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Abstract

Why have so few countries in Sub-Saharan Africa been successful in export-oriented manufacturing? This paper uses firm-level data from the World Bank's *Enterprise Surveys* to discuss this. The paper shows that although firms in most African countries are relatively unproductive, they are more productive on average than firms in other countries at similar levels of development. Further, even though many Africans earn subsistence wages working for informal firms, formal firms have higher labor costs than firms in other low-income countries. The paper discusses several possible reasons for this including the effect of the poor institutional environment on profits and the effect of limited competition on productivity measurement.

Key Words: Africa, Zambia, Productivity, Manufacturing, Wages, East Asia

JEL Codes: O12; O14; O17; O25

I. Introduction

Few countries in Sub-Saharan Africa have been successful in export-oriented manufacturing. On average, manufacturing accounted for only about 13 percent of GDP between 2005 and 2009 for countries in the region—lower than for developing countries in any other region except North Africa and the Middle East (see Table 1). As a result, African countries mostly export agricultural goods and natural resources (Collier, 1998). Diversifying into labor-intensive manufacturing would reduce vulnerability to terms of trade shocks and allow for faster and more steady growth.

Despite the failure to diversify, manufacturing firms in the region are relatively productive. Using data from the World Bank's *Enterprise Surveys*, we show that although productivity is low, it is higher on average than in other countries at similar levels of development. However, wages are also high, possibly stopping these relatively productive firms from being competitive in international market.[1]

The paper discusses possible reasons for these observations. One possibility is the difficult business environment in Africa means that even productive firms struggle to be profitable. High taxes, failing infrastructure and weak governance mean that indirect costs in the region are high (Eifert and others, 2005; Eifert and others, 2008). Since labor and total factor productivity do not take these extra costs into account, some productive firms might find that these high costs make them unprofitable.

Although high taxes and high indirect costs could explain why surviving firms are productive, they do not explain why wages are high. That is, if indirect costs and taxes drive profits downwards, they should also drive wages downwards. The high wages paid by formal firms are especially puzzling given that many unskilled workers earn subsistence wages working for informal firms. This pool of underemployed workers should force wages in the formal sector down and allow formal firms that use unskilled labor, including those in light manufacturing, to expand. A different explanation, which could explain both high wages and high productivity, is that limited competition results in high profits. Firms might then share these high profits with their workers.

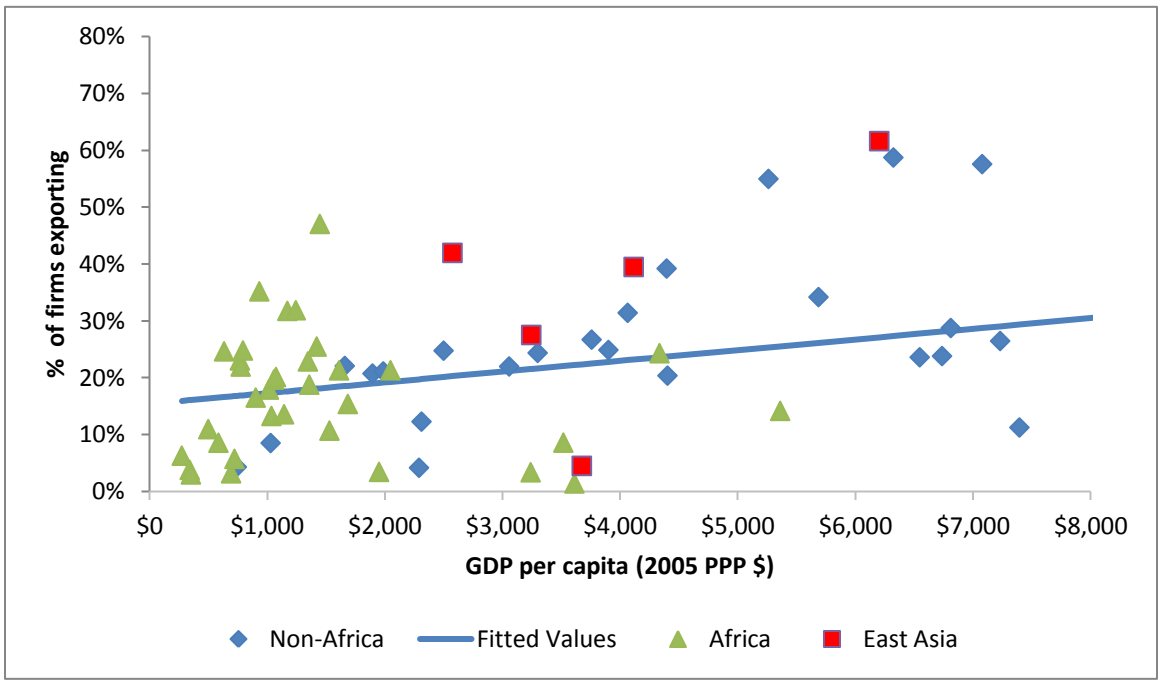
II. Exporting by African Manufacturing Firms

In most African countries, manufacturing firms sell all, or most, of their output domestically. Many do not export at all and those that do mostly export to neighboring countries. Using firm-level data, this section discusses the export performance of African manufacturing firms.

The firm-level data comes from the World Bank's *Enterprise Surveys*.[2] The *Enterprise Surveys* cover formal firms with over 5 employers and omit microenterprises and informal enterprises. Although separate microenterprise surveys, which include informal enterprises, were conducted in some countries in Sub-Saharan Africa similar surveys have not been conducted in other regions. This omission is not serious, however, because although some microenterprises are light manufacturers, few export.[3]

Manufacturing enterprises in most, but not all, African countries focus on internal markets. Less than one in five exports anything in most countries (see Figure 1). Given the small size of the manufacturing sector in most countries, this means that manufacturing exports are small in most economies in the region.

Figure 1: Percent of firms that export, by region



Source: Author's calculations based on data from World Bank's Enterprise Surveys
Note: See Table 4 for additional notes on data construction. East Asia is China, Indonesia, Philippines, Thailand and Vietnam. Africa is Sub-Saharan Africa only. Data are for all Enterprise Surveys conducted since 2006 with at least 50 firms. Countries with GDP over $8,000 are excluded for presentational purposes. Fitted values is line from log-log regression

Although manufacturing enterprises have been unsuccessful in export markets in many African countries, there are significant differences between countries. For example, Kenyan firms are more successful exporters than firms in other countries.

Even in successful countries like Kenya, however, firms mostly export to neighboring countries rather than to Europe or other high-income economies. Although the most recent *Enterprise Surveys* do not collect information on the destination of exports, earlier *Enterprise Surveys* did. In the *Enterprise Surveys* conducted between 2002 and 2004, firms in most countries were more likely to export to neighboring countries than to more distant markets (see Table 2). For example, Tanzania and Uganda were the most important export destinations for Kenyan firms, with 74 percent and 61 percent of exporters exporting to these countries (see Table 2). In comparison, only 8 percent exported to the United Kingdom, the biggest overseas export market. This is true for both landlocked countries (for example, Uganda and Zambia) and countries with access to the sea (for example, Tanzania and Kenya).[4]

III. Stylized Facts about Firm Performance in Sub-Saharan Africa

Why do so few African firms export? One possibility is that firms might not be very productive. Natural and policy barriers to trade might make it difficult for exports to enter African markets, allowing poorly performing domestic firms to survive and compete. These unproductive firms, however, might be unable to overcome other countries' natural and policy barriers to trade and so be unable compete in foreign markets.

Firm productivity in Sub-Saharan Africa[5]

Consistent with this, labor productivity (value-added per worker) is lower on average in Sub-Saharan Africa than in any region other than South Asia (see Table 3).[6] In the average country in Sub-Saharan Africa, labor productivity is $4,734 per worker for the median firm.[7] Labor productivity is especially low in the low and lower middle income economies ($3,316 per worker). In comparison, labor productivity is $6,713 per worker in the average country in East Asia with a strong manufacturing base.

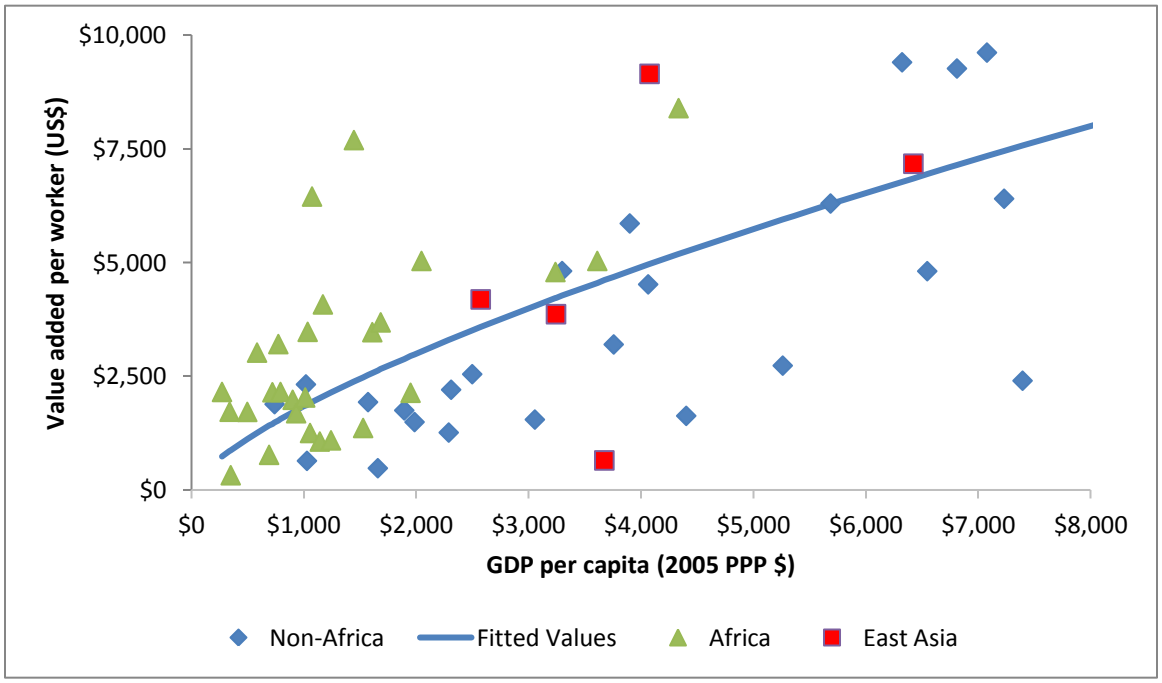
So why is labor productivity low in Africa? One possibility is that it mostly reflects problems at the firm level. Internal factors such as capital intensity, how educated and skilled workers are, and firm organization all affect productivity. Management quality is also important—firms with better educated managers are more productive than other firms.[8]

But external factors also matter. On average, physical infrastructure and the institutional environment are worse in Africa than in other regions.[9] Business regulation is also more burdensome.[10] Further, the external environment affects worker quality and capital intensity—things that are internal to the firm. When education is better, workers will have higher human capital. And when the financial sector is better developed, firms will find it easier to finance investment and training.

Although per capita GDP is not perfectly correlated with external factors that affect firm performance, many vary with income. Institutional quality, for example, is usually higher in rich countries.[11] That is, corruption is higher in low-income countries, the rule of law less well protected and government efficiency lower.[12] To control for these differences, Figure 2 graphs value-added per worker against GDP per capita. Although the fit is not perfect, value-added per worker is usually lower in poor countries.

