

Benchmarking Africa's Costs and Competitiveness

GIUSEPPE IAROSSI, The World Bank

After analyzing one aspect of the business environment with clear implications for the competitiveness of a country—finance—this chapter presents micro-level evidence of how individual firm-level costs in Africa contribute to its competitiveness or lack thereof.

Is Africa a low-cost site from which to run a business? Although data on production costs are not easily available, a number of reports and anecdotal evidence clearly show that Africa is far from being a low-cost production site. A combination of factors linked to the institutional and physical business environment make the African continent one of the most expensive places in the world to produce. By some estimates,¹ as much as 25 percent of sales of firms in some African countries are lost because of impediments of the investment climate such as unreliable infrastructure, contract enforcement difficulties, crime, corruption, and poor regulation. These losses are, at times, much higher than taxes paid. Additional evidence estimates the indirect costs faced by African firms at around 20 to 30 percent of total costs, a value often higher than labor costs.² The impact of such production costs on Africa's competitiveness seems to be above and beyond what is experienced by other regions in the world. By some estimates, Kenya's factory floor productivity is close to China's; but once we account for indirect costs, Kenyan firms lose 40 percent of their productivity advantage when compared to Chinese firms.³ Additional firm-level evidence shows that, although labor costs in a number of African countries are competitive internationally, Africa manufacturers are much less so⁴—as demonstrated by the fact that trade in manufacturers in Africa account for just 2 percent of world trade.

A critical measure of any country's competitiveness is represented by its production cost structure. The existing literature has shown the potential loss in productivity due to costs faced by firms outside their factory gates, and investors do pay attention to these costs when deciding on a site location.⁵ This chapter therefore attempts to expand the available evidence on production costs in Africa by expanding the categories of costs and the number of countries taken into account.⁶ Our aim is to analyze the most important costs faced by African firms and show how critical these are for their productivity and competitiveness. We look at three types of costs: direct costs, indirect costs, and invisible costs. First we examine what are generally defined as *direct costs*—that is, those factory floor costs associated with the production process itself such as labor, capital, and electricity.

Giuseppe Iarossi is Senior Economist in the Finance and Private Sector Development Department of the Africa region at The World Bank. The findings, interpretations, and conclusions expressed in this chapter are those of the author and do not necessarily reflect the views of the Executive Directors of The World Bank or the governments they represent. Andrew Stone and Vincent Palmade (The World Bank) provided a significant contribution to this chapter. We are grateful to Regina Martinez for excellent research assistance.

We then look at *indirect costs*—that is, those costs associated with getting what is produced to market as well as those associated with the broader business environment in which the firms operate. Finally we look at *invisible costs*—that is, those losses experienced by firms as consequence of the poor quality of the business environment. More specifically, we look at losses due to excessive collateral requirements to access credit, poor infrastructure services (power interruptions and transport delays), unpredictable regulatory environment, corruption, and lack of security. After discussing these costs separately, we look at them together and estimate their impact on the value of sales in order to benchmark Africa with other regions. The chapter concludes with policy recommendations.

The evidence presented in this chapter shows that firms in Africa are almost 20 percent less competitive than firms in the other regions, although considerable variation exists across countries. Compared to firms in East Asia, for example, it costs African firms 19 percent more to produce one unit of sale—a considerable competitive disadvantage. As the global crisis looms on the African continent, this finding implies that Asian firms enjoy a much higher margin to absorb price shocks than African firms, while remaining viable producers.

In this chapter we draw mostly on data from the Enterprise Surveys and the Doing Business indicators. The Enterprise Survey data used in this chapter include 93 countries worldwide, of which 32 are in Africa. The values presented are therefore representative of the typical urban-registered firm in each country where the Enterprise Surveys data are employed, or the typical small- or medium-sized enterprise (SME) that is in full compliance with rules and regulation when the Doing Business data are used (see Box 1).⁷

Direct costs

Direct costs are those factory floor costs associated with the production process itself. The three primary direct costs are labor, capital, and electricity; each is addressed in the sections below.

Labor

According to a study covering nine African countries,⁸ wage levels remain the most important cost element attracting foreign investors. In typical sectors such as apparel, textile, food, and horticulture, wage considerations account for up 43 percent of the investors' cost motivations. This evidence, together with the fact that labor cost is associated with income per capita, should put Africa at the top of the world's competitiveness list. Being a low-income and relatively low cost-of-living location, the continent should be well positioned to offer competitive labor cost.

This happens to be true only in part. If we look at levels of labor cost across regions,⁹ we see that Africa

Box 1: Enterprise Surveys and Doing Business indicators

The World Bank's **Enterprise Surveys** collect both perceptions and objective indicators of the business environment in each country. The data are collected through face-to-face interviews with hundreds of entrepreneurs; hence responses reflect the managers' actual experiences. The data collected span all major investment climate topics, ranging from infrastructure and access to finance to corruption and crime. Detailed productivity information includes firm finances, costs such as labor and materials, sales, and investment. The breadth and depth of data allow across-country analysis by firm attributes (size, ownership, industry, etc.), and can probe the relationship between investment climate characteristics and firm productivity. Every year, 15–30 Enterprise Surveys are implemented, with updates planned for each country every three to five years. This reflects the intense nature of administering firm surveys and for the firms responding to the many, detailed questions. So far over 110 countries have been surveyed, including over 20,000 entrepreneurs, senior managers, and chief executive officers in 38 African countries. In 10 countries in Africa surveys have been conducted more than once; hence panel data are also available to researchers around the globe. For more information visit <http://www.enterprisesurveys.org/>.

The World Bank's **Doing Business indicators** are updated on an annual basis, providing a quantitative measure of a particular aspect relevant to competitiveness: business regulation and the protection of property rights as well as their effect on businesses, especially small- and medium-sized domestic firms located in the most important business city. They are based on a survey of local experts in law and accounting who interact with a large number of firms; hence responses reflect what firms should do if they fully complied with regulations. Constancy of firm description across countries allows for a straightforward comparison and ranking by country for the various indicators. Ease of use makes this a useful tool for policy analysis. The data entail in-depth research and exchange with experts on laws, regulations, and institutions covering specific aspects of firm entry, operation, and exit. More specifically, the data cover the following ten topics: starting a business, dealing with construction permits, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts, and closing a business. The most recent data cover 181 economies. Fifty countries in Africa are represented, reflecting the responses of 6,700 experts (including lawyers, business consultants, accountants, freight forwarders, government officials, and other professionals routinely administering or advising on legal and regulatory requirements). Data are collected annually; each year expanded collection (covering more economies and indicators) is planned. For more information visit <http://www.doing-business.org/>.

enjoys only a moderate comparative advantage. After controlling for a number of factors—such as income per capita, cost of living, firm size, and sector of activity—we see that labor costs in Africa are at least 10 percent higher than they are in East Asia, while South Asia retains its strong comparative advantage over Africa with around 40 percent lower labor costs.¹⁰ For the typical firm, labor costs are higher in Africa than in Eastern Europe and Central Asia or Latin America, but South and East Asian regions are more competitive. On the African continent, workers cost on average US\$135 per month; the same worker will cost more than twice that in Eastern Europe and Central Asia and in Latin American and the Caribbean, but much less in South Asia and East Asia. This means that—in nominal terms, without controlling for any other factors—the South and East Asian regions enjoy a labor cost advantage over Africa of 25 percent and 60 percent, respectively.¹¹

Within Africa, exporters and FDI firms pay more (10 to 15 percent more) in labor costs, but they pay less in East Asia and in South Asia in nominal terms. An exporter in Africa pays around US\$150 per worker monthly, while the same worker costs less—around US\$110 in East Asia and less than US\$70 in South Asia. Given that exporters use higher skills, this is a significant cost disadvantage for African firms (see Figure 1).

One component of labor cost is represented by mandatory labor contributions, such as social security. This cost is particularly high in Africa, where it is 12 percent—second only to the costs in Eastern Europe and Central Asia, where it reaches 21 percent. The data again show a wide cross-country variation in Africa. In some countries (e.g., Namibia), social security is almost nil, while in others (such as Algeria) it surpasses a quarter of a worker's gross salary.¹²

In conclusion, our data show that Africa does not enjoy as much of a comparative advantage with respect to labor cost as we would expect, given its level of per capita income. Both labor costs and social security contributions are relatively high, and though a wide cross-country variation does exist, in the great majority of African countries labor costs are much higher than they are in main competitor countries such as India and Vietnam; in half of African countries, labor cost is higher than China's (Figure 2).

Capital

Firms around the world need credit to be able to function. A sound business environment requires an efficient financial system capable of allocating resources to their most productive uses. Yet evidence from firm-level surveys shows that the cost of finance tops the charts of firm complaints around the globe. African entrepreneurs together with Latin American and Caribbean managers complain even more than firms in all other regions. So is the cost of capital really higher in Africa?

We attempt to answer this question by first looking at the *prime rate* that banks charge when lending to their best customers.¹³ A cross-regional analysis of finance cost shows clearly that, if they are located in Africa, even the best customers are charged a much higher interest rate. More specifically, firms in Africa pay around 7 percent more in interest rates than firms in East Asia and in South Asia.¹⁴ In Eastern Europe and Central Asia, the difference is 4 percent. In the main competitors such as India, Thailand, Vietnam, and China, borrowing funds is up to 40–70 percent cheaper than in Africa.

The Enterprise Survey data confirm this picture by showing that firms in Africa pay, on average, an interest rate of 15 percent—close to 5 percentage points more than firms in East Asia and 2 percentage points more than those in South Asia, in nominal terms. Furthermore, since the interest rate charged by banks could be correlated with firm characteristics, we use these data to analyze capital cost after accounting for size, industry, export orientation, ownership, collateral requirements, sales, and value of machinery. Even after accounting for these costs, firms in Africa pay around 3–5 percent more in interest rates than firms in East Asia. The inability of banks to allocate credit more cheaply is reflected in the higher bank spreads seen in Africa. This phenomenon could be related to inefficiencies in the banking system and to lack of competition in addition to the higher risk associated with African firms.

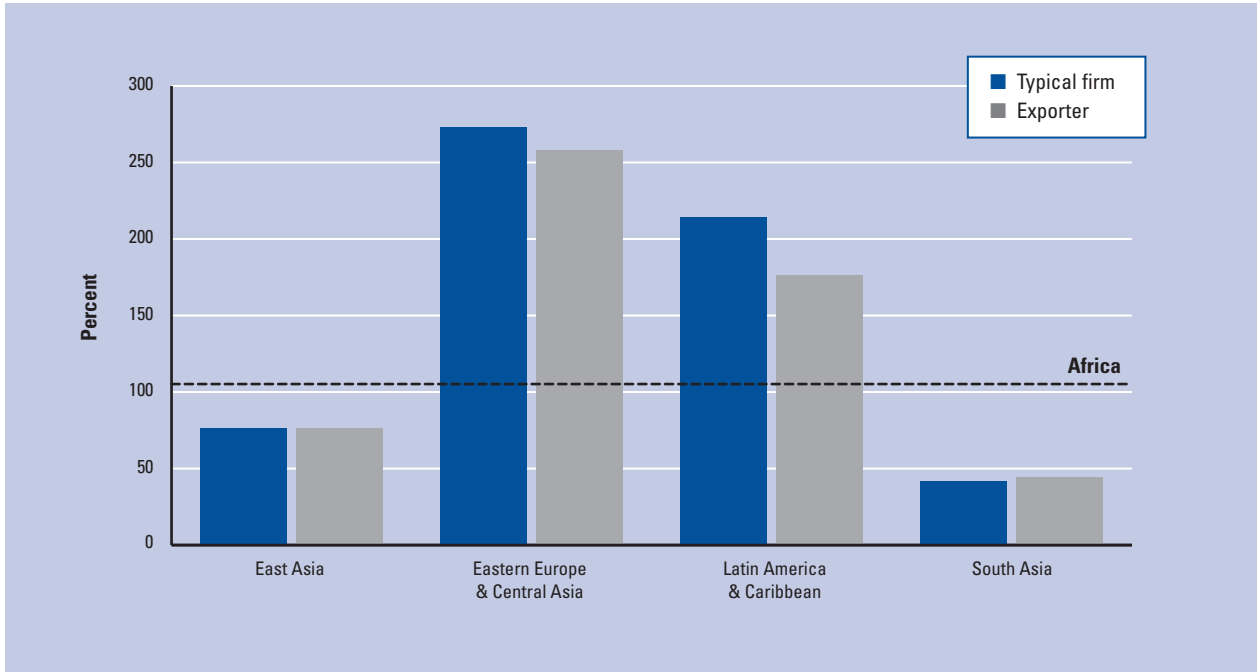
Finally, our survey data confirm that the smaller the firm, the more expensive its credit when it finally receives it. In Africa, smaller firms pay an interest rate that is 1 percentage point higher than the interest paid by medium firms and 3 percentage points above the interest paid by large firms.¹⁵

Electricity

We were able to document electricity costs in 2006 for 48 developing countries, of which 19 are in Africa. According to these data, one kilowatt hour (kWh) of electricity for industrial use in Africa costs, on average, US\$0.068. Of all the regions documented, only in South Asia is electricity costlier, although this average is really driven by the high cost in Sri Lanka (US\$0.137/kWh), while in India electricity costs US\$0.06/kWh. Figure 3 shows that Africa is not competitive in terms of this key infrastructure cost. Firms in East Asia pay, on average, 7 percent less than firms in Africa for electricity, but firms in India and Vietnam pay some 11 percent less—and even less than this in Brazil. As always, there is wide variation within Africa. Electricity costs are as low as approximately US\$0.04 in Lesotho and Botswana and as high as US\$0.14 in Senegal.¹⁶

