

**Business Environment and Comparative Advantage in Africa:
Evidence from the Investment Climate Data***

Benn Eifert
Alan Gelb
Vijaya Ramachandran

February 2005

*Benn Eifert is a Junior Professional Associate at the World Bank. Alan Gelb is Director of Development Policy at the World Bank. Vijaya Ramachandran is an Assistant Professor at Georgetown University and a consultant to the World Bank. Data used in this paper were collected by the Regional Program on Enterprise Development in the Africa Private Sector Group of the World Bank. We would like to thank Francois Bourguignon, Lawrence Hinkle, Mary Hallward-Driemeier, Phil Keefer, Michael Klein, Taye Mengistae, Todd Moss, Leonce Ndikumana, Guy Pfeffermann, Steven Radelet, Gaiv Tata, Manju Shah, and seminar participants at the World Bank, the Center for Global Development, and Cornell University. The views expressed in this paper are solely those of the authors.

Abstract

This paper ties together the macroeconomic and microeconomic evidence on the competitiveness of African manufacturing sectors. The conceptual framework is based on the newer theories that see the evolution of comparative advantage as influenced by the business climate -- a key public good -- and by external economies between clusters of firms entering in related sectors. Macroeconomic data from purchasing power parity (PPP), though imprecisely measured, estimates confirms that Africa is high-cost relative to its levels of income and productivity.

This finding is compared with firm-level evidence from surveys undertaken for Investment Climate Assessments in 2000-2004. These confirm a pattern of generally low productivity, and also suggest the importance of high indirect costs and business-environment-related losses in depressing the productivity of African firms relative to those in other countries. There are differences between African countries, however, with some showing evidence of a stronger business community and better business climate.

Finally, the paper adopts a political-economy perspective on the prospects for reform of Africa's business climate, considering African attitudes to business and the fractured nature of African business sectors as between indigenous, minority and foreign investors. The latter have far higher productivity and a greater propensity to export; however, Africa's difficult business climate and the tendency to overcome this by working in ethnic networks slows new entry and may decrease the incentives of key parts of the business community from constituting an aggressive pressure group for reform. Even though reforms are moving forward in several countries, this slows their impact and raises the possibility that countries settle into a low-productivity equilibrium. The paper concludes with a discussion of the findings for reforms to boost the competitiveness and diversification of African economies.

1 INTRODUCTION

Developing countries were traditionally considered to be primary exporters but that stereotype has long faded: by 2002 sixty percent of their exports were manufactured goods. The technology content of developing country exports has also been rising rapidly, especially in Asia which has seen the emergence of dynamic regional trading networks. Sub-Saharan Africa (Africa) has lagged in this process of economic diversification -- abstracting from South Africa and Mauritius, manufacturing and processing capacity remains modest. Slow progress in economic diversification and technological upgrading has been associated with weak private sector development, lagging incomes, a falling behind in terms of development outcomes, and the marginalization of Africa on the world trading stage.

This paper draws on a number of firm surveys undertaken for the World Bank's Investment Climate Assessments (ICAs) to better understand the factors underlying Africa's slow industrial growth. While a number of studies have used firm surveys to analyze productivity determinants in Africa (Biggs et al, 1996, Collier et al 2000, Fafchamps 2004; Mengistae and Pattillo 2002; see also the extensive RPED studies, 1995-present), it is now possible to combine expanded coverage in Africa with comparisons to other low income countries that have managed to effect the transition to manufacturing exporter status. This paper attempts to position African firms amongst a wide range of firms from other regions. It attempts to analyze the cost structure of firms in Africa relative to those in competitor regions, and to relate these results to macroeconomic variables. It also applies comparative firm data to consider why reform tends to be difficult and slow in Africa.