After taking income into account, value-added per worker is not consistently lower in Sub-Saharan Africa than in other regions. In fact, more African countries lie above the regression line than below it. This suggests that, all else equal, value added per worker is higher in these countries than would be expected given their relative income levels.

Figure 2: Value added per worker for firms in Africa and other regions



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It is interesting to compare Africa with successful exporters of manufactured goods from East Asia—China, Indonesia, the Philippines, Thailand and Vietnam.[13] Per capita GDP and value-added per worker is higher in these countries than in most countries in Sub-Saharan Africa. Interestingly, these countries do not consistently lie above or below the line either. China lies significantly above the line—value-added per worker is higher than would be expected given income levels. Indonesia lies significantly below the line—value added per worker is lower than would be expected. The other three countries lie very close to the fitted line—labor productivity is about what would be expected given their income levels.

Labor Costs in Sub-Saharan Africa

Although productivity affects whether firms can compete in competitive markets, unproductive firms could compete with more productive firms if their labor costs are low. To assess whether African firms can compete in export markets, we therefore have to look at labor costs.

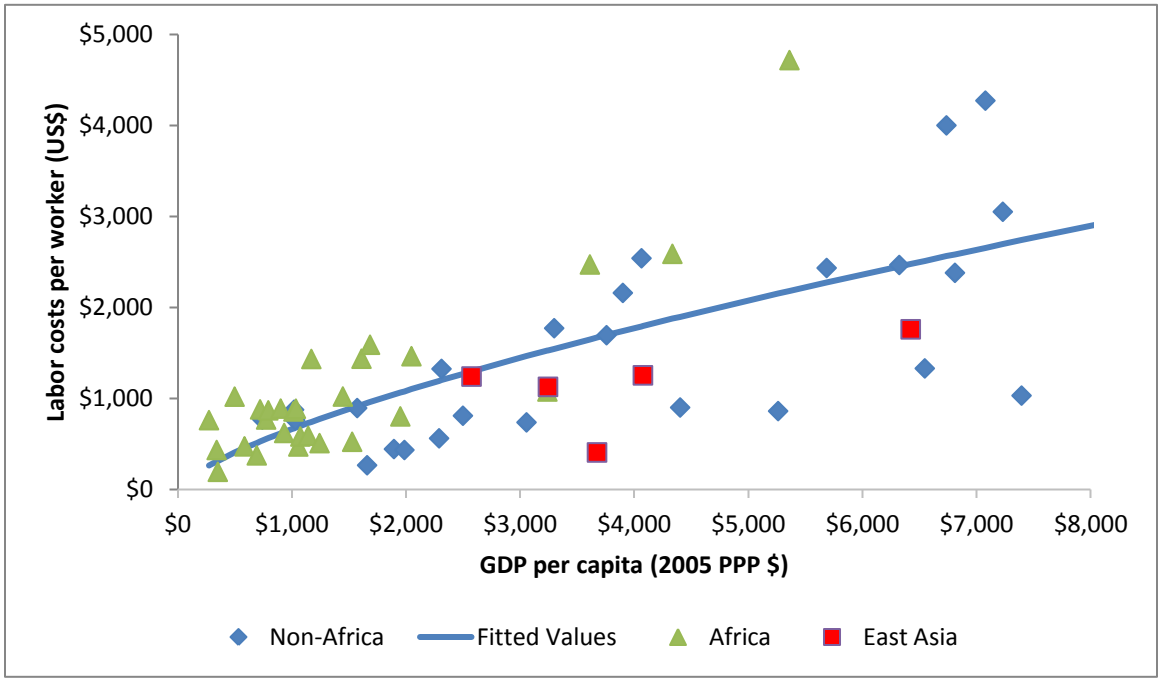
Labor costs, like labor productivity, are low in Africa. Per worker labor costs are about $1,059 for the median firm in low and lower-middle income countries in the region. For the successful manufacturing economies in East Asia, per worker labor costs are about $1,629 per worker. In part, African firms might be able to remain competitive because of their low labor costs.

So why are labor costs are low in Sub-Saharan Africa? One possibility is the quality or quantity of human capital is low. Better educated workers are more productive and command higher wages. Low wages and low labor productivity might therefore due to workers being poorly educated.

Things other than education however affect wages. Investment climate constraints that reduce the marginal productivity of labor also reduce wages. If, for example, poor quality infrastructure or institutions reduce the marginal productivity of labor, wages will be lower in countries with poor infrastructure and weak institutions. It is therefore useful to control for income. As discussed above, although per capita income does not completely control for the quality of the business environment, it is highly correlated with it.

Figure 3 shows labor costs per worker plotted against per capita GDP. Not unsurprisingly, the cost of labor, like labor productivity, is higher in countries where income is higher. This could be because high-income countries have more human capital, stronger institutions, or better infrastructure.

Figure 3: Labor costs per worker for firms in Africa and other regions



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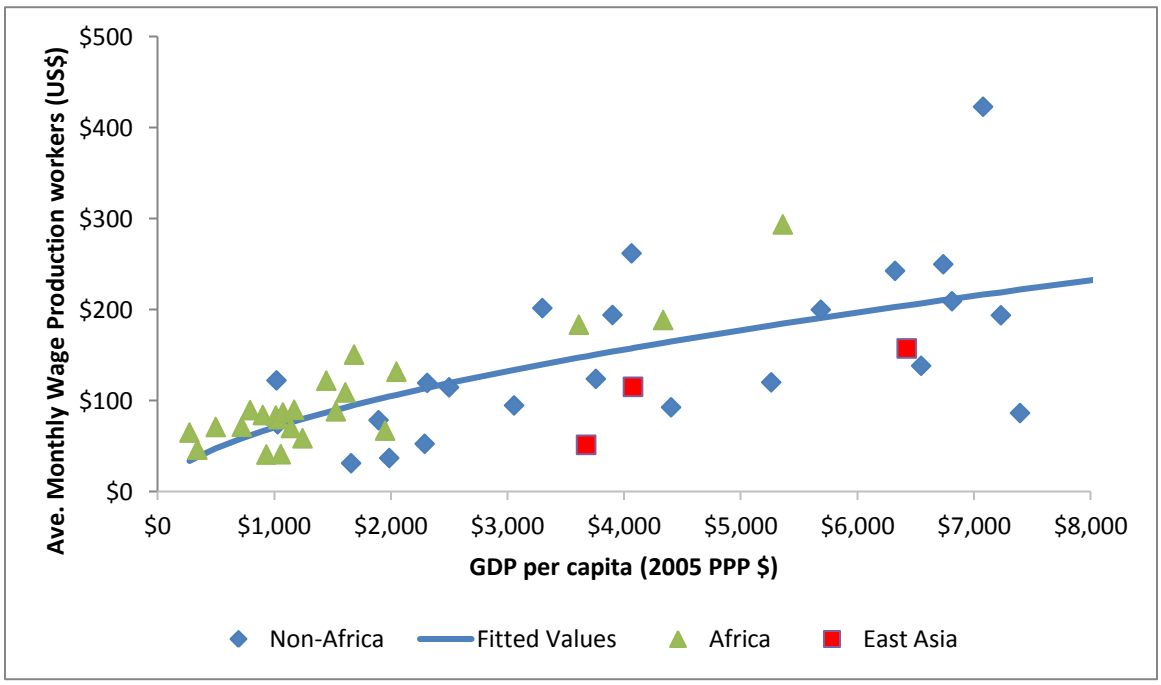
As with labor productivity, labor costs are high in most African countries. Of 31 countries in Africa with available data, labor costs were higher than would be predicted based on per capita income in 19 of them. For many of the remaining countries, labor costs were close to

the predicted values. This suggests that labor costs are high for formal manufacturing firms when compared with other countries at similar levels of development.

One concern is that labor costs might be high because firms pay high wages to skilled workers such as managers and professional staff. If there are shortages of these workers in Africa, firms might face high labor costs because wages are high for them not because wages are high for production workers.

The Enterprise Survey also asks managers about the wages that they pay production workers. This data is less reliable than accounting data; managers will find it easier to lie or make mistakes when they cannot check their accounts. However, because wages for managers and professional staff do not affect it, it provides a direct measure of wages for workers. Further, because it comes from a different source (i.e., managers will not report it directly from company accounts), it provides a useful robustness check.

Figure 4: Ave monthly wages for production workers for firms in Africa and other regions



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In practice, the results are similar when we focus on this measure of labor costs rather than on labor costs from the firms' balance sheets (see Figure 4). Monthly wages were higher than would be expected given income levels in 18 of the 26 countries in Sub-Saharan Africa with data. In comparison, among the successful exporters from East Asia, monthly wages were lower than would be expected given their income levels in all three. This suggests high labor costs are

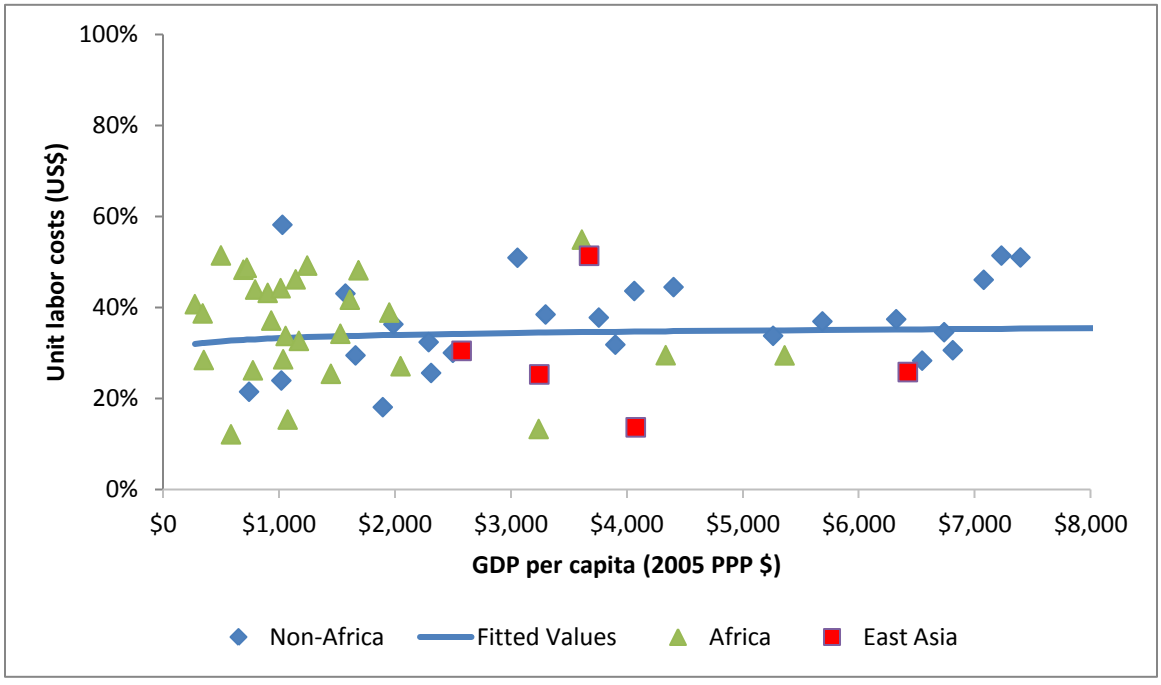
not only due to high wages among highly skilled workers and managers. Rather wages are also high for production workers.