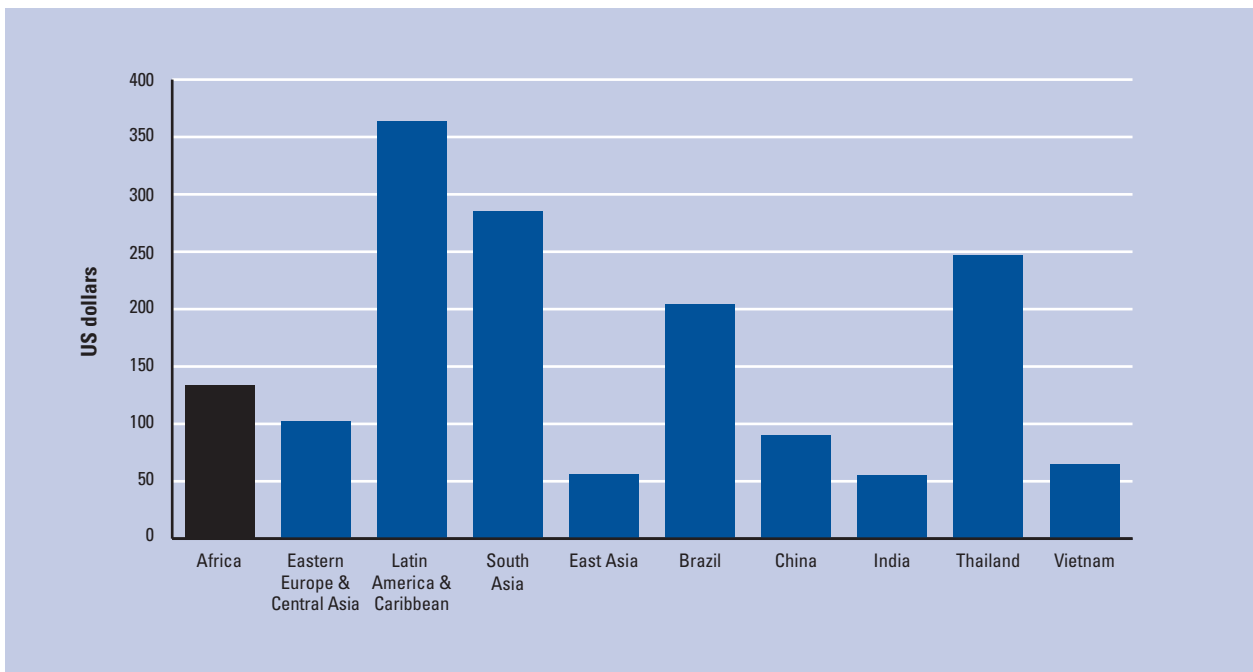
Finally, it is interesting once again to see that in oil-rich countries electricity is 20 percent cheaper, while in landlocked countries it is 15 percent more expensive.¹⁷

Figure 1: Labor cost advantage or disadvantage: Africa vs. selected regions

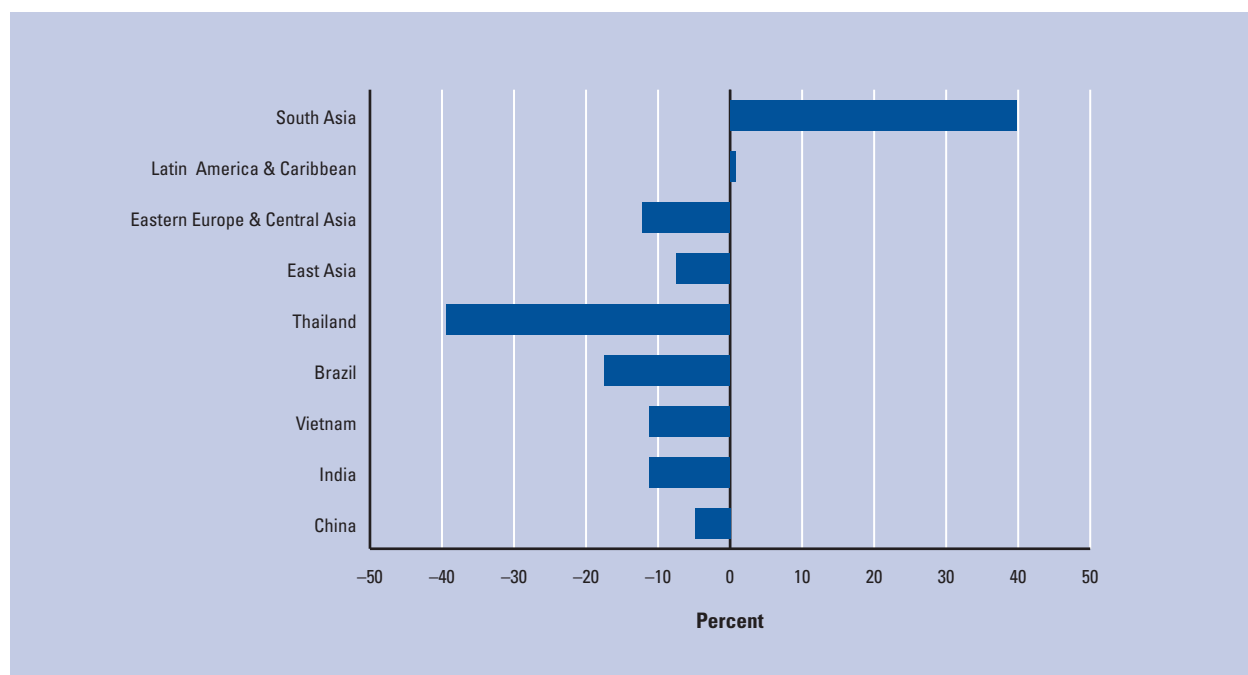


Source: Author's calculations using Enterprise Surveys (various years).

Figure 2: Monthly labor cost per worker: Africa vs. selected comparator countries and regions



Source: Author's calculations using Enterprise Surveys (various years).

Figure 3: Difference in electricity costs: Africa vs. selected developing countries and regions, 2006

Source: EIU, 2009; China data are from the World Bank.

Indirect costs

Indirect costs are those incurred by firms in order to get what is produced to market as well as those associated with the broader environment in which they operate. The two crucial indirect costs are transport and regulation.

Transport

One important aspect in the global supply chain is represented by inland transportation costs. To be competitive it is essential to be able to move goods within a country cheaply. Africa's geography does not help in this regard. A huge continent with a low ratio of roads per square kilometer and large distances represents a natural obstacle to competitiveness. Furthermore, Africa is the continent with the highest number of landlocked countries (two out of five landlocked countries in the world are in Africa).

Not surprisingly, inland transportation costs are higher in Africa than in other regions. It costs US\$1,100, on average, to ship a typical container with imports inland; it costs US\$872 for exports. This is higher than all other regions except Eastern Europe and Central Asia, where it costs US\$1,141 and US\$989, respectively. East Asia, South Asia, and Latin American and the Caribbean, on the other hand, enjoy a significant comparative advantage with respect to transport costs. Firms in East Asia save close to 70 percent in transportation costs, while firms in Latin America and South Asia save approximately 50 percent (Figure 4).

In addition, being a landlocked country obviously adds to the transportation cost. Being landlocked in

Africa adds even more. African landlocked countries pay close to one-third more in inland transportation costs than landlocked countries outside Africa (US\$2,200 versus US\$1,500). Those are significant costs that penalize firms in the continent.

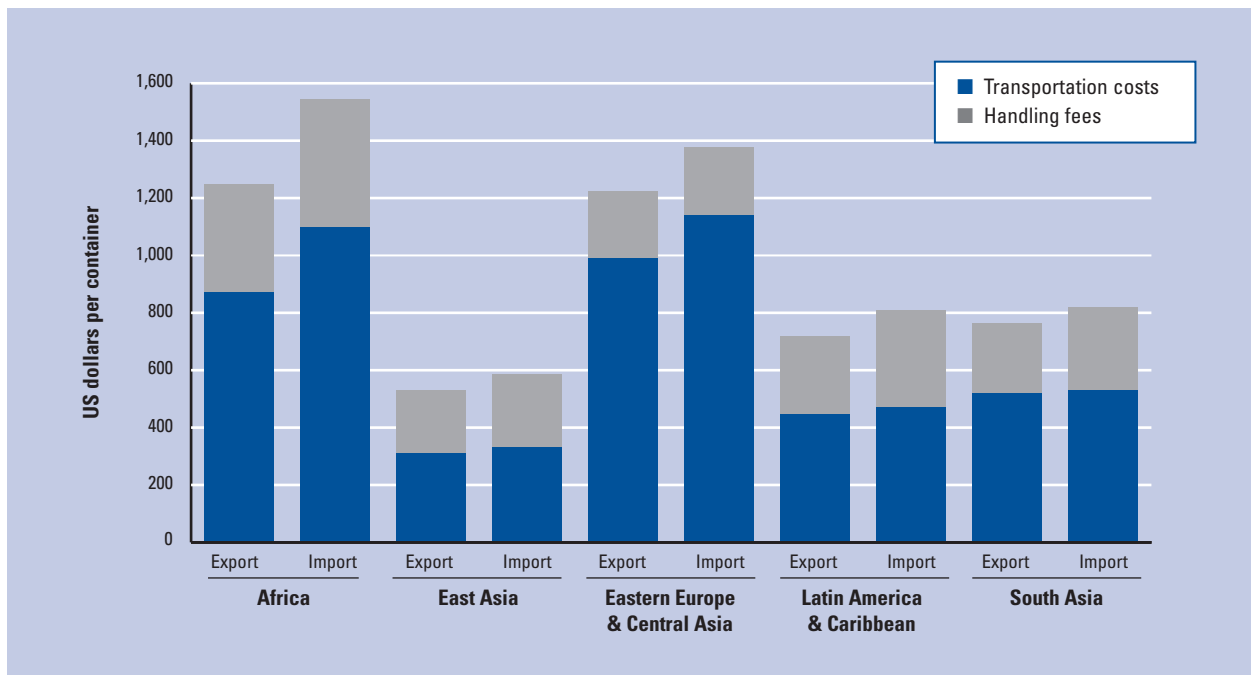
Another important aspect of transport costs is represented by port and terminal handling fees. These costs vary widely around the world, ranging from as low as US\$50 to as high as US\$1,000 per container. Africa not only displays the highest variation across countries (you can pay almost 10 times more in Côte d'Ivoire than in Mauritius, where these fees are only US\$100), but again it remains the region with the highest average cost for both import and export handling fees.

Regulatory environment

Taxes. Governments around the world need to provide the necessary services to ensure a good business environment. To achieve that, they levy a number of different taxes at different levels of administration. Being impossible to take all of them into account, we consider the three most common: corporate income tax, property tax, and value-added tax (VAT).

Corporate tax rates vary considerably across regions, but Africa, together with South Asia, appears to be the least tax-friendly location to corporations.¹⁸ With a rate of approximately 30 percent, African firms seem to be among the most highly taxed firms in the world. The difference with most regions, however, is not striking. In East Asia and Latin America, tax rates are 28 percent and

Figure 4: Inland transport costs and port handling fees for import and export



Source: World Bank, 2008.

29 percent, respectively. Only in Eastern Europe and Central Asia are rates significantly lower, at 19 percent. The data also show a wide dispersion within each region, and especially within Africa. Botswana has the lowest corporate income tax in the world, with a 5 percent rate, while the Democratic Republic of Congo and Chad share with Bangladesh the highest rate at 40 percent. Nonetheless, corporate tax rates in Africa are similar to those in China, India, and Vietnam.

Except for South Asia—with a rate of 21 percent—Africa is the location with the highest property tax. Firms on the continent have to pay, on average, 7.5 percent of the value of the property in taxes. This is much higher than the 4.7 percent and 2.7 percent firms pay in East Asia and Latin America and the Caribbean, respectively. A similar picture emerges if we look at VAT. Africa applies one of the highest average rates at 16 percent (second only to Eastern Europe and Central Asia, with 19 percent), while VAT in all other regions amounts to 11–14 percent. As seen before for corporate tax, the spread of rates across the African continent is the widest, with Nigeria charging only 5 percent (as much as Singapore and Taiwan, China) while Tanzania charges 20 percent. Only Argentina charges more. Overall, if we look at all these costs on a comparative scale, we see that, with only two exceptions, Africa has a higher level of taxation than other regions (see Figure 5).

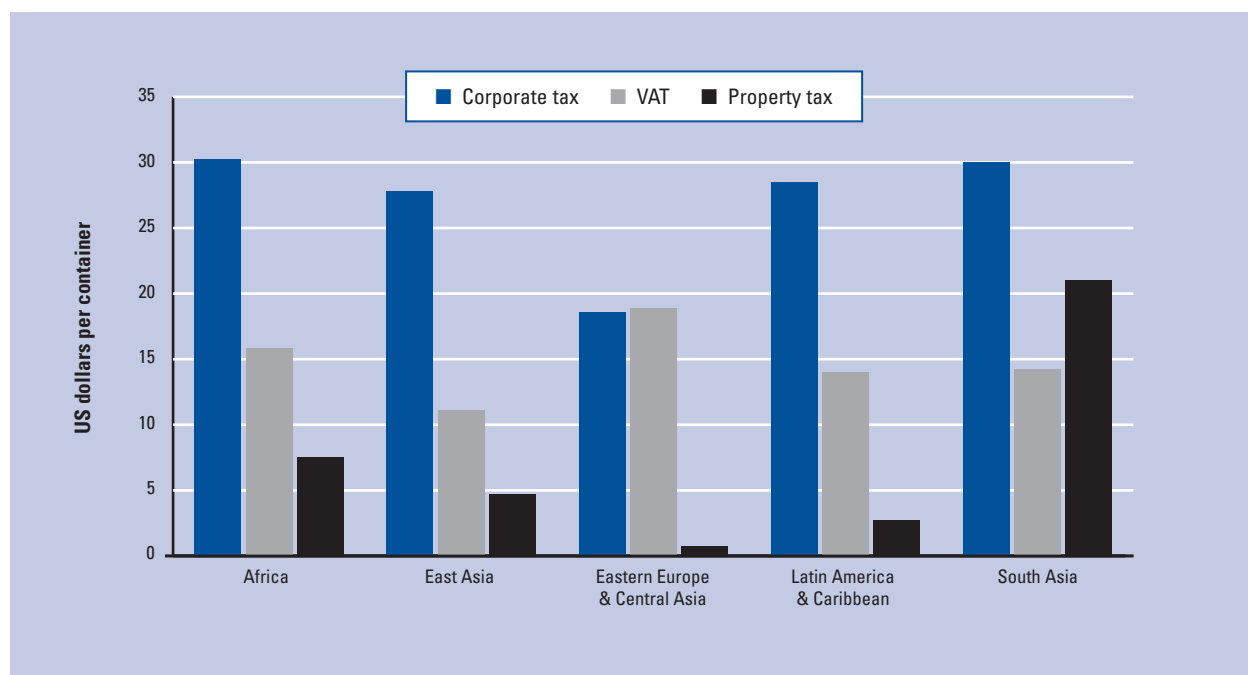
Regulations. The quality of the regulatory environment can encourage or discourage potential entrepreneurs to start a business, to expand its activity, or

even to enter the formal economy. Evidence from other studies has shown that lower regulatory barriers stimulate entry into the formal sector.¹⁹ Is Africa a location with a friendly regulatory cost environment? We try to answer this question by looking at the costs associated with three indicators: establishing a business, registering property, and dealing with customs.