Section 2 of the paper reviews three theories of comparative advantage that offer different perspectives on Africa's slow diversification. The first emphasizes the role of factor endowments in shaping economic structure and the composition of trade. With capital assumed mobile in the long run, Wood and Mayer (2001) and Wood (2002) compare factor endowments in terms of the ratios of land (resources) to skills. While this produces powerful results in terms of trade composition, it does not account for the poverty of Africa in the presence of resource abundance: neither does it offer a perspective on the long-run evolution of the factor endowments that shape trade patterns at any point in time. The second theory focuses on the ability of countries to provide public goods to the investment community in the form of a stable and low-cost business climate: security, good public services and regulation, and predictability. As surveyed by Collier and Gunning (1997), studies suggest that Africa is an environment of high costs and high perceived risks and that this constrains investment in manufacturing. We analyze the deviations from predicted Purchasing Power Parity (PPP) conversion factors to shed light on the degree to which cost and price levels deviate from those expected on the basis of income levels. The third theory, ably surveyed by Burgess and Venables (2004), focuses on the important role of firm entry in creating a critical mass of industries able to reap knowledge and other dynamic scale externalities to strengthen their ability to secure competitive niches in world markets. Both of these theories suggest powerful externalities associated with conglomeration effects, but also that these effects will be hard to achieve in the absence of a low-cost business environment.

Section 3 turns to the firm-level investment climate (IC) surveys and assesses the performance gap between Africa and its competitors). Rather than using cross-country regressions to estimate the impact of particular investment climate variables on productivity levels, we adopt a simpler approach. We define the concept of *net total factor productivity* and consider the contributions of factory floor productivity, indirect costs, and business-environment-related losses to overall differentials in net TFP. Our data suggest that the broader context in which firms are operating, rather than solely factory-floor operations, may be crucial determinants of competitiveness. The results also suggest a range of benchmarking variables that can be used, in conjunction with repeated surveys, to gauge improvements in public service delivery and the business climate.

If -- as suggested by the recent *World Development Report 2005* (World Bank 2004a) -- the business climate is so important for growth and development, why have African countries been so slow to improve it? *Doing Business, 2005* (World Bank 2004b) places Africa low on business climate indicators and as a laggard in reform relative to other regions. Part of the reason concerns the particular severity of physical constraints in Africa, but equally important is the configuration of political interests for and against reforms in business-climate related areas. Section 4 considers the survey evidence from the perspective of ethnicity, highlighting the fracturing of business interests along ethnic and domestic/foreign lines, and the tradeoffs for firms (especially the larger ones) between the gains from a better business climate and the losses from the competitive entry that improvements are likely to encourage. It is argued that these factors weaken the ability, and perhaps also the motivation, of the business community to press for a better business climate, and that this compounds the ambivalent attitude towards business expressed in AfroBarometer surveys and reflected in statements by many prominent officials. These factors raise the question of whether to attempt reforms across-the-board or to sequence them to create pockets of opportunity which in turn can build constituencies for wider reforms.

Section 5 concludes with a summary of policy implications as well as thoughts on further areas of research. The rapid expansion of data on the global business climate, as well as firm surveys for African countries and comparators, calls for a substantial increase in the level of analytical work on competitiveness. Hopefully an increased share of such research will be internalized in Africa itself. A final objective of this paper is to encourage such research.

2 COMPARATIVE ADVANTAGE AND COSTS IN SUB-SAHARAN AFRICA

2.1 Factor Endowments, Business Climate and Dynamic Scale Economies: Three Approaches to Comparative Advantage

As noted long ago by Chenery and Syrquin (1975) and others, development and structural change are closely associated, so that growth largely involves the introduction of new, higher value-added activities and products rather than simply the expansion of old ones. In the initial stages, this involves the relative contraction of low-productivity agriculture and the rise in the share of industry. Similarly, overall growth within the industrial sector is the aggregation of repeated industry cycles of take-off, maturation and stagnation (or migration to less advanced

countries), with more productive economies advancing up the technological ladder. Trade theory is central to understanding economic structure and structural change because countries will tend to export goods which they can make most cheaply and efficiently relative to other countries. And because sustained economic growth is driven by the emergence of new economic activities – rather than the perpetual scaling-up of old activities – trade theory is also key to understanding growth.

The factor-proportions theory of comparative advantage focuses on the relative abundance of factors of production, attributing change in the structure of a country's production and exports to processes like the accumulation of physical and human capital. Wood and Berge (1997), and Wood and Mayer (2001) compare Africa's endowments with those of other regions. With capital assumed mobile in the long run, relative endowments of skills and land (resources) per head are shown to have a strong relationship with the composition of exports. Countries higher up the skills/land spectrum export more manufactures relative to processed or primary goods, and a larger proportion of higher-technology manufactures. A pessimistic view based on these results would argue that Africa's scant human capital and rich natural resource base ensures that manufactured exports will always be unprofitable.