Unit Labor Costs in Sub-Saharan Africa

If labor costs are high because workers are productive (for example, because they are highly skilled or educated), then firms can remain competitive while paying high wages. The ratio of value-added to labor costs—which we refer to as unit labor costs—allows us to see whether this is the case.[14] Although it does not measure competitiveness perfectly–for example, it does not take capital use into account—it is better than labor costs alone.

Unit labor costs are not especially high in Sub-Saharan Africa—they average 34 per cent in low and lower middle-income economies. This is lower than in Europe and Central Asia (38 percent), Latin America (37 percent), or South Asia (40 percent). It is, however, slightly higher than in the manufacturing economies of East Asia (28 percent). This remains true after controlling for per capita income (see Figure 5). Unlike labor productivity and labor costs, there is not a strong relationship between income and unit labor costs.

Figure 5: Unit Labor costs for firms in Africa and other regions



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Although unit labor costs are not especially high in Africa, they are higher than would be predicted by per capita income alone. Of 31 countries in Sub-Saharan Africa with available data, 18 have higher unit labor costs than would be predicted. In contrast, with the notable exception

of Indonesia, the East Asian countries that have been successful in manufacturing have low unit labor costs. In summary, although unit labor costs are not exceptionally high in Sub-Saharan Africa, they are higher than in most successful exporters in East Asia.

IV. Econometric Analysis

Although the graphical analysis is suggestive, it is useful to do a more formal analysis. This will allow us to see whether the differences between Sub-Saharan Africa and other regions are statistically significant.

Model

To see whether the differences between firms in Sub-Saharan Africa and firms in East Asia and the Pacific and other regions are statistically significant after controlling for difference in income, we estimate models of the following form:

$$\text{Performance measure}_j = \alpha + \beta \text{ Per Capita GDP}_j + \gamma \text{ Region Dummies}_j$$

Various median performance measures in country j are regressed on per capita income in country j and a vector of region dummies. The performance measures, which are described in greater detail in Appendix 2, are labor productivity, per worker labor costs, average wages for production workers and unit labor costs.

Since the region dummy for Africa is omitted, the coefficients on the other region dummies, γ, represent the average difference in productivity or the other performance measures between the median firms in countries in Sub-Saharan Africa and the median firms in countries in other regions.[15]

Empirical Results

Table 4 shows the results from the base regression.

Per Capita Income. Consistent with graphical analysis, value-added per worker, labor costs per worker, and monthly wages for production workers increase as per capita income increases. For the first two variables, the point estimates of the coefficients are very close to 1. That is, labor productivity and labor costs increase at about the same rate as per capita income.[16] A 1 percent increase in per capita income is associated with a 0.94 percent increase in labor productivity and a 0.91 percent increase in per worker labor costs. The coefficient on monthly wages for production workers is smaller suggesting that a 1 percent increase in per capita income is associated with a 0.61 percent increase in monthly wages.

The coefficient on per capita income is statistically insignificant and small in the regression for unit labor costs. This suggests that unit labor costs are not consistently lower or higher in countries with higher per capita income. This is also consistent with the graphical analysis, which suggested no relationship between unit labor costs and per capita income.

Regional Dummies. As noted above, the omitted regional dummy is for Sub-Saharan Africa. The coefficients can therefore be interpreted as the average difference between countries in that region and countries in Sub-Saharan Africa. For the most part, the coefficients in the first three regressions are negative and, in many cases, are statistically significant. This suggests that after taking per capita income differences into account labor productivity, labor costs, and monthly wages for production workers are higher in Sub-Saharan Africa on average than in most other regions. The coefficients are consistently statistically significant for the dummy variables for both sets of countries (manufacturing intensive and others) in East Asia and the Pacific and countries in Europe and Central Asia. In contrast, the coefficients are mostly statistically insignificant for the dummy variables for Latin America and South Asia.

The results indicate that after income differences are taken into account labor productivity is about 50 percent lower in the manufacturing economies of East Asia than in Sub-Saharan Africa, that labor costs are about 56 percent lower and that wages for production workers are about 42 percent lower. This is broadly consistent with the graphical analysis.

In contrast, the coefficients on most of the dummy variables are statistically insignificant in the regressions for unit labor costs. This suggest that unit labor costs are similar in Sub-Saharan Africa to similar costs in other regions. The one exception is the coefficient on the dummy variable indicating that the country is one of the manufacturing intensive countries in East Asia. For these countries, the coefficient is statistically significant and negative. The coefficient suggests that unit labor costs are about 20 percent lower in these countries than in Sub-Saharan Africa.

Robustness Checks

Omitting Per Capita GDP. In the previous analysis, the high productivity and high labor costs in Africa is relative to other countries at the same level of development. As discussed above, before controlling for income, productivity and wages appear relatively low in Sub-Saharan Africa (see Table 3). This can also be seen by excluding per capita income from the previous regressions.

After per capita income is excluded, the coefficients on most of the dummies become positive in the regressions for value-added per worker (see Table 5). The coefficients on the dummies for Europe and Central Asia and Latin America, in particular, become positive and statistically significant indicating that wages and productivity are higher in these regions on average than they are in Africa. The coefficients on the dummy for the East Asia and Pacific exporters is also positive, but is statistically insignificant.

In the regression for unit labor costs, the results are similar to the results when per capita GDP is included. For the most part, unit labor costs do not appear to be excessively high on average in Sub-Saharan Africa. The only region with lower unit labor costs in the manufacturing economies in East Asia. The coefficient on the dummy variable for this region, however, becomes smaller in absolute value and its statistical significance falls (to remain statistically significant only at an 11 percent significance level).

Pooling all countries in East Asia and Pacific. As a robustness check, we re-run the regressions pooling all of the countries in East Asia and the Pacific into a single group. The results are similar except that the coefficient on the dummy variable is statistically insignificant in the unit labor cost regression (see Table 6).

Non-linear effect of per capita GDP. As a final robustness check, we include a squared term for per capita income in the regression (see Table 7). This allows for a non-linear and more flexible relationship between income and the dependent variables. The coefficients on the dummy variables are mostly unaffected by this change. Most notably, the coefficients on dummy variable for the East Asia manufacturers remain statistically significant and negative in the regressions for labor costs, labor productivity and unit labor costs.

In summary, the econometric analysis confirm many of the previous results. Most notably, firms in Sub-Saharan Africa appear to be both relatively productive and to have relatively high labor costs compared with firms in other regions after taking into account the lower income in the region. The differences are largest and most statistically significant when comparing firms in Sub-Saharan Africa with firms in East Asia and Europe and Central Asia.

For the most part, unit labor costs are no different in Sub-Saharan Africa than in other regions after taking into account differences in per capita income. Unit labor costs are, however, significantly higher than in successful manufacturing intensive economies of East Asia (China, Indonesia, Malaysia, Philippines, Thailand, and Vietnam). The point estimate suggests that on average unit labor costs are about 20 percent lower on average in these countries than in Sub-Saharan Africa. This suggests that it will be more difficult for firms in Sub-Saharan Africa to compete with firms from these regions.

Sector-based Analysis

One concern about the previous results is that they do not control for sectoral differences in productivity and wages. That is, the medians are calculated across all manufacturing sectors. It is possible that the high wages and high levels of productivity observed in Sub-Saharan Africa are due to firms operating in high productivity and high wage sectors. To control for this, we perform an enterprise-level analysis that regresses the dependent variables on the previous variables and a series of sector dummies as a robustness check. Although controlling for sector is useful, if high wages and productivity were the result of sectoral differences, this would leave the question of why firms in Africa operate in high wage-high productivity sectors unanswered.

The results from the firm-level regressions are shown in Table 8.[17] The results are similar to previous results. Value added per worker is higher on average among low-income countries in Sub-Saharan Africa than in most other regions. The differences are statistically significant in several cases.

Similar, but more highly significant results, are also visible for labor costs per worker. Per worker labor costs are higher on average in low-income countries in Sub-Saharan Africa than in any other region except Latin America. The coefficient on the Latin America dummy is negative (i.e., suggesting that wages are higher in Africa) but not statistically significant. Results

are similar for monthly wages for production workers—although the difference are less highly significant and in some cases the coefficients are positive (but statistically insignificant).

Unit labor costs are similar, however, in Sub-Saharan Africa to unit labor costs in other regions except East Asia. In East Asia, unit labor costs are significantly lower than in Sub-Saharan Africa. This is true for both manufacturing and non-manufacturing economies

In summary, the results after controlling for sectoral difference appear consistent with the country-level results. Wages and productivity appear higher than in other regions in Sub-Saharan Africa after controlling for per capita income and sectoral differences. These differences are, however, not always statistically significant. Given that the differences were generally significant before controlling for sector, this suggests that some of the differences between Africa and other regions reflect differences in sectoral composition. Wage costs and unit labor costs, however, appear to be higher than in East Asia.

V. The high cost of doing business in Sub-Saharan Africa

Given their poor export performance, it is surprising that firms in Africa are more productive than firms in other countries at similar stages of development. One possible explanation is that standard measures of productivity fail to account for some aspects of performance that affect competitiveness. Eifert and others (2008), in particular, note that they do not account for indirect costs. This section discusses two types of indirect cost: high tax rates on formal firms and high indirect costs related to the weak institutional environment.

High Indirect Costs

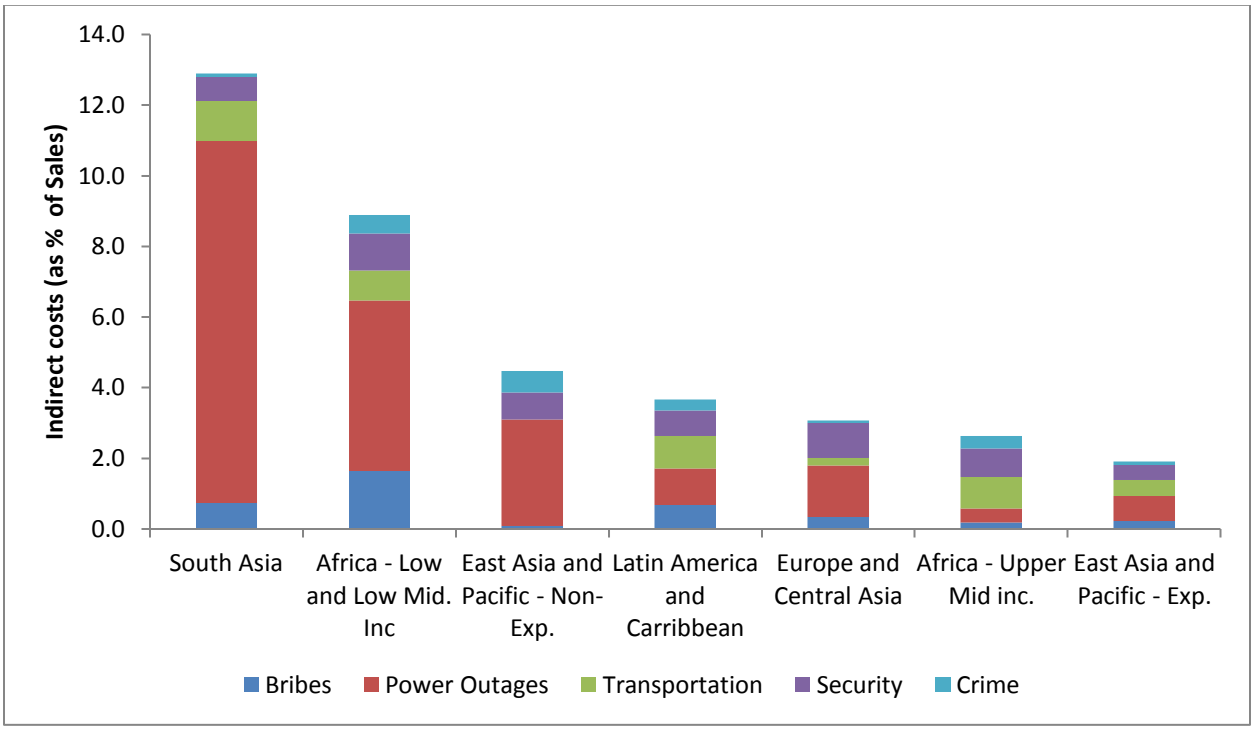
Standard measures of productivity measure revenue, the cost of intermediate inputs, raw materials, energy and fuel, and the cost of capital.[18] As Eifert and others (2008) point out this ignores other costs that affect profitability such as transport, communications, and security costs. Using data from 17 Enterprise Surveys from between 2002 and 2005, they show that many of these indirect costs are higher in Africa than in other regions. After taking these into account, they show that African firms are less productive than firms in other regions.

