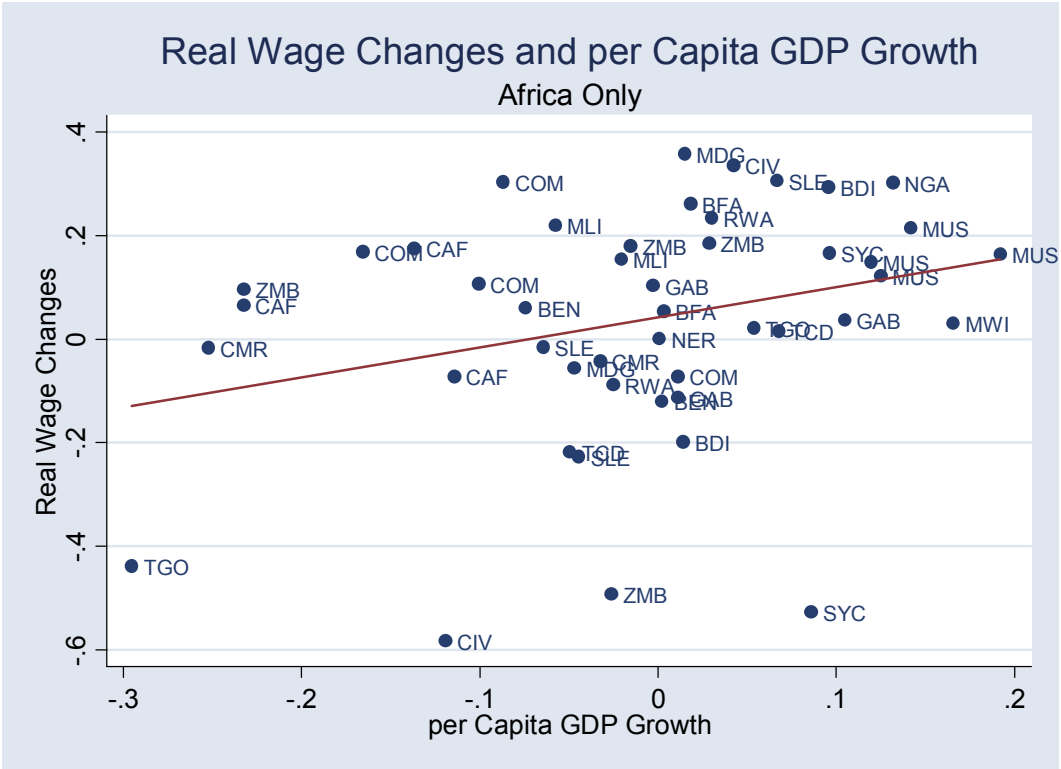
- Wages for a given job may rise over time, either in response to changes in worker productivity or external sources of wage pressure; i.e., the wage *rate* may rise.
- Alternatively, wages for a given job (the wage rate) may remain constant or even decline over time, yet average household wage earnings may increase as employment expands and more workers move into high-wage, formal sector jobs.

We have already shown that informal sector employment has been growing. It is possible that part of this process of "informalization" has been a shift within wage employment to lower paid jobs in which case average earnings may be falling even if wage rates for given types of jobs have not. It will be argued in later sections that in order to become competitive on international markets, African economies must focus on increasing incomes and reducing poverty through a reversal of this process (i.e., stimulating labor demand in high-wage industries while holding wage rates at competitive levels for given jobs). Looking at aggregate trends masks these methods by which the average may be changing. We will explore where we can how the process of wage change differs over sectors. Here we focus on the data available for sectoral averages over time.

First we ask to what extent has aggregate economic growth, where and when it has been achieved in Africa, translated into real wage increases for unskilled workers. Figure 5 brings together national accounts data from the Penn World Tables with internationally comparable data on wages by occupational category, compiled from the ILO's October Surveys by Freeman and Oostendorp (2000) in the Occupational Wages around the World (OWW) database. Looking exclusively at those occupations fitting into the broad category of unskilled production workers, the figure shows that growth has indeed been fairly correlated with real wage increases. The regression line for this relationship has a slope close to unity implying that growth has been associated with a proportional rise in wages. Furthermore, while the broader growth-wage correlation is strong in the overall

Figure 5. Economic Growth and Changes in Wages





international sample, it is much weaker among African countries (bottom panel of Figure5).

As far as we are aware the reasons for these correlations have not been investigated. One would expect the relationship between wage and GDP growth to be closest for economies in which the growth process was intensive in the use of unskilled labor. Does the weakness of the correlation for Africa reflect the fact that African growth, where it has occurred, has not been of this form? Is some attenuation in wage increases a precondition for industrial expansion and growth? We are unaware of any work investigating these issues.

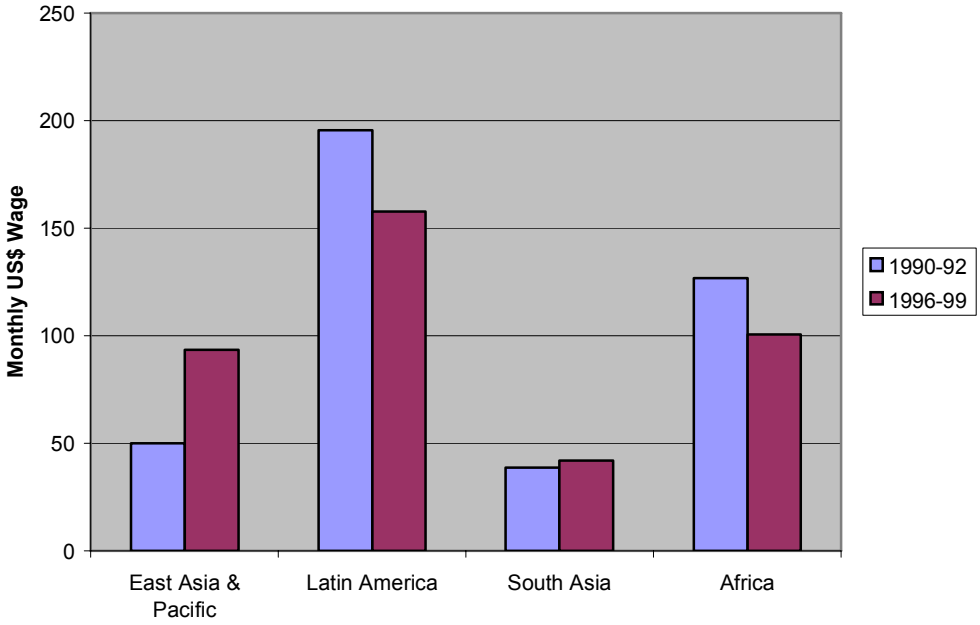
A related question is to what extent growth and real wage increases translate into a reduction in poverty? Policy recommendations made by the Bank and other international organizations have placed great emphasis on broader economic growth as a means to achieve the more specific goal of poverty alleviation. Dollar and Kraay (2002) have provided strong empirical support for this equation of growth and poverty alleviation, showing that national increases in average per capita GDP have produced proportional increases in the incomes of the poor. However averages may hide important policy related differences in outcomes. Focusing here on Africa we note that the implications of growth for the poor depend in large part on the impact of growth on rural incomes. One mechanism, conspicuous by its absence in the data we have surveyed, is that rural workers could migrate to urban jobs in export sectors. If wages were higher in such jobs then average wages would be rising, as would employment and incomes with substantial impacts on poverty.

A prominent issue for labor demand in Africa is the argument that wages are too high for the continent to have a comparative advantage in labor intensive exports. We return to this question after we have considered the evidence for real wage differences across sectors based on micro data. Here we summarise the macro evidence on this issue. Figure 6 shows average U.S. dollar wages across selected regions at the beginning and end of the 1990s (Freeman and Oostendorp, 2000, OWW database). What appears striking is that while average wages in Africa have fallen during the 1990s they remain above the level for East Asia. The data presented in the Figure are based on population weighted means which ensures that the data for East Asia for the 1990s is dominated by China. We noted in the introduction that the contrasts been East Asia and SSA which have been a prominent aspect of relative international growth rates for a long period have, if anything increased in the 1990s. One view to which we will turn in section 5 below is that industry in SSA faces high wages due to its resource endowments. Certainly the macro data we have suggest that wages in SSA remain, on average, high relative to their East Asian competitors.

In summary, growth appears to be associated with both reductions in poverty and perhaps less reliably, increases in real wage rates. However, given the evidence from Figure 4 on the relative incomes of households in various sectors, it is not the case that these wage increases in the formal sector are a mechanism that will link growth to poverty reduction. At their current levels, formal sector wages already provide the surest source of income security for African households. The

challenge for African labor markets, as evidenced by the dramatic increase in the informal share of the economy shown in Figure 3, is to create a greater *number* of these formal sector wage jobs.

Figure 6. Monthly US$ Wages for Unskilled Occupations
Source: Freeman and Oostendorp (2000), OWW Database



3. Labor market segmentation: How are workers allocated between employment, unemployment and the informal sector?

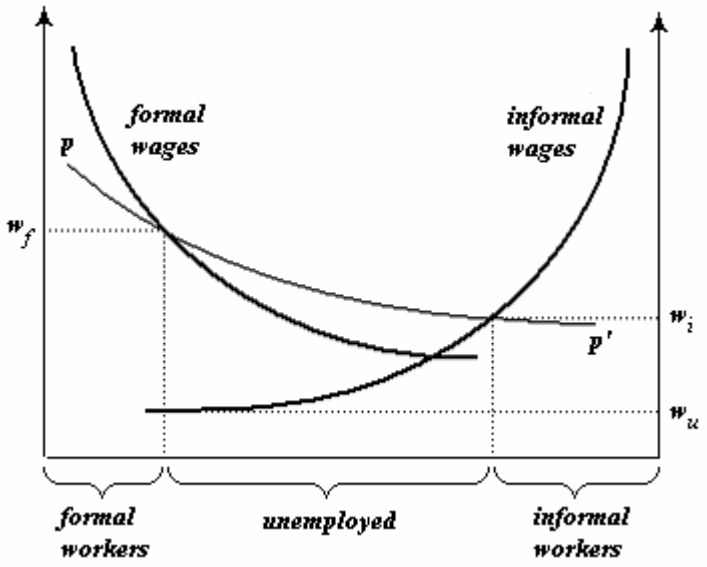
The picture of African labor markets which emerged from the data in the previous section was of uniformly low formal sector labor demand, with job creation failing to keep pace with labor force growth. Beyond this general feature of insufficient demand and excess labor supply, however, there was very little uniformity in labor market outcomes across African economies. Specifically, the rate of non-agricultural self employment ranged from a low of 10% of the workforce in South Africa in 1995 to over 27% in Ghana in 1998/99. Meanwhile, measured unemployment in Tanzania and Uganda is below 1%, while economies both richer and poorer reported rates at or above 30%, as in the case of South Africa and Ethiopia.

What can account for this wide range of outcomes? This section presents a basic structure for understanding labor market segmentation and then proceeds to a more in depth analysis of three examples of different labor market outcomes: structural unemployment using South Africa, search unemployment where we focus on Ethiopia, and widespread informality as in Ghana.

One way of approaching this question is through an adaptation of the familiar Harris-Todaro

Figure 7. Wages and Employment in a Segmented Labor Market

Note that the labor demand curves shown here are drawn for workers with a given level of education and productivity, working in firms with a given level of capital stock—three factors which may outweigh the wage rigidity concerns highlighted here in the determination of labor demand.



dual economy model. Consider an urban economy which is divided between three classes of workers: formal sector workers, informal or self-employed workers, and the unemployed. Suppose that agents entering the labor market face the option of queuing/searching for a formal sector job or pursuing self-employment in the free-entry informal sector.[3] The number of workers falling into each category is depicted on the horizontal axis of Figure 7, with their respective wages on the vertical axes (formal sector employment and wages are read from the left, the informal sector from the right).

Agents base their choice of which sector to enter on two factors: the wages available to them and their perceived probability of finding a job in each sector. Individual characteristics may clearly influence both of these. In a perfectly competitive market wages would be the same in both sectors for an individual with given characteristics, with employment divided at the crossing point of the formal and informal sector labor demand curves (read from the left and right axes, respectively). In contrast, standard Harris-Todaro analysis of African labor markets posits an institutionally rigid formal sector wage, w_f in the figure, far in excess of the market clearing level. This high formal wage has two direct effects: first it constrains formal sector labor demand; second, the prospect of securing lucrative formal sector work entices some share of workers who would otherwise enter the informal sector to remain unemployed and search for formal employment. The probability of finding such a job is assumed to decline with the number of people searching, creating an equilibrium level of job searchers depicted by the line *pp'*. The overall result is a segmented labor market with large earnings differentials and insufficient labor demand, stemming from institutional rigidities.

Turning to the analysis of individual case studies, Figure 7 suggests at least three broad factors to be considered in studying the segregation of a given labor market. First of all, earnings differentials between formal and informal employment remain central. These may include public sector wages or the wage premium garnered by unionized workers. They may also include considerations related to efficiency wages and more general bargaining issues that drive a wedge between wages for identical workers. Second, differences in individual characteristics might influence a worker's probability of finding formal sector worker, making the decision to risk open unemployment more or less attractive. For instance, more educated workers may see fit to forego the informal sector and queue for government jobs. Finally, the decision to queue for formal work is almost certainly affected by an individual's ability to support herself in unemployment.

The dominant view of unemployment in developing countries is that open unemployment is due to search. This indeed was the view underlying the initial presentation of the Harris-Todaro (1970) model. If search for a formal sector job from the unemployed state is more efficient than from informal employment, those able to afford unemployment remain openly unemployed and search. However, the poor cannot afford it. Thus, if most unemployment in the economy is of the voluntary

[3] This builds on the assumption, consistent with some evidence but open to debate, that agents cannot or do not simultaneously hold informal sector employment and search for a formal sector job.

search variety, the relationship between unemployment and household income is likely to be positive because the well-off will choose search unemployment but the poor will enter informal sector employment. Whether this is the case for South Africa is considered next.

Case 1: Unemployment and Self Employment in South Africa

Unemployment in South Africa, using the broad definition, rose from 31% in 1993 to 42% in 2003. On the 'narrow' definition, where the labor force is defined as the employed plus the searching unemployed, unemployment rose from 17% in 1995 to 32% in 2003. (See Tables A2 and notes to that Table). This high and rising level of unemployed reflects in part the failure of either the formal or informal sector to provide new jobs and in part an unprecedented growth in the size of the labor force. Labor force participation rates of women rose by a remarkable 15 percentage points in the eight years between 1995 and 2003. They rose by 5 percentage points for men in that period. The increase in participation rates for both men and women is likely due to the lifting of apartheid restriction on movement to urban areas and the new possibilities of employment that this was perceived to open. Education levels have risen and participation rates typically increase with education level, particularly so for women. Lastly, the significantly higher increase in female than male participation rate appears to be because of a decline in women's access to male income due to increase unemployment among males, the HIV epidemic, and increased female headship due to change in household structure (Casale and Posel, 2001).

Kingdon and Knight (2004) find little support for the idea that people choose to be unemployed, one interpretation of the unemployment outcome of the Harris-Todaro model set out in Figure 7. The unemployed are, on average, substantially worse off than the informally employed – both in terms of income and expenditure and in terms of a range of indicators of well-being. This contradicts the luxury or search unemployment interpretation, whereby higher income increases the incentive to remain searching and reduces the incentive to obtain informal employment.

It might be argued that, given the disutility of work, some people prefer to substitute leisure for higher monetary income, so that their apparent deprivation cannot be used to argue that they are constrained to be unemployed. However, in order to interpret unemployment as voluntary, such people should be happier (or, at least, not unhappier) than employed people. Data show that the unemployed are very substantially (and significantly) less happy than informally employed people, suggesting that their unemployment is not due to choice. Finally the average duration of uncompleted spells of unemployment (2.2 years) is too long to sustain a person in search unemployment. The fact that the unemployed are significantly poorer and unhappier than the informally employed suggests the existence of barriers to entry in the informal sector.

Kingdon and Knight (2004) show that despite recent growth in informal employment,

South Africa is an international outlier in terms of the small size of its informal sector: the ratio of non-agricultural informal sector employment to unemployment is 0.7 in South Africa but 4.7 in Sub Saharan Africa, 7.0 in Latin America and 11.9 in Asia. As defined by the South African statistical agency, the 'informal sector' absorbed only 15.7% of the workforce in 1997 and 18.8% in 2002.

What prevents or discourages the unemployed from entering the informal sector? In a survey of 500 informal sector operators in the Johannesburg area in 1999, respondents listed crime, lack of access to credit, lack of access to infrastructure and services, and need for training as the top four constraints on their businesses. Chandra et al. (2002, pp. 26, 30) find that the informal sector operators had required substantial start-up capital (averaging over 2.5 times the average monthly earnings in the sample). New small businesses have to rely on their own financial resources: there was very little access to either formal or even informal credit. However, these problems exist in most developing countries and do not explain the smallness of the South African informal sector.

One thing that does distinguish South Africa is the observed effectiveness of enforcement of labor regulations. Labor market institutions such as Industrial Councils (now called Bargaining Councils) and Wage Boards set sectoral minimum wages and stipulate working conditions in many industries in South Africa. These minimum wages and stipulations are applied to all firms in the industry and region, irrespective of size, *via* the 'extension' provision. There are serious penalties for flouting the agreements of these institutions. Such provisions impose a burden of high labor costs on small firms and it is likely that they would seriously inhibit the entry and growth of such firms. This is one explanation for the large average size of firms in South Africa. These institutional features may inhibit small firms but they should not inhibit individual entrepreneurship, i.e., owner-operators.

The lack of African self-employment is, to some extent, a legacy of apartheid. Historically the apartheid system repressed the informal activities of black South Africans through such restrictive legislation as the Group Areas Act, harsh licensing, strict zoning regulations, and effective detection and prosecution of offenders. Bouts of slum clearance and other periodic attacks on the illegal spaces within which informal enterprise thrived, served to rid South African cities of black-dominated informal sector niches that were construed as hazardous to public health and stereotyped as unsightly and unsanitary (Rogerson 1992). While these restrictions have been progressively lifted since the mid-1980s, there were lingering licensing controls and restrictive bye-laws in many urban centers in the late 1990s. Moreover, repression and disempowerment of Africans under apartheid would have inhibited the development of entrepreneurial and social skills and of social networks. These factors are important for confidence in entering the self-employed sector and for success in it. Although the figures are unreliable (Devey et al., 2003), the size of the informal sector shows growth in recent years. While more research is needed on the issue, the above evidence provides pointers as to why the South African informal sector is small compared with other countries. It is also possible that its middle-income status inhibits informal firm entry in South Africa, since informal firms

produce mostly basic subsistence goods that are demanded little by middle and high income consumers.