Starting a business in Africa is not expensive in nominal terms. The total cost of the startup procedures and the minimum capital requirements add up to approximately US\$2,350. This is less than startup costs in East Asia or Eastern Europe and Central Asia, where starting a business runs around US\$3,700.²⁰ However, if we take into account the average income per capita, then establishing a company in Africa becomes quite expensive. The total cost rises to 135 percent of annual income—more than double the cost in all other regions.

Registering property is also an expensive process in Africa. Over 10 percent of the value of the property is spent on registration fees. This cost is much higher than in all other regions, where it ranges from 2 to 6 percent. At the extreme, Africa has countries where the registration cost gets closer to a quarter of the value of the property (Zimbabwe, Chad, and Nigeria).

Finally, another important regulatory cost is that of customs clearance. In all countries, the great majority of firms import and export their inputs and goods. When exporting or importing, firms must follow the regulatory procedures enacted in each country. The costs associated with these procedures include the preparation of

Figure 5: Tax rates: Africa vs. selected regions

Source: World Bank, 2008.

documents, administrative fees, and technical control charges. If we sum up all these costs, we see once again that Africa is the most expensive region among those taken into account. Firms in Africa must pay US\$585 or US\$682 each time they need to comply with import and export regulatory requirements. Firms in all other regions pay much less; in particular, firms in East Asia pay around 60 percent of the amount African firms are charged (Figure 6).

Invisible costs

Losses experienced by firms because of the poor quality of the business environment are considered invisible costs. In the following section, we consider losses caused by bank financing requirements, unreliable infrastructure, excessive regulations, corruption, and security concerns.

Losses due to bank financing requirements

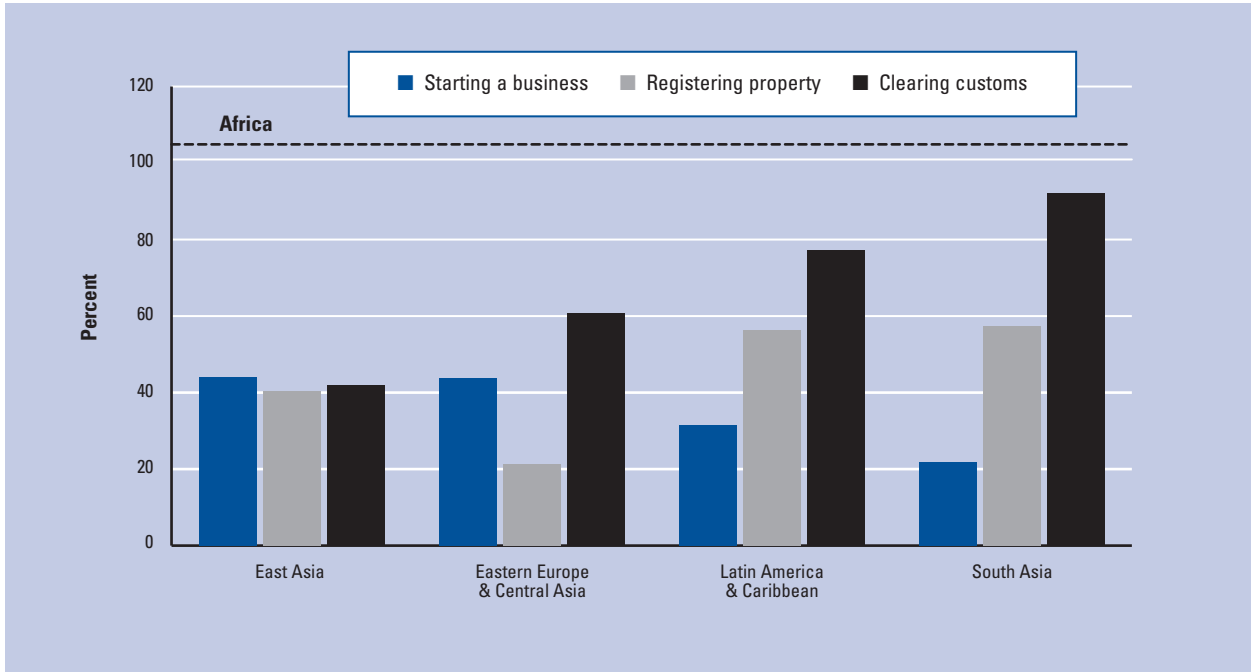
In the great majority of cases, firms are asked to provide collateral when applying for loans. Moreover, the value of the required collateral is usually higher than the value of the loan. In Africa, the value of the collateral that establishments are required to post to obtain a loan is the second highest in the world—equivalent to 137 percent of the value of the loan. Eastern Europe and Central Asia has the highest requirement of all, at 54 percent above the loan value, compared to East Asia and South Asia, where firms post collateral at only 13 percent and 3 percent above the value of the loan, respectively.

This restriction limits access to finance for firms since, for a given amount of fixed assets, the higher the collateral requirements, the lower the ability of firms to secure credit. So, for instance, since African firms are asked to post collateral for 137 percent of the value of the loan, they can obtain loans equivalent to only approximately 57 percent of the value of their fixed assets. This represents a cost for firms because, for a given loan amount, they need to provide more guarantees than firms in other regions. We estimate such loss as the interest paid on the *additional* value of collateral that firms must post because of higher collateral requirements, where *additional* is defined as the value of collateral in excess of the median value observed in each country.²¹

According to these estimates, because of more stringent collateral requirements, firms in Africa have to pay an additional hidden charge in order to secure a loan. Under the assumption that firms in each country would be required to post collateral not higher than the median value of the loan, the estimated loss in additional interest paid by African firms is US\$6,000 a year, the highest of all regions. In other words, if those firms in Africa that post a collateral above the median value would be allowed to reduce such collateral requirements to a value equal to that posted by the median firm, they would save, on average, US\$6,000 a year. Firms in East Asia experience a much lower loss, estimated at 40–70 percent of that in Africa (Figure 7).

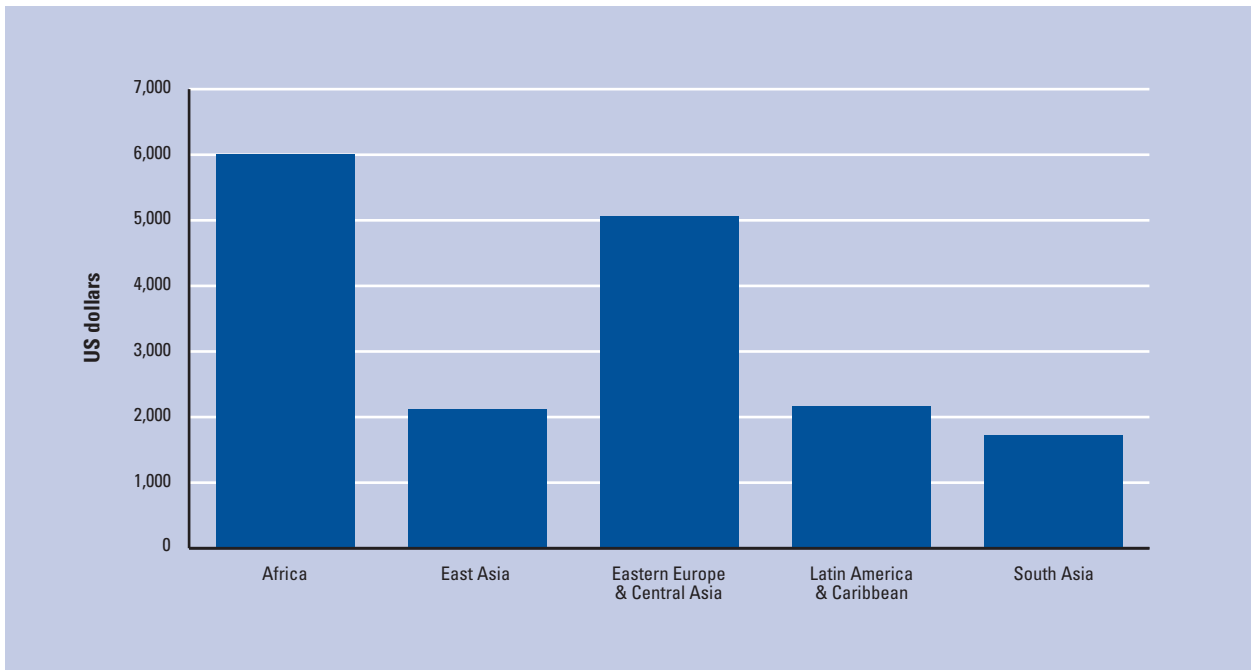
In terms of fixed assets, the typical exporter in East Asia has three times as much as an exporter in Africa.

Figure 6: Regulatory costs: Africa vs. selected regions



Source: World Bank, 2008.

Figure 7: Estimated yearly cost of additional collateral requirements: Africa vs. selected regions



Source: Author's calculations using Enterprise Surveys (various years).

Consequently it experiences higher losses than firms in Africa in nominal terms. However, these losses are less than proportional to the value of the fixed assets, demonstrating that even exporters in Africa pay more to obtain a loan of a given amount. Furthermore, exporters in South Asia, where exporters have an average value of fixed assets approximately equal to those in Africa, lose just one-fifth of the amount African exporters do because of excessive capital requirements in African countries.

Losses due to unreliable infrastructure services

Electricity. Findings from many firm-level surveys have highlighted the importance of a reliable power supply. And yet for different reasons—strong economic growth in some places, economic collapse in others, war, poor planning, population booms, high oil prices, and drought—sub-Saharan nations face crippling electricity shortages.²² Evidence from the Enterprise Survey data shows how serious this problem is. Firms around the world experience power outages that last from few minutes to hours. Africa holds the unenviable record of being one of the worst places, experiencing the longest outages. In some countries in the continent, power losses last approximately 12 hours. As a consequence, firms in Africa lose power, on average, for 13 percent of their working hours. This is much higher than in all other regions. In East Asia, for example, firms lose power for only 1 percent of their working hours. South Asia is the region closest to Africa, and yet firms there lose power for only 7 percent of the working hours (see Figure 8).

Unreliable power has severe cost implications for firms. They will either lose sales or they will have to buy generators. As a matter of fact, many firms purchase generators. After South Asia—where 50 percent of firms have generators—Africa has the highest share of firms with generators, at 38 percent. In East Asia, only 30 percent of firms do. A much larger share of exporters in Africa own a generator—60 percent, at par with South Asia and much more than East Asia exporters, where it is 38 percent. Generators, however, are expensive, with prices that range from a couple of thousand dollars to almost a million dollars, depending on capacity.

Consequently not all firms can afford to buy them. Therefore firms experience two types of losses associated with power disruptions: one is the actual loss in sales for those firms that do not have a generator, and the second is the financing cost of buying a generator for those that own one.²³ By estimating these costs across countries, as expected, we see first that the losses sustained by those firms that do not own a generator are higher than the cost of financing a generator.²⁴ Furthermore, the average loss due to power outages for firms in Africa is the second highest of all regions after South Asia. On the continent, firms lose almost US\$9,000 a year because of power unreliability. Firms in East Asia lose 40 percent less than firms in Africa.²⁵

Transport. The inefficiency of the transport system can add to production costs in subtle ways, such as by requiring firms to hold higher inventories than they would otherwise. If the delivery time of inputs is uncertain, firms will have to order inputs ahead of what would otherwise be the optimal time. This implies an additional cost represented by holding unwanted fixed investments for an extra period of time. If firms adjust their inventory stock according to the efficiency of the transport system, we can estimate the cost of holding unnecessary inventory as the cost of borrowing the necessary funds to purchase such inventories. By doing so, we see that firms in Africa lose some US\$850 a year in additional interest paid solely to buy inventories in advance. This amount is similar to what firms in Latin America and the Caribbean pay, and less than what is paid by firms in South Asia and in Eastern Europe and Central Asia. However, this estimated loss is 40 percent higher for African firms than for firms in East Asia. Competitor countries such as India and Vietnam also enjoy lower transport losses than the African average (Figure 9).

Losses due to regulatory environment

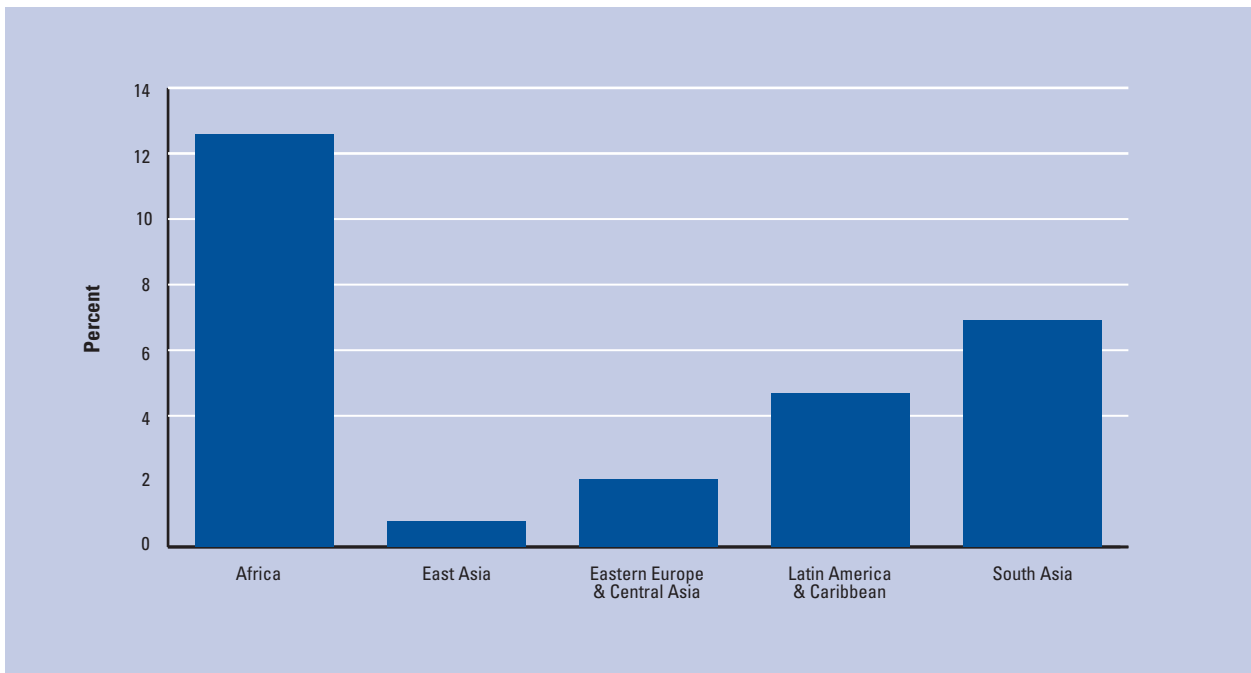
The regulatory environment is an important aspect of the business environment. A lot of micro evidence has shown that rules and regulations that are transparent and easy to interpret have a clear impact on any country's competitiveness. Consequently, when rules and regulations become burdensome they represent an obstacle, and even a cost, for firms.