These theories do not, however, fully account for Africa's low income level despite its resource abundance; neither do they explain the dynamic path of factor accumulation (notably pervasive financial and human capital flight)¹ and comparative advantage which has shaped Africa today. A simple extension of this logic is that comparative advantage is also a function of those differences in productivity and costs across countries and industries which *do not* derive from relative factor abundance (Krugman 1980, 1981, 1983). The main effects here – which play a major role in the *endogenous* determination of comparative advantage – are expressed in two other approaches, one relating to business-environmental factors and the other to dynamic economies of scale. These factors interact to produce a more flexible theory of dynamic comparative advantage.

The *business environment* is the nexus of policies, institutions, physical infrastructure, human resources, and geographic features which influence the efficiency with which different firms and industries operate.² At firm level, the business environment directly influences costs of production; at the industry level it often relates to market structure and competition. These effects are felt more heavily in traded sectors which are not particularly intensive in natural resources (i.e. manufacturing, high-value services) than in primary production and extractive resource sectors because the former tend to more intensively require “inputs” of logistics, infrastructure, and regulation (Collier 2000). For example, the combination of macroeconomic instability, crime and poor security, a weak and politicized financial system, shoddy local roads and electricity systems, high transport costs, and predatory local officials will have relatively little influence on the productivity and costs of offshore oil industries, but will be devastating for

¹ For estimates of financial and human capital flight see Collier et al (1999). It is also worth pointing out that while land is abundant, distortions in the regulatory and legal environments have resulted in very high prices for land in many countries.

² For more detail see World Development Report 2005 “A Better Investment Climate for All” and the series of Investment Climate Assessments put out by the World Bank over 1999-2004. See also www.worldbank.org/rped and www.fias.net

small-scale and medium-scale manufacturing. Even efficient firms, able to transform inputs into outputs with high efficiency and low “factory-floor” costs can be driven out of business by the increase in indirect costs occasioned by a poor business environment.

The consideration of dynamic economies of scale generated by learning processes, network effects, and industry-specific spillovers represents a further step beyond classical production and trade theory (Krugman 1980, 1991). Evidence suggests that dynamic scale economies play a considerable role in shaping the structure of production, as illustrated by path-dependence in the development of individual industries, the “lumpy” nature of growth in a particular product across countries (e.g. high degrees of specialization in narrow industrial lines; see Burgess and Venables, 2004) and within countries (e.g. urbanization, industrial clusters, and path-dependence in the development of individual industries; see Krugman, 1991).

Individual firms do not internalize the social value of the potential economies of scale from their entry into a particular industry in a particular country. Thus entry, investment and the development of new industries is still dependent on the quality of the business environment, good policies, and sound infrastructure (Collier 2000), incentives provided by competition in an appropriate institutional setting (Olofin, 2002, Grossman and Helpman, 1994), and geographic advantages and disadvantages (Krugman, 1991).³ Business environments do not have to be perfect, but they have to be ‘good enough’ on a number of crucial dimensions to stimulate enough investment and competition to launch the self-reinforcing process of industrial growth.

This theoretical framework offers insights beyond those of classical trade theory for understanding patterns of trade and industrialization. First, while many resource-rich countries have been unable to move past primary products, other notable cases with good policies (Chile, Malaysia, Australia, United States) built high-value-added resource processing industries in the early stages of industrialization, using these as a springboard to even higher-value activities. Second, the broad factor-based specialization predicted by classical trade theory does not map well onto reality. Countries with similar factor endowments often export different products, and often to each other. Hausmann and Rodrik (2002) study US-bound exports from Bangladesh, Dominican Republic, Honduras, Korea, and Taiwan at a very fine level of disaggregation, finding that exports are characterized by specialization in a narrow range of activities with surprisingly little overlap across countries. Indeed, African examples of new industries such as Kenya’s horticulture-floriculture sector and the garment sectors of Madagascar and Lesotho also suggest the importance of industrial clustering.