Case 2: Search Unemployment in Ethiopia

Krishnan et al (1998) and Serneels (2004) report an urban male unemployment rate of 30% or higher for Ethiopia based on data collected by Addis Ababa University (AAU). The official figure for urban male unemployment for the nineties is 20%, as reported in the "Survey of the Ethiopian Economy", published by the Ministry of Economic Development (now part of the Ministry of Finance and Economic Development). The figures from Krishnan et al (1998) and Serneels (2004) are higher than the official figures because the AAU data focuses on the 7 largest towns in Ethiopia, with Addis Ababa representing 60% of the sample whereas the official figure uses a broader definition of urban. Unemployment in Ethiopia is higher in more urban areas. These rates are much higher than those observed in many African economies. With per capita GDP in the mid 1990s of only $520, Ethiopia provides a striking contrast to the folk wisdom that open unemployment is a rich country phenomenon and surplus labor is absorbed by the informal sector in poor countries. What do we know about the unemployed in Ethiopia and what affects their probability of finding work?[4]

Examining the composition of the urban unemployed, Serneels (2004) finds that a majority are well educated and come from middle class households. They are predominantly young, with the highest unemployment rates at 19 years of age, have a median duration in unemployment of nearly 4 years, and a majority have never held paid work in their lifetimes. It is important to note also that approximately half of young unemployed males in urban Ethiopia report that they are searching for a job in the public sector, implying job queues for this sector far in excess of the employment opportunities.

Turning to the factors which determine whether a young male becomes employed or unemployed, Serneels finds that education raises the probability of unemployment up to the tertiary level, which has an indeterminate effect. Given that returns to education are significantly higher for

[4] How the unemployed are defined is an important issue. The official Census data appears not to use a search criterion. The AAU data explicitly distinguishes between those "looking for work and unable to find any" and those "not at paid work and not looking for work". Krishnan et al (1998, pp 4-5) use the definition of those "looking for work and unable to find any". They note that "the International Labour Organisation defines the unemployed as those who have not been in work in the previous week and have looked for work in that period. The percentages reported here are not with reference to any period, they might be an overestimate of the current rate by the definition used". Serneels (2004) defines unemployment to include those "not at paid work and not looking for work" arguing that "given the high unemployment rates, it is not unlikely that job searching is passive and that people are waiting rather than actively looking for a job". (p.5) Serneels notes however "that none of our results are sensitive to this (broad) definition. The unemployed who are 'not at paid work and not looking for work' only represent 6%of the unemployed". (p.5) In sum, the finding that rates of unemployment in urban Ethiopia are high does not appear to depend on any peculiarity in how the data is collected or unemployment is defined.

males in the public versus private sector in Ethiopia (Krishnan, et al, 1998) this pattern is consistent with the basic framework described above: personal characteristics which increase an individual's potential earnings in the public or formal sector and/or increase their probability of securing such a job will likewise increase their probability of entering the unemployment pool vis-à-vis the informal sector. Similarly, young males whose father is a civil servant are more likely to be unemployed—perhaps due to a networking or informational advantage in public sector job search—while those whose father is self-employed are less so. However, while education and social capital appear to contribute to the likelihood of unemployment, one must be careful not to assume that it is purely a middle class phenomenon, the familiar "luxury unemployment." Once unemployed, the probability of finding work is positively correlated with family wealth, with poorer job searchers exhibiting significantly longer unemployment duration.

Finally, although the precise causes and potential cures for high unemployment in Ethiopia require further research, the stylized facts reviewed here suggest that public-private and formal-informal wage differentials may play a central role. Wage data in Table A3 of the appendix show that while the public-private gap in the formal sector is small, the gap between formal employment and self-employment widened dramatically in the 1990s, reaching 85% by 1997.

Case 3: High Informality and Low Unemployment

While South Africa and Ethiopia represent two important cases within SSA, most of the economies for which we have comparable data display a very different pattern of labor market outcomes. Ghana, Uganda and Tanzania all have a large self-employment sector which absorbs increases in the labor supply. The differences we observe are not due to differences in the rate of labor supply increase which has been rapid in all these countries. Little work appears to have been undertaken to enable us to make comparative statements as to the reasons for the differential rates of growth of the informal sectors within these economies. As Figure 4 above showed, the expenditure per capita by households headed by the urban self-employed are above those of public sector wage employees. Measuring earnings for the self-employed is deeply problematic but when attempted as in Teal (2001, Table 4) the gaps between urban self-employed incomes and wage earnings are not large, a differential of 17 per cent for 1998/99. This is the crude earnings differential and does not allow for the fact that wage earners have higher levels of human capital than the self-employed. It is possible that for most African economies – we obviously exclude Ethiopia and South Africa – there is a competitive free-entry self-employment sector in which earnings are not significantly different from the lower part of the distribution among wage earners in firms. As we document below, wage dispersion within the firm sector is very large. In terms of our framework for African labor markets,

this suggests that in these countries informal sector wages have fallen to clear the labor market. Rather than unemployment, the primary issue of policy concern is the low wages at which the informal market clears.

Before turning to consider the evidence for the dispersion of wages within the formal sector we note possible qualifications that need to be made regarding the low levels of unemployment in these economies. The figures we have presented are derived from household surveys. While their structures differ some ask respondents if they have undertaken any economic activity in the recent past and, if they have, they are classified as employed. Such a procedure clearly leaves open the possibility that while some activity is undertaken much time is not spent earning income. As we document below, and as shown in Teal (2000), real wages fell substantially in Ghana's manufacturing sector in the first half of the 1990s, a period when household surveys showed the low unemployment rates reported above. It seems very unlikely that low unemployment means, in this context, high employment in the sense of full-time employment. Much more likely is that the surveys are too crude to pick up the extent of inactivity within households. These economies lack up-to-date labor market surveys which could establish how the pressures observed on real wages are to be reconciled with the low reported levels of unemployment.

4. Two aspects of 'flexibility' in African labor markets

The primary motivation for this study is the failure of African labor markets to create good paying jobs, resulting in excess labor supply in the form of either open unemployment or a large informal sector with high underemployment. As highlighted by the model of market segmentation applied in the previous section, perhaps the most common explanation for this disequilibrium is a lack of labor market 'flexibility' keeping formal sector wages above their equilibrium level and restricting job creation.

However, the term labor market 'flexibility', or its converse 'rigidity', is often very vague when applied in policy debates. Recent research shows that real wages in Africa during the 1980s and '90s may have been more downwardly flexible than previously thought and have been surprisingly responsive to unemployment rates, yet large wage differentials between formal and informal sector firms remain and may be rising. This section reviews the evidence for the first two of these dimensions of a "flexible" labor market – real wage adjustments over time and the responsiveness of wages to unemployment – while section 6 examines the wage differential across sectors and whether this differential is itself stable over time.

Wage adjustments over time

The most commonly noted aspect of labor market flexibility is the ability of aggregate real wages to decline over time. As stressed by Horton, et al (1994), the need for downward flexibility of real wages to achieve full employment in response to budget cuts and other demand reductions was seen as a crucial feature of structural adjustment programs.

Evidence for the flexibility of African wages over time is mixed. The data summarized in section 2 and presented in the appendix show that real wages in several African countries declined considerably in the 1980s and parts of the 1990s, and furthermore, that the gap in real earnings between urban and wage rural wage earners fell in response to demand shifts toward agricultural production. Reviewing the Kenyan experience through the two oil shocks, a severe drought in 1984 and subsequent stabilization programs, Milne & Neizert (1994) conclude modern wages were quite flexible:

> "Through the adjustment phase, real wages in all modern sectors fell, although the drop in the public sector was more pronounced. Indeed, real wage rates seem to have provided the major part of the adjustment as there do not appear to have been major changes in the urban unemployment rate." (p. 454)

Writing on Ghana in the same volume, Beaudry and Sowa (1994) note that wages differentials between sectors were fairly quick to respond to demand shifts (toward agriculture and industry, away from services) brought about by structural adjustment and that "a flexible labor market probably helped achieve the macroeconomic improvements observed in Ghana during the 1980s." (p. 402)

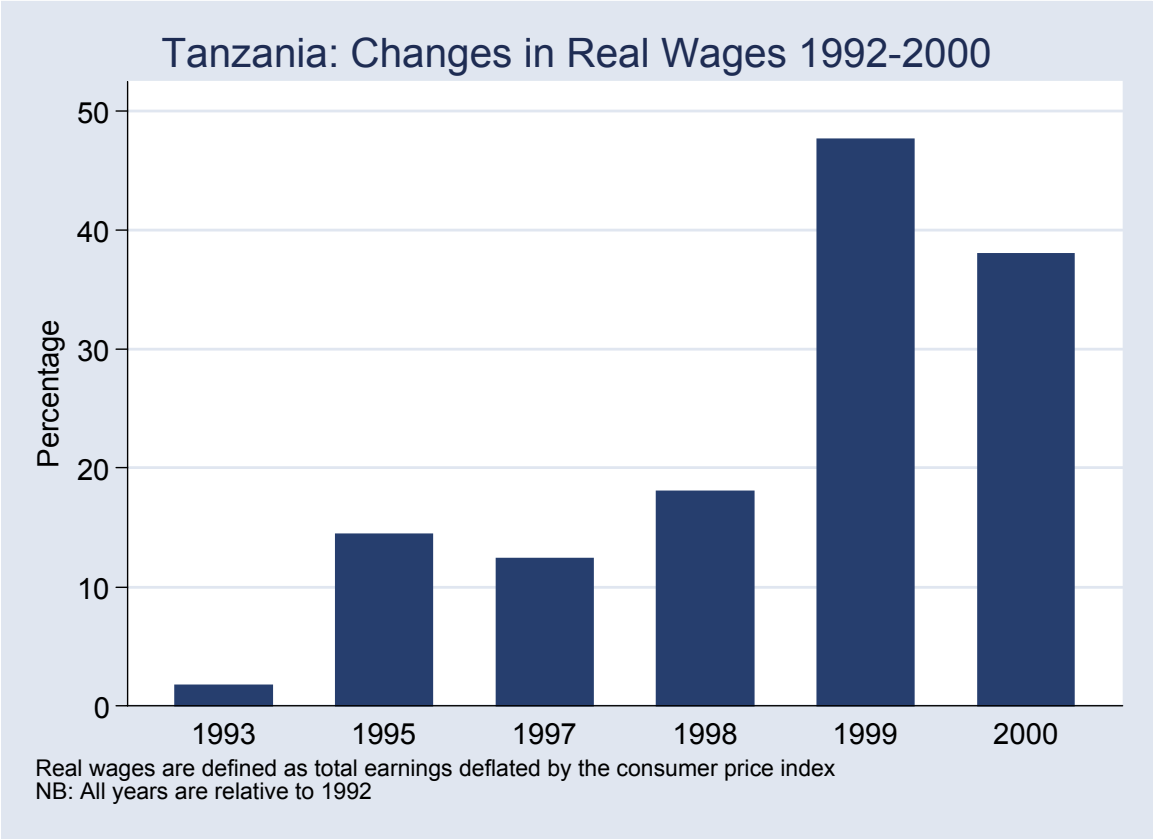
Even in South Africa where, as will be discussed below, unions are an important part of the wage setting process, real wages for Africans have fallen over the period from 1995 to 2003 according to the data presented in Casale et al (2004). Unions have not been able to prevent flexibility in real wages over time.

Despite these signs of flexibility, a detailed assessment of wage misalignment for CFA franc economies by Rama (2000) concluded that wages in these countries showed some evidence of real rigidity in that they closely tracked public sector wages and consumer price indices. In an international comparison, Rama found that wages in CFA countries from 1985-93 remained considerably higher than could be explained by their level of development, urbanization, industrialization or human capital intensity. Similarly, evidence presented by Krishnan, et al (1998) shows that real wages in the urban Ethiopian labor market have been surprisingly unresponsive to downward pressure from economic reforms, even amidst high rates of open unemployment.

For two countries more detail of real wage changes in the manufacturing sector can be given. Figure 8 presents data from the World Bank's Africa Regional Program on Enterprise Development (RPED) and follow-up work at the Centre for the Study of African Economies (CSAE) which enables real wage changes to be measured over the 1990s in which there are controls for the human capital characteristics of the worker and the size of the firm in which they work. As discussed in later sections, firm level variables such as unionization, capital stock, formal sector registration, and firm size itself are highly correlated with wages even after allowing for differences based on human capital. Controlling for firm size is a means of providing a more comparable picture of wages over time for workers in firms of a given size.

The first point to be drawn from Figure 8 is that real wages in these manufacturing sectors have experienced quite erratic fluctuations over the 1990s, implying a great deal of flexibility in this first sense of the term. For both countries the Figure shows the percentage change in real wage relative to the base year of 1992. Thus Ghanaian manufacturing wages experienced a 30% drop from 1990 to 1995 – ruling out any notion that these wages were downwardly rigid over time – and then a substantial rise such that by the end of the decade they were only modestly below their level of 1992. Clearly, explaining this roller-coaster ride in real wages is a very important research question and at present we have little idea how these changes over time are to be explained. The contrast with Tanzania is striking in that

Figure 8. Real Wage Changes over Time



over the decade real wages in the Tanzanian manufacturing sector grew quite rapidly. By 2000 they were some 40 per cent above their 1992 level.

Do these figures for the manufacturing sector carry over to other sectors? It is clear that the answer to that question is no for two reasons. The first is the nature of the controls used in deriving the rates of wage increase shown in the Figure. As will be discussed below large firms pay substantially more than small firms. If the size distribution of firms has been changing (and we can be fairly certain it has, although very uncertain as to how), then average wages in the economy will not have followed the pattern shown in Figure 8. The second reason why the figures for the manufacturing sector are likely to be misleading indicators of overall averages is that the sector has faced severe problems and as such is likely to have seen lower wage increases than other sectors.

While there are clear reasons why we should not generalize from the pattern of real wage changes for the manufacturing sector Figure 8 does address some of the central issues facing labor market analysis in SSA. For workers within firms of a given size wages do not appear downwardly rigid over time. Nor have they been falling in a consistent manner over the decade, indeed in the case of Tanzania they have been rising rapidly.

Wage adjustments in response to unemployment

Another aspect of flexibility stressed in recent empirical work on developed country labor markets is the responsiveness of wages to local unemployment rates, a relationship which Blanchflower and Oswald (1995) have termed the "wage curve." Tests of this relationship in urban African labor markets by Hoddinott (1996) for Côte d'Ivoire and Kingdon and Knight (2001) for South Africa have yielded results strikingly similar to those for the United States and Canada: a wage-unemployment elasticity of approximately -0.1. The finding of a wage curve of this form, particularly for South Africa, is both a surprising and important result.

It is surprising because it has often been assumed that the South African labour market is particularly inflexible. Trade unions play an important role in wage determination in South Africa as will be discussed below. It is important for two reasons. First, it suggests strong similarities in labour markets across economies with very different levels of per capita income. The second implication of the finding is that the size of the wage fall is very large. Broadly the evidence suggests that a rise in unemployment of 10 per cent lowers wages by 1 per cent and that this elasticity appears to be constant over the range of unemployment from 0 to 30 per cent. These figures imply that a rise in regional unemployment in South Africa from 10 to 30 per cent reduce wages by 20 per cent. While the wage curve elasticity is low, the high levels of unemployment imply relatively large effects on wages.

Are wages in Africa "flexible"?

Do the findings reported in this sub-section that real wages are known to have fallen substantially in some economies and that there appears strong evidence that unemployment does impact on wages imply that wages in Africa are "flexible"? To answer that question, as has already been suggested, it is essential to recognise that there are several dimensions to the notion of "flexibility". Two of those dimensions are clearly that real wages can decline at the macro level and due to unemployment. In those two senses of the term "flexibility" there is evidence that labor markets can be flexible. However it is necessary to note how limited is the evidence on even these aspects of flexibility which we have found.

The evidence for the "wage curve" is confined to South Africa and the urban labor market of Cote d'Ivoire. Neither of these labor markets are remotely like that which characterises most African economies. Do "wage curves" exist in these other economies, and, if not, why not? We do not know. Do real wages fall for workers in a firm or does the fall that we observe reflect changes in firm composition? We controlled for firm size but there are many other dimensions of the firm that may affect wages. Are "insiders" able to protect themselves at the expense of "outsiders"? The new panel data on worker earnings that has been collected enables us to address these questions, but at present we do not know the answers.

However, flexibility in labor markets may be achieved by means not captured in the categories dealt with here, as illustrated by the Mauritian case. During the 1980s Mauritius embarked on significant trade liberalization, transitioning from an import substitution policy stance to export promotion beginning in 1983. While growth in the export processing zone (EPZ) drove significant increases in manufacturing wages during the post liberalization period, Milner and Wright (1998) show that despite a history of heavy union activity and government influenced wage setting, some attenuation of wage increases was achieved during the early phases of industrialization. Evidence in Durbarry (2001) suggests this wage attenuation was achieved by drawing primarily female workers – historically earning lower wages due to lower unionization rates and discrimination – from the agricultural sector or into the labor force for the first time. Milner and Wright conclude, "this allowed employment in importables to be maintained (even slightly increase) as the exportable sector expanded. This factor is probably crucial in explaining how Mauritius was able to undergo such a dramatic structural change without a lengthy adjustment process and accompanying unemployment." (p. 525).

Judging by Mauritius' experience, it may well that these first two dimensions of "flexibility" discussed here are not the ones that are the key to understanding why labor markets are not producing jobs in Africa. In section 6 we return to the issue of flexibility – in

the third and fourth sense of the term outlined at the beginning of this sub-section – to examine wage differences across sectors and firms.

5. Explaining wages: the role of education

Possibly the central fact about labor markets in Africa, and the fact that is most often used to explain low wages, is Africa's low skill levels. These levels are low in two senses. The absolute amount of educated labour in Africa is lower than in any other region of the world. In 1990 only 25 per cent of the population aged over 15 had completed primary school in Africa as compared with 32 per cent in South Asia and 85 per cent in East Asia. At the secondary school level the gap is even larger. Additionally, in 1990 only 4 per cent of the African population over 15 had completed secondary education while the comparable number for South Asia was 10 per cent and for East Asia was 50 per cent (see Söderbom and Teal (2003)).