There are different aspects of the regulatory environment we can look at. One is the time spent by managers in dealing with all government regulations, from taxes to licenses and inspections. This represents a clear cost since it distracts managers from the more important task of running the business. In this respect, Africa performs relatively well. In Latin American and the Caribbean—the worst of all the regions in this regard—managers spend on average over 8 percent of their time dealing with such requirements, whereas in Africa and East Asia, managers spend almost 5 percent of their time in this way. In South Asia and in Eastern Europe and Central Asia, regulations are the least burdensome—the time spent by managers is around 4 percent. Interestingly, in oil-rich countries in Africa, regulations require much more of a manager's time—almost double—while the opposite is true for landlocked countries, where regulations are less burdensome. We notice no substantial difference across firm size and exporter status.

The inability of firms to adjust their fixed costs during business cycles also generates losses that decrease their productivity and ultimately their competitiveness. One of the reasons for such incapacity is the existence of strict labor regulations—in particular, limitations on hiring or firing workers. According to the Doing Business indicators, firms in Africa face the highest level

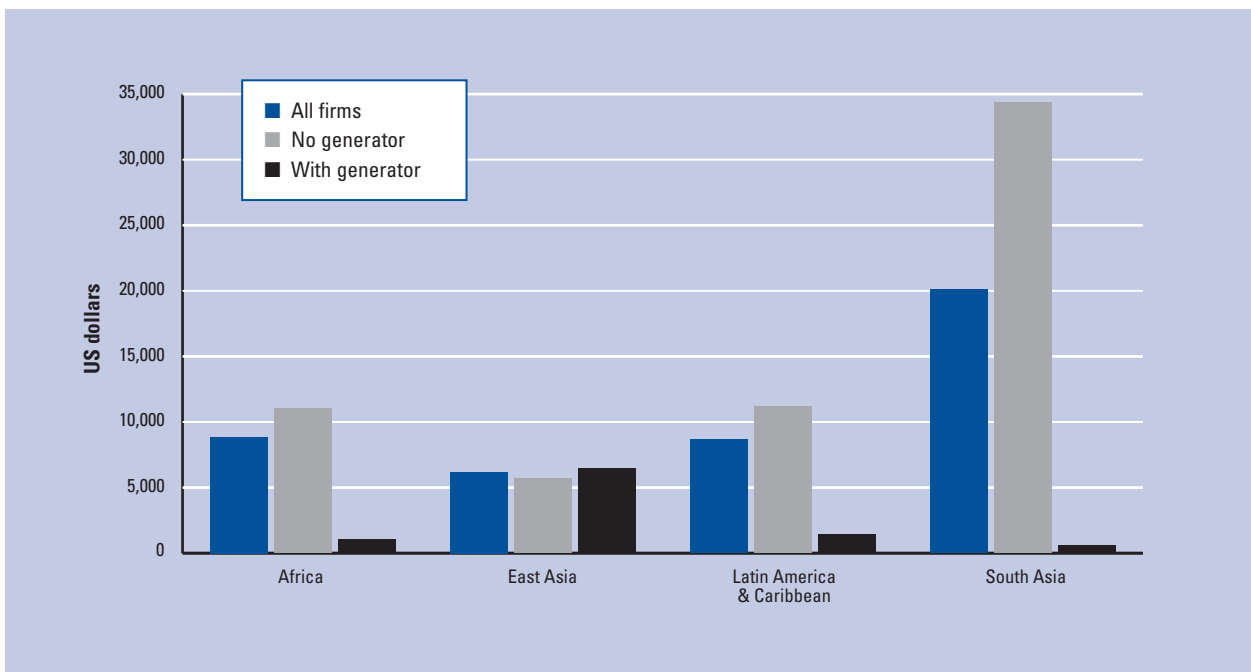
Figure 8: Burden of electricity loss: Africa vs. selected regions

8a: Share of working hours lost due to power outages

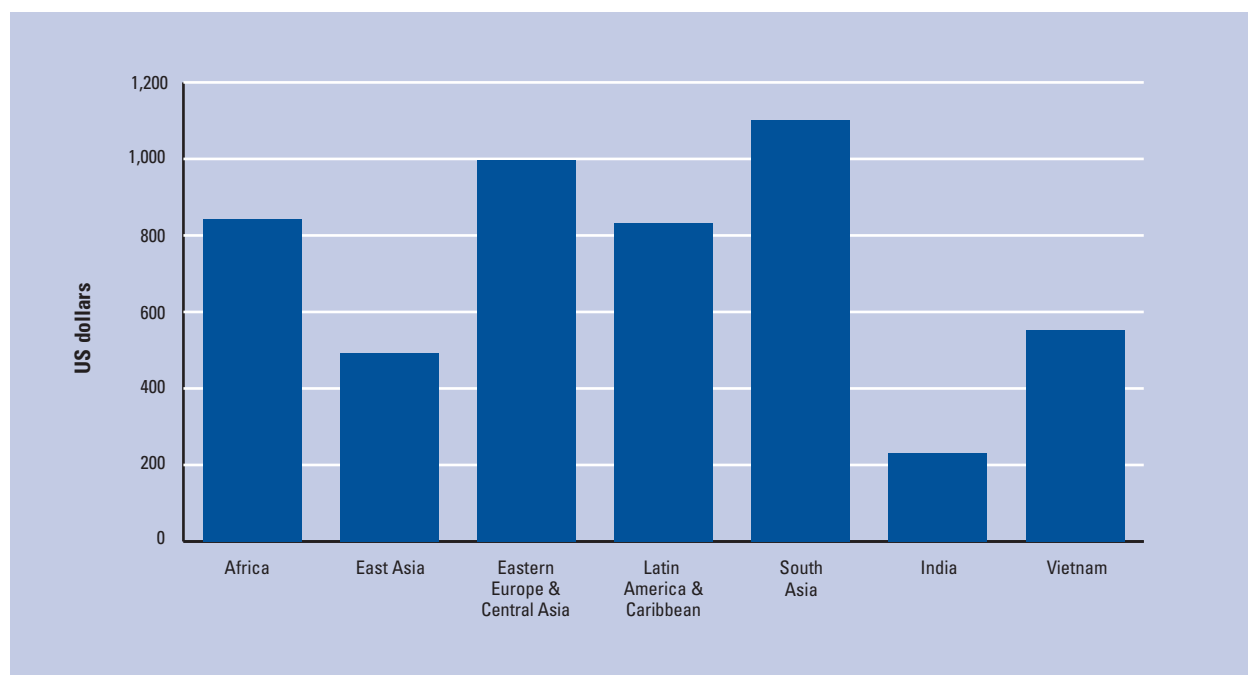


Source: Author's calculations using Enterprise Surveys (various years).

8b: Estimated electricity losses (total, with and without generator)



Source: Author's calculations using Enterprise Surveys (various years).

Figure 9: Estimated costs of inventory holding: Africa vs. selected regions and comparator countries

Source: Author's calculations using Enterprise Surveys (various years).

of difficulties in hiring and firing workers of all regions. Does this labor market rigidity have a cost implication? We attempt to quantify this cost by estimating the losses caused by an excess or shortage of staff in our sample of firms. During the Enterprise Survey interviews, managers were asked to indicate how many more (or fewer) workers they would like to hire (or shed) if there were no labor regulations preventing them from doing so. Overall we observe that the great majority of firms in most regions report having the right size workforce. Africa shows the highest share of firms with the right level of employment, followed by Latin America and the Caribbean and South Asia (see Figure 10). East Asia and Eastern Europe and Central Asia are the regions where, on the contrary, a considerable number of firms are not satisfied with their existing level of workforce.

Using this information, we estimate the cost of labor restriction as either (1) extra wages paid—in the case of excess labor—or (2) value-added lost—in the case of shortage of staff. These estimates show that the average African firm enjoys the lowest cost—after South Asia—from labor regulations, at around US\$30 a month. Firms in East Asia and Latin America and the Caribbean, by comparison, lose around US\$300 and US\$170, respectively, a month. The highest loss from labor regulations is experienced by firms in Eastern Europe and Central Asia, where labor restrictions are most pervasive.

Another aspect of the regulatory environment that imposes costs on firms refers to retrenchment. When firms shed workers, they are required to pay a compensation

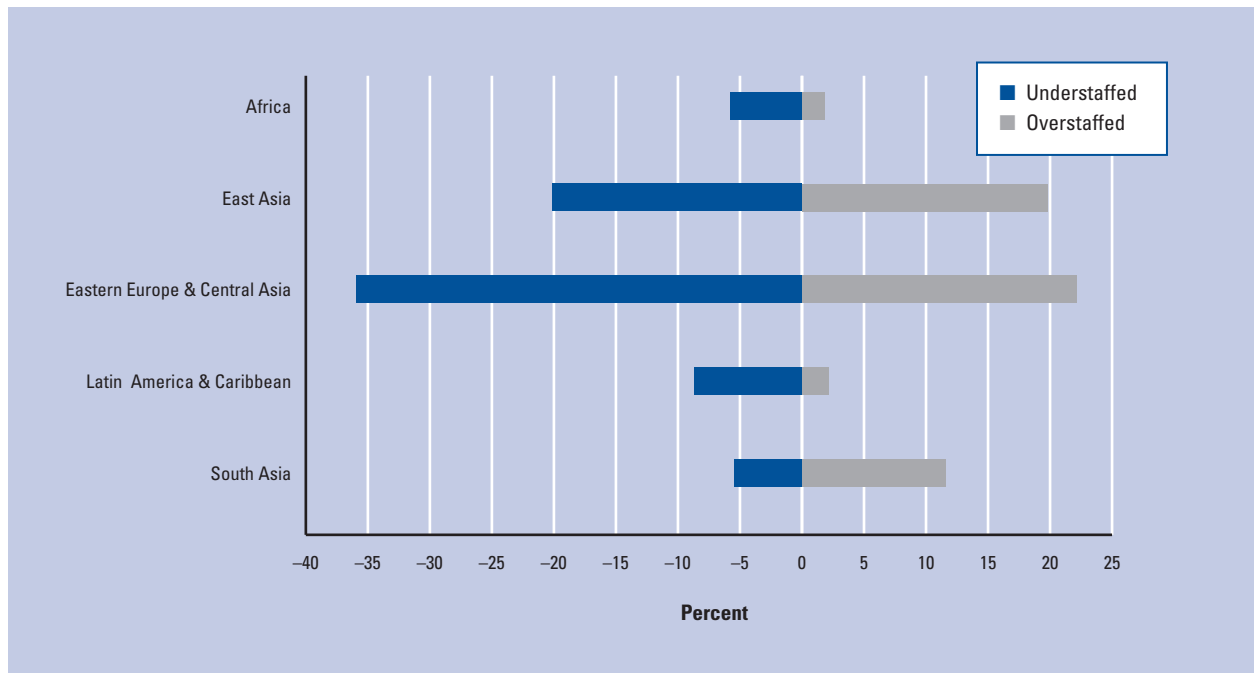
determined by law. This cost is marginal in some cases, but it is not trivial in others, and it is higher in Africa than in all other regions. African firms are required to pay, on average, almost 1.5 years of wages when shedding labor, while the same firms in East Asia are required to pay a little over half that amount. Only firms in South Asia have the same requirement as African firms. However, in some African countries, such as in Zambia, Ghana, Sierra Leone, and Zimbabwe, firms are required to pay as much as 3 to 8 years of wages when firing a worker.

An additional important aspect of the regulatory environment that has substantial cost implications for firms is the functioning of the courts, both in enforcing contracts and in closing businesses. Uncertainty in the applicability of rules of law has been shown to impact long-term growth, at the aggregate level, and to generate second-best behavior by firms—such as establishing informal networks based on ethnicity or other personal information—at the micro level. According to the Doing Business indicators, in Africa it costs on average almost half of the value of the claim (47 percent) to go through the court process. This value is almost the same in East Asia, but much higher than in other regions, with Eastern Europe and Central Asia being the least expensive, at 24 percent of the value of the claim. In the Democratic Republic of Congo, Sierra Leone, Mozambique, Malawi, and Burkina Faso court costs are so high that they could even exceed the value of the claim itself.