Pessimistic evaluations of the prospects of diversification and growth in resource-rich countries, like some of those surveyed by Bigsten et al (2000)⁴, therefore miss a large part of the story. African countries often suffer from poor policies, weak institutions, and shoddy infrastructure (see Collier and Gunning 1999, Eifert and Ramachandran 2004). High transport costs and

³ Also, Montobbio (2002) has analyzed structural change from the perspective of evolutionary economics. He finds that with firm-level heterogeneity in unit costs, sorting and selection driven by competition and product substitutability drive a process of structural change. Though this approach has very different analytical foundations than endogenous growth and trade theory, one of its fundamental insights – that an economy’s relatively more productive firms and sectors tend to become more important over time in an economy – is similar.

⁴ These include the Mayer-Wood (2001) argument that Africa’s skill deficit and relative abundance in natural resources condemns the continent to primary product exports for the foreseeable future.

sparseness are also important (Venables and Limao 1994, Winters and Martins 2004): GDP per square kilometer in Africa (excluding South Africa) is one-tenth the level in Latin America and one-twentieth that in India. Manufacturing value added per hectare (excluding South Africa) is only 1.2% that of China: moreover, the GDP of the median country, at barely \$3 billion, suggest that regulatory costs are high relative to domestic market potential. These factors increase costs, depress productivity, discourage investment, and hence obstruct the self-reinforcing processes of growth, clustering and dynamic economies of scale. Within Africa, productivity is strongly related to exports, both as a cause and as a consequence (Collier et al 2000, Soderbom and Teal 2003). But most African firms simply are not productive enough to export manufactures. Even from a classical perspective, Africa's factor endowment is consistent with competitiveness in a variety of labor-intensive natural resource processing industries. However, most African countries have been unable to take even this step towards higher value-added processing.

2. 2 Macroeconomic Evidence on High Costs

Countries with poor business environments can therefore be modeled as having low efficiency in producing a wide range of non-traded goods and services that serve directly as intermediate inputs to production or that underpin the efficient operation of services, such as finance, essential for production. As countries move progressively down the efficiency frontier, the costs to manufacturing firms of obtaining these inputs rises; this squeezes their value-added between rising overall costs and the price at which their products can be imported. Few firms can insulate themselves from high domestic costs: in extreme cases the economy retreats into a combination of subsistence agriculture and concentrated hydrocarbon or hard-mining activities able to shield themselves from economy-wide effects.⁵ This section of the paper approaches costs from a macroeconomic perspective departing from the PPP conversion factors which can be useful for comparing price levels across countries (Gelb and Tidrick 2000).

Purchasing Power Parity (PPP) conversion factors—here expressed as the ratio of a country's GDP measured in market prices to its income measured in PPP prices --provides an estimate of its aggregate price level relative to those of other countries. This ratio ranges from less than 0.2 in some poor countries to 1 or higher in OECD countries (see Table 1). Unfortunately, the price deflators for PPP calculations were last updated for 1993-1996, so this picture is ten years old and some countries may look different today. Further, although survey coverage was quite widespread in Africa and within other regions, the global linkages were weak as was linkage for some important comparators, notably India and China. The global relativities of PPP deflators are therefore subject to considerable error and potential biases, in directions unknown. A new round of data collection is underway, but it will take some time for this effort to be completed.⁶

PPP conversion factors are closely related to income levels due to the “Balassa Effect”-- productivity gaps between rich and poor countries are larger in tradeables sectors than in non-

⁵ Technology can sometimes enable a wider range of firms to overcome high domestic cost structures. Installing their own communications systems enabled Indian software and data-processing firms to bypass ineffective and costly telecommunications systems and build on a strong base of cheap, highly-trained and English-speaking labor. But such cases are likely to be rare.

⁶ Linkage between Africa and other regions proceeded through price comparisons with the US for a limited range of products, not always perfectly matched in terms of quality. China and India were linked through regression procedures based on income and secondary education.

tradeables, while rich countries also have higher demand for non-traded goods and services. These therefore tend to be relatively more costly in rich countries. International trade tends to equalize prices of traded goods so that aggregate price level differences tend to be driven by the prices of non-traded products, although the final prices of most tradeable goods will also be affected by trade restrictions and the prices of inputs such as port services and domestic transport. For manufacturing firms, higher-traded goods prices will impact competitiveness through the cost of imported capital equipment and raw materials, while higher non-traded goods prices will do so through a wide range of indirect costs: transport, logistics, electricity, telecommunications, rent, security, and so forth.