High indirect costs reduce profitability. Firms that are relatively productive before taking indirect costs into account might become unprofitable after taking them into account. When indirect costs are high, therefore, only the most productive firms can survive. This would result in a small, but relatively productive, manufacturing sector—something seen in Sub-Saharan Africa.

Because the information collected in the *Enterprise Surveys* has changed significantly over time, it is not possible to do identical calculations to those in Eifert and others (2008) for the more recent surveys. However, the available evidence from the newer surveys is consistent with Eifert and others (2008). Figure 6 shows the bribe payments, the cost of power outages, losses during transport, the cost of security, and losses because of crime and theft.[19] These specific indirect costs are equal to about 9 percent of sales in Sub-Saharan Africa (see Figure 6 and Table 9). In comparison, they are equal to only 2 percent of sales for exporting countries in East Asia

with available data (Indonesia, Vietnam, and the Philippines). These costs are also far lower in Europe and Central Asia, upper middle-income countries in Sub-Saharan Africa, and Latin America and the Caribbean.[20] Corruption (1.6 percent of sales on average) and power outages (4.8 percent of sales) are especially high in Africa.

Figure 6: Indirect costs as % of sales, by region



Source: Author's calculations based upon data from World Bank's Enterprise Surveys
Note: Regional averages are unweighted averages across countries in that region with available data. Costs are only for manufacturing firms.

Other evidence also suggests that indirect costs are high in the Sub-Saharan Africa. As discussed below, transport costs other than breakage and theft are also high. Similarly, data from the International Telecommunications Union suggests that broadband and telecommunications costs are high (Eifert and others, 2008).

High Tax Rates

As well as omitting indirect costs associated with the weak institutional environment and unreliable infrastructure, standard productivity measures do not take taxes into account. When taxes are high, profitable firms can become unprofitable—especially when taxes are not levied directly on profits (e.g., labor taxes or turnover taxes). When taxes are high, firms have to be productive to remain profitable and keep operating.

It is not possible to calculate after-tax measures or performance using data from the *Enterprise Surveys* since the *Enterprise Surveys* do not collect information on taxes. We therefore rely on other evidence. One useful, and consistently calculated, measure of the tax

burden is the total tax rate from the World Bank's *Doing Business* report (2010b). The total tax rate is better than the statutory corporate tax rate because it includes other taxes and considers additional features of corporate taxes.

The total tax rate is high in Sub-Saharan Africa (see Table 10), averaging 68 percent of profits. In comparison, the average rate is about 40 percent in Europe and Central Asia, 33 percent in the Middle East and Africa and 35 percent in East Asia and the Pacific. The total tax rate is almost twice as high as in East Asia and the Pacific and 20 percentage points higher than in the region with the next highest total tax rate (Latin America).

The *Doing Business* report breaks the total tax rate into three parts: profit taxes, labor taxes and other taxes. Although labor taxes are similar in Sub-Saharan Africa to other regions—and lower than in several regions including Eastern Europe and Central Asia and the OECD economies—other taxes and profit taxes are higher. This suggests that African firms' high productivity might be misleading. Even if before-tax profits are relatively high, taxes erode them. Further, as noted above, high indirect costs suggest that before-tax profits might not be very high.

VI. Low levels of competition distorting productivity and wages

Although high taxes and other indirect costs might mean that surviving manufacturing firms have to be productive, they do not explain why wages are high. If indirect costs and taxes make it difficult for poorly performing firms to survive, we would expect to see low wages. This section discusses things that could explain both high wages and high productivity: the possibility that workers are particularly productive and the possibility that weak competition distorts productivity measurement.

Labor costs and informality

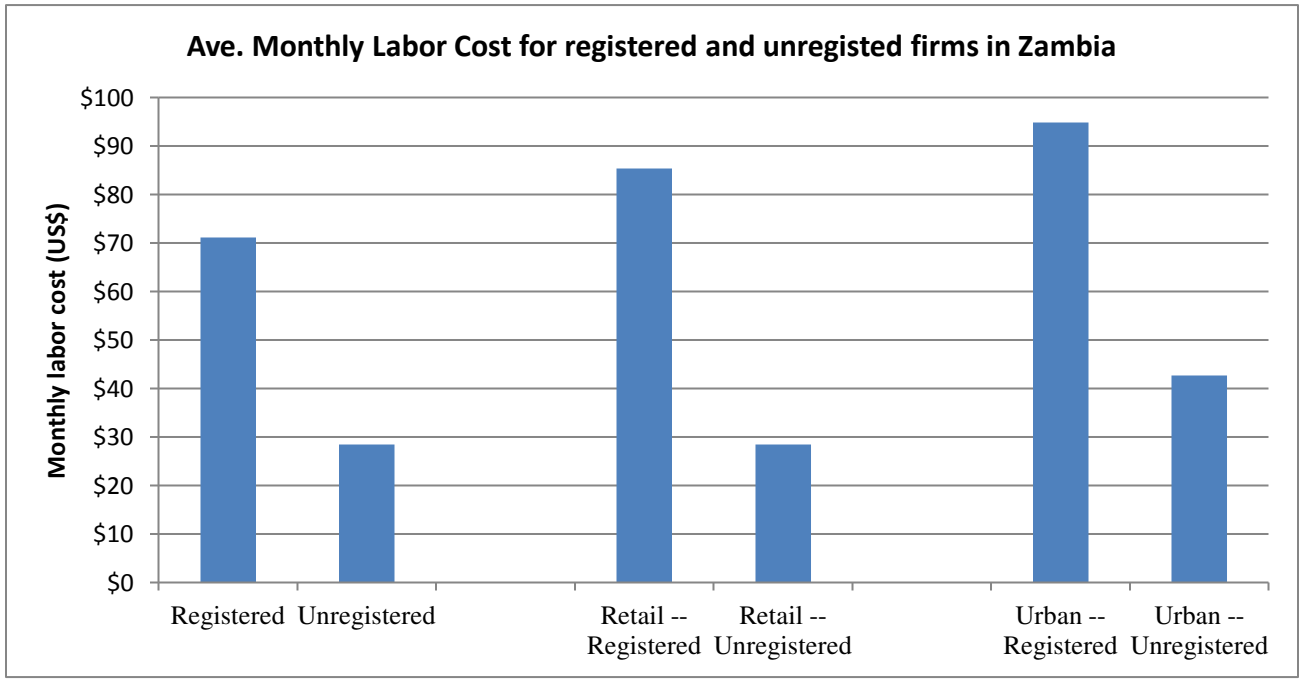
An important question in most African countries is how do firms in the small formal sector coexist with the many informal firms paying subsistence wages.[21] In most low-income countries in Africa, most people work for informal firms. In Zambia, for example, about 84 percent of workers do.[22] Informal firms usually pay their workers far less than formal firms. Workers in large firms and the public sector in Ghana and Tanzania earn over twice as much as self-employed people and similar workers in small firms (Sandefur and others, 2010).[23] A similar pattern can be seen in Zambia. MSME's per worker labor costs are low. The median unregistered MSME has monthly labor costs of less than US$30 per worker.[24] In comparison, the median formal manufacturing firm reports monthly labor costs of about US$120 per worker.

In part, the difference in wages between the formal and informal sector is due to location. Wages are low in areas and sectors where informality is high. Monthly per worker labor costs are about $57 per month for urban MSMEs in Zambia, compared with only $19 per month for rural MSMEs (see Table 11).

That said, a large gap remains between large formal enterprises in Zambia, registered MSMEs in urban areas, and unregistered MSMEs in urban areas. Monthly labor costs were

about $120 per worker for the large, formal urban firms in the Zambia *Enterprise Survey*. For registered MSMEs in urban areas, the average was $95 per month (see Figure 7). And for unregistered MSMEs in urban areas, the average was $43 per month.

Figure 7: Monthly labor costs for registered and unregistered MSMEs in Zambia



Note: See Table 11 for notes

One possible reason for the large difference between wages in the small formal and large informal sectors is that labor regulations make the informal sector the employer of last resort. Although some countries such as Uganda and Rwanda have flexible labor markets (World Bank, 2009a), this is not true in many countries in the region (see Table 12). Rigid labor markets could lead to rationing of high paying formal sector jobs, with unemployed workers forced into the informal sector as they try to find formal employment.

Another possibility is that poor quality basic education could lead to a skills mismatch, where workers with enough education and skills are scarce despite the many unskilled workers in the informal economy.[25] That is, poorly paid informal workers might not have the skills and education to compete in the modern formal economy. Combined with problems in the investment climate that drive productivity downwards and other costs associated with exporting upwards, this might mean that formal firms cannot compete with exporters from regions such as East Asia.[26]

Labor market rigidities and shortages of skilled workers are not, however, the only possible reasons why informality might fail to drive formal wages downwards. Another possibility is that formal sector jobs might be unattractive. That is, the informal sector might be large because people prefer working for informal firms. Maloney (1999; 2004) notes that this is

the case in Latin America—many people say that they would prefer to be self-employed in the informal sector rather than working for somebody else in a formal firm.

This could also be true in Africa. In Zambia, less than half of self-employed people said that they would take a full-time job in the formal sector if offered one. Further, many would prefer to work for either the government (67 percent), a state-owned enterprise (4 percent) or an NGO (17 percent). Only 10 percent of MSME owners said they would like to work for a formal private sector firm.

So why do some people prefer to work for informal firms? Although informal firms pay low wages, Maloney (2004) notes that it is difficult to compare wages in the formal and informal sectors. For example, informal workers avoid taxes—meaning before-tax wage comparisons are not useful. Moreover, some people like to work for themselves and informal sector jobs can be more flexible. Informal enterprises also have lower indirect costs than formal enterprises—they avoid dealing with license fees and other regulations and might avoid much of the cost of corruption.[27] Even for informal workers who are not the owners, there are benefits to working for informal firms. Many—if not most—workers are family members who receive in-kind payments.[28]

Some things, however, make formal employment preferable. Formal firms often pay benefits that informal firms do not and employment is more secure. Maloney (2004) argues that these large positive and negative differences make wage comparisons between formal and informal jobs difficult.