Similarly, if a business fails, then the legal requirements that must be followed might make it lengthy and

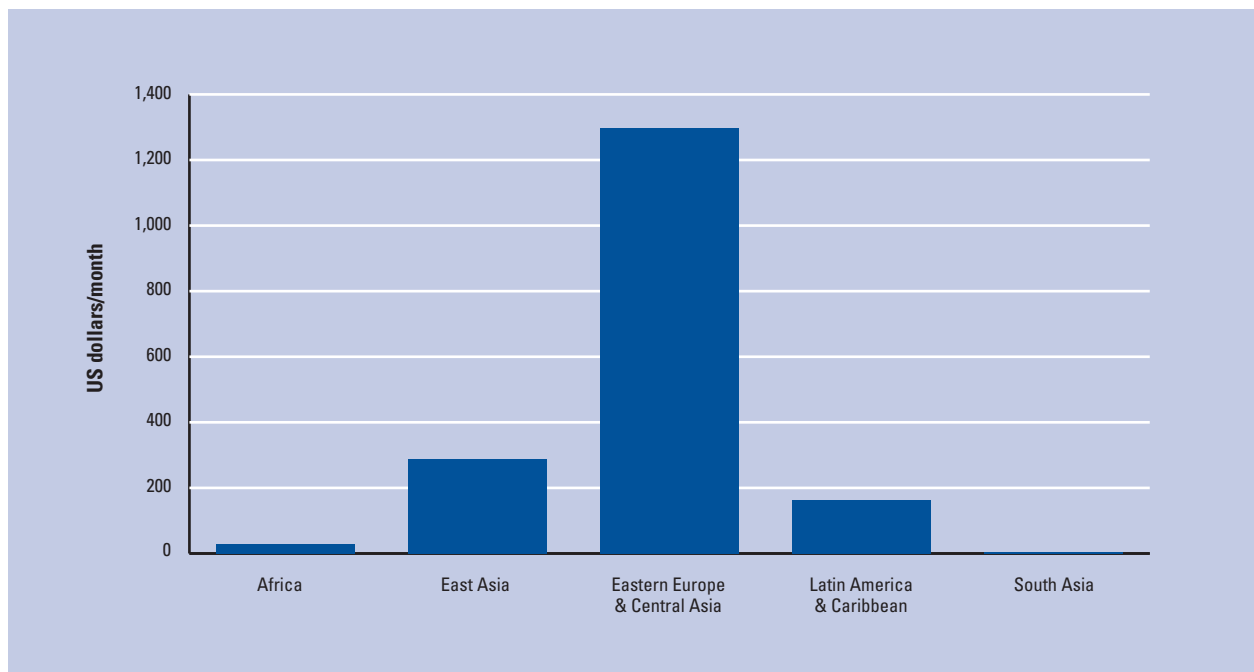
Figure 10: Costs of over- and understaffing: Africa vs. selected regions

10a: Share of firms over- and understaffed

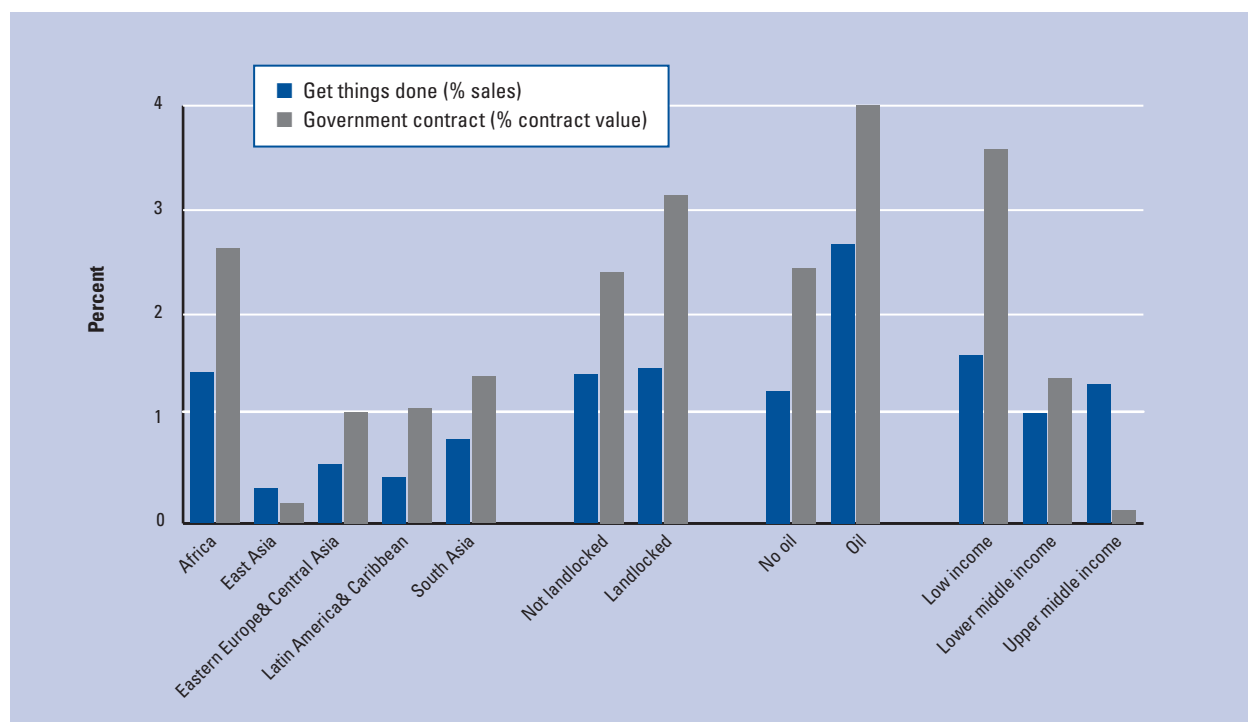


Source: Author's calculations using Enterprise Surveys (various years).

10b: Estimated cost of over- or understaffing



Source: Author's calculations using Enterprise Surveys (various years).

Figure 11: Value of corruption payments across selected regions and country characteristics, by corruption type

Source: Author's calculations using Enterprise Surveys (various years).

expensive to formally close that business. In Africa, the estimated costs of an insolvency process are high. The typical SME on the continent can expect to spend around 20 percent of the value of the estate in bankruptcy procedures. This is similar to costs in East Asia, but much higher than all other regions. Once again there is a wide variation across countries in Africa. This process can cost as little as 7 percent in Algeria, Tunisia, and Senegal or as much as 76 percent in the Central African Republic.

Losses due to corruption

African managers still place corruption among the most important constraints to their businesses. Objective data confirm such perception. Firms in Africa pay close to 1.5 percent of sales in bribes to “get things done” and close to 3 percent of the value of contract when dealing with government procurement. This is more than three times as high as what firms in East Asia pay, and more than twice the amount paid in most other regions.

The pattern of corruption across countries in Africa shows that petty corruption—to get things done—is pretty much the same across landlocked and coastal countries. However, there is a considerable difference among countries in the cost of corruption linked to government contracts (Figure 11).

Interestingly, oil-rich countries perform much worse for both types of corruption than non-oil-rich ones. Finally, the level of development has a significant

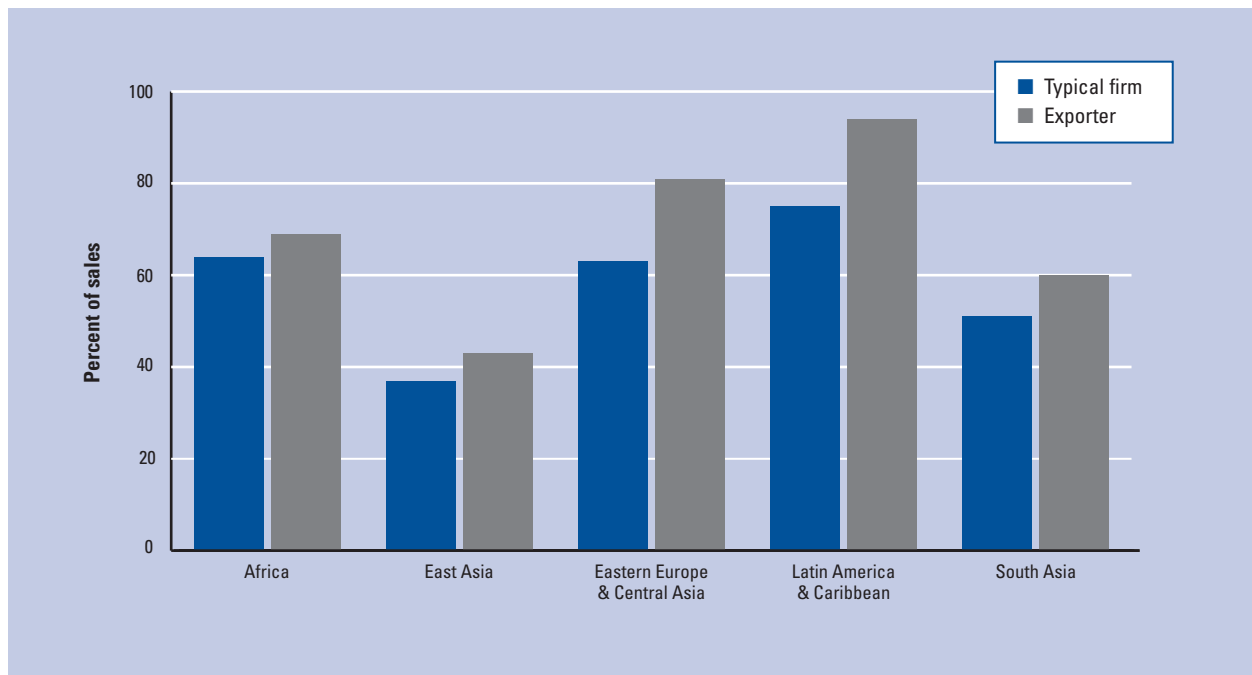
impact on government procurement corruption, but not on petty corruption.

Large firms pay significantly less in bribes than small and medium firms, while domestic and non-exporters also show higher values of bribes paid than exporters and foreign firms.

Losses due to lack of security

Providing a safe environment where firms can conduct their business is a key function of any state. And yet, around the world, as much as 15 percent of firms report losses due to crime. In spite of this, a much higher share of firms (almost 60 percent) protect themselves from theft by using protection services, which adds to the cost of doing business. Interestingly, 16 percent of African firms report losses due to crime, at par with Eastern Europe and Central Asia and well above all other regions, but over half of the African firms employ private security services. Consequently, African firms spend a nontrivial amount on security services—equal to over half a percentage point of sales, which is considerably higher than East Asia or South Asia (Figure 12).

There is no significant difference in the cost of security services borne by small firms compared to medium and large ones (in terms of share of sales), nor is there a difference between foreign and domestic firms. However, exporters in Africa spend more (almost 10 percent more) than non exporters.

Figure 12: Security losses: Africa vs. selected regions

Source: Author's calculations using Enterprise Surveys (various years).

Impact of costs on Africa's competitiveness

With few notable exceptions, firm-level data seem to show that Africa is not, in nominal terms, a cost-friendly location to run a business compared to South Asia or East Asia, while it enjoys a considerable cost advantage over Eastern Europe and Central Asia and Latin American and the Caribbean. Yet, compared to these regions, we do not observe a persistent flow of investments to Africa, nor do we witness higher export growth in Africa. Why is that?

Simply looking at nominal costs does not provide an accurate picture of competitiveness. Costs need to be evaluated within a context of productivity. Therefore in this section we assess Africa's competitiveness by looking at production costs as share of sales. This will help us establish how productive and competitive African firms are in transforming inputs (costs) into outputs (sales). Table 1 presents the list and definitions of the costs taken into account. We attempted to include as many of the costs presented above as possible, estimating 14 costs divided into three categories: direct costs, indirect costs, and invisible costs.²⁶

Figure 13 presents the distribution of these costs as a share of sales across regions. According to this figure, Africa appears to be the least competitive of all regions. For each unit of sale, African firms spend almost half of it on these costs. All other regions are much more competitive, with East Asia being almost 20 percent less expensive. The figure also shows that, for all categories of costs, Africa exhibits a comparative disadvantage with

the rest of the world. Similarly, while factory floor costs (direct costs) are more comparable across regions, invisible costs are much higher in Africa than in the other regions—with the only exception of South Asia. Finally, indirect costs also contribute, although to a lesser extent, to the comparative disadvantage of African firms. The difference between Africa and the other regions on indirect costs exceeds 5 percentage points.

Figure 14 presents the three direct costs—labor, capital, and electricity—and shows that factory floor costs are to some extent similar across regions. Direct labor cost in Africa is marginally higher (2–3 percent) than in East Asia, Eastern Europe and Central Asia, and Latin American and the Caribbean. Only South Asia enjoys a 5 percent comparative labor cost advantage over Africa. Overall this is good news for Africa, especially if we take into account the fact that, as seen earlier, in nominal terms labor costs in the continent are much higher than in East Asia and South Asia. Hence we could argue that Africa's labor costs are competitive with respect to East Asia and with South Asia since, compared to these regions, Africa enjoys a much higher nominal cost advantage but a marginal disadvantage in costs as share of sales. We should, however, recall that the labor costs shown above could be underrepresented in Africa since they do not account for skills and hours worked.

The cost of capital is, on the contrary, much higher in Africa than elsewhere. This is the case even though Figure 14 shows just a 3 percent costs disadvantage for

Table 1: List and description of direct, indirect, and invisible costs

DIRECT COSTS		INDIRECT COSTS		INVISIBLE COSTS	
Category	Description	Category	Description	Category	Description
Labor	Total compensation of workers, adjusted for temporary workers	Transport	Transportation costs	Capital	Interest paid on additional collateral requirements
Capital	Interest paid—using prime rate—on value of loans, estimated as value of fixed assets discounted by the value of collateral required	Electricity	Cost of fuel used to run generators	Electricity	Losses due to power interruptions estimated from reported time of interruptions
Electricity	Cost of electricity	Telecommunications	Cost of telecommunications	Transport	Losses due to transport delays
		Regulatory environment	Sum of (1) interest paid on bureaucratic procedures to start a business and minimum capital requirement, plus (2) cost of customs clearance times the estimated number of trips made	Regulations	Costs of managers' time spent dealing with regulations plus losses due to labor regulation rigidities
				Corruption	Informal payments to get things done
				Security	Costs of security measures

Africa. As a matter of fact, since firms in Africa enjoy a much lower access to credit, we would have expected a much lower share of sales represented by interest payments. The high relative share of such cost shows that credit is much more expensive in Africa, in line with evidence that interest rates on the continent are the highest. Finally, the direct cost of electricity appears to be the least important in comparative terms. The difference between Africa and the other regions is less than 1 percentage point.