With incomes averaging \$300 per head, Africa's poor economies have only four-fifths the income level of South Asia and one-half that of East Asia. But from PPP conversion factors, their costs are 75% and 35% higher, respectively than those for these two regions. This provides an indication of substantially higher costs than would be predicted by the Balassa Effect as shown in Figure 1. Table 1 also compares actual to predicted costs. Africa's poor countries are 31% more costly than predicted, while China and South Asia (India, primarily) are 20% and 13% below their predicted levels.⁷

These results are broadly compatible with the estimates from Sala-i-Martin et al (2003) that capital costs are one third higher than world levels in Africa and one third lower than world levels in Asia. These results may also reflect the price of land, which is often very high in Africa due to various market distortions. But they suggest that cost divergences extend more widely beyond capital goods to encompass a wide range of goods and services.

Table 1. Ratio of PPP conversion factors and actual relative to predicted prices, by region, 1993-96

Figure 1. Cost levels versus log income, regional aggregates

Moving to the country level, income explains 90 percent of the cross-country variation in price levels. However, some lie substantially above or below the regression line, including a number of poorly-performing African countries. While there is noise in the PPP data, there are also some systematic patterns. The most deviant outlier, the Democratic Republic of Congo, provides some intuition on the causes. Congo is an oil-producing country with a record of political instability and poor governance and economic management, low capacity, poverty and high inequality, a harsh tropical climate, and is relatively far from major international markets. Despite the country's modest per capita income (\$750 at market prices), market prices for goods and services are close to OECD levels (ER/PPP is 0.80). Table 2 illustrates countries' price levels and their deviation from the Balassa income-price curve. Many strong performers lie well below the regression line--most of these countries have effected the transition to manufactured exporter status and have created a critical mass of industrial activities able to take advantage of cheap local inputs to lower costs for other firms and consumers alike. This pattern holds also within Africa: price levels in Africa's better-performing countries, including South Africa and Mauritius which have also shifted from primary to manufactured exports, are also close to

⁷ As noted above, these estimates are subject to considerable error.

predicted values. Countries above the line are typically weak performers and most are still at primary exporting stage. Table 2 divides countries below \$1,000 per capita into low, moderate, and major manufacturing exporters and reports cost levels and deviations from the Balassa curve. There are exceptions – Sudan is one of the strangest – but the pattern is quite strong.

If the costs facing many African firms are even close to the estimates, they will therefore impact on competitiveness in many sectors. In addition, to the extent that households and workers also face high prices, the market value of their wages and incomes overstates their purchasing power relative to households in other poor, but low-cost, countries. African firms may therefore face relatively high wage costs for firms but African workers see relatively low purchasing power.

Of course, especially given the limited accuracy of the PPP data, this highly aggregated exercise is only indicative; it is unclear which areas are driving the cross-country differences in costs. The next section analyzes microeconomic evidence at the firm-level, which throws more light on the factors causing African firms to face high costs of doing business.

Table 2. Costs and Export Structure, 1993-96, countries under \$1,000 per capita

3. COSTS AND PRODUCTIVITY: EVIDENCE FROM ICA SURVEYS

3.1 The Countries and the Surveys.

This section uses data gathered by the World Bank's Investment Climate (IC) firm surveys over the period 2000-2004 to shed light on firm-level patterns.⁸ Cross-sectional IC data covers sixteen countries: Eritrea, Ethiopia, Kenya, Mozambique, Nigeria, Senegal, Tanzania, Uganda and Zambia (Sub-Saharan Africa); India and Bangladesh (South Asia); China (East Asia); Bolivia and Nicaragua (Latin America); Algeria and Morocco (North Africa). Core productivity data is available for more than 7,000 firms in 8 industry categories (textiles, garments and leather; food and beverage processing; metals and machinery; wood and furniture; paper, printing and publishing; plastics; chemicals and paints; other). Of these, around 2,700 are in Africa, and 1,800 in Sub-Saharan Africa (see Table 3). There is a fair spread across firm size groups, though in the African and Latin American cases, more firms are micro, small and medium enterprises relative to samples in Bangladesh and China.