The second sense in which skills are scarce in Africa is that the ratio of educated labour to land endowment is far lower in Africa than in any other region of the world. This fact is viewed as highly relevant to Africa's poor export performance, to which we return in section 7. Wood and Mayer (1998, Figure 4a, p.15) present data showing average years of schooling and the amount of land per worker for all the regions of the world. Sub-Saharan Africa has both the lowest amount of schooling and the highest amount of land per worker. Viewed from the perspective of standard Heckshire-Ohlin trade theory, the implication, as Wood has argued in several books and papers (Wood (1994), Wood and Berge (1997), Wood and Mayer (1998)), is that Africa lacks a comparative advantage in manufactures which are skill intensive. It is possible that natural resource intensive economies will be able to efficiently export the goods in processed form, essentially if transport costs are sufficiently high to outweigh other cost disadvantages. Owens and Wood (1997) argue for sub-Saharan Africa that this is not the case. They find that processing requires higher levels of skills than are available in Africa. The conclusion that Wood draws from these findings of low skill levels in Africa is that Africa's exports will continue to be dominated by natural resources.

Private returns to education

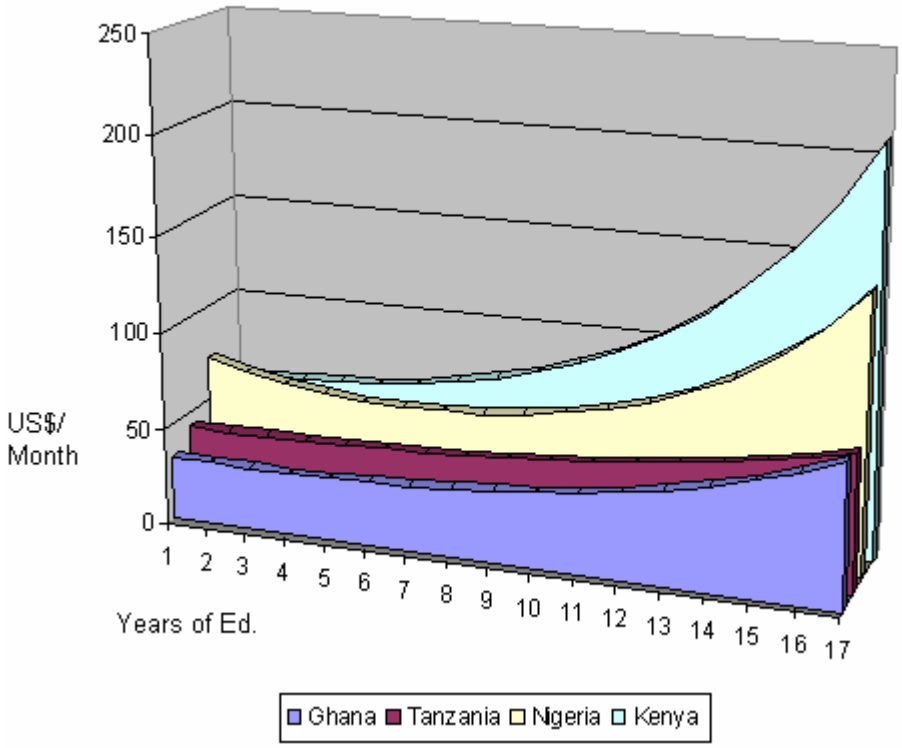
Skill levels may be relatively low in international terms, but the argument that there is a skill shortage implies pressure on skill premia (requiring not only that supplies are low, but that demand for skills is relatively high). These skill premia can be observed from two complementary perspectives: the additional earnings accruing to skilled workers, and the contribution of workers' skills to firm productivity. This sub-section summarizes findings on individual returns in Africa, while firm data is analyzed in the next sub-section.

Recent evidence suggests that, by some measures, the skill premia paid to individuals have been falling over part of the skill spectrum and that it is only at relatively high levels of

education that the returns to education are high. A survey of the Mincerian returns to education across SSA by Appleton, Hoddinott and MacKinnon (1996) concluded that there is a general pattern by which the returns to education rise with its level. This is consistent with skill supplies in Africa being higher than demand for the skills acquired in primary education. Among other studies which find such convex (or increasing) returns to education are van der Gaag and Vijverberg (1989) for Côte d'Ivoire, Moll (1992) and Fallon and Lucas (1996) for South Africa, Zambia and Zimbabwe, Jensen and Westergaard-Nielsen (1996) for Zambia, and Söderbom, Teal, Wambugu and Kahyarara (2003) for Kenya and Tanzania who not only find strong evidence for convexity but some evidence for increasing convexity in the 1990s. Table A7 in the appendix lists the estimated returns by education level and, where available, age group as reported by Schultz (2004) in a forthcoming survey. Most of the annual returns for primary education are in the single digit range (exceptions being males in Cote d'Ivoire and both genders in the first round of surveys for Burkina Faso) and are monotonically increasing for almost every subgroup.

This same pattern of increasing (or convex) returns is observed in data on manufacturing workers collected by the RPED and CSAE. Figure 9 presents the average level of earnings for a manufacturing worker at each level of education, broken down between the four countries for which comparable data is currently available: Ghana, Kenya, Nigeria and Tanzania. These figures are based on a standard Mincerian earnings function, with controls for sex, age, tenure, union status and a time trend. The returns are convex in each country – particularly so in the case of Kenya and Nigeria where higher levels of education reap large returns in the manufacturing labor market – with nearly zero private wage return on the first six years of schooling.

Figure 9. Returns to Education by Country



The implications of increasing returns

What are the policy implications of this emerging consensus that the private returns to education in Africa are low in the early years of schooling and increasing with the level of education? First, this evidence shows that the market for human capital is central in explaining the wages of the highest income workers. At the low skill levels observed among production workers in manufacturing and other industries, however, skill differences appear to play a relatively small role in explaining wage differentials. This is not to say that educational expansion is not an important ingredient in raising overall productivity and wages, but simply that educational differences cannot explain away the distortions in labor costs between firms highlighted in earlier sections.

Second, the policy recommendation that primary education should be the priority in poor countries is often based on the idea that earnings are concave in education. With convexity and low returns at low levels, the premise of this recommendation is undermined. Again, the implication is *not* that poor countries should invest less in primary education. A large literature exists documenting the non-pecuniary benefits of primary education in developing countries, particularly for girls. Additionally, only with sound primary education

will individuals be able to proceed to the levels of education associated with higher returns. Convexity, however, does imply that the effect of education policies designed to stimulate individuals who otherwise would have no or little education to obtain only a modestly higher amount will have a small aggregate effect on income and poverty.

Finally, one of the micro-macro puzzles in the development literature is why at the macro level the expansion of education in Africa during the last two decades has generated so little growth, while at the micro level the average returns to education appear high. With convexity, these two results can be reconciled if, as is probably the case, the expansion of education has primarily occurred on relatively flat segments of the earnings function.

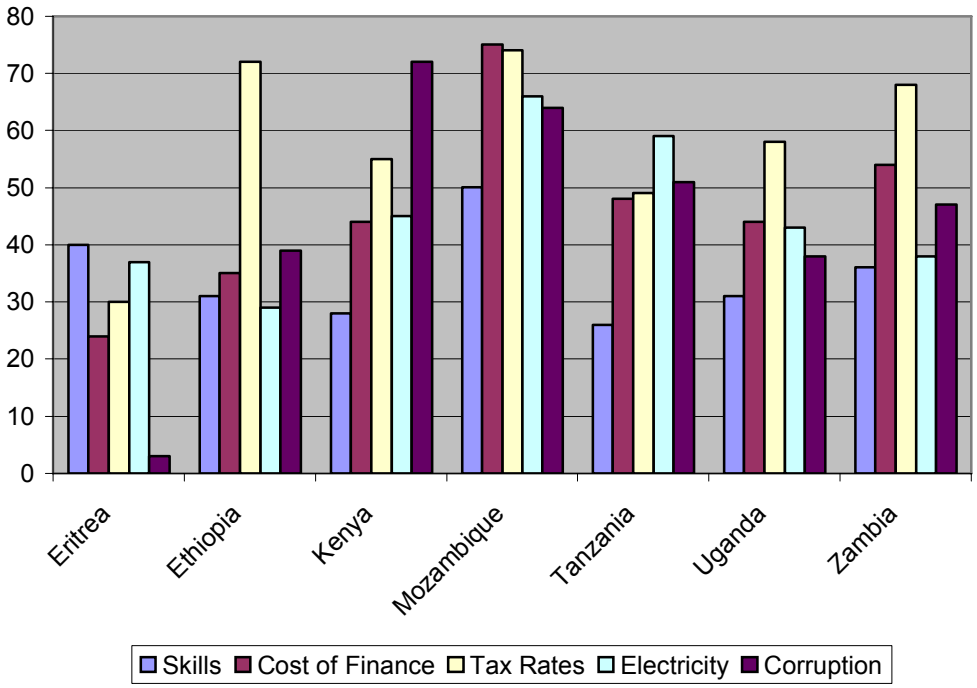
Firms and the demand for skilled labor

The demand for skills – as with the demand for labor itself – is a derived demand, and depends ultimately on the production decisions of firms. Thus the most direct way to evaluate the presence of skill shortages in African economies is through the analysis of firm level production. Workers' skills can be treated as a factor input whose return is directly comparable with the returns to other factors, including physical capital.

This is the approach pursued by Bigsten et al (2000) who estimate firm level production functions using panel data from the manufacturing sectors across five African countries: Cameroon, Ghana, Kenya, Zambia and Zimbabwe. Across these countries, they find very low average rates of return to education in the production function, at only 5%. This is somewhat lower than the average of 9% which they find using an individual based Mincerian specification, but still dramatically below the average return to physical capital in these five countries of approximately 30%.

In a related approach, Teal (2000) approaches the issue of the demand for skilled labor by examining the demand for skills within the labor force of Ghanaian firms. He finds evidence that the demand for skilled labor is *falling*, a result wholly consistent with the low investment levels documented for such firms and discussed in the companion paper.

Figure 10. Major Obstacles Facing African Firms



Nevertheless, the shortage of skills is a prominent theme in business circles and journalistic reporting on Africa. *The New York Times* recently reported on the plight of "Tiger Wheels," an aluminum wheel manufacturer with plants in South Africa and Poland, under the headline "Low Labor Standard Leads South Africa to Export Jobs," (LaFraniere, 2004). In citing the reasons for shifting future investment to Poland after twenty years of operation in South Africa, Tiger Wheels' CEO Eddie Keizan pointed directly to human capital issues: 90% of the firm's Polish workers have university degrees while 90% of its South African employees have only primary education, yet the firm pays similar wages in both countries. This skill differential is reflected in the rate of product defects, and compounded by the additional labor costs incurred in South Africa due to high HIV-related worker mortality.

The inference that is drawn from such accounts is that skills are "too low". An alternative inference to draw is that there is a mismatch between the wages of the workers and the productivity of the firms in which they work.[5] As the next section discusses, skills are only one of several dimensions of productivity and labor competitiveness, neglecting the role

[5] To avoid confusion, it should be noted that the term "productivity" is used here in the general sense of output per worker. "Total factor productivity" or TFP will be used when discussing the narrower concept of underlying efficiency, defined as value added for a given level of capital, labor, skills, and other inputs. It is this latter concept, TFP, which is most frequently associated with the broader business climate and institutional context.

of institutional constraints and the broader business climate. Indeed, when looking beyond journalistic anecdotes to a more representative sampling of firms, Eifert and Ramachandran (2004) find in almost every African country surveyed, firms report skill constraints as the least severe obstacles they face, after infrastructure, the cost of finance, and the tax burden (see Figure 10). Thus while changing skills is one way to improve productivity, it would be unwise to allow an exclusive focus on skills to distract from other reform imperatives. Furthermore, achieving productivity gains through skills increases will not necessarily increase the demand for low skill labor which is the policy requirement for all the countries under review in this paper.

The importance of school quality

The discussion of returns to education so far has implicitly assumed that an additional year of schooling provides some given quantity of additional skills or human capital. However, it is obvious that the quality of education varies dramatically both across countries and often across schools within a country or region. Macro evidence, such as that presented by Hanushek and Kimbo (2000) has shown that output based measures of schooling quality (e.g., standardsized test scores) can be directly linked to countries' economic growth.

Empirical evidence within Africa shows the importance of school quality can be observed at the micro level as well. Using data from Ghana, Glewwe (1996) identifies an effect from three school inputs – additional textbooks, blackboards, and repairs to leaky classrooms – on both test scores and, ultimately, wages. Combining his findings with data on the cost of these improvements, he estimates returns to improving school quality ranging from 24 to 29 percent for wage earners.

Pritchett and Filmer (1999) review similar findings from the education production function literature in other developing countries, focusing on the stark contrast between the marginal returns to teacher-related inputs versus other inputs. Specifically, Harbison and Hanushek (1992) find that for second graders in Northeast Brazil, additional expenditure on textbooks, for instance, has 33.9 times greater impact on mathematics scores than an equivalent expenditure increase on teacher salaries. Even more strikingly for the Philippines, Tan, Lane and Cousternane (1996) find that the return to investing in classroom furnishings and workbooks is several hundred times greater than the return to reducing class sizes. Pritchett and Filmer note that in a simple optimizing model of government expenditure the marginal returns to all inputs should be equalized, which is clearly far from the case, and the apparent excess expenditure on teacher inputs relative to other inputs suggests to them that teachers may have disproportionate influence on public expenditure decisions compared with parents.

Results such as these may have surprising implications for how best to allocate public investments in education between schooling levels. A common analysis in the education literature on Africa is that, given the pattern of convex returns documented here, efficiency dictates expanding enrolments at higher levels where returns are high, while primary expansion is exclusively an equity issue. However, as Glewwe (*op cit*, p. 284) argues, when the quality dimension of schooling is taken into account this logic may be misleading:

> "Low rates of return to certain types of education do not necessarily imply that future investments should be directed to other types; in fact, they may indicate that investmenets are most desperately needed there. Taking Ghana as an example, the apparent low rates of return to primary and middle school education do not mean that investments in these schools should be redirected toward other forms of education. They may mean the *opposite*, *more* investments are needed to raise the rate of return to primary and middle school education."

In conclusion, we have seen that although African labor markets are characterized by abysmally low levels of average schooling, there is little evidence that simply expanding *enrolments* at the primary level will have a large impact on the wages of the bulk of Africa's labor force. Marginal rates of return to additional years of education for primary students are simply too low to provide a direct route out of poverty. Rather, to be cost effective public investment in educational expansion must focus on the quality dimension as well as the quantity dimension of schooling. In any case, however, earnings functions indicate that there is large variance in earnings that is not explicable by either education or other skills. It is to these non-competitive earnings differentials to which we now turn.

6. Explaining wages: the role of institutions

Modern labor economics acknowledges that an individual's relative earnings may depend not only on their personal characteristics, but also on the characteristics of the firm or sector where they are employed. The previous section showed that within Africa individual differences in skills, for instance, do fairly well at explaining wages at the upper end of the earnings distribution, but less well at explaining wage gaps between workers with low to moderate skill levels. This section reviews evidence on firm characteristics and labor market institutions as explanations for these wage differentials which *cannot be explained by skill differences*.

The differences in wages between firms and sectors documented here constitute a third dimension of wage flexibility, in addition to the two dimensions discussed in section 5: flexibility over time in response to demand shifts, and across localities in response to different rates of unemployment. The importance of understanding these possible wage rigidities between sectors at the same time and place is highlighted by the dual economy model presented in section 4. Institutional constraints creating large wage premia for a small group of formal sector "insiders" will constrain labor demand and contribute directly to the low wages and excess labor supply in the informal sector. Furthermore, addressing these institutional constraints is not simply a distributional issue: as explained in the following section, enabling large formal firms to pay competitive wage rates is also a key to achieving export-led growth in African economies.

Wage differences between formal and informal sectors

Evidence suggests that formal vs. informal sector or large vs. small firm wage differentials may be the most crucial distortion in African labor markets. We review three possible approaches to establishing the size of any wage differential between the formal and informal sector. First, looking at the raw earnings data shows that wage earners, and public sector employees in particular, have a distinct advantage over the self-employed. Table A4 in the appendix shows that in 1998/9, for instance, the differential for wage-employment over self-employment in urban Ghana was 17%, while the public sector wage differential was over 50%. For Ethiopia by 1997 these gaps had spread to roughly 85 and 120% respectively. In South Africa in 1993 among Africans, the differential for wage employment over self-employment was 76%, while the public sector over self-employment wage differential was 170%.

It could be objected, however, that these differences simply reflect skill differences between workers in each sector. Thus a second, a more careful approach to earnings

comparisons across sectors uses earnings regressions to examine differences between sectors while controlling for differences in personal characteristics including observable human capital. Lachaud (1995) uses this technique to compute formal sector earnings premia of 57.1% for Burkina Faso, 60.3% for Cameroon, 40.9% for Côte d'Ivoire, and 9.6% for Mali. Miller and Vallée (1995) and Vallée and Thomas (1994) confirm these orders of magnitude for Cameroon, as do Vijverberg and van der Gaag (1993) for Côte d'Ivoire. The latter authors suggest that the public sector wage premium in Côte d'Ivoire may be explained by personal characteristics with queues for these jobs based on non-pecuniary benefits. However, Berthélémy and Bourguignon (1992) find a massive 203.7% differential. In South Africa, Kingdon and Knight (2004) find that 50-64% of the large formal-informal earnings difference remains after controlling for characteristics, depending on whether OLS or selectivity-corrected earnings functions are used.

Third, a closely related approach is to compare the wages of similar workers in establishments of varying size. Firm size can provide a clearer basis for comparison than the formal-informal distinction which is often inconsistently defined across studies. Examination of employer-size wage differentials also allows for direct comparison with developed country labor markets, where the positive relationship between size and wages has been the subject of an enormous amount of research. Table 3 show the results form the early RPED data (from the period 1992-95) for the coefficient on the log of firm size measured by employment.