Low levels of Competition

The relationship between competition and measured productivity is complicated. For the most part, we would expect competition to increase productivity. That is, unproductive firms will have to either improve their performance to the levels of the market leaders in highly competitive markets or will be forced out of business. In contrast, when firms have market power, firms are able to earn excess profits allowing management to underperform without forcing the firm out of business. Hicks (1935, p. 8), for example, argues that "[monopolists] are likely to exploit their advantage much more by not bothering to get very near the position of maximum profit, than by straining themselves to get very close to it. The best of all monopoly profits is a quiet life,"

Although competition will tend to lead to higher productivity, productivity will also appear artificially high when competition is low. The reason for this is that labor productivity is measured using revenue rather than physical measures of output.[29] When productivity is measured in monetary terms, firms with market power who can charge higher prices than they would be able to in competitive markets will appear to be highly productive. Because of this, firms with market power will appear more productive than similar firms in competitive markets.[30]

Although it is difficult to measure competition, there are several reasons to believe that competition is limited in most countries in Sub-Saharan Africa. One reason is that there are

relatively few modern manufacturing firms in most low-income African countries, suggesting that firms will often have few direct competitors. In Zambia, for example, only about 150 manufacturing firms had more than 50 employees at the time of the most recent *Enterprise Survey*.[31] Although most countries in the region have large and vibrant informal microenterprise sectors, microenterprises often do not compete directly with large manufacturing firms.

A second reason is that the cost of registering a business is high, making entry difficult (see Table 13). On average, it takes 45 days and costs an amount equal to 95 percent of per capita income to start a formal limited liability company in Sub-Saharan Africa. In comparison, it takes only 16 days and costs an amount equal to 8.5 percent of per capita income to start a business in the average country in Eastern Europe and Central Asia. The formal sector tends to smaller and more concentrated in countries where it takes a long time to start a business.[32]

A final reason is that competition from imported goods is also limited. Although formal barriers to trade have fallen over time, natural and policy barriers to trade remain.[33] As a result, it is very expensive to import manufactured goods into most countries in the region. The World Bank's *Doing Business* report notes that it takes an average of 38 days to complete all procedures to import manufactured goods into Sub-Saharan Africa. This is as least as long as in any other region (see Table 14). It is also expensive to do so. It costs an average of about $2,500 to import a standard container into Sub-Saharan Africa from overseas. This is far higher than in any other region—it costs less than $1,000 on average in East Asia.

Several studies have noted that high transportation costs discourage firms in Africa from exporting.[34] In the same way, these high costs are likely to discourage imports. This will reduce competition significantly and, in so doing, increase unit prices. Higher unit prices, in turn, mean that productivity will appear artificially high when measured in monetary terms.

The aggregate impact of competition on measured productivity will depend upon which of the mechanisms is stronger. If lower levels of competition reduce productivity by allowing inefficient firms to stay in the market more than they increase measured productivity by raising prices, then measured productivity will be lower in countries with less competition. If the reverse is true, the measured productivity will be higher in countries with less competition.

When we add a variable representing the cost of importing to the simple productivity regressions in the previous section, the coefficient is negative but statistically significant for the whole sample of countries (see Table 15). But when the sample is restricted to countries in Sub-Saharan Africa, labor productivity is higher in countries with high import costs. In part this seems to be passed on to workers in the form of higher wages—workers at formal manufacturing firms in countries with high import costs appear to be paid more than workers at similar firms in countries with low import costs (see Table 16). In this respect, the high productivity and high labor costs observed in manufacturing firms in the region might reflect the low level of competition rather than high productivity.

VII. Conclusion

Few countries in Africa have successfully diversified into export-oriented manufacturing. Most have small, underdeveloped manufacturing sectors and even successful countries such as Kenya mostly export to nearby countries rather than to developed economies. With a large pool of underemployed, low-skilled workers earning subsistence wages in the informal sector, this seems puzzling—many African countries should be able to enter labor-intensive export-oriented light manufacturing.

The failure to succeed in export-oriented manufacturing suggest that African firms are not competitive in international markets. This is not because productivity is low. In fact, labor productivity is higher on average in Africa than in other countries at similar levels of development. This high productivity, however, is offset by relatively high wages.

The observation that wages and productivity are high leads to the two questions that are the focus of the paper. Why do firms in Africa appear productive when compared with firms in other countries at similar levels of development? And, given there are many informal firms paying subsistence wages, why aren't wages forced downwards allowing labor-intensive formal firms to be competitive in international markets?

One possibility is that African firms have to be productive to survive because the business environment in the region is so difficult. There are two possible reasons this might be the case. First, taxes on formal firms are high. Since labor productivity does not take taxes into account, unproductive firms might find it harder to remain profitable in Sub-Saharan Africa than in other regions. Second, previous studies have found that other indirect costs are also high (Eifert and others, 2005; Eifert and others, 2008). Most productivity measures do not take the costs imposed by poor infrastructure (for example, transport and communication costs), poor governance (the bribe tax), or crime into account. These high indirect costs might make productive firms unprofitable. Both high taxes and high indirect costs might therefore force less productive firms out of business in Africa, making measured productivity high for surviving firms.

Although high taxes and indirect costs might partly explain why firms are relatively productive, they do not explain why wages are high. That is, if indirect costs and taxes drive profits downwards, they should also drive wages down to competitive levels.

A different explanation that could explain both high wages and high productivity is that weak competition make profits artificially high and that firms share these high profits with workers. Although competition will improve firm performance—inefficient firms will be driven from the market—competition leads to lower prices. Because, we measure productivity using revenue (price multiplied by physical output) rather than physical output, weak competition might increase rather than decrease measured productivity. That is, high productivity might reflect high prices rather than high levels of physical output. This is relevant in Sub-Saharan Africa since most firms sell only in small domestic markets with weak competition. Although most countries have reduced tariffs, transportation costs and other barriers mean that firms in these markets are often well protected against international competitors.

VIII. References

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IX. Tables

Table 1: Manufacturing as share of GDP

Country	Average (2005-2009)	Country	Average (2005-2009)
Regions (developing countries only)		**Sub-Saharan Africa (cntd.)**	
East Asia & Pacific	31.46	Gambia, The	4.97
Europe & Central Asia	18.26	Ghana	8.74
Latin America & Caribbean	17.39	Guinea	4.26
Middle East & North Africa	11.92	Guinea-Bissau	..
South Asia	16.24	Kenya	10.10
Sub-Saharan Africa	13.18	Lesotho	19.74
East Asia (Exporters)		Liberia	13.05
China	33.03	Madagascar	14.90
Indonesia	27.93	Malawi	14.06
Malaysia	27.70	Mali	3.13
Philippines	22.15	Mauritania	5.05
Thailand	34.86	Mauritius	19.84
Vietnam	20.74	Mozambique	14.90
Sub-Saharan Africa		Namibia	14.92
Angola	4.79	Niger	..
Benin	7.51	Nigeria	2.71
Botswana	3.69	Rwanda	5.23
Burkina Faso	14.10	Sao Tome and Principe	6.37
Burundi	8.83	Senegal	13.83
Cameroon	17.00	Seychelles	12.23
Cape Verde	6.73	Sierra Leone	..
Central African Republic	7.52	Somalia	..
Chad	5.92	South Africa	16.89
Comoros	4.24	Sudan	6.38
Congo, Dem. Rep.	6.09	Swaziland	43.28
Congo, Rep.	3.92	Tanzania	6.87
Cote d'Ivoire	18.13	Togo	10.14
Equatorial Guinea	11.15	Uganda	7.67
Eritrea	5.90	Zambia	11.39
Ethiopia	4.61	Zimbabwe	13.52
Gabon	4.01		

Source: World Bank (2010c).
Note: Averages for regions are weighted. Averages across years and unweighted averages for each country for available years for that country

Table 2: Export destinations for enterprises included in the Investment Climate Surveys from early 2000s.

	Most Important Export Destinations (% of exporters that report destination is important)	Most important industrialized export destination
Ethiopia	Italy (55%), United Kingdom (29%), Germany (19%)	Italy (55%)
Kenya	Uganda (74%), Tanzania (61%), Rwanda (19%)	United Kingdom (8%)
Mali	Burkina Faso (63%), Guinea (53%), Niger (38%)	France (9%)
Senegal	Gambia (39%), Mali (36%), Mauritania (31%)	France (18%)
Tanzania	Kenya (38%), Malawi (14%), Uganda (12%), United Kingdom(12%), Zambia (12%)	United Kingdom (12%)
Uganda	Rwanda (49%), Congo (33%), Kenya (18%)	United Kingdom (16%)
Zambia	Congo (38%), Malawi (22%), Germany (21%)	Germany (21%)

Source: World Bank's Enterprise Surveys (various years, 2002-2004).
Note: Enterprises were asked to list their three most important export destinations. Countries are ranked based upon the number of enterprises that ranked each country among the top three. Not all enterprises reported three destinations. Data were not available for Mozambique.

Table 3: Labor Costs in Africa and other regions

	Obs.	Labor Cost per Worker (US$)		Value-Added per Worker (US$)		Unit Labor Costs	
		Mean	Median	Mean	Median	Mean	Median
Africa	37	$1,464	$887	$4,734	$3,210	33.5%	32.6%
Africa -- Low and lower middle income	*32*	*$1,059*	*$873*	*$3,316*	*$2,462*	*33.9%*	*33.9%*
Africa -- Upper middle income	*5*	*$4,056*	*$2,818*	*$13,811*	*$14,967*	*30.7%*	*28.8%*
East Asia	12	$1,733	$1,246	$6,631	$5,192	31.7%	31.9%
East Asia - non manufacturing	*6*	*$1,837*	*$1,800*	*$6,713*	*$4,064*	*33.4%*	*34.6%*
East Asia - manufacturing	*6*	*$1,629*	*$1,246*	*$6,548*	*$5,684*	*30.0%*	*28.1%*
Europe and Central Asia	30	$4,046	$2,869	$10,297	$7,741	37.7%	37.5%
Latin America and Caribbean	14	$3,241	$2,795	$8,890	$7,884	36.6%	37.2%
South Asia	2	$817	$817	$1,483	$1,483	39.9%	37.5%

Source: Authors' Calculations using data from World Bank's Enterprise Surveys
Note: Means and medians are unweighted country-level means and medians for all countries in the region. The country level data are weighted medians for that country. See Table 17for list of countries in each region

Table 4: Difference in median values of productivity variables by region

	Value-Added per Worker (2005 US$)	Labor costs per worker (2005 US$)	Monthly Wage Production Workers (2005 US$)	Unit Labor Costs
Observations	77	77	71	78
Per capita GDP (log)	0.943***	0.910***	0.617***	0.039
	(11.50)	(13.65)	(6.03)	(0.96)
Region Dummies [a]				
Asia and Pacific Exporters	-0.702**	-0.840***	-0.699*	-0.255*
	(-2.59)	(-3.80)	(-1.82)	(-1.87)
Asia and Pacific Other	-0.797*	-0.708**	-1.334*	0.134
	(-1.93)	(-2.11)	(-1.95)	(0.65)
Europe and Central Asia	-0.954***	-0.745***	-0.453*	0.004
	(-4.50)	(-4.32)	(-1.79)	(0.04)
Latin America and Caribbean	-0.493**	-0.298	-0.185	-0.006
	(-2.24)	(-1.66)	(-0.70)	(-0.05)
South Asia	-0.613	0.061	0.021	0.098
	(-1.48)	(0.18)	(0.04)	(0.47)
Constant	1.188*	0.334	0.262	-1.358***
	(1.95)	(0.67)	(0.34)	(-4.45)
R-squared	0.72	0.79	0.464	0.09