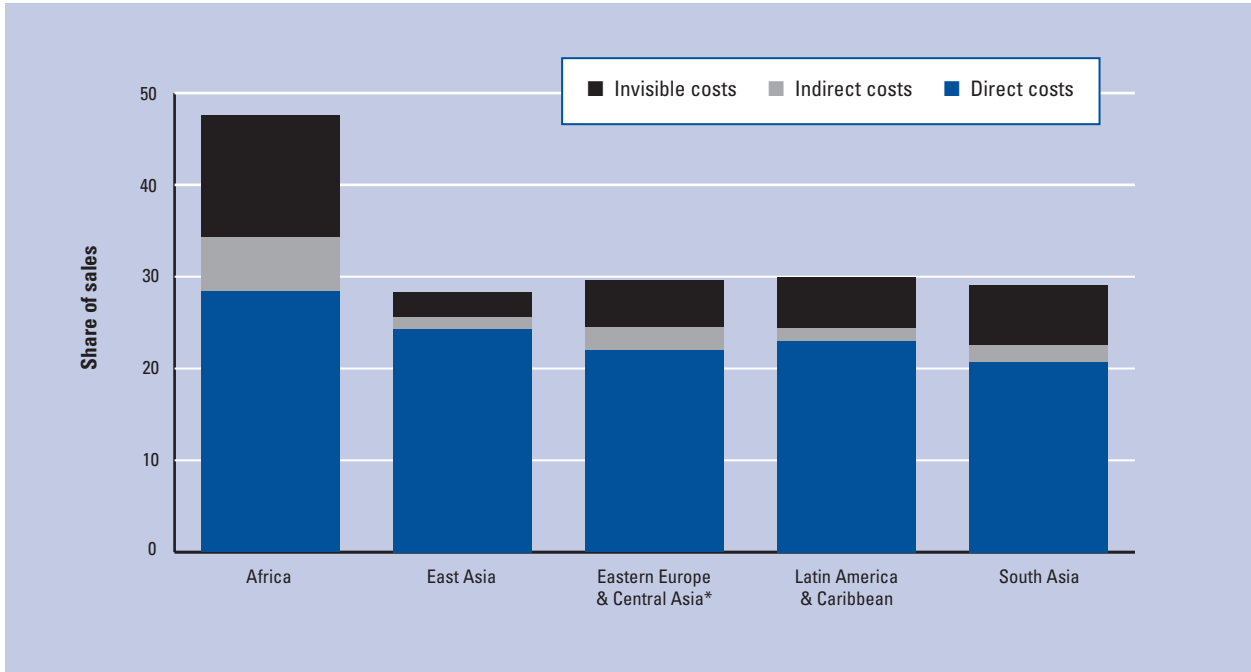
The real obstacle to Africa's competitiveness is represented by the losses firms suffer because of the poor infrastructure services, burdensome credit market, and unpredictable regulatory environment. Figure 15 shows the incidence of each of the invisible costs on value of sales. Overall, firms in Africa lose a whopping 13 percent of sales because of these inefficiencies. That is 11 percent more than firms in East Asia and 7–8 percent more than firms in the other regions. Not surprisingly, losses due to electricity interruptions stand out as the most important invisible cost. Even though these are also significant in South Asia—especially in Pakistan—Africa is the region where firms suffer the most. This cost alone is higher than all direct cost disadvantages of African firms. Apart from South Asia—where losses are estimated at about 4 percent—no other region loses more than one-quarter of what Africa loses because of energy unreliability. Second, losses due to credit requirements—that is, excessive collateral requirements as defined in this chapter—are equally important. African firms lose almost 4 percent of sales just to provide collateral *in excess* of what the median firm provides. This is more than four times what firms in East Asia and South

Asia experience, and more than twice that of firms in other regions. Corruption remains an important cost for firms in the continent, amounting to over 1 percent of sales—more than half of what other regions pay. Finally, poor transportation and lack of security are also important costs, although they account for less than 1 percent of sales. As seen earlier, labor restrictions are not a major cost for African entrepreneurs (Figure 15).

If we take the cost shares as indicators of competitiveness, overall Africa is 19 percent less competitive than East Asia and 18 percent less competitive than South Asia. The great majority of such competitive disadvantage is the result of what we define as *invisible costs*. Such losses are, in fact, 11 percent higher in Africa than in East Asia, with the remaining cost differential almost equally distributed between direct and indirect costs. These are substantial and significant cost disadvantages.

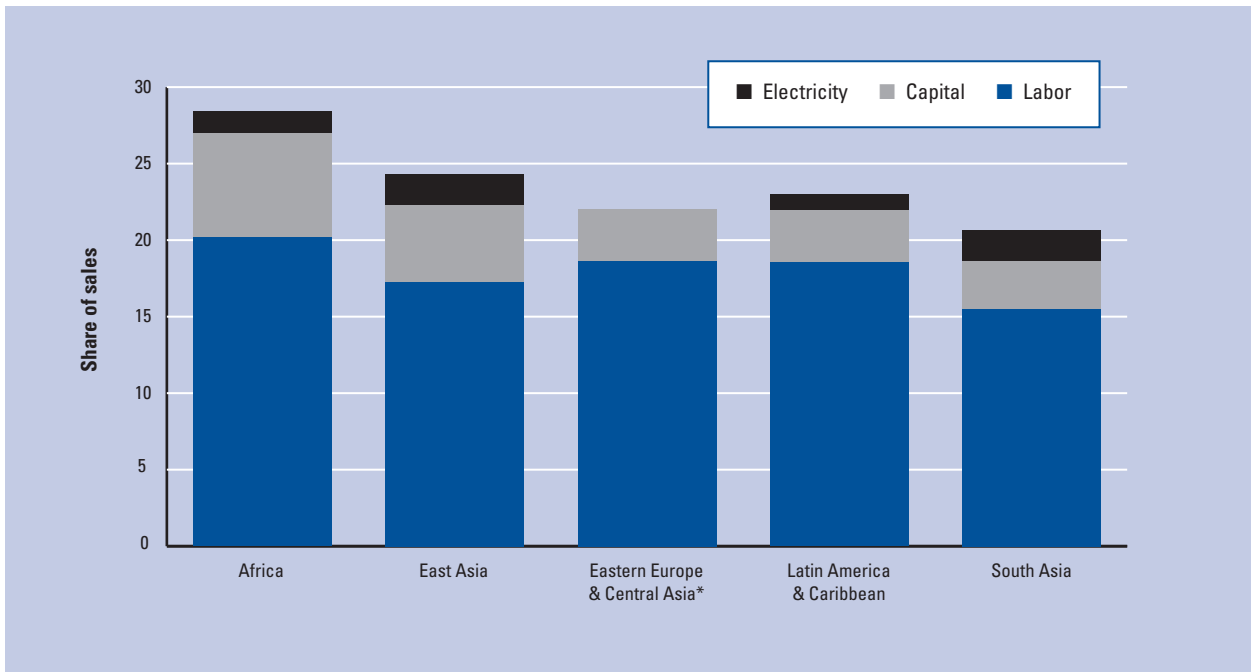
When we look at the distribution of costs across firm types—exporters, domestic, and so on—we observe that Africa has the highest level of overall costs, but we do not always see that invisible costs account for most of the continent's cost disadvantage. An interesting finding is represented by the notable differences in cost structure between non exporters and exporters. While in the first group the pattern presented above persists, for exporters the pattern is reversed. As a matter of fact, contrary to non exporters, for exporters direct costs are more important than invisible costs. As Figure 16 shows, exporters in Africa experience 11 percent higher costs than in East Asia, but most of this difference (7 percent) is the result of direct costs—more specifically, of labor and capital costs. On the other hand, if we look at the cost structure of nonexporters, African firms incur 18

Figure 13: Estimated direct, indirect, and invisible costs across selected regions

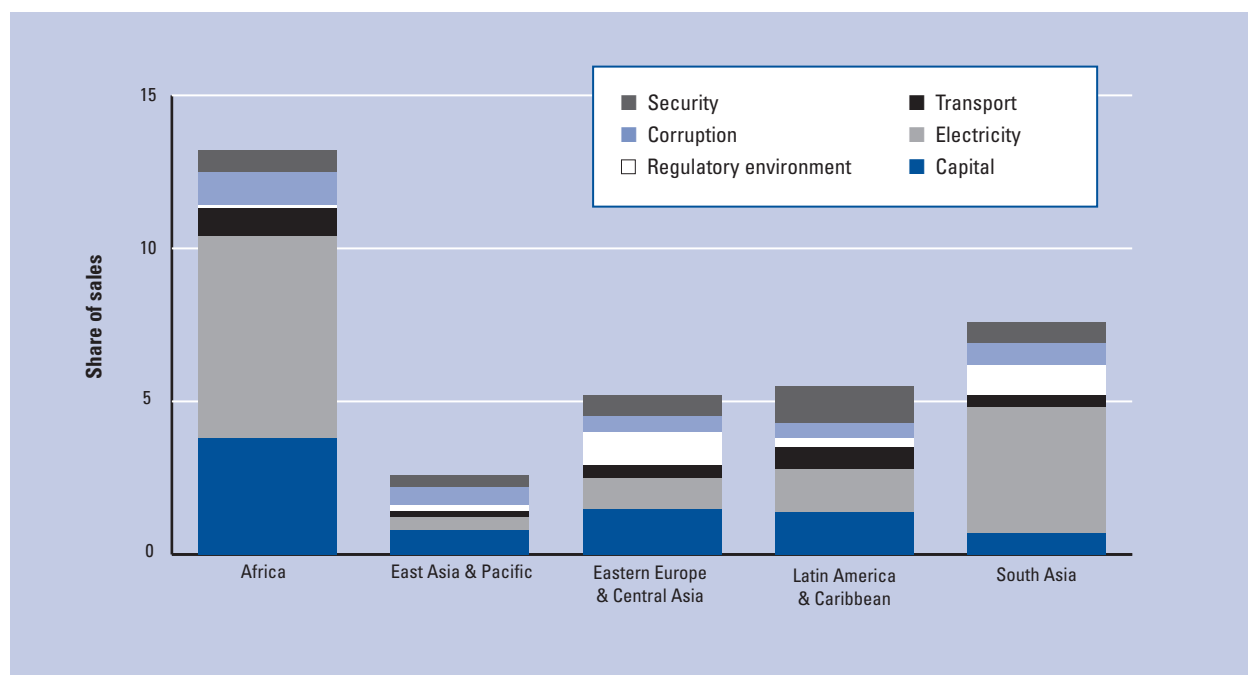


Source: Author's calculations using Enterprise Surveys (various years); World Bank, 2008.
*Electricity costs not available.

Figure 14: Composition of estimated direct costs across selected regions



Source: Author's calculations using Enterprise Surveys (various years).
*Electricity costs not available.

Figure 15: Composition of estimated invisible costs across selected regions

Source: Author's calculations using Enterprise Surveys (various years) and World Bank, 2008.
 Note: *Regulatory environment* includes time spent by manager and losses due to labor regulations.

percent higher costs than similar firms in East Asia, with invisible costs being the major component of such disadvantage (11 percent).

On the other hand, we observe a significant variation across countries in Africa. This confirms what we saw earlier when we looked at nominal costs. Figure 17 shows two interesting patterns.²⁷ First, it shows the wide variation of costs across firms in Africa. It is relatively less costly to produce in Algeria, Egypt, Morocco, Botswana, South Africa, Namibia, and Kenya; these countries are viable competitors of major international countries, such as Brazil, Thailand, or Vietnam. It is twice as expensive to produce in Nigeria, however. Second, the main comparative disadvantage of African firms is represented by invisible costs. Comparatively direct costs in Africa are higher than they are for the major competitors, but not nearly as high as invisible costs.

Conclusions and policy implications

Based on firm-level data, this chapter has presented evidence that Africa is not a cost-friendly location to conduct business. For each unit of sales realized, African firms spend almost half of it in costs, as much as 19 percent more than firms in other regions.

If we look at the main production costs, we can see that the most important comparative disadvantage for African firms is represented by costs of capital and electricity. African firms suffer two disadvantages in terms of access to credit: first, they pay a higher interest rate, and

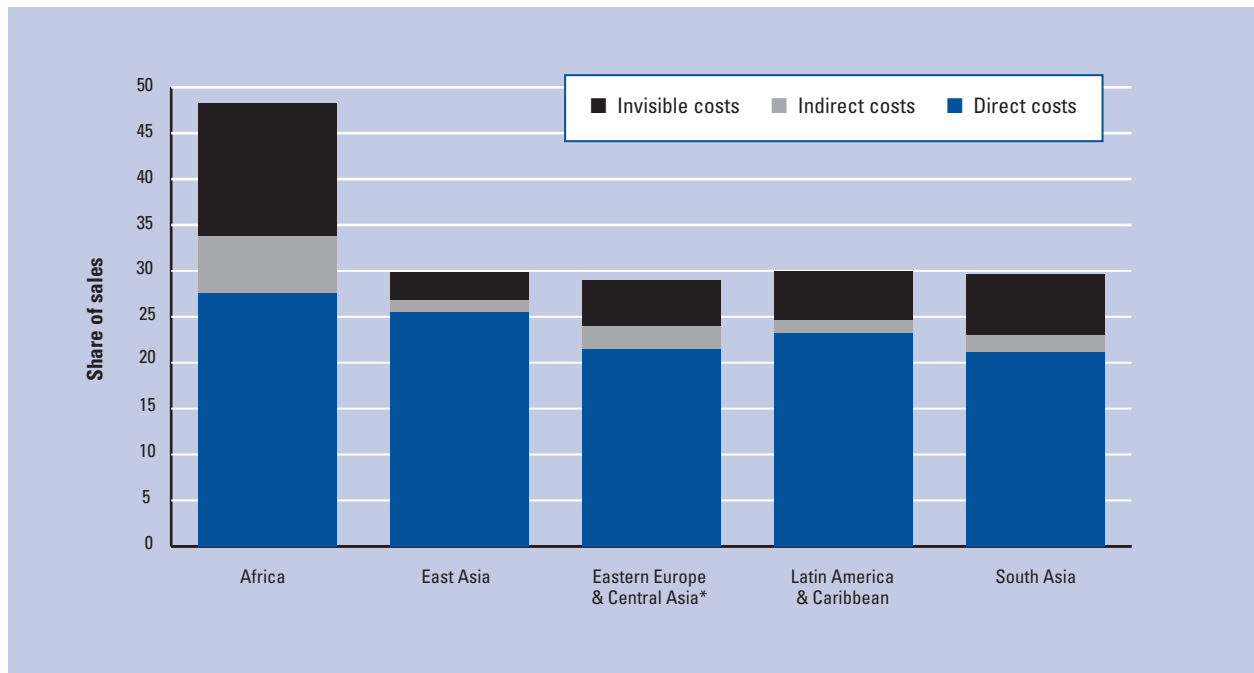
second, they are also required to post higher collateral. These barriers not only limit the ability of firms to obtain credit but also imply a higher cost of finance. As a consequence, African firms lose an estimated 11 percent of sales a year. Equally important is electricity. The total cost of electricity for African firms is estimated at more than 10 percent of sales—4 percent because of the actual cost and 6 percent from losses caused by power interruptions. The third set of bottlenecks affecting Africa's competitiveness is transport, corruption, and the regulatory environment. Together these account for over 5 percent of sales and are important not only for existing firms but primarily for SMEs and for entry into the formal sector (Figure 18).