To show how these size premiums translate into effects on wages across firms Figure 11 shows the wage differential between a firm with 20 versus 100 employees for a worker in the manufacturing sector with a given set of human capital characteristics. The data used in the figure includes follow-up surveys to those conducted in the early 1990s. It also differs from those reported in Table 3 in that the comparison is confined to production workers across the four countries. If the sample is not so restricted then any size effect may reflect the presence in larger firms of certain types of more highly paid workers whose skills are not adequately captured by the human capital controls. It seems safe to conclude from Figure 11 that wage differences between the large and small firm sectors are uniformly large across African countries, they significantly exceed those observed in developed economies and they cannot be explained by the observed skills of the workforce.

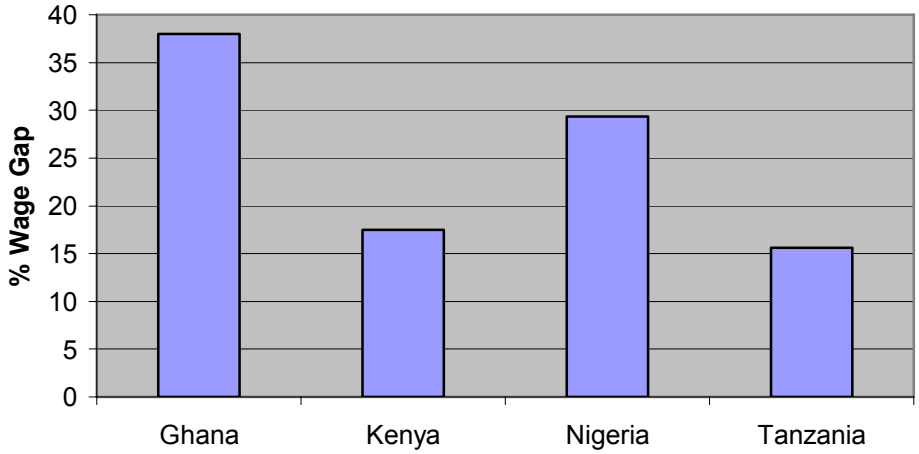
Table 3. Coefficients of Log of Size in an Earnings Function

	Cameroon	Côte d'Ivoire	Ghana	Kenya	Tanzania	Zambia	Zimbabwe	.
Log Size	0.22	0.15	0.14	0.12	0.10	0.17	0.20	

Source: Mazumdar & Mazaheri (2002), p.264.

Figure 11. Wage Gap by Firm Size

% Difference in wages between a firm with 20 vs. 100 employees, *controlling for workers' skills*



Recent work in this area has investigated if this size effect is due to the *unobserved* skills of the workforce. The collection of panel worker data, to match the panel data of the firm, has made this possible. Söderbom, Teal and Wambugu (2002, forthcoming) show that this size affect is only in small part due to unobserved skills. Changes in the size of the firm, controlling for all time-invariant aspects of both the firm and the worker lead to increases in earnings. The implications of these firm-size differentials for allocative efficiency are discussed in Söderbom and Teal (2004). While this firm size effect on wages is not attributable to skills (observable or unobservable), it is consistent with a wide range of possible explanations including aspects of efficiency wages and bargaining. The following sub-sections examine a number of these potential explanations in greater detail.

Why do large formal sector firms pay wages far in excess of workers' apparent alternatives?

In their analysis of wage gaps in Cameroon, Thomas and Vallée (1996) list six possible causes of labor market segmentation in Africa, i.e., high formal sector wages which are *not* explained by workers' skills and productivity.

- High formal sector wages may be due to the presence of trade unions in the formal sector.
- Minimum wages and other labor regulations, which are by definition only applicable in the formal sector, may dictate wage levels.

- Monopoly rents accrue to formal sector firms which are insulated from competition by the regulatory structure, and these rents may be shared with employees through a bargaining process.
- It may be worthwhile for only the most able managers to bear the expense of formal sector registration, contributing to higher productivity and, in turn, wages in this sector.
- Because larger size is often associated with higher turnover and monitoring costs, formal firms may pay efficiency wages to retain employees and increase productivity while informal firms do not.
- Finally, firms may discriminate on criteria not related to productivity, such as gender or ethnicity.

The source of wage differentials and labor market segmentation is a matter of contentious debate, precisely because the policy implications are so stark. If, on the one hand, high formal sector wages simply reflect the greater human capital and productivity of workers who secure these jobs then the lack of formal sector labor demand in many African economies can be directly attributed to a shortage of skilled labor. On the other hand, if high wages in the formal sector are attributable to unions and government regulations, stimulating labor demand will require not an increase in skills but rather reforms in labor market institutions. Thus the task of this section will be to assess the evidence on the role of labor market institutions in explaining wage setting behavior in the formal sector. The following section then turns to the issues of skill levels and worker productivity.

The following paragraphs review the evidence on three categories of labor market institutions: minimum wages, unions and other bargaining mechanisms, and job security regulations. The discussion draws heavily on several studies which have employed firm and worker data from Africa's manufacturing sector collected through the World Bank's Regional Program for Enterprise Development (RPED), as well as numerous household surveys.

Minimum Wages

While minimum wages were used aggressively by many African governments to raise urban wages in the immediate post-colonial period, their relevance to wage setting behavior has declined considerably in recent decades. Table A5 in the appendix reports the real level of minimum wages in several Africa countries, relative to 1990 as the base year. As is apparent from the numbers, minimum wages have generally been quite flexible, with the periods of real minimum wage decline outnumbering the increases for this subset of countries. Similarly, for the CFA countries, Rama (2000) found that minimum wages were downwardly flexible and incapable of explaining wage misalignment in these countries during the 1990s.

However, it must be noted that numbers in Table A5, as well as the aggregate data employed by Rama, could potentially conceal the actual impact of a minimum wage in economies with wide wage dispersion. On the one hand, if minimum wages are applied to all firms, they may fail to bind on the average firm while presenting a significant obstacle for otherwise low-paying small firms. Conversely, if minimum wages are selectively applied to a subset of firms, the impact of regulation may be quite different from a textbook model of a price floor. Squire & Suthiwart-Narueput (1997) have shown that the social efficiency losses in such cases may arise more from legal avoidance of the regulations (through hiring temporary workers, for instance) than illegal evasion. Thus country by country investigation of minimum wage policies must focus on more detailed data considering the distribution of wages across firm size, the enforcement of regulations, and the incentives to avoid or evade the law.

Trade Unions

It is useful to distinguish the possible effect of unions on two separate dimensions of labor flexibility outlined earlier: wage adjustments over time and labor segmentation between sectors. In his analysis of wage misalignment in CFA countries, Rama (2000) addressed the first of these questions, asking whether unions can explain the incomplete adjustment of wages in these countries during the 1990s. He concludes that "private sector unions… seemed more instrumental in achieving wage moderation than wage drift. Their members usually had lower wages than similar, non-unionised workers, which probably reflects the 'subordinate' nature of the labour movement." This latter observation is based on a review of research findings measuring union wage premiums in which a number of studies report a *negative* union wage premium for CFA countries (see Table A6, the relevant part reproduced from Rama, 2000, in the Appendix).

A second question is whether unions can explain labor market segmentation between firms or sectors. While focusing on a different subset of countries, research on this topic has produced dramatically different findings on the size of the union wage premium in Africa. For the case of South Africa, Schultz and Mwabu (1998) find an average union wage premium for African workers of 47%.[6] In addition, they use a quantile regression approach to examine the effect of unionization on wages for workers in each segment of the income distribution. For African workers at the 10th percentile, unionization is estimated to increase wages by 145%,

[6] Butcher and Rouse (2003) argue that a much lower figure for the union wage premium among Africans workers – around 20%, obtained by controlling for industry – is the relevant statistic. This places the South African union premium in 1993 at more comparable levels to the U.S. and U.K.

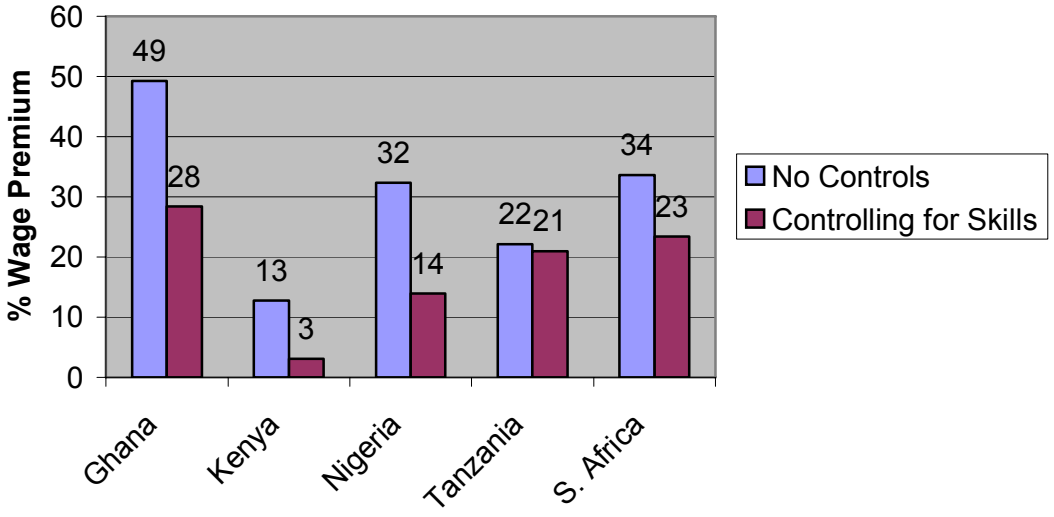
while at the 90th percentile the effect is only 11%. For white workers the numbers are significantly lower, at 21% and negative 24% respectively.

Work undertaken by CSAE updating the Schultz and Mwabu (1998) work suggest that this union premium has risen markedly in the period from 1995 to 1999. Even controlling for industry the union premium in 1999 was 53.8 per cent, massively higher than that observed in OECD countries (see Table A6). Controlling for firm size, Blunch and Verner (2004) perform a similar analysis for the Ghanaian manufacturing sector and are unable to find a significant wage effect from unionization when looking at workers as a whole, but find a 34% premium at the 10th percentile. The results may be affected by the quality of their data.

Work to date emphasizes the remarkable divergence that has been observed for the union premium. More evidence is becoming available as a result of the firm surveys carried out in Africa's manufacturing sector. These surveys collected both labor market and firm information. It is thus possible to control for the human capital of the workers and for firm characteristics for similar types of firms over several countries. It may well be thought that the South African economy is an outlier within Africa as far as the importance of the union premium is concerned. Figure 12 draws from these labor and firm surveys for Ghana, Kenya, Nigeria and Tanzania to provide a comparison with the union premium for South Africa.

Figure 12 shows the union premium for the five countries for which we currently have comparable data. The first column shows the union wage premium for a production worker in the manufacturing sector with no controls, while in the second column there are controls for gender and differences in skills measured by age, years of education, and job

Figure 12. Union Premia for Production Workers in Manufacturing



tenure (though none of the underlying regressions includes controls for other aspects of the firm, either sectors within manufacturing or size). While controlling for skills dramatically reduces the union effect, the remaining union premia are still very large by international standards. Indeed, premia of 49 and 32% for Ghana and Nigeria respectively are as high or higher than the average union effects found for South Africa, suggesting this latter country may not be so idiosyncratic as sometimes assumed. Furthermore, the importance of differences across quantiles noted in the work discussed above suggests that these averages hide important differences that require investigation. As they stand, they suggest an important role for unions as part of the institutional structure that drives wages across workers with similar levels of human capital.

In conclusion, while there is an emerging body of evidence to suggest that unions play a central role in many African labor markets, systematic identification of their effects is complicated by the factor that unionization is highly correlated with other leading explanations for labor market distortions including the other regulations reviewed in this section, monopoly power of producers, and firm size more generally. The success of the quantile regression approach in identifying union premiums for low wage workers may relate precisely to their ability to compare these workers — concentrated in smaller firms — with a baseline of low-wage non-union workers for whom union contracts do not apply. Separating out such a control group within large formal sector firms is extremely difficult. Further research in this area should focus on disentangling such potentially correlated factors as union status, regulatory coverage, firm size, worker skills, and capital intensity.

Hiring and Firing Restrictions

In addition to producing wage rigidity, labor market regulations may lead to inflexibility in employment which is not apparent in the wage data examined above. Job-security regulations limiting the ability of firms to lay off workers during an economic downturn convert labor into a long term investment. The effect of such regulations on the equilibrium number of jobs has been the subject of much theoretical speculation for the case of the European labor market. There are clearly two effects to consider: on the one hand such regulations discourage layoffs thereby increasing employment, but on the other hand the prospect of being saddled with costly unwanted workers in the future may discourage firms from hiring in the first place—particularly given the high levels of risk and volatility in African markets.

The most scientific examination of hiring and firing restrictions in Africa has been conducted by Fallon and Lucas (1993) who exploit drastic policy changes in India and Zimbabwe to conduct a natural experiment. Using industry data spanning the period before and after the enactment of stringent new job-security laws in both countries in the 1980s, they

estimate the effect of regulation on the speed of labour adjustment and the overall level of labour demand. Surprisingly, they find no significant effect of legislation on the *speed* of adjustment, wages, or hours worked. Rather, the main impact seems to fall on the level of labour demand, with the new regulations reducing the number of workers employed in a sizeable share of the industries observed.

Once again, it is worth cautioning against making aggregate judgments on the flexibility of an economy or a regulatory framework as a whole. It is clear that no consensus has yet developed on the appropriate definition of these regulations, much less on the more abstract notion of flexibility. As an example, Table 4 shows that Ghana ranks as a relatively flexible country on both hiring and firing restrictions. Meanwhile, a second database also compiled by the World Bank (Rama and Artecona, 1997) reports that Ghana has among the

Table 4. International Indicators of Labor Flexibility

Region or Economy	Flexibility of Hiring	Conditions of Employment	Flexibility of Firing	Average
Sub-Saharan Africa	49	68	40	52
Ethiopia	58	67	29	51
Ghana	33	56	17	35
Nigeria	17	76	36	43
South Africa	42	36	30	36
Tanzania	57	77	49	61
Uganda	33	44	50	42
East Asia & Pacific	45	60	30	45
Europe & Central Asia	52	81	38	57
Latin America & Caribbean	56	79	48	61
Middle East & North Africa	41	66	36	48
OECD: High income	49	58	28	45
South Asia	39	68	39	49

Source: World Bank, Doing Business database, http://rru.worldbank.org/DoingBusiness/

most restrictive job-security laws in the world. In reality, it is possible that both statements are true for some segment of Ghanaian firms.

Average numbers likely mask extreme differences in the labor market conditions faced by firms of varying size, ownership, location, and so on. This can be seen in Table 5, which lists Ghanaian firms' own reports on the impact of regulations. As can be seen, there is a striking tendency for the largest firms to be more encumbered by regulation in general and layoff restrictions in particular.

Table 6 shows that in South Africa the employment impact of labor regulations varies

Table 5. Severity of restrictions on manufacturing firms in Ghana*

	Overall	Micro	Small	Medium	Large	Very Large
Min W	8.9	0	0	7.8	20.0	25.0
Layoff Restriction	8.7	0	0	9.5	15.6	42.9
Hiring Restriction	1.1	0	0	0	0	12.5
Limit on temp hires	0	0	0	0	0	0

*Firms are asked whether costs, revenues, or activities are constrained by the listed restrictions, and asked to rank the severity of constraint from 1 to 5, with 5 being most severe. The table reports the percent of firms in each category which score the given restriction from 3 – 5, i.e. at least fairly restricting.
Source: Mazumdar & Mazaheri (2002), p. 30.

Table 6. Cumulative employment response of large firms to recent labor regulations (% of firms)

	Manufacturing firms	Tourism firms	IT firms
Hired fewer workers	39.2	25.9	7.0
Substitute capital/machinery for workers	38.9	7.3	14.0
Hire more temporary than permanent workers	41.6	27.9	14.0
Rely more on sub-contracting	33.5	27.8	19.0
Improve labour relations	29.6	26.0	9.0
Increase labour productivity	11.9	18.7	n.a.

Source: Table 4.1 in Chandra and Nganou (2001) "Obstacles to formal employment creation in South Africa: Evidence from recent firm surveys", paper presented to the DPRU conference, Johannesburg, Nov. 2001.

importantly by industry and that it is in the manufacturing industry that labor legislation had the most detrimental impact. South Africa introduced major pieces of labor legislation in the post-apartheid period, aimed at improving worker security, redressing racial imbalances in the labor market and improving worker skills. This new body of legislation may have reduced labor market flexibility by prescribing wage minima, making it more difficult to hire and fire workers, and introducing racial quotas.

Chandra and Nganou (2001) report that CEOs of surveyed firms point to labour regulations as a key constraint to growth and job creation. 33-44 percent of manufacturing firms said they responded to recent labour legislation by deciding to hire fewer workers, substituting capital/machinery for labour, replacing permanent workers with temporary workers and by greater reliance on sub-contracting than in-house production. The proportion

with such responses in the skill-intensive IT sector was lower.

Rent-seeking, institutions and efficiency wages

So far we have focused on a model of the labor market where the large observed deviations from competitive wage levels (i.e., from wages based solely on individual human capital characteristics) are due to overt institutional or regulatory interventions. However, large formal sector firms may also pay high wages to increase labor efficiency, or as a result of rent-seeking behavior by workers which may or may not occur in a union context.

In the case of efficiency wage models, a link between wages and effort or productivity may arise for a variety of reasons, including the increased fear of dismissal when wages are high (Shapiro & Stiglitz, 1974), a tendency for better paid workers to be better nourished and in better health (Dasgupta & Ray, 1986), increased morale from above average earnings, and so on. Similarly, above market-clearing wages may reduce labor turnover, creating a necessary link between high wages and large formal firms (Stiglitz, 1974; Manning, 2003).

One major piece of empirical evidence already described which is consistent with the idea of efficiency wage setting in Africa is the wage curve literature discussed in Section 3. The causal link from unemployment to lower wages found in this literature is inconsistent with purely competitive wages based on human capital alone, but can be readily explained in an efficiency wage model such as that of Shapiro Stilglitz. Along these lines, Fafchamps and Söderbom (2004) use worker-firm matched data across 10 African countries from the RPED surveys to establish a connection between firm size and wages, and show that this prominent feature of the data is consistent with wage setting behavior determined by labor management concerns. In support of this hypothesis, they show that worker effort and productivity increase with both the level of supervision and wages, two incentive mechanisms stressed in many efficiency wage models.