Source: Authors' Calculations using data from World Bank Enterprise Surveys
Note: ***,**,* means statistically significant at 1%,5% and 10% levels. T-statistics in parentheses. All dependent variables are weighted median values for enterprises with available data. Value added is calculated by subtracting intermediate inputs and energy costs from sales from manufacturing. Workers include permanent and temporary full-time workers. Labor cost is the total cost of wages, salaries, allowances, bonuses and other benefits for both production and non-production workers. Unit labor costs are labor costs divided by value-added.
[a] Omitted dummy is dummy for Sub-Saharan Africa

Table 5: Difference in median values of productivity variables by region (GDP omitted)

	Value-Added per Worker (2005 US$)	Labor Costs per Worker (2005 US$)	Monthly Wage Production Workers (2005 US$)	Unit Labor Costs
Observations	78	78	72	79
Region Dummies [a]				
Asia and Pacific Exporters	0.373	0.198	0.069	-0.210
	(0.87)	(0.50)	(0.15)	(-1.64)
Asia and Pacific Other	-0.629	-0.546	-1.233	0.141
	(-0.91)	(-0.86)	(-1.46)	(0.68)
Europe and Central Asia	0.709***	0.880***	0.565**	0.086
	(2.76)	(3.73)	(2.44)	(1.12)
Latin America and Caribbean	0.854***	1.003***	0.616**	0.052
	(2.73)	(3.49)	(2.20)	(0.56)
South Asia	-0.960	-0.274	-0.287	0.083
	(-1.39)	(-0.43)	(-0.47)	(0.40)
Constant	8.068***	6.977***	4.843***	-1.070***
	(43.61)	(41.08)	(28.17)	(-19.25)
R-squared	0.20	0.25	0.16	0.08

Source: Authors' Calculations using data from World Bank Enterprise Surveys
Note: ***,**,* means statistically significant at 1%,5% and 10% levels. T-statistics in parentheses.
See Table 4 for additional notes
[a] Omitted dummy is dummy for Sub-Saharan Africa

Table 6: Difference in median values of productivity variables by region (East Asia combined)

	Value-Added per Worker (2005 US$)	Labor Costs per Worker (2005 US$)	Monthly Wage Production Workers (2005 US$)	Unit Labor Costs
Observations	77	77	71	78
Per capita GDP (log)	0.945***	0.906***	0.629***	0.028
	(11.79)	(13.87)	(6.24)	(0.68)
Region Dummies [a]				
Asia and Pacific	-0.728***	-0.804***	-0.839**	-0.147
	(-3.07)	(-4.16)	(-2.43)	(-1.21)
Europe and Central Asia	-0.959***	-0.738***	-0.474*	0.025
	(-4.59)	(-4.34)	(-1.89)	(0.23)
Latin America and Caribbean	-0.497**	-0.292	-0.201	0.011
	(-2.28)	(-1.65)	(-0.77)	(0.10)
South Asia	-0.612	0.059	0.027	0.094
	(-1.49)	(0.18)	(0.05)	(0.44)
Constant	1.167*	0.362	0.168	-1.274***
	(1.96)	(0.75)	(0.22)	(-4.19)
R-squared	0.721	0.794	0.458	0.050

Source: Authors' Calculations using data from World Bank Enterprise Surveys
Note: ***,**,* means statistically significant at 1%,5% and 10% levels. T-statistics in parentheses.
See Table 4 for additional notes.
[a] Omitted dummy is dummy for Sub-Saharan Africa

Table 7: Difference in median values of productivity variables by region (squared term included)

	Value-Added per Worker (2005 US$)	Labor Costs per Worker (2005 US$)	Monthly Wage Production Workers (2005 US$)	Unit Labor Costs
Observations	77	77	71	78
Per capita GDP (log)	-1.726**	-1.618**	-1.032	-0.015
	(-2.13)	(-2.53)	(-0.93)	(-0.03)
Per capita GDP Squared (log)	0.164***	0.156***	0.101	0.003
	(3.31)	(3.97)	(1.49)	(0.13)
Region Dummies [a]				
Asia and Pacific Exporters	-0.492*	-0.641***	-0.590	-0.251*
	(-1.88)	(-3.10)	(-1.53)	(-1.77)
Asia and Pacific Other	-0.595	-0.517*	-1.216*	0.138
	(-1.52)	(-1.67)	(-1.79)	(0.65)
Europe and Central Asia	-0.931***	-0.723***	-0.436*	0.005
	(-4.70)	(-4.61)	(-1.74)	(0.04)
Latin America and Caribbean	-0.328	-0.141	-0.086	-0.002
	(-1.55)	(-0.84)	(-0.32)	(-0.02)
South Asia	-0.573	0.100	0.014	0.099
	(-1.48)	(0.32)	(0.03)	(0.47)
Constant	11.741***	10.335***	6.860	-1.142
	(3.63)	(4.04)	(1.52)	(-0.65)
R-squared	0.76	0.83	0.482	0.09

Source: Authors' Calculations using data from World Bank Enterprise Surveys
Note: ***,**,* means statistically significant at 1%,5% and 10% levels. T-statistics in parentheses.
See Table 4 for additional notes
[a] Omitted dummy is dummy for Sub-Saharan Africa

Table 8: Difference in median values of productivity variables by region (Firm level regressions)

	Value-Added per Worker (2005 US$)	Labor Costs per Worker (2005 US$)	Monthly Wage Production Workers (2005 US$)	Unit Labor Costs
Observations	26340	29112	27431	27497
Sector Dummies	Included	Included	Included	Included
Per capita GDP (log)	0.846***	0.813***	0.641***	-0.046
	(7.91)	(7.46)	(6.54)	(-0.74)
Region Dummies [a]				
Asia and Pacific Manufacturing Only	-0.142	-0.890***	-0.434**	-0.783***
	(-0.47)	(-4.58)	(-2.22)	(-4.05)
Asia and Pacific Other	-0.547	-0.550*	-0.861***	-0.347**
	(-1.60)	(-1.85)	(-6.26)	(-2.38)
Europe and Central Asia	-0.640**	-0.607**	-0.075	-0.056
	(-2.06)	(-2.33)	(-0.29)	(-0.36)
Latin America and Caribbean	-0.216	-0.269	0.102	-0.079
	(-0.82)	(-1.24)	(0.46)	(-0.56)
South Asia	-0.499***	-0.209*	0.020	-0.125
	(-3.26)	(-1.75)	(0.16)	(-0.61)
Africa Middle Income	0.034	0.091	0.172	0.130
	(0.10)	(0.23)	(0.61)	(0.61)
Constant	1.318*	0.745	-0.448	-0.492
	(1.74)	(0.94)	(-0.64)	(-1.06)
R-squared	0.26	0.35	0.51	0.15

Source: Authors' Calculations using data from World Bank Enterprise Surveys

Note: ***,**,* means statistically significant at 1%,5% and 10% levels. Robust t-statistics clustered at country level in parentheses. See Table 4 for additional notes on variables. The model also includes sector dummies for textiles, garments, food and beverage, chemicals, construction materials, wood and furniture, metal products, paper and publishing, plastics, machinery, electronics, cars, and other manufacturing. Outliers more than 3 standard deviations from the country-level averages are excluded.

[a] Omitted dummy is dummy for Sub-Saharan Africa

Table 9: Indirect Costs as % of Sales by Region

	Bribes	Power Outages	Losses During Transport	Security	Crime	Total
Africa - Low and Lower Middle Income	**1.6**	**4.8**	**0.9**	**1.0**	**0.5**	**8.9**
Angola	2.6	2.9	0.5	0.9	0.2	
Benin	3.1	6.8		1.2	0.0	
Burkina Faso	0.0	2.3	0.1	0.7	0.0	
Burundi	3.3	8.1	0.1	0.6	0.5	
Cameroon	3.0	4.3	2.0	1.4	0.9	
Cape Verde	0.0	2.8		0.7	0.8	
Chad	1.4	1.9		0.9	1.6	
Congo	2.6	13.2		2.1	0.2	
Congo, DR	3.5	6.1	0.3	0.3	0.5	
Cote d'Ivoire	3.6	1.8	0.3	0.3	0.2	
Eritrea	0.0	0.0		0.3	0.0	
Gambia	2.0	8.9	0.9	2.6	1.0	
Ghana	1.5	5.3	0.8	0.5	0.2	
Guinea	3.6	14.0	0.7	0.2	0.7	
Guinea Bissau	4.3	1.3	0.6	0.8	0.5	
Kenya	2.2	4.3	1.6	0.7	0.5	
Lesotho	0.1	2.1		2.2	1.1	
Liberia	0.6	0.5		2.3	1.7	
Madagascar	1.8	7.9	1.0	1.1	0.4	
Malawi	0.0	7.9		4.7	1.6	
Mali	0.5	0.8	0.6	0.3	0.1	
Mauritania	3.4	0.9	0.5	0.5	0.0	
Mozambique	0.5	0.9	0.9	0.5	1.0	
Niger	1.6	1.4		0.5	0.1	
Nigeria	0.9	8.8	2.4	1.3	0.2	
Rwanda	0.9	6.5	1.0	0.6	0.3	
Senegal	0.8	6.2	0.6	0.5	0.1	
Sierra Leone	0.3	5.4		0.9	0.8	
Swaziland	0.7	1.0	0.8	0.8	0.4	
Tanzania	2.3	7.7	1.4	1.4	0.6	
Togo	0.0	6.3		0.9	0.2	
Uganda	2.7	8.9	1.0	0.7	0.3	
Zambia	0.2	2.3	0.7	1.0	0.4	
Africa - Upper Middle Income	**0.2**	**0.4**	**0.9**	**0.8**	**0.4**	**2.6**
Botswana	0.2	0.3	1.3	1.0	0.5	
Gabon	0.5	0.7		0.8	0.2	
Mauritius	0.0	0.5	0.2	0.8	0.1	
Namibia	0.1	0.0	0.8	0.6	0.6	
South Africa	0.1	0.4	1.3	1.0	0.5	
East Asia and Pacific - Exporters	**0.2**	**0.7**	**0.5**	**0.4**	**0.1**	**1.9**
Indonesia	0.1	0.1	0.6	0.1	0.0	
Philippines	0.3	0.6	0.7	0.7	0.3	
Vietnam	0.3	1.3	0.2	0.4	0.0	

Source: Author's calculations using data from the World Bank's Enterprise Surveys

Table 10: Tax rates in Sub-Saharan Africa and other regions

	Profit tax (%)	Labor tax (%)	Other taxes (%)	Total tax rate (% profit)
East Asia & Pacific	18.3	10.3	6.8	35.4
Eastern Europe & Central Asia	9.8	22.9	8.5	41.2
Latin America & Caribbean	20.9	14.7	12.4	48
Middle East & North Africa	12	16.8	4.1	32.8
OECD	16.8	23.3	3	43
South Asia	17.8	7.8	14.2	39.9
Sub-Saharan Africa	23.1	13.5	31.5	68

Source: World Bank (2010b)

Table 11: Average monthly labor cost for MSMEs in Zambia, by registration status, sector, and location

	Ave. Monthly Labor Cost
Registered	$71
Unregistered	$28
Urban	$57
Rural	$19
Manufacturing	$71
Retail	$28
Other Services	$43
Agriculture	$20
Other	$36
Retail -- Urban	$57
Retail -- Rural	$20
Retail -- Registered	$85
Retail -- Unregistered	$28
Urban -- Registered	$95
Urban -- Unregistered	$43

Source: Author's calculations using data from the Zambia Business Survey
Note: Data are for firms with workers that are paid in cash. Workers paid in-kind are excluded and in-kind payments are excluded. Firms with more than 50 employees are included.