Policy implications

The evidence presented in this chapter provides some hierarchy to a number of bottlenecks to the emergence of a competitive private sector in Africa: the high cost and lack of access to credit, the poor quality of infrastructure services, and lack of a transparent and friendly regulatory environment. A number of initiatives are ongoing on all these fronts, from the New Partnership for Africa's Development (NEPAD)'s Infrastructure Investment Facility and the World Bank's Sustainable Infrastructure Action Plan to the Doing Business reforms. However, the global economic crisis is likely to exacerbate these bottlenecks, so renewed action is warranted to ensure that Africa's competitiveness remains at the forefront of the policy agenda on the continent. Within this

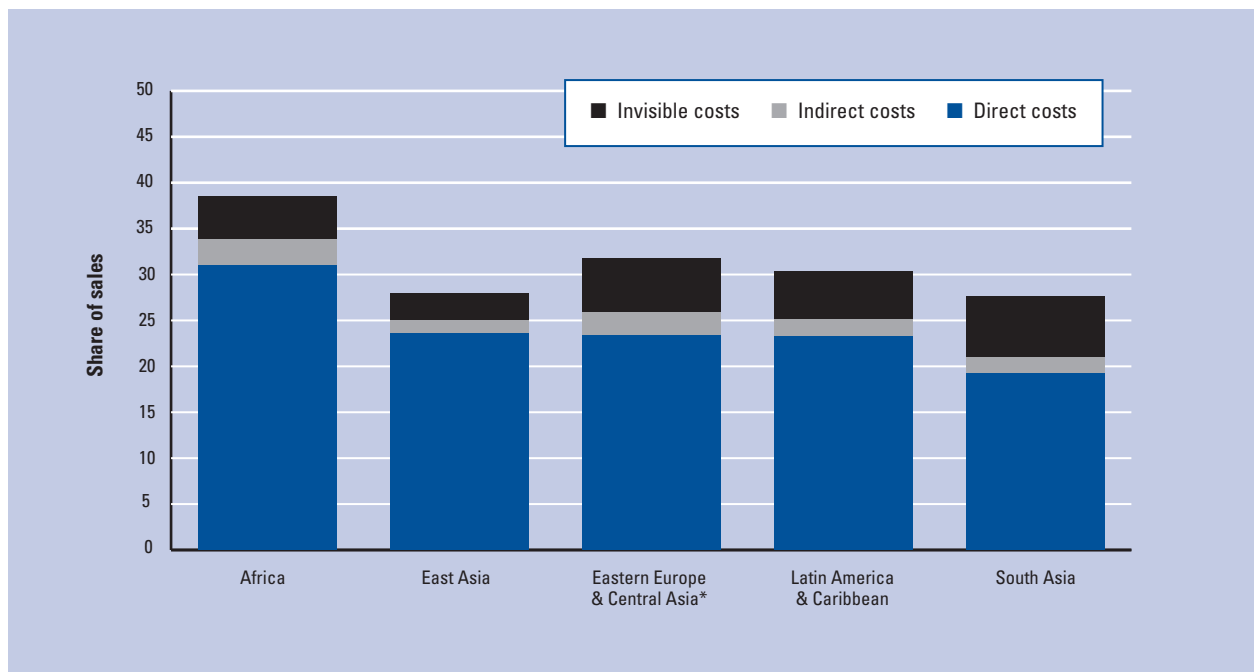
Figure 16: Estimated direct, indirect, and invisible costs across selected regions, by export status

16a: Nonexporters



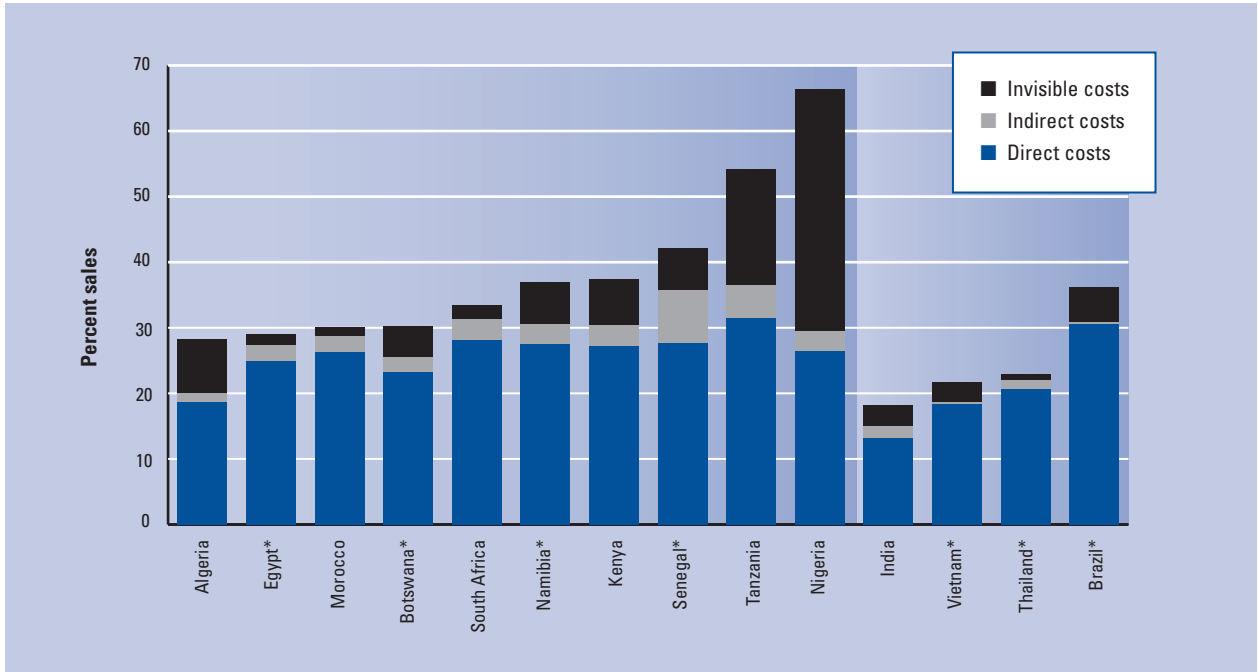
Source: Author's calculations using Enterprise Surveys (various years) and World Bank, 2008.
*Electricity costs not available.

16b: Exporters



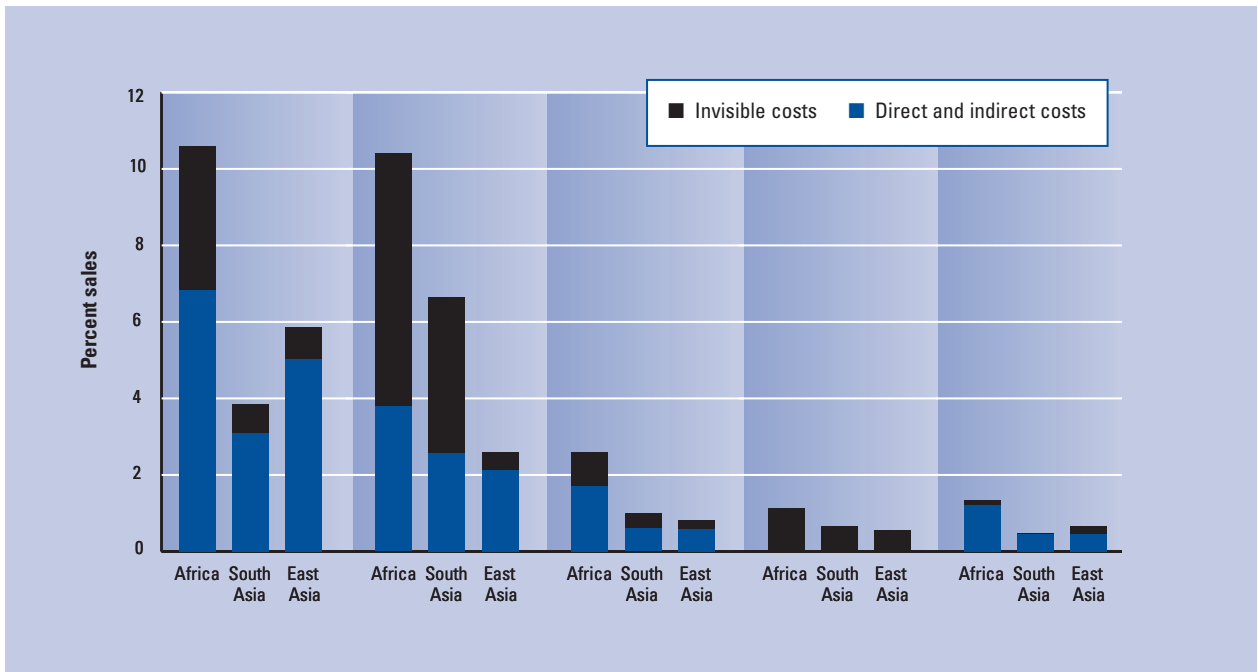
Source: Author's calculations using Enterprise Surveys (various years) and World Bank, 2008.
*Electricity costs not available.

Figure 17: Cross-country comparison of estimated costs: Africa and major comparator countries



Source: Author's calculations using Enterprise Surveys (various years) and World Bank, 2008.
 *Countries with a few missing costs (see list in endnote 27)

Figure 18: Magnitude of estimated production costs in Africa, East and South Asia



Source: Author's calculations using Enterprise Surveys (various years) and World Bank, 2008.

framework, the following policy recommendations are offered.

Finance. Objective evidence presented in this chapter confirms the well-established fact that firms in Africa lack access to, and pay higher costs for, credit. Access is particularly limited for SMEs. Not many commercial banks do SME-banking in Africa, and the global financial crisis is likely to reduce even further access to finance for SMEs in the years to come. Hence African governments need to implement new policies to increase access to credit for firms, especially SMEs. This can be achieved in three ways. First, scale up support for SME financing by providing partial credit guarantees to financial institutions already involved in SME financing. This approach will benefit those firms that do not have access to the banking system. By sharing the credit risk, governments will expand access to finance to SMEs that are not otherwise able to get credit and will help reduce the cost of financing.

This approach, however, must be accompanied by initiatives aimed at developing the capacity of financial institutions to assess credit worthiness and to enhance the recipients' capabilities to obtain and properly manage the additional financial resources. Furthermore, for those firms that already have access to the banking system, the government should adopt excess collateral guarantee schemes whose goal is to guarantee the value of additional collateral requested by banks above a certain norm (e.g., the median value). This will increase access to credit, especially in Africa. Finally, for those firms that cannot post collateral, policies aimed at improving the financial management literacy should be adopted. This will improve the ability of firms—especially micro firms with little knowledge of how to prepare a business plan—to properly apply for loans and to manage finances.

Electricity. Development is strongly associated with an increasing reliance on energy production, supply, transport, and usage. Consequently, a relentless improvement of energy policies is needed in Africa if long-term growth is to be sustained. Furthermore, the recent spike in energy prices has highlighted the fact that energy businesses are increasingly global in nature, while energy policies are predominantly made at the national level. This circumstance calls for African nations to apply consistent and coherent energy policies in order for energy businesses to receive clear and stable policy signals to invest in new technology, infrastructure, and products.

With respect to energy, Africa suffers from a complex set of challenges: geographic—the existence of plenty of resources but with poor access (often called *energy poverty*); affordability—a very limited possibility for cross-subsidizing energy costs; and capacity—a limited ability to bring in investments and technology. These challenges need to be addressed especially through the harmonization of donors and country interventions, and

by not only bringing in investments and managerial capability but also creating the right environment.

With a dismal record on electrification, Africa needs to improve its generation and distribution systems. A number of countries have taken concrete steps in this direction, but there is room for more action. The opening of generation, transmission, and distribution must be accompanied by proper institutional and legal frameworks. Creating the legal environment for private investment through an appropriate legal framework, institutional framework, access to adequate and accurate information, and security is essential. Also governments should encourage large investors and SMEs to invest privately or through public-private partnerships (PPPs) in electrification through co-generation projects, mergers of small projects to bring economies of scale, and co-operative arrangement. Governments should be wary, however, that although there is no single ideal policy to adopt, the sequencing of reforms is important to ensure that energy is available to all. In particular, the establishment of structures and mechanisms for increased electrification in rural areas ought to be in place before large-scale reforms such as privatization are initiated.

Finally, the enormous potential of renewable energy sources (especially hydroelectric and solar) should be exploited. This has the potential to make Africa not only a major producer but a net exporter of energy. According to some estimates, 17 countries in Africa are among the top 35 nations with the biggest total reserves of solar, wind, hydro, and geothermal energy. Most of Africa receives solar radiation of the order of 6–8 kilowatt hours per meters squared per day—some of the highest levels in the world—placing 31 African countries in the top 35 countries on the planet. And power generation from renewable sources can be cost-effective. A recent study concluded that renewable energy is more economical than conventional power energy for off-grid generation of less than 5 kilowatts—exactly the sort of power needed by the majority of African users.²⁸

Transport. Addressing the transport problem in Africa requires action on two fronts: infrastructures and regulations. Creating a major road network in Africa has been advocated since 2006. Between South Africa and Nigeria—the two largest economies on the continent—there is virtually no overland shipment, mostly because of the very poor road quality in transit countries such as the Democratic Republic of Congo. Yet such a network would generate an estimated expansion of overland trade by about US\$250 billion in 15 years, with both direct and indirect benefits for Africa's rural poor. Furthermore, road construction is labor intensive and would also help improve road safety—Africa has a very high road death rate per vehicle. On the other hand, high transport costs in Africa are mainly the result of a lack of competition in the trucking industry. Consequently, without proper deregulation of trucking services, prices will remain high and firms will not ben-

efit from the investment in road rehabilitation. In West and Central Africa, this strategy is most warranted. There cartels should be abolished and the tax structure should reward those who operate more modern vehicles and utilize them more intensively. Finally, deregulation should also facilitate new entrants' access to freight. In East Africa and the Southern African road network, lower transport costs can be achieved through improvements in some critical road sections. Similarly, the establishment of one-stop border posts would reduce delays and would help achieve lower transport prices. Finally, in East Africa it might be appropriate to lower fuel taxes in landlocked countries so that domestic trucking operators are not disadvantaged against coastal countries' operators.²⁹

Corruption. Too many African nations remain at the bottom ranks in indicators of corruption. Firm-level data confirm that corruption remains a major problem for entrepreneurs on the continent. Tackling corruption is not an easy or a short process. It requires political will, popular support, and necessary resources. Hence governments throughout Africa need first to clearly and unequivocally declare their political will to fight corruption at the very top level. Second, they will have to allocate the necessary resources to the fight—more specifically, they need to assign at least 0.5 percent of the national budget permanently to this battle. Third, they need to establish an anti-corruption agency, recruit investigators and staff, and define a clear mandate. Finally, they need to develop and support an anti-corruption campaign to build popular support.