One implication of these findings is that labor management may be a more acute problem for African firms than their competitors elsewhere. Fafchamps and Söderbom find that the wage-elasticity of effort is around 0.45, compared with 0.74 in Morocco, which the authors posit as a control case. A second key implication of the whole class of efficiency wage models is that the high wages observed in larger, more productive formal sector firms need not depend on labor market institutions, but rather are a necessary result of the firms' organizational structure. As far as policy is concerned, the link from labor market "flexibility" to job creation is effectively broken.

Rent-seeking models attribute wage differentials to a process of bargaining – implicit or explicit – that takes place between workers and the owners of capital over the rents or profits from production. Evidence of such "rent-sharing" effects on wages has been found for

a wide range of countries, including Ghana (Teal, 1996) and Zimbabwe (Velenchik, 1997) within Africa. Furthermore, as Blanchflower, et al (1994) note, these effects appear to be fairly consistent across countries with widely differing institutional structures and unionization rates, indicating a role for bargaining even in the absence of unions.

In conclusion, the evidence presented at the beginning of this section makes clear that a subset of African workers earn large wage premia which are inconsistent with competitive wage setting and cannot be explained by their skills alone. However, there are competing models to explain these wage differentials, and the relative importance of these different effects may produce drastically different policy conclusions. The task of consulting sub-Saharan African policymakers on how to achieve competitiveness in their labor markets would be greatly aided by additional research which could differentiate between, for instance, efficiency wage and bargaining stories, and pinpoint the magnitude of the impact of specific institutional features in the economy.

For the time being, what we do know is that minimum wages appear to pose a fairly minor constraint on job creation in most African economies. Evidence on job-security regulation is more mixed, and particularly complicated by inconsistency in enforcement. In contrast, one of the most significant findings in this area is the large size and union wage premium identified across African countries, making the effect of these firm characteristics on wages and labor competitiveness a worthy topic of further empirical research.

7. Skills, productivity, and competitiveness

The previous section focused on the institutional factors that may inhibit the ability of firms to lower wages and increase employment. That unions are powerful in Africa and that formal sector wages are much higher in larger than small firms are now much better established facts than a decade ago due to data advances made possible by new survey based evidence on firms and households. However, we noted in the earlier section that in most African economies – the examples we have focused on here have been Ghana and Tanzania – the informal sector provides employment opportunities and low wages. We also noted that Africa had been conspicuously unsuccessful in ensuring that labor demand could grow rapidly through labor intensive exports. These two sets of findings suggest an important question. Why do these low wages not provide an attraction for investors wishing to export labor intensive manufactures?

African wages in international perspective

One of the greatest challenges in analyzing international competitiveness is the paucity of data allowing for meaningful wage comparisons across countries. A firm in Kenya paying an average of, say, US$50 per month to its production workers may have more or less competitive labor costs than a similar firm in China paying US$70 per month. To make this wage comparison informative, we must consider at least three other factors: the capital intensity of the firm, skill levels of the workers, and total factor productivity (TFP) which may depend in part on the broader business climate.

To appreciate the implications of the data and empirical research discussed below, consider a standard Cobb-Douglas production function, where the output, Y, of each firm is determined by its physical capital and labor inputs (K and L, where the latter is augmented by the stock of human capital, H) as well as its underlying TFP, denoted A:

$$Y = A\left[K^{\alpha}(HL)^{\beta}\right] \tag{1.1}$$

In this case, wage rates under perfect competition can be expressed simply as:

$$\hat{w} = \beta\left(Y/L\right)$$

$$= \beta A K^{\alpha}\left(H\right)^{\beta} L^{(\beta-1)} \tag{1.2}$$

where β is labor's share in total output. This expression for wages illustrates the basic point that wages will reflect labor productivity. If wages are raised (increasing the left-hand side) the firm will respond by decreasing labor demand to increase the capital labor ratio and thus labor productivity (increasing the right-hand side).

Comparing wages and labor productivity within a country is not a way to measure the international competitiveness of an economy. To do that we need to ask if wages in Kenya are higher than they are predicted to be by differences across countries in total factor productivity (TFP), the capital stock, and skills. This can be done by measuring deviations from competitive wage levels as defined in equation (1.2), rewritten here in logs:

$$\ln \hat{w}_i = \ln \beta + \ln A_j + \alpha \ln K_j + \beta \ln H_i + (\beta - 1) \ln L_j + \omega(country\_dummies) + u_i \quad (1.3)$$

In this equation the coefficient on the country dummies, ω, will measure all country specific factors affecting wages, after netting out the effect from TFP, capital, and skills.[7] These country specific effects can be interpreted as a measure of wage distortions or competitiveness: countries with a high value of ω are deemed *un*competitive, as firms must pay relatively high wages at given productivity levels.[8]

The following sections apply this framework to examine two questions about the competitiveness of African wages. First, are wage differentials across countries in line with productivity differentials or driven by other distortions? Second, how does the productivity of African workers and firms compare to their Asian competitors and how important are each of the three elements of productivity discussed here in explaining Africa's productivity gap?

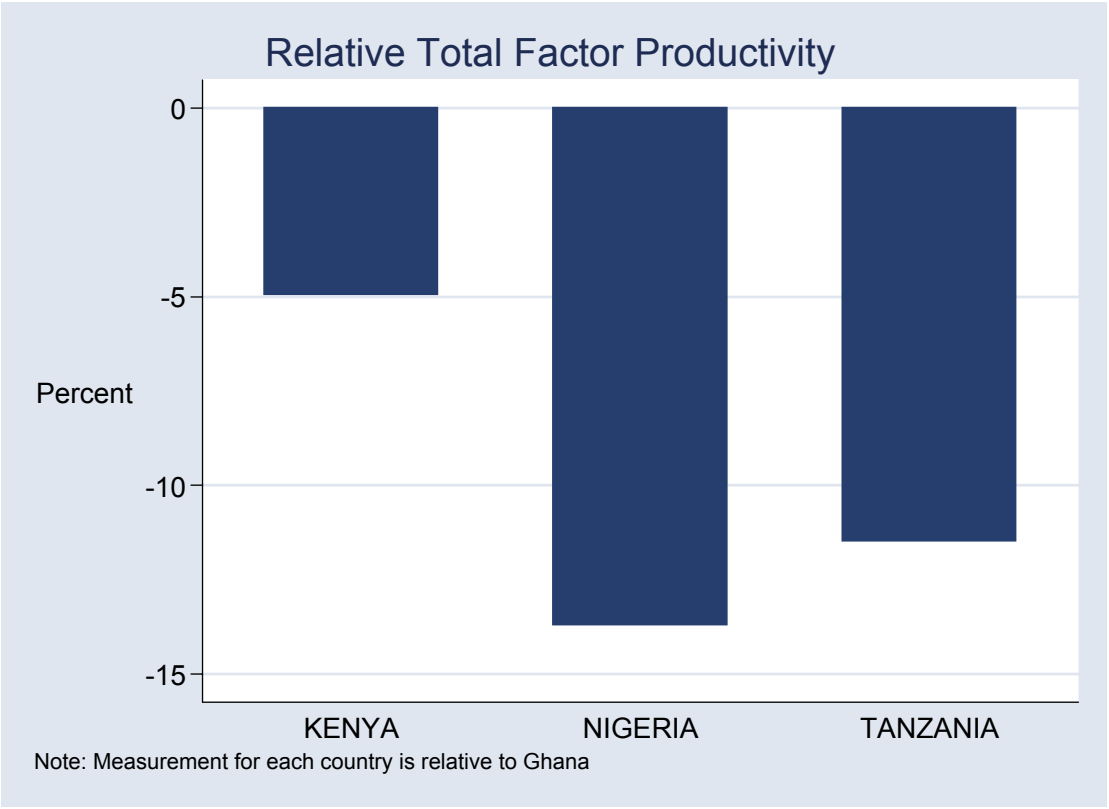
a. Wages and productivity across African countries

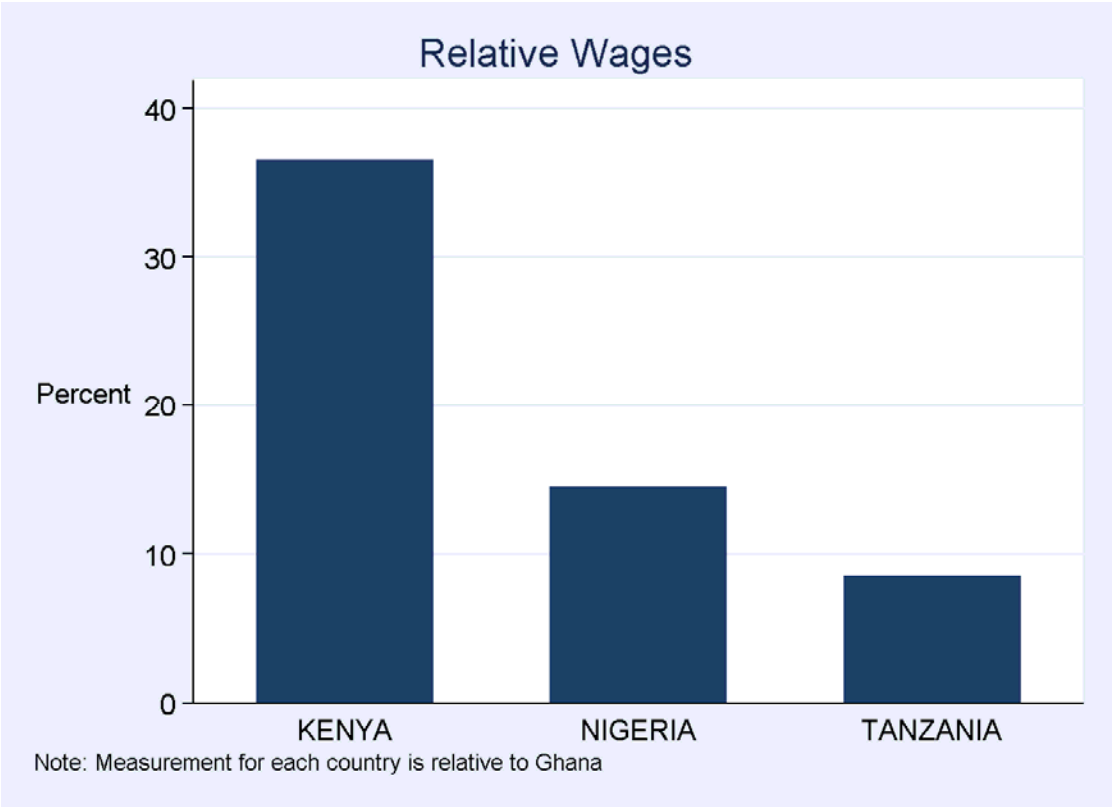
The above framework provides a way to make meaningful comparisons of wages across countries, simultaneously accounting for all the contributing elements of firm productivity. Wage differentials based on skills or TFP differences can be considered entirely "justified" in this framework, and will not detract from international competitiveness. On the other hand, wage premia which do not correspond to workers' productivity may be attributed to other institutional constraints which will inhibit competitiveness.

[7] It should be noted that in practice, implementation of this empirical measure involves one additional complication. Data on TFP is not directly available, but must be computed on the basis of the model specified in equation (1.1), where we can see that $\ln A = \ln Y - \alpha \ln K - \beta \ln H + \beta \ln L + \lambda(country\_dummies)$. If this expression is substituted into the equation for wages, (1.3) it is clear that the country dummies in this final equation are the net effects of country specific effects on total factor productivity and the effect of wages. If wage differences across countries exactly mirror differences in TFP then there will be no country specific effect on wages, consistent with the description in the text.

[8] One caveat to this interpretation is that ω may include the unobserved quality of the human and physical capital in a given country; a possibility which is theoretically testable.

Figure 13


Relative Total Factor Productivity
0
-5
-10
-15
Percent
KENYA
NIGERIA
TANZANIA
Note: Measurement for each country is relative to Ghana


Relative Wages
40
30
20
10
0
Percent
KENYA
NIGERIA
TANZANIA
Note: Measurement for each country is relative to Ghana

Data from the RPED and additional CSAE surveys allow us to examine the correspondence between wages and productivity directly in a sample of firms stretching across four African countries - Ghana, Kenya, Nigeria and Tanzania. We begin with the gap in TFP across the countries. Figure 13 (top panel) shows TFP differences across the four countries. The omitted country is Ghana so the Figure shows that Tanzania is the least efficient country across the four, although it is not significantly different from Nigeria (see the Appendix Table A8 for the regression underlying the chart]. In the bottom half of Figure 13 we report relative wages for production workers with controls for human capital differences, but not for differences in the TFP or capital intensity of firms. While Kenyan firms are some 5 per cent less efficient than their Ghanaian counterparts, Kenyan production workers have wages nearly 40% higher. While the differences are smaller the pattern is the same for Tanzania and Nigeria: both have wages significantly higher than those in Ghana, combined with substantially lower TFP.

In Figure14 below we bring the two halves of Figure 13 together to ask how competitive are the four economies in the sense of how far are their wages for production workers out of line with underlying productivity, as described by equation (1.3).

Figure 14

As would be anticipated from the pattern shown for productivity and wages, Kenya is by far the least competitive economy in this sense of the term and Ghana is the most competitive.

Nigeria and Tanzania are midway between Kenya and Ghana, both being some 10 to 20 per cent more competitive than Kenya and similarly less competitive than Ghana.

b. Productivity and skills: comparing African and Asian firms

Unfortunately data do not exist to systematically compare wages and productivity across regions in order to examine the competitiveness of African wages in comparison with Asian or other workers. However, recent research within the Bank has employed data pooling African and Asian firms to allow for direct productivity comparisons across the regions. In addition, this data allows us to ask which of the basic ingredients in worker productivity identified above – TFP, capital, or skills – can best explain Africa's lagging competitiveness?

Comparing firms in Kenya and Thailand, Dollar and Zeufack (1999) find that Thai firms produce *three times* as much value added per capital and labor input as their Kenyan counterparts. This suggests Africa's poor competitiveness vis-à-vis Asia may be driven primarily by TFP differences. Neither country exhibits a significant productivity difference between domestic and foreign firms, leading the authors to conclude that the enormous cross-country productivity gap is driven primarily by the local business environment, rather than firm level technology. Furthermore, inserting additional controls for workers' human capital does nothing to alter their result, suggesting that these productivity differences are not attributable to a skills gap.

Micro evidence on the determinants of export performance

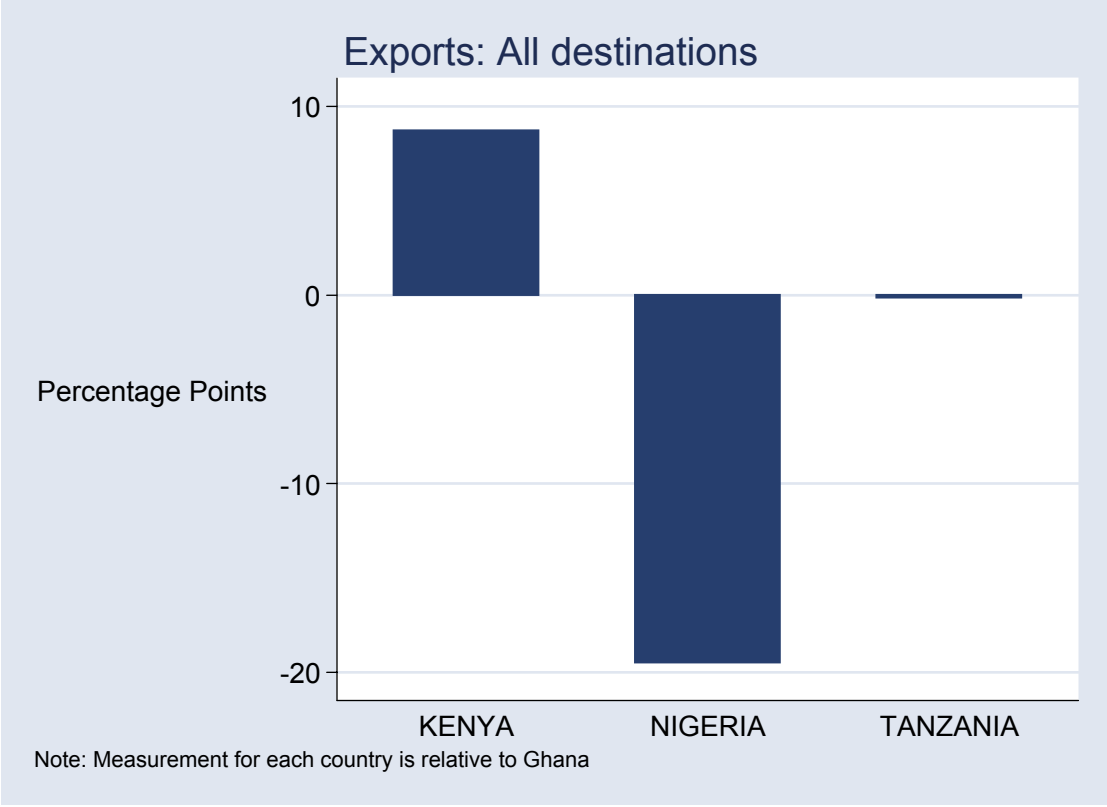
The papers by Adrian Wood and others cited above explore the determinants of trade patterns from a macro perspective using a simplified version of the 2x2 Heckshire-Ohlin-Vanek trade model. This highly stylized depiction of trade patterns has been criticized on a number of grounds, including the inappropriateness of using aggregate data from segmented markets where large and small firms use very different input ratios, as well as the exclusion of any role whatsoever for institutional factors such as the investment climate issues discussed in the companion paper.

Using World Bank firm level datasets (the RPED in Africa and the Firm Analysis and Competitiveness Surveys in Asia) a parallel microeconometric literature has developed which analyzes trade performance in Africa more closely, particularly in manufacturing. Summarizing this emerging literature, Zeufack (2001) points to a number of key results on the determinants of Africa's manufacturing export performance:

1. Although the total quantity of Africa's manufacturing exports is still small, large African firms are equally likely to export as similar firms in other countries or regions, as shown by Bigsten et al. (1999). These authors also find that firm size is the single most important determinant of a firm's decision to export.
2. Entering export markets has a sizeable positive impact on firms' efficiency. However, this causation seems to flow both ways, as Bigsten et al. (2001) find evidence of both learning-by-exporting and self-selection of more productive firms into export markets.
3. Finally, observable skills – defined as either education or work experience – have no effect on firm investment or exports (Soderbom & Teal, 2000). Similarly, by pooling data from Ghana, Kenya and India, Zeufack (2001) finds that firm level skills (measured as the proportion of 'professionals' and 'technicians' in the firm) are not significant determinants of the ratio of output that a firm exports. Thus the microeconometric evidence stands in direct contrast to the implication of simple trade models.