Table 12: Labor regulations in Sub-Saharan Africa and other regions

	Difficulty of Hiring	Rigidity of Hours	Difficult of Redundancy	Rigidity of employment
East Asia & Pacific	19.2	8.6	19.6	15.8
Eastern Europe & Central Asia	31.9	29.9	25.9	29.2
Latin America & Caribbean	34.4	21.3	24.1	26.6
Middle East & North Africa	21.3	22.1	30	24.5
OECD	26.5	30.1	22.6	26.4
South Asia	27.8	10	41.3	26.3
Sub-Saharan Africa	37.3	29.3	39.8	35.5

Source: World Bank (2009a)
Note: Higher values mean more rigid regulations (on 0-100 scale)

Table 13: Time and Cost to Start a Business in Africa

	Procedures (number)	Time (days)	Cost (% of income per capita)	Paid-in Min. Capital (% of income per capita)
East Asia & Pacific	7.8	39	27.1	50.6
Eastern Europe & Central Asia	6.3	16.3	8.5	12.3
Latin America & Caribbean	9.3	56.7	36.2	4.6
Middle East & North Africa	8.1	20	38	104
OECD	5.6	13.8	5.3	15.3
South Asia	7.1	24.6	24.5	24.1
Sub-Saharan Africa	8.9	45.2	95.4	145.7

Source: World Bank (2010b)

Table 14: Cost of importing and exporting

	Time to export (days)	Cost to export (US$ per container)	Time to import (days)	Cost to import (US$ per container)
East Asia & Pacific	22.7	889.8	24.1	934.7
Eastern Europe & Central Asia	26.7	1651.7	28.1	1845.4
Latin America & Caribbean	18	1228.3	20.1	1487.9
Middle East & North Africa	20.4	1048.9	24.2	1229.3
OECD	10.9	1058.7	11.4	1106.3
South Asia	32.3	1511.6	32.5	1744.5
Sub-Saharan Africa	32.3	1961.5	38.2	2491.8

Source: World Bank (2010b)

Table 15: Difference in median values of productivity variables by region (cost of importing included)

	Value-Added per Worker (2005 US$)	Labor Costs per Worker (2005 US$)	Monthly Wage Production Workers (2005 US$)	Unit Labor Costs
Observations	77	77	71	78
Per capita GDP (log)	0.900***	0.858***	0.572***	0.047
	(9.82)	(11.63)	(4.75)	(1.02)
Cost of importing (log, US$)	-0.175	-0.213	-0.154	0.031
	(-1.05)	(-1.58)	(-0.72)	(0.37)
Region Dummies [a]				
Asia and Pacific Exporters	-0.861***	-1.034***	-0.836*	-0.227
	(-2.77)	(-4.13)	(-1.94)	(-1.44)
Asia and Pacific Other	-0.865**	-0.791**	-1.331*	0.146
	(-2.07)	(-2.35)	(-1.94)	(0.69)
Europe and Central Asia	-0.924***	-0.708***	-0.424	-0.001
	(-4.33)	(-4.11)	(-1.65)	(-0.01)
Latin America and Caribbean	-0.514**	-0.323*	-0.202	-0.003
	(-2.33)	(-1.82)	(-0.76)	(-0.02)
South Asia	-0.572	0.111	0.044	0.091
	(-1.38)	(0.33)	(0.09)	(0.43)
Constant	2.838*	2.343*	1.776	-1.650*
	(1.68)	(1.72)	(0.79)	(-1.95)
R-squared	0.73	0.80	0.47	0.09

Source: Authors' Calculations using data from World Bank Enterprise Surveys
Note: ***,**,* means statistically significant at 1%,5% and 10% levels. T-statistics in parentheses.
See Table 4 for additional notes
[a] Omitted dummy is dummy for Sub-Saharan Africa

Table 16: Difference in median values of productivity variables for Africa (cost of importing included)

	Value-Added per Worker (2005 US$)	Labor Costs per Worker (2005 US$)	Monthly Wage Production Workers (2005 US$)	Unit Labor Costs
Observations	31	31	26	31
Per capita GDP (log)	0.781***	0.716***	0.493***	-0.045
	(7.38)	(8.63)	(3.02)	(-0.59)
Cost of importing (log, US$)	0.570**	0.409**	0.612*	0.103
	(2.65)	(2.42)	(1.87)	(0.66)
Constant	-1.990	-1.390	-3.520	-1.546
	(-1.00)	(-0.90)	(-1.12)	(-1.07)
R-squared	0.66	0.73	0.30	0.04

Source: Authors' Calculations using data from World Bank Enterprise Surveys
Note: ***,**,* means statistically significant at 1%,5% and 10% levels. T-statistics in parentheses.
See Table 4 for additional notes
Note: Only includes countries from Sub-Saharan Africa

Table 17: List of Countries, regions, and number of observations for productivity data

Country	Region	Obs.	Country	Region	Obs.
Afghanistan	SA	73	Lithuania	ECA	73
Albania	ECA	42	Madagascar	AFR	148
Angola	AFR	215	Malawi	AFR	55
Argentina	LAC	510	Malaysia	EAP-M	775
Armenia	ECA	83	Mauritania	AFR	79
Azerbaijan	ECA	101	Mauritius	AFR-UMI	129
Belarus	ECA	62	Mexico	LAC	1000
Benin	AFR	17	Micronesia	EAP	9
Bolivia	LAC	258	Moldova	ECA	101
Bosnia and Herzegovina	ECA	84	Mongolia	ECA	128
Botswana	AFR-UMI	110	Montenegro	ECA	22
Brazil	LAC	992	Mozambique	AFR	341
Bulgaria	ECA	385	Namibia	AFR-UMI	102
Burkina Faso	AFR	47	Nepal	SA	124
Burundi	AFR	102	Nicaragua	LAC	314
Cambodia	EAP	129	Niger	AFR	17
Cameroon	AFR	89	Nigeria	AFR	2008
Cape Verde	AFR	45	Panama	LAC	158
Chad	AFR	21	Paraguay	LAC	198
Chile	LAC	528	Peru	LAC	303
China	EAP-M	10697	Philippines	EAP-M	689
Colombia	LAC	582	Poland	ECA	88
Congo	AFR	14	Romania	ECA	91
Congo, DR	AFR	149	Russia	ECA	391
Cote d'Ivoire	AFR	137	Rwanda	AFR	58
Croatia	ECA	270	Samoa	EAP	17
Czech Republic	ECA	60	Senegal	AFR	259
Ecuador	LAC	286	Serbia	ECA	126
El Salvador	LAC	410	Sierra Leone	AFR	43
Eritrea	AFR	53	Slovak Republic	ECA	54
Estonia	ECA	80	Slovenia	ECA	85
FYR Macedonia	ECA	79	South Africa	AFR-UMI	678
Gabon	AFR-UMI	24	Swaziland	AFR	68
Gambia	AFR	33	Tajikistan	ECA	91
Georgia	ECA	76	Tanzania	AFR	271
Ghana	AFR	292	Thailand	EAP-M	1385
Guatemala	LAC	297	Timor Leste	EAP	38
Guinea	AFR	134	Togo	AFR	13
Guinea Bissau	AFR	50	Turkey	ECA	542
Honduras	LAC	233	Uganda	AFR	307
Hungary	ECA	92	Ukraine	ECA	279
Indonesia	EAP-M	857	Uruguay	LAC	219
Kazakhstan	ECA	134	Uzbekistan	ECA	118
Kenya	AFR	395	Vanuatu	EAP	8
Kosovo	ECA	84	Venezuela	LAC	0
Kyrgyz Republic	ECA	73	Vietnam	EAP-M	670
Lao PDR	EAP	143	Mali	AFR	301
Latvia	ECA	74	Zambia	AFR	304
Liberia	AFR	72			

Source: Author's calculations based upon data from World Bank Enterprise Surveys
Note: Number of observations in table are for labor productivity calculations. Other productivity measures may have slightly more or slightly fewer observations. AFR: Africa (low and lower middle income); AFR-UMI: Africa (upper middle income); EAP: East Asia and Pacific (non-manufacturing); EAP-M: East Asia and Pacific (manufacturing); ECA: Europe and Central Asia; SA: South Asia;

Appendix I: Data Description

The Enterprise Survey data is carefully collected using a standard and rigorous approach across countries. The surveys provide representative samples of each country's private sector, collecting standard accounting measures of firm performance and information on each country's investment climate (see Table 17 for a list of countries with data). Summaries of the broad survey results are included on the Enterprise Survey website (www.enterprisesurveys.org). More detailed summaries of Enterprise Surveys have been completed for the World Bank's Investment Climate Assessment program.

The surveys have used almost identical questionnaires and identical sampling methodologies since 2006. They are conducted in between two and five cities in each country and cover firms with more than 5 employees in the following industries (according to ISIC, revision 3.1): all manufacturing sectors (group D), construction (group F), retail and wholesale services (sub-groups 52 and 51 of group G), hotels and restaurants (group H), transport, storage, and communications (group I), and computer and related activities (sub-group 72 of group K). The surveys are delivered to the managing director or his or her direct representative. Accountants or human resource managers sometimes provide information on company accounts and labor practices.

The samples are stratified random samples—stratified by industry, location, and, when information is available, by firm size. Sample sizes are set within each stratum to allow certain variables to be calculated to specified levels of precision and firms are randomly selected from each group. Weights are constructed to take account of varying probabilities of selection between strata.

The sampling frames are constructed from lists of registered enterprises in each country. Lists of firms were obtained from government agencies in each country—usually the Bureaus of Statistic, Business Registrar, or Ministry of Trade and Industry. These lists are then verified and updated to get complete and up-to-date sampling frames. The survey methodology is described in more detail and the survey data are available for download on the World Bank's Enterprise Surveys website (www.enterprisesurveys.org).

Although Enterprise Surveys were conducted before 2006, we restrict the analysis to data collected after 2006. We do this because there was considerable heterogeneity across countries and regions in terms of sectors covered, questionnaire format, coverage of microenterprises with less than 5 employees, and sampling methodology before 2006. Moreover, the Enterprise Surveys conducted before 2006 were not generally representative of the formal economies in this region and weights are not available to allow for the computation of population averages.