Regulatory environment. With almost 30 countries implementing close to 60 reforms in 2008, Africa has demonstrated that it is a region recognizing the value of regulatory reforms. Botswana, Burkina Faso, Rwanda, Senegal, and Tunisia—just to mention some—all topped the charts of reformers last year. And Mauritius joined the top 25 on the ease of doing business after years of reforms. All this notwithstanding, Africa remains the region with the lowest comparative ranking on the quality of its regulatory environment. Clearly more needs to be done. Entrepreneurs in Africa still face a burdensome regulatory environment, particularly in regard to trading across borders, starting a business, and registering property. Although it takes only 8–9 procedures to clear customs—at par with most regions in the world—the time these procedures involve in Africa is much longer than it is in the rest of the world. There it takes, in fact, on average 35–40 days to complete these procedures, one-third more than in East Asia. Similarly, starting a business in Africa takes some 10 procedures and approximately 45 days, which is slightly higher than in most regions. Where Africa stands out as an unfriendly location, however, is with respect to the cost of procedures and the minimum capital requirement. These costs in Africa are three to four times higher than in other regions. Finally, another area of reform

is property registration. Here again, although the number of procedures and duration is in line with other parts of the world, the costs are much higher in Africa.³⁰

Notes

- 1 World Bank 2005.
- 2 Eifert et al. 2008.
- 3 Eifert et al. 2008.
- 4 World Bank Investment Climate Assessments, various years.
- 5 MIGA 2006b; Eifert et al. 2008.
- 6 A great deal of work has been done in analyzing different factors of the business environment and their impact on firm performance. Not as much evidence, however, exists on detailed production costs.
- 7 The great majority of Enterprise Surveys were conducted in the 2005–08 period. See appendix Table A1 for a detailed list of countries included and year of data collection. Measures were taken to account for outliers. Note that not all variables are available for all countries; hence, to avoid results being driven by small samples, we dropped any variable with fewer than 15 observations in a particular country.
- 8 MIGA 2006b. The nine countries covered are Ghana, Kenya, Lesotho, Madagascar, Mali, Mozambique, Senegal, Tanzania, and Uganda.
- 9 Labor cost is adjusted for temporary workers by estimating the full-time equivalent of temporary workers.
- 10 Available data do not allow us to adjust for hours worked; hence the real gap would probably be larger.
- 11 Available data do not allow us to adjust for skills. Hence the real gap would probably be larger.
- 12 Data are not available for all countries.
- 13 We use these data because of data availability—the Enterprise Survey data have few observations on interest rates. In the analysis, we use three-year averages (to account for the fact that loans are generally long term).
- 14 Since we do not have data in producer price indices we cannot estimate real interest rates. For this reason we prefer to present the spread in nominal interest rates across regions rather than the absolute values.
- 15 Firm sizes are defined as follows: a *small* firm has less than 25 employees, a *medium* firm has between 25 and 150 employees, and a *large* firm has more than 150. This definition is applied to all countries and aims mainly at dividing the sample equally.
- 16 Data refer to 2006, which is the year with the highest number of observations. These figures exclude Burkina Faso, where electricity costs a whopping US\$0.23/kWh.
- 17 This estimation is based on a small sample of three oil-rich countries and four landlocked ones.
- 18 The reader should keep in mind that the discussion in this paragraph refers to firms fully complying with tax laws and regulations (as per the Doing Business methodology).
- 19 See World Bank 2008.
- 20 In South Asia and Latin America and the Caribbean, it costs around US\$350 and US\$2,200, respectively, to start a business.
- 21 In other words, we estimate the cost of the additional collateral above the median as if the firms had to borrow that additional collateral amount—and pay interest on it—in order to obtain the loan. To determine the value of collateral, we use the value of fixed assets, since that is most often accepted as collateral.
- 22 *The New York Times* 2007.

- 23 When estimating the losses associated with power outages, we use the sales lost (proportional to the time of lost production) for those firms that do not have a generator and the cost of a generator for those that have one. We therefore assume that each firm will incur only one of the two losses and that firms with a generator do not experience sales losses due to power outages. Furthermore, the cost of a generator is estimated as the interest paid on the cost of a generator, using the prime rate. Finally, because the cost of a generator was not asked in the survey, we impute its cost by using the energy intensity of sales and imputing the corresponding generator cost. See appendix Table A3 for the costs and capacities of generators.
- 24 Only in East Asia are the losses for firms with a generator higher than the losses for firms without a generator. This is because firms in East Asia own much larger generators.
- 25 Eastern Europe and Central Asia is not shown for lack of data on ownership of generators. The high values for South Asia are driven mainly by Pakistan.
- 26 For a more detailed description of these costs, assumptions, and data sources, see appendix Table A2.
- 27 Some countries did not report all costs. Missing costs are: for Botswana and Namibia, fuel; for Brazil, transport, fuel, telecommunications, and bribes; for Egypt, regulations (invisible costs) and security; for Senegal, excess labor; for Thailand, transport, fuel, and telecommunications.
- 28 Buys et al. 2007; Karekezi et al. 2004; Karekezi et al. 2005; Ramachandran et al. 2009; World Bank 2006.
- 29 Buys et al. 2006; Teravaninthorn and Raballand 2009.
- 30 World Bank 2008.

References

- Arbache, J. S. and J. Page. 2007. "More Growth or Fewer Collapses? A New Look at Long-Run Growth in Sub-Saharan Africa." *Policy Research Working Paper* No. 4384. Washington, DC: World Bank.
- Buys, P., U. Deichmann, C. Meisner, T. Ton-That, and D. Wheeler. 2007. "Country Stakes in Climate Change Negotiations: Two Dimensions of Vulnerability." *Policy Research Working Paper* No. 3400. Washington, DC: World Bank.
- Buys, P., U. Deichmann, and D. Wheeler. 2006. "Road Network Upgrading and Overland Trade Expansion in Sub-Saharan Africa." *Policy Research Working Paper* No. 4097. Washington, DC: World Bank.
- EIU (Economist Intelligence Unit). 2009. *World Investment Service* database. Available at http://www.eiu.com/site_info.asp?info_name=ps_WorldInvestmentService&entry1=psNav&rf=0.
- Eifert, B., A. Gelb, and V. Ramachandran. 2008. "The Cost of Doing Business in Africa: Evidence from Enterprise Survey Data." *World Development* 36 (9): 1531–46.
- IMF (International Monetary Fund). 2009. *World Economic Outlook Database*. IMF.
- Karekezi, S., J. Kimani, L. Majoro, and A. Wambille, eds. 2005. *Proceedings of the African Regional Workshop on Electricity and Development*. July 13–14. UN Complex, Nairobi, Kenya.
- Karekezi, S. and A. R. Sihag, eds. 2004. *Final Synthesis/Compilation Report*. Energy Access Working Group, Global Network on Energy for Sustainable Development. Available at <http://www.afrepren.org/project/gnesd/synthesis.pdf>.
- MIGA (Multilateral Investment Guarantee Agency). 2003. *Benchmarking FDI Competitiveness in Asia*. Washington, DC: World Bank Group/MIGA.
- _____. 2005. *Investment Horizons: Afghanistan*. Washington, DC: World Bank Group/MIGA.
- _____. 2006a. *Investment Horizons: Western Balkans*. Washington, DC: World Bank Group/MIGA.
- _____. 2006b. *Benchmarking FDI Competitiveness in Sub-Saharan African Countries*. Washington, DC: World Bank Group/MIGA.
- _____. 2007. *Benchmarking FDI Competitiveness in Caribbean Countries*. Washington, DC: World Bank Group/MIGA.
- New York Times, The*. 2007. "Toiling in the Dark: Africa's Power Crisis." July 29. Available at http://www.nytimes.com/2007/07/29/world/africa/29power.html?_r=2&oref=slogin&pagewanted=print&oref=slogin.
- Ramachandran, V., A. Gelb, and M. K. Shah. 2009. *Africa's Private Sector*. Baltimore, MD: Center for Global Development, Brookings Institution Press.
- Teravaninthorn, S. and G. Raballand. 2009. *Transport Prices and Costs in Africa*. Washington, DC: World Bank.
- Transparency International. 2009. *Corruption Perceptions Index*. Available online at http://www.transparency.org/policy_research/surveys_indices/cpi.
- World Bank. Various years. Enterprise Surveys Database. Available online at <http://www.enterprisesurveys.org/>.
- World Bank. Various years. Investment Climate Assessments. Available at <http://www.worldbank.org/rped/index.asp>.
- _____. 2005. *World Development Report 2005: A Better Investment Climate for Everyone*. Washington, DC: World Bank and Oxford University Press.
- _____. 2006. *Technical and Economic Assessment of Off-Grid, Mini-Grid and Grid Electrification Technologies*. Washington, DC: World Bank.
- _____. 2007. *Connecting to Compete: Trade Logistics in the Global Economy*. Washington, DC: World Bank.
- _____. 2008. *Doing Business 2009*. Washington DC: World Bank. Available at <http://www.doingbusiness.org/>.
- _____. 2009. *World Development Indicators* database. Washington, DC: World Bank.

Table A1: Number of observations by country and region

Country/Region	Year	Number of countries	Number of observations
Algeria	2007		590
Angola	2006		424
Benin	2004		178
Botswana	2006		339
Burkina Faso	2006		49
Burundi	2006		270
Cameroon	2006		119
Cape Verde	2006		47
Democratic Republic of Congo	2006		339
Egypt	2006		995
Ethiopia	2006		460
Gambia	2006		171
Ghana	2007		494
Guinea-Bissau	2006		159
Guinea-Conakry	2006		223
Kenya	2007		657
Madagascar	2005		279
Malawi	2005		157
Mali	2007		490
Mauritania	2006		235
Mauritius	2008		321
Morocco	2007		470
Mozambique	2007		479
Namibia	2006		327
Nigeria	2007		1,888
Rwanda	2006		212
Senegal	2007		505
South Africa	2007		937
Swaziland	2006		306
Tanzania	2006		417
Uganda	2006		561
Zambia	2007		484
Africa		32	13,582
East Asia		9	17,936
Eastern Europe & Central Asia		30	9,124
Latin America & Caribbean		18	12,195
South Asia		4	4,618
TOTAL		93	57,455

Note: **East Asia** includes Cambodia, China, Indonesia, Laos, Malaysia, Philippines, Korea, Rep., Thailand, and Vietnam. **Eastern Europe & Central Asia** includes Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Rep., Estonia, Former Yugoslav Republic of Macedonia, Georgia, Hungary, Kazakhstan, Kosovo, Kyrgyzstan, Latvia, Lithuania, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Tajikistan, Turkey, Ukraine, Uzbekistan and Yugoslavia. **Latin America & Caribbean** includes Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela. **South Asia** includes Bangladesh, India, Pakistan and Sri Lanka.

Appendix A (Cont'd.)

Table A2: Description, assumptions, and sources of cost calculations

Cost type	Cost category	Description	Assumptions	Source
DIRECT	Labor	Total compensation of workers, adjusted for temporary workers	—	Enterprise Surveys, various years
	Capital	Interest paid—using prime rate—on value of loans, estimated as value of fixed assets discounted by the value of collateral required	All firms pay an interest rate equal to the prime rate to account for a low response rate. Furthermore, since access to finance is often reported as one of the most common constraints and fixed assets as the most common form of collateral, we assume that the value of debt is equal to the value of fixed assets discounted by the value of collateral (for example, if the value of collateral is 200 percent of the loan, then the value of borrowing is equal to half the value of fixed assets). Only firms with loans are included.	Enterprise Surveys and World Development Indicators, various years
	Electricity	Cost of electricity	—	Enterprise Surveys, various years
INDIRECT	Transport	Transportation costs	—	Enterprise Surveys, various years
	Electricity	Cost of fuel used to run generators	We take the difference between the fuel costs of firms with generators and those without generators as fuel costs used to run the generator.	Enterprise Surveys, various years
	Telecommunications	Cost of telecommunications	—	Enterprise Surveys, various years
	Regulatory environment	Sum of (1) interest paid on the costs of bureaucratic procedures to start a business and minimum capital requirement, plus (2) cost of custom clearance times the estimated number of trips	(1) All firms pay an interest rate equal to the prime rate. (2) The cost of bureaucratic procedures is assumed equal to the interest cost on expenses to start a business. (3) The number of trips is estimated assuming that goods are exported/imported via a 40-foot container holding US\$115,000 worth of merchandise. (Note: This shipment value assumption generates estimated costs of transport very close to the actual transportation costs reported by firms in the few countries where both data are available.)	Doing Business indicators 2009 and World Development Indicators
INVISIBLE	Capital	Interest paid on additional collateral requirements	(1) All firms pay an interest rate equal to the prime rate. (2) For firms with collateral value above the country's median, the "additional" cost of financing is estimated as the interest cost on the collateral above median value—same assumption as before on the value of loans (see above). For those firms with value of collateral below the median, the additional cost is set to zero.	Enterprise Surveys and World Development Indicators, various years
	Electricity	Losses due to power interruptions estimated from reported time of interruptions	—	Enterprise Surveys, various years
	Transport	Losses due to transport delays	—	Enterprise Surveys, various years
	Regulations	Costs of manager time spent on dealing with regulations plus losses due to labor regulations rigidities	To account for unavailability of data, we multiply the average labor cost by a factor estimated from those countries that reported wage costs for managers (controlling for region and size of firms)	Enterprise Surveys, various years
	Corruption	Informal payments to "get things done"	—	Enterprise Surveys, various years
	Security	Costs of security measures	—	Enterprise Surveys, various years

Table A3: Price of generators (US dollars)

Generator price (US\$)	Power generated (kilowatts)	Total kilowatts generated* (annual)
2,490	8	21,600
2,520	10	27,000
2,550	12	32,400
2,840	16	43,200
2,960	20	54,000
3,080	24	64,800
3,130	30	81,000
3,540	40	108,000
4,120	50	135,000
5,470	75	202,500
5,660	90	243,000
5,710	100	270,000
6,690	120	324,000
8,200	150	405,000
10,925	160	432,000
12,806	200	540,000
14,183	250	675,000
16,311	300	810,000
17,470	320	864,000
23,300	350	945,000
27,464	400	1,080,000
28,690	440	1,188,000
34,950	500	1,350,000
37,116	540	1,458,000
62,282	640	1,728,000
62,976	720	1,944,000
64,682	800	2,160,000
69,989	900	2,430,000
106,278	1000	2,700,000
149,000	1250	3,375,000
255,000	1500	4,050,000
229,000	1750	4,725,000
375,000	2000	5,400,000
495,000	2250	6,075,000

*Total annual power generated assumes that each generator works 300 days/year, 9 hours/day.