To conclude, we now ask if there is any evidence whether the measure of wage "competitiveness" explored in the previous sub-section is linked to the export performance of firms in a given country. At first glance, the answer seems to be no. The top panel of Figure 15 shows the relative propensity of firms across these four countries to export: Kenyan firms are 10 percentage points more likely to export (to all locations) than Ghanaian ones despite, on our measure, being much less competitive. Nigerian firms are much less likely to export, while the export propensity of Tanzania is virtually identical with that of Ghana. However, a substantial part of exporting by manufacturing firms in Africa takes the form of regional exports. As the Figures show, the distinction between regional and "international" exports is of considerable importance. The picture is very different if we consider exports outside of Africa (the bottom part of Figure 15). For this part of the export market firms in Ghana are more likely to be exporting than for any of the other three countries. While such a cross-tabulation using only four countries is obviously far from conclusive, it is consistent with the hypothesis that wage competitiveness is one factor enabling firms to enter the international export market.

Figure 15



Note: Measurement for each country is relative to Ghana

Note: Measurement for each country is relative to Ghana

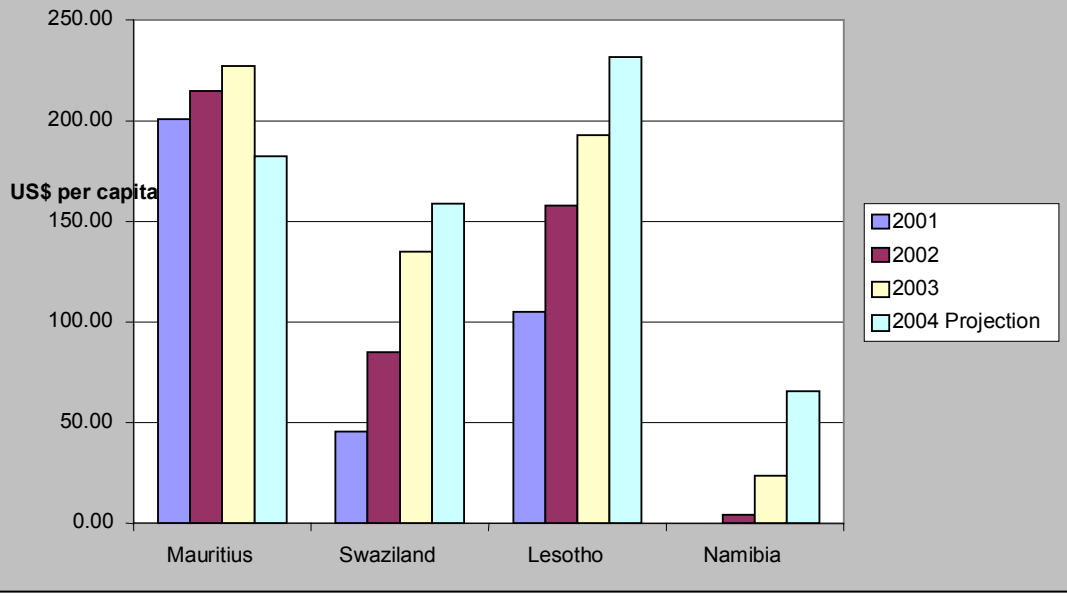
Box: The importance of market access

So far all of the strategies for expanding labor demand through international competitiveness discussed in this report have focused on factors within the control of domestic policymakers: institutional reforms, improvements to the business climate, skill investments, etc. However, it is important to emphasize the role played by developed country policies in Africa's export performance. Two recent initiatives to improve African manufacturing firms' access to developed country markets illustrate this point, and suggest that significant export gains are feasible with adequate market access.

First, a handful of African countries have significantly expanded one segment of manufacturing exports in the last several years under preferential tariff provisions for African textiles provided by the United States' African Growth Opportunities Act (AGOA). Figure 16 shows that per capita apparel exports in Swaziland, Lesotho, and Namibia more than doubled from 2001 to 2004. Second, the European Union has provided even more extensive market access to low income countries through its Everything But Arms (EBA) initiative. In both cases, however, the ultimate impact of these reforms may depend on the details of 'rules of origin' provisions which are still being hammered out.

None of this should imply that pressure is off African firms and policymakers to improve competitiveness at home. The U.S. Trade Commission (2004) projects that once garment import quotas to the U.S. are lifted for all countries at the end of 2004 China will virtually control the U.S. apparel market, crowding out other developing country competitors. This need to compete on an equal footing brings us back to all of the issues discussed above.

Figure 16. AGOA Apparel Exports per Capita



Exporting and the demand for labor

So far in this section we have focused on the factors that affect the ability of firms to compete in the international market place. In this sub-section we assess the evidence for whether firm's labor demand increases as a result of firms being in the export sector. Comparative work on exporting firms has found that exporters have higher levels of productivity, employ more people and are more capital intensive. There is evidence for SSA that that exporting leads to higher productivity and that firms with higher productivity self-select into exporting, Bigsten et al (2004). Rankin (2004) investigates whether the relationship between these dimensions of firm size and exporting is due, at least in part, to exporting firms *growing* faster than non-exporting ones. Table 7 presents results from Rankin (2004, Table 4.19) showing how *growth* in productivity, output, employment and the capital stock are related to the export status of the firm.

The Table presents these results for alternative levels of differencing ie from one to seven years. This procedure enables us to see how robust is any effect of export status on growth. The effect which is robust across all orders of differencing is that firms which enter the export market saw a significant growth in employment. It is also the case that employment growth among continuous exporters is higher than for non-exporters. The coefficient estimates are positive in all cases and similar in magnitude if converted to annual values. They are significantly different from zero at the 10 per cent level for 1^{st} 2^{nd} and 5^{th} differences. These values suggest that continuous exporters increase employment by between 2.4 and 5.2 per cent per annum more than non-exporters. There is some evidence that continuous exporters have higher rates of capital stock growth than non-exporters although the magnitudes and signs are not robust across lengths of differences. Exit from the export market is associated with a contraction of output (or lower rates of output growth), of between 5 and 11.6 per cent per annum over 5^{th} to 7^{th} differences. The data does not show a significant decline in employment with exit from the export market. This may be partly due to problems of measurement but may also reflect declining productivity with exit. The pooled sample is for exporting firms from Ghana, Kenya and Tanzania. Full results can be found in Rankin (2004, Appendix Tables A4.16-A4.25).

In summary there appears to be some evidence across these economies that both being in the export market and entering the export market leads to an increase in the demand for labor.

Table 7 Growth results							
Length of difference (*d*)	1	2	3	4	5	6	7
Productivity (gross output, Constant returns to scale production function)							
Continuous exporters$^{d}_{it}$	-0.033	-0.038	-0.014	-0.003	-0.052	-0.169	-0.179
	(-1.61)	(-1)	(-0.28)	(-0.06)	(-0.74)	(-2.11)**	(-1.67)*
Entrants$^{d}_{it}$	0.021	0.066	0.047	0.168	0.079	-0.202	-0.061
	(0.39)	(1.22)	(0.62)	(1.73)*	(0.88)	(-2.03)**	(-0.51)
Exits$^{d}_{it}$	0.136	-0.074	0.003	0.145	-0.032	-0.210	-0.239
	(2.47)**	(-1.47)	(0.04)	(1.94)*	(-0.37)	(-2.05)**	(-1.95)*
R-squared	0.760	0.784	0.818	0.791	0.791	0.803	0.792
N	1589	1128	751	654	555	472	309
Output							
Continuous exporters$^{d}_{it}$	0.004	0.027	-0.009	-0.031	-0.023	-0.141	-0.008
	(0.11)	(0.4)	(-0.1)	(-0.32)	(-0.18)	(-0.85)	(-0.03)
Entrants$^{d}_{it}$	0.047	0.251	0.292	0.301	0.359	0.063	0.368
	(0.56)	(2.61)***	(1.92)*	(1.87)*	(2.04)**	(0.31)	(1.3)
Exits$^{d}_{it}$	0.082	0.069	-0.024	-0.043	-0.378	-0.698	-0.352
	(0.84)	(0.63)	(-0.22)	(-0.3)	(-2.65)***	(-4.04)***	(-1.26)
R-squared	0.016	0.037	0.051	0.091	0.097	0.096	0.095
N	1589	1128	751	654	555	472	309
Employment							
Continuous exporters$^{d}_{it}$	0.052	0.076	0.077	0.095	0.141	0.152	0.179
	(2.13)**	(1.88)*	(1.32)	(1.44)	(1.74)*	(1.58)	(1.18)
Entrants$^{d}_{it}$	0.068	0.211	0.174	0.253	0.246	0.397	0.560
	(1.44)	(3.26)***	(2.2)**	(3.03)***	(2.71)***	(3.46)***	(3.62)***
Exits$^{d}_{it}$	-0.025	0.021	-0.052	0.018	-0.053	-0.166	-0.237
	(-0.48)	(0.34)	(-0.72)	(0.21)	(-0.57)	(-1.5)	(-1.57)
R-squared	0.034	0.055	0.050	0.088	0.073	0.093	0.103
N	1589	1128	751	654	555	472	309
Capital Stock							
Continuous exporters$^{d}_{it}$	0.003	0.009	0.064	-0.024	-0.049	0.064	0.207
	(0.83)	(0.55)	(2.56)**	(-0.41)	(-0.61)	(0.67)	(1.65)*
Entrants$^{d}_{it}$	0.009	0.010	0.067	-0.035	0.081	0.118	0.247
	(1.32)	(0.6)	(1.92)*	(-0.68)	(1.15)	(1.32)	(1.99)**
Exits$^{d}_{it}$	0.000	-0.006	0.000	-0.111	-0.099	-0.057	-0.289
	(0.05)	(-0.4)	(0.01)	(-1.74)*	(-0.96)	(-0.44)	(-1.51)
R-squared	0.075	0.048	0.081	0.063	0.073	0.066	0.102
N	1589	1128	751	654	555	472	309
Raw materials							
Continuous exporters$^{d}_{it}$	0.044	0.092	0.035	-0.041	0.008	0.019	0.156
	(0.91)	(1.1)	(0.3)	(-0.31)	(0.06)	(0.11)	(0.62)
Entrants$^{d}_{it}$	0.006	0.185	0.201	0.115	0.263	0.240	0.444
	(0.06)	(1.67)*	(1.29)	(0.84)	(1.48)	(1.17)	(1.5)
Exits$^{d}_{it}$	-0.075	0.206	-0.031	-0.291	-0.464	-0.624	-0.098
	(-0.6)	(1.51)	(-0.22)	(-1.71)*	(-2.49)**	(-2.94)***	(-0.32)
R-squared	0.014	0.026	0.039	0.079	0.114	0.130	0.147
N	1589	1128	751	654	555	472	309

OLS results, observed firm characteristics, sector and country controlled for. ** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level. Values in parenthesis are t-statistics. Inputs and output are expressed in natural logarithms STATA 8.0 SE command hadimvo used to eliminate outliers. P-value of 0.2 used.

8. Summary and Conclusions

This report has provided an overview of how African labor markets have performed in the 1990s and investigated the links between economic growth, labor market outcomes, and poverty reduction. Our objective has been to understand what recent research on wage determinants, labor demand, and labor market institutions can teach us about the design of job creation policies to target the poor. In the process, we have identified a range of key policy questions. How do wage earnings link to poverty? Does a lack of labor market flexibility hamper the process of high-wage job creation? What explains the returns to skilled labor and how have they been affected by developments in labor markets in the 1990s? This report provides the basis for answering these questions by analyzing a representative subset of African economies, rather than focusing exclusively on continent wide averages, and by documenting notable (but rare) success stories. To begin, we draw on a wide range of macro and micro data sources to provide an overview of four stylized facts characterizing Africa's recent performance.

Trends in the 1990s

- The absolute level of wage employment has increased in countries for which comparable data is available, but formal sector job creation has not kept pace with a growing labor force.
- In the 1990s capital investment failed to keep pace with population growth.
- As a result, the relative proportion of informal sector employment has increased dramatically over the decade. This broad trend masks diversity in unemployment and self-employment rates across the continent.
- Wage rates for unskilled workers on average across sub-Saharan Africa have fallen during the 1990s. Despite this, African wages remain, again on average, higher than those in China.

A typology of labor market outcomes in Africa

The failure of modern job-creation and investment to keep pace with population growth has prevented significant poverty reduction in most countries. However, this common result of excess labor supply takes widely divergent forms across the continent, and policies must be tailored to each of at least three categories delineated in section 3:

1. *Structural unemployment*. South Africa, the largest economy in the region, suffers one of the highest unemployment rates in the world. Evidence suggests that individuals who are out of work are not unemployed voluntarily, in any meaningful sense of the word, thus the search for an explanation turns primarily to structural constraints preventing job creation.

2. *Search unemployment*. Pockets of high unemployment similar to South African levels can be found elsewhere on the continent, such as urban Ethiopia, which lies at nearly the opposite income extreme within the region. However, examining the profile of unemployed persons in the Ethiopian data shows them to be disproportionately young, well-educated, and from affluent backgrounds (in contrast to South Africa). Evidence suggests high public sector wages may contribute to job queuing by the relatively educated.

3. *Informality*. Finally, a majority of African economies lie somewhere in the income range between Ethiopia and South Africa, but report low or negligible levels of open unemployment. Instead, a large informal or self-employed sector dominates the economy. The sections of the report have focused on diagnosing the causes of this labor market segmentation and the failure of large formal firms to absorb the pool of low-wage labor.

Do African labor markets need to be more "flexible"?

Labor market policy debates frequently invoke the concept of "flexibility." In this report we identifed at least four distinct attributes of labor markets all related to the flexibility of wages and employment.

- The ability of real wages to decline over time
- The tendency for wages to adjust in the face of unemployment
- The extent of wage differentials between sectors and/or firms of various size.
- The change in these wage differentials over time.

Section 4 reviewed evidence showing that African labor markets may be surprisingly flexible in the first two senses—rising and falling erratically at points in the last decade, and exhibiting a "wage curve" relationship with respect to unemployment. However, Section 6 argued that "rigidity," in the sense that we observe substantial wage differentials between firms and sectors, certainly characterizes African labor markets. The tendency for large, export oriented firms to face significantly higher labor costs than their smaller, informal

counterparts is a source of severe allocative inefficiency, and perhaps more importantly, a major obstacle to export oriented growth on the continent.

What role do labor markets play in Africa's poor export performance?

African countries have been conspicuously unsuccessful in raising labor demand through labor intensive exports, despite a large pool of low wage labor concentrated in the informal sector. Is this export failure due to a shortage of skills in the labor force? Or perhaps to labor market distortions that render labor costs uncompetitive vis-à-vis Asian and other firms? Alternatively, perhaps African firms are unable to compete for reasons independent of labor markets, such as their low levels of underlying efficiency.

While acknowledging that they are not mutually exclusive, section 7 attempted to assess the relative importance of these three factors in African competitiveness. One of the primary hurdles here is the lack of data permitting wage comparisons across regions. However, preliminary assessment indicates that TFP differentials between Asian and Africa firms (on the order of 300%) are a primary explanation for export differences. Similarly within Africa, TFP appears to be the primary determinant of a firm's decision to export, with no significant role observed for worker skills. Finally, looking at the correspondence of wages with worker skills, capital intensity, and TFP exposes significant differences in wage competitiveness across African countries.

A strategy for poverty reduction through outward oriented employment expansion

It has proved easier to increase the supply of educated labor at the lower part of the skill spectrum than the demand for such labor. A policy focus on skills needs to be complemented by policies focused on labor demand for such skills. As high level skills (by which we mean post-secondary education) are expensive in Africa and becoming more so, a successful growth path will be one economizing on their use and focusing on the less skilled.

Wage employment may contribute to raising overall incomes by one of two general patterns:

1. Increases in the wage rate for a given set of workers and a given composition of firms, or
2. Employment expansion drawing workers in from low- to high-wage sectors, and/or increasing the firm size composition of high-wage sectors.

Of these two alternatives, the second is the route by which wage rises can be linked to poverty reduction. It has worked where labor demand expansion has been linked to exports. The failure in export markets has meant that the typical pattern in SSA has been the reverse process by which employment expands in low wage opportunities, with very limited poverty reduction.

Looking forward, there is reason to believe that the key to unlocking Africa's growth potential is directly related to the plight of marginalized groups in the labor market. To compete internationally and achieve export led growth, African economies must foster the specific forms of flexibility that allow exporters to bring low-wage workers from the pool of self-employed and unemployed into the formal sector. One of the primary agendas for labor market research in Africa in the future will be to identify precisely what institutional mechanisms prevent this from happening in more countries at present.