The data have some limitations. One concern is that firm managers might not report accurate data to interviewers. One problem might be that firm manager underreport their sales because they are concerned about the tax authorities using the data to target them. That is, although managers are assured that the data are confidential, they might underreport due to a sense of concern ('better safe than sorry'). On the other hand, other pressures might lead them to over-report performance—managers are often concerned about their competitors gaining

information on their performance. Recent studies using Enterprise Survey data for Nigeria suggests that managers who appear deceptive appear to over-, not under-, report labor productivity.[35]

Appendix 2: Measures of Firm Performance

The study focuses on several measures of firm productivity. These are calculated in a uniform way in all countries with available Enterprise Survey data from between 2006 and 2009. The measure of firm performance are:

Labor Productivity. Value-added per worker is the basic measure of labor productivity used in this paper. It is the value of the goods and services that the firm produces less the cost of the raw materials (such as iron or wood) and intermediate inputs (such as engine parts or textiles) used to produce the output divided by the number of full-time workers in the firm.[36] Firms that produce more output with less raw material and fewer workers have higher labor productivity.

Output is measured in dollars not in physical units.

Differences in labor productivity can be the result of differences in technology, differences in organizational structure, differences in worker education or skills, differences in management ability, or differences in capital use. Because labor productivity does not take capital (i.e., machinery and equipment) use into account, it will generally be higher in firms that use capital in place of labor (i.e., firms that are capital intensive).

Labor costs per worker. The cost of labor is the cost of wages, salaries, bonuses, other benefits, and social payments for workers at the firm divided by the number of workers. The data is taken from the firms' accounts. It includes wages and salaries paid to all workers and managers – not just production workers.

Average monthly wage for production workers. The average monthly wage for production workers. This information generally does not come from company accounts. Instead it reflects the wages the manager reports paying to a typical production worker. Although it should provide information similar to 'labor costs per worker', it provides a useful robustness check since it will does not come from the same source (i.e., not from company accounts).

Unit labor costs. This measure is labor costs as a percent of value-added. Although it is an approximation to true unit labor costs (i.e., it measures output in dollars rather than as physical measure of production), it can be calculated using information from the *Enterprise Survey*. It is a better measure of labor costs than labor cost per worker in that it takes differences in productivity into account when assessing labor costs. Unit labor costs are higher when higher labor costs are not fully reflected in higher productivity. When unit labor costs are higher (i.e., when labor costs are higher compared to productivity), all else equal, firms will find it more difficult to compete on international markets than when they are lower. Although unit labor costs are not the only factor that affect competitiveness—for example, they do not take the cost of capital or capital intensity into account—they are a better measure of competitiveness than labor costs alone.

X. Endnotes

[1] Although high on average, wages are low in some countries in the region. For example, in a selection of light manufacturing sectors, World Bank (2011b, Table 1.1) shows that wages in Ethiopia were low in 2010 ($34-53 per month). Although Ethiopia was not included in the most recent set of Enterprise Surveys, evidence from the 2002 Ethiopia survey suggest that wages were low at that time. Per worker labor costs were about $489 per year—lower than in any of the 35 other African economies in the first round of surveys except Guinea.

In comparison, World Bank (2011b, Table 1.1) shows that wages for unskilled workers were between $78-$131per month in Vietnam, $80-$130 in Tanzania, $157-$208 in Zambia, $197-$278 in China. It is important to note, however, that per capita income is considerably higher in Vietnam and China than in the three African countries. In PPP adjusted terms, per capita GDP was about $6,800 per capita in China, $2,900 per capita in Vietnam compared with between $900 and $1400 in the three African countries.

[2] Appendix I describes the data in greater detail.

[3] Clarke (2010) note that of the 4,800 microenterprises and SMEs in the Zambia business survey only 15 exported anything and only 2 exported outside of the sub-region. Even among formal manufacturing enterprises (i.e., enterprises larger than microenterprises), studies have found that large enterprises are more likely to export. Clerides and others (1998) find evidence consistent with this for Colombia, Mexico and Morocco. Similarly, Grenier and others (1999) found that large Tanzanian enterprises export more than smaller enterprises. Using data from several countries in sub-Saharan Africa from the mid-1990s, Bigsten and others (2004) and Söderbom and Teal (2003). Clarke (2009) found similar results using data from the earlier round of Enterprise Surveys for Ethiopia, Kenya, Mali, Mozambique, Senegal, Tanzania, Uganda and Zambia.

[4] Although Ethiopia appears to be an exception to this rule—Italy, the United Kingdom and Germany are the three most important export destinations for Ethiopian enterprises—very few Ethiopian enterprises export. Although over half of Ethiopian exporters export to the country's main industrial market (Italy), this represents less than 4 percent of Ethiopian enterprises. In contrast, although only about 8 percent of Kenyan exporters export to their main industrial market (the United Kingdom), since 58 percent of Kenyan enterprises export, this represents over 4 percent of Kenyan enterprises. The poor performance of Ethiopian exporters in regional markets probably reflects regional difficulties that have prevented Ethiopian enterprises from developing export partnerships with firms in neighboring countries (e.g., in Eritrea, Somalia and Sudan)

[5] Appendix II describes the productivity measures discussed in this section in greater detail.

[6] Moreover, it is important to note that the two countries where surveys have been conducted in South Asia (Afghanistan and Nepal) are not representative of the region as a whole.

[7] The analysis focuses on median measures of firm performance because medians are less sensitive to outliers than means. For brevity, the term 'median firm' is used to refer to the median firm on each measure of firm performance. For example, in this section, 'median firm' refers to the median firm in the country in terms of labor productivity.

[8] Previous studies using enterprise level data for Sub-Saharan Africa have found that firms are better performing when the manager is better educated (Biggs and others, 1998).

[9] See, for example, Eifert and others (2008). They show that indirect costs related to infrastructure and services account for a relatively high share of firms' costs in poor African countries and pose a competitive burden on African firms.

[10] In 2012, the average country in Sub-Saharan Africa ranked 137th in the Doing Business rankings – worse than any other region (World Bank, 2011a).

[11] See, for example, Acemoglu and others (2001)

[12] See, for example, Svensson (2005) on corruption. Many papers have shown the strong link between corruption and other measures of institutional quality. See, for example, Langbein and Knack (2010).

[13] These countries were chosen because manufactured goods accounted for over 20 percent of output between 2005 and 2009 (see Table 1).

[14] These differ from standard measures of unit labor costs in that we use value-added rather than measures of physical output.

[15] The coefficients on the regional dummy variables can be transformed in percentages using the following formula: % Difference $= 100 \times (e^{\gamma_1} - 1)$. See Hardy (1993)

[16] The null hypothesis that the coefficient is one cannot be rejected at conventional significance levels for labor productivity (p-value=0.50) and labor costs (p-value=0.18). In contrast, the null hypothesis can be rejected for average monthly wages for production workers.

[17] The previous analysis focused on medians rather than means. Medians are used because a small number of outliers tend to distort mean comparisons. Outliers could be due to a number of things including enumerator error, misreported numbers, or other events. Many firms in developing countries either do not keep detailed accounts or are unwilling to share the information with enumerators. In the analysis in this section, outliers –defined as firms where the dependent variable is more than three standard deviations from the mean—are excluded. This is used rather than robust or absolute deviation regressions because these other approaches do not allow for clustered standard errors.

[18] Labor productivity excludes the cost of capital, while total factor productivity and technical efficiency take the cost of capital into account.

[19] Clarke (2011b) shows that it is difficult to compare these costs with costs from company accounts because many managers overestimate these other costs.

[20] Although costs are higher in South Asia, the countries in this region with available data (Afghanistan, Bangladesh, Bhutan, and Nepal) might not be representative of other countries in the region.

[21] Although it is difficult to compare the size of the informal sector across countries due to difficulties associated with both definitions and measurement, most evidence suggests that the informality is greater in Africa than in other regions. Schneider (2005; 2004) estimates that the informal sector accounted for about 41 percent of GDP in the 24 African countries for which data were available. This is similar to Latin America, but higher than in most other regions. As in most regions, informality is higher in low-income countries. See, for example, Figure 1-5 in World Bank (2010a)

[22] See World Bank (2010d)

[23] As discussed in de Mel and others (2009), wages and productivity are likely to be understated in the informal sector for several reasons. Firms often do not keep detailed accounts and might underreport profits either intentionally, if they are concerned about the tax authorities getting access to the data, or unintentionally (i.e., due to recall errors). In practice, however, taxes might affect self-reported data even for formal firms in the Enterprise Surveys. As noted in Clarke (2011c), close to two-thirds of formal firms do not report productivity data directly from the firm's written accounts.

[24] Note that this excludes workers that are not paid in cash and excludes in-kind payments. The exclusion of in-kind payments might partially explain the exceedingly low wages in the agricultural sector.

[25] See, for example, Pritchett (2001) for a discussion of education.

[26] Eifert and others (2008) show that indirect costs such as those related to poor infrastructure, crime and corruption are very high in Sub-Saharan Africa.

[27] Using data from informal enterprises in Zambia, Clarke (2011a) shows that formal microenterprises pay more bribes than informal enterprises. The difference appears to be, at least in part, because formal microenterprises demand more government services than informal enterprises.

[28] See, for example, Conway and Shah (2010).

[29] See, for example, Pakes (2008). A related concern is that exchange rates can also affect measured productivity. For cross-country comparisons, value-added has to be denominated in a common currency (e.g., US dollars in this paper). Because sales and intermediate inputs are denominated in local currency in the survey, cross-country comparisons of productivity are vulnerable to exchange rate fluctuations. If the exchange rate is overvalued relative to its long-run equilibrium then productivity might look artificially low.

[30] See, for example, the discussion by Levinsohn (2008) on the Escribano-Guasch methodology (2005; 2008; 2005).

[31] The 2009 Investment Climate Assessment was based on a survey of formal enterprises of five or more employees in Lusaka, Kitwe, Ndola and Livingstone. The list of enterprises, which was provided by the Central Statistical Office, yielded a final list of only 3 336 enterprises in manufacturing and services with over five employees in these cities. Only 449 of these enterprises had over 50 employees. Most of these, however, were in retail trade and other services. Only about 156 of these 449 enterprises were in manufacturing. At the time of the last census (2000), these cities accounted for about 20 percent of total population and probably account for a greater share of the number of large enterprises in the country. See Regional Program on Enterprise Development (2009)and World Bank (2009b) for more details.

[32] See World Bank (2003) and Djankov and others (2002).

[33] Most countries in the region took steps towards liberalizing trade by reducing tariffs and quotas during the 1990s and 2000s. According to data from the World Bank, the average weighted tariff in the manufacturing sector fell from about 15-18 percent at the beginning of the 1990s to about 8 percent by 2008 (World Bank, 2010c).

[34] Clarke (2009), Iwanow and Kirkpatrick (2010) and Yoshino and others (2008) show that problems with trade regulation and customs administration make exporting difficult for firms in Africa. Djankov and others (2010) show that increasing the days to export by one day has an equivalent impact on trade as a 70KM distance addition in a gravity model of trade.

[35] Azfar and Murrell (2009) develop a methodology using random response questions to identify reticent respondents who appear to be evasive or deceitful. They show that reticent respondents in Romania appear to underreport bribe transaction. Clausen and others (2010) repeat this analysis for firms in Nigeria and show similar results with respect to direct questions on corruption. They also show that reticent managers appear to over-report that they are ISO certified. They suggest that this is because reticent managers appear to exaggerate their firm's performance. Using the same data as Clausen and others (2010), Clarke (2011c) shows that reticent managers appear to over-report how productive and capital intensive their firms are.

[36] The number of workers is the number of permanent and temporary full-time workers. Data on part-time workers is not collected in most countries outside of Sub-Saharan Africa and so these workers are omitted for reasons of comparability. In practice, for countries with data on part-time workers, including these workers does not have a large effect on relative rankings.