Appendix

Table A1. Wage Trends by Skill Group[a]

Table A1.1 Unskilled Production Workers

	1983-86		*1987-89*		*1990-92*		*1993-95*		*1996-99*	
	US$	PPP$	US$	PPP$	US$	PPP$	US$	PPP$	US$	PPP$
OECD	910.76	1027.46	1218.88	1113.74	1467.87	1283.66	1546.48	1344.34	1603.45	1482.57
East Asia/Pacific	87.22	265.93	96.40	354.64	50.09	210.13	71.77	306.28	93.33	387.92
Europe/Central Asia	136.57	255.04	143.47	361.54	230.56	742.67	176.69	590.95	108.13	461.77
Latin America	191.79	434.25	73.03	396.73	195.36	340.40	223.09	364.19	157.64	321.90
MENA	639.36	795.71	325.70	800.93	349.73	727.71	624.77	933.36	189.01	608.74
South Asia	38.98	127.07	45.39	148.55	38.63	148.73	38.29	170.27	42.09	191.07
Africa	115.12	184.57	83.11	220.86	126.49	292.33	110.99	236.15	100.58	189.44
Angola	45.77	89.28							106.46	427.49
Burundi	63.19	146.12	66.69	196.10	50.22	160.80				
Benin	82.66	259.21	94.66	229.92	94.51	244.17				
Burkina Faso	75.63	224.45	113.06	291.70	129.14	308.05			81.37	360.74
Central Afr. R.			99.23	199.53	88.93	185.58	92.62	221.16	79.14	236.04
Ivory Coast	87.90	294.18			247.90	496.61	77.17	277.22	132.16	387.98
Cameroon	119.98	342.75	136.71	328.53	151.14	322.99				
Comoros	57.32	303.55	74.54	282.29	96.82	334.39	122.32	453.16	119.93	504.44
Gabon	204.70	628.64	276.90	652.30	347.57	723.45	236.40	646.41		
Ghana							50.17	161.94		
Madagascar	65.64	130.16	38.51	123.05			26.39	88.60	34.49	126.77
Mali	55.86	171.94	72.17	214.22	92.70	249.88				
Mauritius	98.43	484.10	126.28	570.70	169.37	707.55	195.68	821.46	224.54	928.53
Malawi							44.53	186.17	45.41	191.88

Nigeria	205.87	202.02					56.24	89.38	127.73	121.02
Rwanda	78.87	206.46	120.74	261.08	91.83	239.16				
Sierra Leone	19.48	69.43	22.75	94.27	35.50	207.37	40.62	204.23	34.31	162.77
Swaziland	77.34		75.03				161.89			
Seychelles	181.90	373.22	276.32	220.41	302.68	260.29				
Chad	70.40	228.26	81.86	231.98	70.73	186.54			86.86	352.24
Togo					125.28	336.66	80.06	217.14	81.25	221.84
Uganda							27.43	92.95		
South Africa							409.92	808.54		
Zambia	37.17	134.86	49.14	82.45	53.29	98.74	51.39	108.65	55.72	130.74
China					43.31	194.70	62.55	293.72	92.70	386.10
Hong Kong	372.15	676.87	502.83	863.22	704.34	1079.21	1082.31	1383.73	1379.11	1587.19
India	40.20	126.45	47.51	151.99	38.96	145.85	37.69	164.85	39.55	177.14
Cambodia							16.15	68.06	39.73	196.84
S. Korea	223.84	445.79	376.02	627.96	642.88	931.37	852.83	1118.83	837.82	1204.20
Philippines	78.23	269.35	95.41	354.94	112.64	418.50	144.31	441.90	672.58	638.42
Singapore	279.21	357.92	321.14	402.39	443.53	472.50	583.78	529.43		

Source: Occupational Wages around the World (OWW) Database, Freeman & Oostendorp (2000)
[a] All individual country wage numbers represent *median* values from all wages reported for occupations in a given skill group, country, and time period. Regional numbers represent *means* taken over these country medians.

Table A1.2 Skilled Production Workers

	1983-86		*1987-89*		*1990-92*		*1993-95*		*1996-99*	
	US$	PPP$	US$	PPP$	US$	PPP$	US$	PPP$	US$	PPP$
OECD	1069.87	1192.94	1436.25	1317.38	1698.95	1501.30	1911.08	1664.06	1914.06	1775.13
East Asia/Pacific	97.32	304.03	94.90	349.83	48.55	203.08	66.95	275.07	92.47	387.65
Europe/Central Asia	142.62	271.34	141.61	379.11	226.24	868.70	199.72	656.81	103.17	438.38
Latin America	199.64	449.10	80.58	427.34	198.53	350.76	234.70	387.45	179.60	367.81
MENA	654.08	855.71	401.74	919.59	356.51	745.60	663.96	938.67	215.68	709.29
South Asia	43.44	142.44	51.58	165.46	44.76	176.62	42.20	188.83	44.28	205.25
Africa	147.07	238.85	107.79	283.78	151.41	354.48	143.38	328.11	135.21	229.48
Angola	45.77	89.28							94.27	345.20
Burundi	105.50	251.89	121.09	358.53	96.00	329.34				
Benin	65.84	201.99	125.18	293.51	142.31	357.64				
Burkina Faso	112.94	318.60	129.14	323.01	142.25	349.67			84.11	392.67
Central Afr. R.			121.45	249.30	142.77	301.40	114.51	294.63	91.52	268.14
Ivory Coast	97.68	326.91			270.47	541.81	77.17	277.22	138.62	392.45
Cameroon	208.76	575.24	180.69	416.11	183.91	390.78				
Comoros	73.04	379.44	164.74	623.87	151.12	521.92	171.86	639.14	163.54	721.93
Ethiopia							46.54	254.44		
Gabon	261.81	794.80	359.98	848.02	544.43	1131.13	290.49	794.32		
Ghana							65.22	210.53		
Madagascar	74.02	146.78	41.61	132.92			30.35	101.89	39.44	144.96
Mali	75.23	259.57	103.05	299.26	101.10	272.52				
Mauritius	119.62	585.29	185.99	849.89	225.31	931.44	266.76	1141.15	309.11	1265.06
Malawi							52.80	239.22	66.63	265.17
Nigeria	256.22	260.44					84.22	129.15	182.76	173.17
Rwanda	137.75	345.80	175.07	383.62	125.72	347.56				
Sierra Leone	19.77	70.46	23.04	94.69	33.14	193.57	33.60	191.13	33.35	158.22
Swaziland	124.94		116.66				210.54			

Seychelles	210.31	420.00	305.67	243.83	277.94	251.78				
Chad	70.40	228.26	81.86	231.98	73.31	190.85			115.82	479.86
Togo					125.28	336.66	68.33	190.80	58.44	160.56
Uganda							67.36	228.28		
South Africa							639.33	1255.73		
Zambia	46.92	163.58	63.62	114.45	74.05	137.70	65.66	138.83	69.27	162.55
China					40.94	184.56	55.48	254.63	91.80	385.71
Hong Kong	423.21	769.62	609.40	1050.70	1099.94	1581.31	1709.42	2357.66	2612.13	3056.18
India	44.74	141.52	53.67	167.64	44.72	172.65	41.62	183.06	41.12	187.17
Cambodia							15.96	66.64	53.52	242.76
S. Korea	222.48	437.37	409.60	669.67	646.63	937.00	871.91	1134.80	878.24	1335.94
Philipines	80.73	296.96	93.66	349.95	123.09	457.30	161.44	490.05		
Singapore	291.87	381.12	357.91	445.77	473.54	519.28	671.19	637.40	781.06	744.19

Table A1.3 Office Workers

	1983-86		*1987-89*		*1990-92*		*1993-95*		*1996-99*	
	US$	PPP$	US$	PPP$	US$	PPP$	US$	PPP$	US$	PPP$
OECD	1003.46	1113.35	1428.40	1279.92	1676.45	1471.38	1770.42	1568.33	1761.07	1653.05
East Asia/Pacific	141.43	430.90	128.88	452.47	55.16	230.64	83.39	334.92	104.64	438.05
Europe/Central Asia	137.89	245.98	158.72	333.29	553.06	2594.86	178.57	575.84	115.15	431.31
Latin America	219.54	494.77	96.62	521.56	214.54	381.07	261.36	432.84	219.09	448.54
MENA	702.13	881.77	376.87	878.78	214.50	658.09	193.99	701.62	197.78	649.66
South Asia	40.57	132.75	52.30	172.92	47.72	171.29	53.62	233.64	53.40	237.80
Africa	172.42	291.91	144.28	390.12	174.72	425.68	92.21	223.24	130.47	245.66
Angola	49.29	96.14							68.89	221.40
Burundi	236.25	556.13	243.45	730.45	166.68	579.72				
Benin	72.08	208.55	142.33	341.44	152.72	390.32				
Burkina Faso	108.66	319.56	144.98	369.22	191.93	510.84			97.78	453.92
Central Afr. R.			251.64	503.80	178.18	368.92	145.02	411.44	124.66	397.40
Ivory Coast	145.41	486.65			287.76	576.46	88.05	316.31	143.15	406.43
Cameroon	228.26	629.68	250.42	601.78	53.41	111.83				
Comoros	73.96	420.27	125.20	474.12	142.15	490.94	201.73	744.38	183.72	793.97
Gabon	276.22	847.70	408.55	962.44	690.78	1611.07	692.14	1892.56		
Ghana							89.92	290.28		
Madagascar	102.02	202.30	46.07	147.19			33.45	115.25	43.19	158.74
Mali	127.44	365.54	167.50	499.84	161.65	435.73				
Mauritius	140.28	694.01	235.51	1075.73	265.86	1099.09	351.05	1490.22	391.79	1728.55
Malawi							93.40	467.61	139.01	538.25
Nigeria	293.51	293.45					86.96	134.38	153.21	145.17
Rwanda	140.21	367.04	204.96	444.31	170.04	405.20				
Sierra Leone	25.35	90.35	30.26	127.43	44.32	258.87	48.97	235.63	48.59	230.49
Swaziland	74.71		97.92				306.63			
Seychelles	243.29	468.44	281.65	224.67	355.72	319.57				

Chad	134.98	437.63	156.94	444.77	197.63	516.37			165.94	615.29
Togo					247.46	665.02	121.11	338.16	158.80	411.37
Uganda							94.11	318.96		
Zambia	67.66	224.38	77.58	152.41	78.15	144.80	103.35	218.53	116.02	272.25
China					43.60	203.91	63.65	294.85	103.96	436.10
Hong Kong	379.23	703.10	642.13	1134.93	904.28	1346.14	1410.94	1787.36	2025.21	2370.87
India	41.48	130.47	54.87	177.53	48.57	168.24	53.35	227.74	51.00	222.28
Cambodia							17.77	74.23	50.60	212.50
S. Korea	319.76	639.97	551.49	855.35	845.18	1224.70	1119.03	1478.18	1173.91	1592.12
Philipines	126.67	446.02	126.19	450.78	136.49	484.79	169.08	563.69		
Singapore	481.41	628.62	564.46	708.49	738.09	781.32	955.19	876.84	1083.15	1029.70

Table A2. Employment by Sector for Selected Countries

	1987/88		*1988/89*		*1991/92*		*1998/99*	
Ghana	%	000s	%	000s	%	000s	%	000s
Wage Employees	17.3	1,121	18.1	1,215	15.4	1,143	13.2	1,166
Government	8	518	7.9	530	7.8	579	5.9	521
State Enterprise	1.9	123	2.3	154	1.2	89	0.6	53
Private	7.4	480	7.9	530	6.4	475	6.7	592
Self-employment	19.5	1,264	24.2	1,624	23.5	1,744	27.3	2,411
Unpaid Family	2.2	143	1.1	74	1.3	96	0.3	26
Agriculture	58.7	3,804	54.6	3,664	56.7	4,207	55.7	4,918
Unemployed	2.2	143	1.9	127	3.2	237	3.5	309
Total Labor Force	100	6,480	100	6,710	100	7,420	100	8,830

	1992						*1999/00*					
	Total		M		F		Total		M		F	
Uganda	%	000s	%	000s	%	000s	%	000s	%	000s	%	000s
Wage Employment	15.3	968	24.2	772	6.3	196	13.3	1,050	21.3	807	5.9	243
Public	5.4	343	8	254	2.9	90	3.4	265	5.3	201	1.6	65
Private	9.9	625	16.2	518	3.4	106	9.9	785	16	607	4.3	178
Self Employment	7.6	482	9.5	302	5.7	180	10.3	815	11.8	447	8.9	367
Agriculture	76.2	4,819	65.3	2,083	87.4	2,736	75.5	5,959	65.5	2,477	84.7	3,481
Unemployed	0.9	55	1.1	34	0.7	21	0.9	68	1.3	50	0.4	18
Total Labor Force	100	6,324	100	3,191	100	3,133	100	7,892	100	3,782	100	4,110

	1991/92		2000/01	
Tanzania	%	000s	%	000s
Wage Employment	7.93	899	7.40	1,071
Government	3.79	430	2.17	314
State Enterprise	1.95	221	0.72	104
Private	2.19	248	4.51	653
Self Employed	5.23	593	8.44	1,221
Unpaid Family	5.65	640	9.38	1,358
Agriculture	80.41	9,114	69.04	9,992
Unemployed	0.79	89	1.20	173
Total Labor Force	100.00	11,335	100.00	14,473
Total population		24,522		31,878

	1993 (Saldru)			*1995 (OHS)*			*2003 (LFS)*		
South Africa (%)[1]	Total	Male	Female	Total	Male	Female	Total	Male	Female
Wage employment	60.9	66.4	54.5	60.2	70.8	47.0	47.7	52.9	42.3
- Public	15.0	15.7	14.2				9.4	9.5	9.2
- Private	45.9	50.7	40.3				38.3	43.4	33.1
Self employment	7.9	6.6	9.3	10.4	6.7	15.0	10.6	11.3	9.8
- Agriculture	0.4	0.5	0.3				1.3	1.5	1.2
- Other	7.5	6.2	9.0				9.2	9.8	8.6
Employment	68.8	73.1	63.8	70.6	77.5	62.0	58.2	64.3	52.2
Unemployment	31.2	26.9	36.2	29.4	22.5	38.0	41.8	35.7	47.8
Labour Force	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Participation Rate				56.4	65.9	47.8	66.7	71.1	62.8

South Africa ('000s)	1993 (Saldru)			1995 (OHS)			2003 (LFS)		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Wage employment	7849	4657	3202	8231	5379	2852	9509	5302	4207
- Public	1933	1101	834				1869	949	920
- Private	5916	3556	2368				7640	4353	3287
Self employment	1018	463	546	1421	513	908	2111	1134	977
- Agriculture	52	35	18				269	148	121
- Other	967	435	529				1842	986	856
Employment	8868	5127	3748	9652	5892	3760	11622	6436	5187
Unemployment	4021	1887	2127	4015	1710	2305	8332	3579	4753
Labour Force	12889	7014	5875	13667	7602	6065	19954	10015	9939

Ethiopia (Urban Areas)	1994			1997		
	%			%		
	Total	M	F	Total	M	F
Wage Employees	42.9	47.4	37	47.8	54.3	40.2
Public	25	26.4	23.2	26.7	29.3	23.7
Private	17.9	21	13.8	21.1	25	16.5
Self Empl.	17.6	18.8	16	22.3	18	27.4
Unemployed	39	33.8	47.8	29.9	27.7	32.4
Labor Force Participation Rate	100	100	100	100	100	100
	55.8	68.3	42	57.2	62.7	51.9

Kenya (Urban Areas)	1986		1998/99	
	%	Millions	%	Millions
Wage Employees	66.2			
Self Empl.	16.5			
Unemployed	16.9			
Participation	70.4			
Population				
Modern			38.0	1.56
Informal			29.3	1.20
Agriculture			3.7	0.15
Not-stated			3.7	0.15
Unemployed			25.1	1.03
Participation			86.4	4.10
Population				4.74

Burkina Faso (Oufadougou & Bobo Dioulasso)	1955-64[2]		1965-74		1975-84	
	M	F	M	F	M	F
Formal Sector	23.2	7.5	15.4	3.9	8.3	3.7
Private	13.4	1.8	7.9	0.5	3.3	0.8
Public	9.8	5.7	7.5	3.4	5	2.9
Informal Sector	76.8	92.5	84.6	96.1	91.7	96.3
Agriculture	11.9	5.5	9.9	5.4	7.1	2
Craft	8.5	13.4	16.5	8	15.2	4
Petty trade – food	8	61.6	5.3	54.8	11	52.6
Petty trade – other	8.5	8	26.7	13.6	26.1	14.3
Services	39.9	4	26.2	14.3	32.3	23.4

Sources: **Ghana**: Teal (2000), based on Ghana Statistical Office surveys; **Uganda**: HIS 1992 and UNHS 1999/00, courtesy Simon Appleton; **Tanzania**: Household Budget Survey, courtesy Trudy

Owens; **South Africa**: SALDRU (1994) "South Africans Rich and Poor", South African Labour and Development Research Unit, University of Cape Town, August; StatsSA (1996) "October Household Survey 1995", Statistical Release P0317.10. Statistics South Africa, Pretoria; and StatsSA (2004) "Labour Force Survey, September 2003", Statistical Release P0210, Statistics South Africa, Pretoria; **Ethiopia**: Krishnan, et al (1998), based on 1st and 3rd rounds of the Ethiopian Urban Household Survey; **Kenya**: Urban Labour Force Survey, 1986; Labour Force Survey, 1998/99; **Burkina Faso**: Calvés & Schoumaker, *World Development* (2004), Table 3.

[1] See note below explaining the issues involved in comparing data sources across time in South Africa.

[2] Years represent birth cohorts. All numbers represent percentages from a 2000 survey who recalled finding their first paid employment in a given sector.

A Note on the South African data sources

Figure 3 in the main text uses 1993 Saldru data rather than the 1995 October Household Survey (OHS) despite concerns about the comparability between Saldru and the 2003 Labor Force Survey (LFS), because the OHS do not include a question on employer type (public versus private). We present in Appendix Table A2 a comparison between Saldru 1993 and the OHS for 1995 and, where direct comparison is possible, it can be seen that the numbers are very similar.

In making the case that the rate of unemployment has increased from the mid 1990s to 2003 Figure 3 in the text relies on comparing Saldru with the LFS 2003. It has been argued that such comparisons are misleading as data collection changes now classify individuals as unemployed when before they were classified as out of the labor force and that the definition of self-employment in South Africa's Saldru dataset is not consistent with LFS which, in turn, is not consistent with OHS.

We begin by considering the role played in constructing the comparative data by changing classifications of individuals. It is true that the LFS introduced changes in the capture of data. It is well known that they made a greater effort to capture informal work than did the previous OHS. Thus the post-1999 LFS provides a more reliable way of capturing the size of the informal sector in South Africa because they ask more probing questions about self-employment and small business activities than do the OHS which are available only up to 1999.

The questions to determine employment in the two surveys are shown in Table A2_South Africa. A HSRC report says "with respect to registering informal activities not only is the LFS an improvement on the OHS, but improvements were made to the data-gathering process. For example, fieldworkers were trained, prompting improved and the awareness of coders was increased" (Chapter 6, HSRC, 2003). Not surprisingly, the LFS gives somewhat higher estimates of the size of the informal sector in South Africa. Now, suppose that before the LFS was introduced, some people who were engaged in very informal work activities did not report themselves as employed. They could either have reported themselves as out-of-labor-force (OLF) or as unemployed. If they tended to report themselves as unemployed, then better data capture – which results in their being correctly recorded as employed - should *reduce* the unemployment rate, not raise it. On the other hand if, before the LFS, such people tended to get recorded as OLF, then from the LFS onwards, they would get recorded as *employed* labor force participants, i.e. their correct inclusion will again lead to a *reduction* in the unemployment rate. Thus, correct re-classification of very informally employed individuals (who were previously recorded as out of the labor force) due to data collection changes would lead to a reduction in the unemployment rate, rather than to an increase.

The data underlying Figure 3 also show a large increase in labor force participation rates over the 8 year period from 1995 to 2003 (see Table A2). If this figure is incorrect and these new entrants are not genuine labor force participants, and if they were re-coded into their correct (OLF) status, the unemployment rate would be lower. Such scepticism about the increase in labor force participation rates in the post-apartheid period is understandable as growth in the labor force is so dramatic. The labor force participation rate for women increased from 47 to 62 percent, i.e. increased by 15 percentage points, in the 8 year period between 1995 and 2003. However, two points need to be considered.

Firstly, there are good reasons why the LFP rate should have increased. The increase in participation rates for both men and women is likely due to the lifting of apartheid restriction on movement to urban areas and the new possibilities of employment that this was perceived to open. The end of apartheid and the better occupational attainment possible for non-white groups and women (partly due to employment equity legislation) is likely to have raised returns to employment for non-white sections of the population, and it is their labour force participation rates that have risen the most

Table A2_South Africa
Question to determine work status

OHS 1999	LFS 2000	
During the past seven days, did (name) do work for pay, profit or family gain" and it goes on to list the following as examples of work? Formal work for a salary, wage or profit Informal work, such as making things for sale, selling things or providing a service Work on a farm or land, whether for a wage or as part of the household's farming activities Casual/seasonal work 1 = yes, full time 2 = yes, part time 3 = yes, casual/seasonal 4 = no	In the last seven days, did (name) do any of the following activities, even for only one hour? (a) run or do any kind of business, big or small, for himself/herself or with one or more partners? *Examples: selling things, making things for sale, repairing things, guarding cars, brewing beer, hairdressing, creche businesses, taxi or other transport business, having a legal or medical practice, etc.* (b) Do any work for a wage, salary, commission or any payment in kind (excl. domestic work)? *Examples: a regular job, contract, casual or piece work for pay, work in exchange for food or housing.* (c) Do any work as a domestic worker for a wage, salary, or any payment in kind? (d) Help unpaid in a household business of any kind *Examples: Help to sell things, make things for sale or exchange, doing the accounts, cleaning up for the business etc. Don't count normal housework.* (e) Do any work on his/her own or the household's plot, farm, food garden, cattle post or kraal, or help in growing farm produce or in looking after animals for the household? *Examples: ploughing, harvesting, looking after livestock.* (f) Do any construction or major repair work on his/her own home, plot, cattle post or business or those of the household? (g) Catch any fish, prawns, shells, wild animals or other food for sale or household food? (h) Beg for money or food in public	 y/n y/n y/n y/n y/n y/n y/n y/n

(Kingdon and Knight, 2004). Education levels have risen and participation rates typically increase with education level, particularly so for women. Secondly, the significantly higher increase in female than male participation rate appears to be because of a decline in women's access to male income due to increased unemployment among males, the HIV epidemic and increased female headship due to changes in household structure. Casale and Posel (2001) show that the percentage of working-age women living with at least one employed male in the household fell from 53% in 1995 to 44% in 1999, female headship increased from 28% in 1995 to 34% in 1999 and the percentage of women reported to be married fell from 39.5% in 1995 to 35.2% in 1999. Further, much of the 15 percentage point increase in female labour force participation rates occurred before the introduction of the Labor Force Surveys. Casale and Posel (2001) show that between the 1995 and 1999 OHS, female broad labor force participation rate rose by 13 percentage points, from 47.8% to 60.8%, and male participation rate rose by 4.8 percentage points, from 65.9% to 70.7%. Thus the increase in labor force participation rates is not due to better capture of participants in later surveys as the main bulk of increase in labor force

participation rates occurred within the life-span of the OHS which had similar questions to capture labor force participation. In fact, the increase in labor force participation rates (and thus in the unemployment rates) slowed down after the introduction of the new Labor Force Surveys despite their more probing questions on participation and informal employment. However, this slow-down is likely to be because of discouragement due to rising unemployment rates and/or the effects of HIV/AIDS on the adult population, rather than due to major changes in the survey questions. Similarly, much of the increase in unemployment rates in South Africa in the post-apartheid period occurred by 1999. Casale, Muller and Posel (2004) made adjustments to the various OHS and LFS datasets "to ensure that the definitions of strict and broad unemployment are consistent across the years" (p. 11 cites their other work that details what adjustments were made). They then present a table of unemployment rates on an exactly comparable basis over time (their Table 2), which is reproduced below as Table A3. This shows that broadly defined unemployment rose by fully 10 percentage points in the four year period 1995-1999 and by 13.4 percentage points in the 8 year period 1999-2003. This is not very different to the unadjusted figures published by StatsSA and the story is similar for the narrowly defined unemployment as well. Overall, it is not correct to argue that unemployment in South Africa today is high due to better capture of participants in later surveys.

Table A3
The total labor force and unemployment in South Africa: 1995 -2003

	OHS 1995	OHS 1997	OHS 1999	LFS 2000:2	LFS 2001:2	LFS 2002:2	LFS 2003:1
Strict labour force (employed + searching unemployed)							
Total labour force	11 603 100	11 793 200	14 068 700	15 970 500	15 531 400	16 034 000	16 933 700
Total unemployed	1 971 900	2 688 700	3 671 200	4 231 900	4 687 600	4 986 900	5 354 200
Unemployment rate	17.0	22.8	26.1	26.5	30.2	31.1	31.6
Broad labour force (employed + searching and non-searching unemployed)							
Total labour force	13 648 000	14 468 000	17 169 800	18 250 200	18 556 000	19 276 700	20 259 600
Total unemployed	4 017 800	5 363 500	6 772 300	6 511 600	7 712 200	8 229 600	8 680 100
Unemployment rate	29.4	37.1	39.4	35.7	41.6	42.7	42.8

Notes: Estimates are for all labour force participants aged between 15 and 65 years. The searching unemployed were identified as those who were willing to accept work and had actively searched for work in the four weeks prior to being interviewed.

Source: Table 2 from Casale et. al. (2004).

Table A4. Wages for Selected Countries – Annual US$ and PPP$

Ghana	*1987/88*		*1988/89*		*1991/92*		*1998/99*	
	US$	PPP$	US$	PPP$	US$	PPP$	US$	PPP$
Public Wage Job	1103.17	1545.55	1056.60	1664.10	1232.84	1940.25	1277.80	3250.69
Private Wage Job	1106.78	1156.48	980.33	1161.00	1118.43	1423.07	1260.94	2093.57
Self Employment	1129.27	1156.48	1001.20	1208.38	1227.62	1212.66	1224.81	1766.27
Farmer	736.25	288.05	669.21	232.07	727.02	403.66	712.16	491.09
% gap between private and self employment		0.0		-3.9		17.4		18.5

Source: Teal (2000), Ghana Statistical Office surveys.
*Income from principal job

Ethiopia	*1994*		*1997*	
	US$	PPP$	US$	PPP$
Public Wage Job	1,281	3,696	1,664	4,248
Private Wage Job	1,206	3,479	1,426	3,496
Self-employment*	1,496	4,315	655	1,890
% gap between private and self employment		-19.4		85.0

Source: Urban Labour Force Survey, 1986; Labour Force Survey, 1998/99
*Median revenues per family worker

South Africa	*1993*		Premium over self-employed persons (%)
	US$	PPP$	
African Wage workers	2,958	5,800	76.3
African Public wage workers	4,530	8,883	170.1
African Private wage workers	2,488	4,878	48.3
African Self-employed workers	1,677	3,289	--

Source: Calculations from SALDRU survey, 1993. Note that these are arithmetic averages.

Mauritius		*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*
Agriculture & Fishing	US$	1,940	2,082	1,942	2,089	2,677	2,843	2,786	2,581	2,671
	PPP$	8,244	8,606	8,480	8,805	10,523	11,095	12,225	12,301	12,727
Manufacturing	US$	1,921	2,201	2,212	2,474	2,787	2,856	2,598	2,457	2,423
	PPP$	8,163	9,100	9,659	10,428	10,955	11,148	11,400	11,710	11,545
Manufacturing, EPZ	US$	1,690	2,015	2,061	2,189	2,409	2,494	2,288	2,153	2,115
	PPP$	7,182	8,329	9,000	9,228	9,470	9,733	10,041	10,263	10,077
Central Government	US$	3,345	3,704	3,359	4,353	4,785	4,795	4,905	4,311	4,692
	PPP$	14,217	15,313	14,668	18,351	18,807	18,715	21,521	20,548	22,355

Source: http://statsmauritius.gov.mu/hs/labour/hs.htm

Table A5. Real Minimum Wages, Selected Countries, 1970-90					
	1970	*1975*	*1980*	*1985*	*1990*
Benin	--	143	100	91	--
Botswana	--	85	100	113	--
Burkina Faso	79	87	100	87	101
Congo	--	157	100	96	--
Côte d'Ivoire	104	114	100	84	
Gabon	90	107	100	90	84
Ghana	415	509	100	144	114
Kenya	119	121	100	68	--
Malawi	--	119	100	120	--
Mauritius	--	--	100	104	--
Niger	--	87	100	70	81
Senegal	99	111	100	78	78
Togo	143	131	100	80	80
Zaire	805	599	100	164	--

Source: Squire & Suthiwart-Narueput (1997), p. 121

Table A6. Wage Premia for Union Jobs			
Study	*Estimation Technique*	*Country*	*Earnings Differential*
Miller & Vallée (1995)	OLS with dummy variable for union members	Cameroon	-8.1%
Vallée & Thomas (1994)	OLS for formal sector jobs plus Logit for self-selection	Cameroon	-10.7%
Terrel & Svejnar (1989)	OLS with dummy variable for union members	Senegal	-12.5%
Schultz & Mwabu (2003) (a)	Quantile regression with dummy for union members, *no industry controls*	South Africa (Africans)	145% at 10th percentile 11% at 90th percentile
Blunch & Verner (2004)	Quantile regression with dummy for union members, control for firm size	Ghana (manufacturing)	34% at 10th percentile -9% at 90th percentile

Union wage premium in South Africa				
	African		White	
	1993	1999	1993	1999
Without controlling industry				
Coefficient on union dummy	0.468	0.561	-0.051	0.030
t-value	(14.7)	(24.7)	(0.8)	(0.6)
Union premium	**59.7%**	**75.2%**	**-5.0%**	**3.0%**
Controlling industry				
Coefficient on union dummy	0.191	0.430	-0.097	-0.022
t-value	(5.9)	(17.9)	(1.4)	(0.4)
Union premium	**21.0%**	**53.8%**	**-9.2%**	**-2.2%**

Note: Dependent variable is log of hourly wage and independent variables were education in years, its square, urban dummy and union status dummy.
Source: Schultz and Mwabu (2001) for 1993 figures and own calculations from October Household Survey of 1999.

Table A7. Returns to Education in Selected Countries

Source: Schultz (2004), except where otherwise noted

Ghana	1987				1998			
	Age 25-34		Age 35-44		Age 25-34		Age 35-54	
	Male	Female	Male	Female	Male	Female	Male	Female
Primary	9	6.2	6.5	6.3	11	7.5	7.8	-2.9
Middle	3.8	2.7	5.9	-2	3.9	3.4	5.2	4.8
Secondary	15	8.1	9.9	18	12	14	9	16
University	24	54	5.8	6.2	44	25	20	-20

Cote d'Ivoire	1985-87			
	Age 25-34		Age 35-54	
	Male	Female	Male	Female
Primary	15	4.5	17	10
Middle	14	9.6	12	3.8
Secondary	22	12	26	28
University	16	3.6	3.6	28

Kenya	1994			
	Age 25-34		Age 35-44	
	Male	Female	Male	Female
Primary				
Middle	11	8.1	10	5.8
Secondary	7.4	20	12	19
University	21	26	13	16

Kenya	1986/88		1992		1994	
	Male	Female	Male	Female	Male	Female
Primary	17.7%	11.3%	25.4%	32.5%	14.4%	15.7%
Post-primary	57.4%	40.7%	69.0%	76.0%	34.7%	58.6%

Source: Dabalen (2000)

South Africa	Africans				Whites			
	Age 25-34		Age 35-54		Age 25-34		Age 35-54	
	Male	Female	Male	Female	Male	Female	Male	Female
Junior secondary	7.3	9.6	8.8	13	1.4	-3.4	1.9	-3.1
Secondary	22	32	18	28	20	28	24	12
University	32	46	29	26	20	12	12	14

Nigeria	Age 15-64		Age 25-34		Age 35-44		Age 45-64	
	Male	Female	Male	Female	Male	Female	Male	Female
Primary	2.5%	2.4%	1.6%	0.8%	1.3%	2.1%	4.1%	4.5%
Secondary	3.9%	4.4%	4.0%	7.2%	3.9%	3.1%	4.2%	4.2%
Post-secondary	10.4%	12.2%	12.7%	13.8%	12.0%	13.6%	9.5%	10.0%

Source: Aromolaran (2002)

Burkina Faso	1994		1998	
	Male	Female	Male	Female
Primary	10.1%	19.0%	7.9%	7.1%
Secondary	17.2%	16.1%	10.9%	14.4%
Post-secondary	17.4%	19.2%	12.9%	16.0%

Source: Kazianga (2002)

Manufacturing Sector Workers	Cameroon	Ghana	Kenya	Zambia	Zimbabwe
Primary Completers	3	3	2	5	3
Secondary Completers	8	15	5	22	27
University Completers	38	29	43	65	37

Source: Bigsten, et al (1998)

Appendix A8

A8_1 Ln (Real Earnings in Domestic Prices)
Production Workers in the Manufacturing Sector

		Ghana	Kenya	Nigeria	Tanzania
[1]	Union dummy (no controls)	0.401 (6.91)**	0.120 (1.91)	0.367 (3.18)**	0.214 (3.85)**
[2]	Union dummy (controls for skills))	0.258 (4.90)**	0.030 (0.52)	0.238 (2.38)*	0.177 (3.49)**
[3]	Union dummy (controls for skills and size)	0.063 (1.05)	-0.072 (1.23)	0.065 (0.60)	0.070 (1.35)
[4]	Ln (employment)	0.127 (5.19)**	0.071 (3.40)**	0.126 (2.24)*	0.093 (4.12)**
	Observations	3973	1312	295	2403

Robust t statistics in parentheses
* significant at 5%; ** significant at 1%

Note: All equations have time dummies.

Row [1] is the raw union premium with no controls.
Row [2] is the union premium with controls for gender, age, age squared, education in years (linear and squared) and tenure.
Row [3] is the union premium with controls for skills as in Row [3] and the log of firm employment.
Row [4] is the coefficient on the log of employment in the regression reported in Row [3].

		Ghana	Kenya	Nigeria	Tanzania	South Africa
[1]	Union dummy (no controls)	0.397 (6.80)**	0.125 (2.02)*	0.284 (2.65)**	0.221 (4.04)**	0.284 (9.33)**
[2]	Union dummy (controls for skills)	0.258 (4.92)**	0.039 (0.68)	0.155 (1.73)	0.181 (3.63)**	0.200 (7.06)**
	Observations	4012	1333	500	2668	2246

Note: All equations have time dummies.

Row [1] is the raw union premium with no controls.
Row [2] is the union premium with controls for gender, age, age squared, and education in years (linear and squared).

Notes: There are nine years of Ghana data covering the period 1992 to 2000; five years of Kenyan data covering the years 1993, 1994 , 1995, 1999 and 2000; six years of Tanzanian data covering the years 1992, 1993, 1995, 1997, 1999 and 2000; two years of Nigerian data covering the years 2000 and 2001. For all these countries the data is based on firm surveys of workers in the manufacturing sector, within the workers surveyed the regression confines the data to production workers. There are four years of South African household data taken from the OHS for 1993, 1995, 1997 and 1999. For these individuals the sample is again confined to production workers in manufacturing.

A8_2	Labor Productivity in the Manufacturing Sector: Ln (Real Output per Employee)		
Kenya	0.668	-0.084	-0.051
	(6.67)**	(2.89)**	(1.64)
Nigeria	0.256	-0.132	-0.148
	(1.51)	(3.43)**	(3.63)**
Tanzania	-0.186	-0.139	-0.122
	(1.74)	(5.52)**	(4.62)**
Ln (Capital/Employee)		0.029	0.025
		(4.29)**	(3.42)**
Ln (Raw Material/employee)		0.666	0.664
		(39.89)**	(37.63)**
Ln (Indirect Cost/Employee)		0.176	0.176
		(13.25)**	(12.58)**
Ln (Employment)		0.016	0.015
		(2.02)*	(1.76)
Exports		0.001	0.001
		(2.62)**	(2.59)**
Any foreign Ownership		0.036	0.045
		(1.15)	(1.41)
Firm Age		0.001	0.001
		(1.42)	(1.26)
Education (Weighted)			0.009
			(2.16)*
Tenure (Weighted)			0.002
			(0.96)
Constant	8.275	1.915	1.859
	(82.76)**	(20.35)**	(17.56)**
Observations	4042	3444	3175
R-squared	0.07	0.91	0.90

Robust t statistics in parentheses
* significant at 5%; ** significant at 1%

A8_3 Ln (Earnings in US$) for Production Workers in the Manufacturing Sector

Kenya	0.279	0.321	0.281
	(5.65)**	(7.10)**	(6.41)**
Tanzania	0.027	0.092	0.143
	(0.56)	(2.00)*	(3.51)**
Nigeria	0.125	0.131	0.090
	(1.45)	(1.69)	(1.26)
Male		0.240	0.226
		(6.41)**	(7.25)**
Age		0.044	0.028
		(7.66)**	(5.68)**
Age^2		-0.000	-0.000
		(6.16)**	(4.65)**
Education in years		0.015	0.012
		(1.59)	(1.55)
$(Education\ in\ years)^2$		0.001	0.001
		(1.71)	(1.34)
Tenure in years		0.002	0.003
		(0.90)	(1.65)
Ln (Output/Employee)			0.102
			(3.35)**
Ln (Capital/Employee)			-0.016
			(1.50)
Ln (Raw Materials/Employee)			-0.022
			(1.00)
Ln (Indirect Costs/Employee)			0.005
			(0.31)
Ln (Employment)			0.118
			(8.79)**
Union Dummy			0.021
			(0.57)
Ln (firm Age)			-0.058
			(3.04)**
Constant	3.967	2.609	2.202
	(42.79)**	(18.25)**	(12.56)**
Observations	7101	7101	7101
R-squared	0.06	0.17	0.28

Robust t statistics in parentheses
* significant at 5%; ** significant at 1%

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