One question of potential concern is the possibility of systematic bias in the response rates to questions on sales and costs needed to estimate production functions. Response rates do differ across countries, but within countries they are remarkably uniform across categories of firms – domestic-foreign, by ethnic status, by exporter/non-exporter – that are known to correlate strongly with productivity. While selection bias is always a concern in any survey, we think it unlikely to pose a major problem for the broad pattern of results. Some African surveys have few firms in some size categories however, and this cautions against using very fine disaggregation.⁹

⁸ For more information, visit www.worldbank.org/privatesector/ic or www.worldbank.org/rped

⁹ In particular social and political environments, particular kinds of firms which tend to be more productive and which have greater reason to fear expropriation (foreign firms, ethnic minority firms) might be less likely to provide

Table 3. Number of firms with productivity data, by size-class (employees)

Table 4. Selected Economic Indicators

Table 4 presents an overview of the economies considered in this analysis. The African countries are small and cluster towards the poorer end, along with India and Bangladesh, and tend to be more agrarian. Investment rates also tend to be lower, though Mozambique and Eritrea have recently benefited from a number of large investments. Manufacturing sectors in the African countries tend to be modest with very low exports--the manufacturing share of merchandise exports is 88% in China, 92% in Bangladesh, 77% in India and 64% in Morocco relative to the average of 15% for the African countries.

However, there are important differences between the African countries themselves. The surveys in Ethiopia and Eritrea took place in the aftermath of a damaging conflict; this particularly affected Eritrea's economy which was still operating on somewhat of a wartime footing with conscription creating severe labor shortages. By closing off access to Eritrean ports, the conflict also exacerbated the longstanding isolation of Ethiopia's economy: relative to other African countries, state control of private activity was pervasive, with low levels of FDI, a high prevalence of "party-statal" firms, and a degree of tension between the government and the traditionally Amharic investment community. Nigeria also has been subject to considerable instability, and its oil-dominated economy has suffered from extremely poor governance and has not yet seen a major period of opening. These three economies are distinctive enough that we would be surprised to find "normal" results. Senegal, Kenya, Uganda, Tanzania, Mozambique and Zambia share a recent legacy of wide-ranging policies to open their economies to trade and foreign investment. But of these, only Senegal and Kenya had avoided severe disruption to their established business community since independence, whether through revolutions and civil conflict (Uganda, Mozambique) or phases of socialist development and widespread nationalization (Tanzania, Zambia, Mozambique). In this group, Senegal, Tanzania, Uganda and Mozambique would be considered as the best-managed,¹⁰ with Kenya suffering from an extended period of bad governance and public sector management and Zambia having experienced an extended period of inconsistent reforms, macroeconomic instability, and a series of controversial privatizations that had strained relations between the government, donors, and a business sector traditionally heavily dependent on mining-related activities.¹¹

These differences between countries and in the strength of their business communities provide a useful check on the patterns from the surveys. Indeed, Ethiopian, Eritrean and Nigerian

data on sales and costs, thus artificially reducing the average measured productivity in countries where this is more of a problem. However, response rates do not indicate any such pattern; see Appendix Table X. The only strong pattern in response rates is that micro firms (with less than ten employees) tend to respond less often, which suggests that response rates to detailed sales and costs questions may have more to do with accounting and capacity. Fieldwork experience does suggest that minority forms, in particular, are likely to understate sales. If true, this will tend to accentuate the ethnic productivity gaps shown by the data.

¹⁰ Senegal, Uganda and Tanzania are rated in the top tercile in Africa by the World Bank's CPIA assessments. Mozambique is also well-rated, but weaker in some areas, notably the financial sector.

¹¹ For a comparative review of some of these countries see Devarajan et al, *Aid and Reform in Africa*.

manufacturing firms export very infrequently, while those in Senegal, Kenya, and Zambia do considerably more often (Figure 2). Another feature shown by the surveys is the importance of the regional market as an export destination for these firms. Despite the low share of regional trade in Africa's total trade (11%), regional integration appears to offer an important market for manufacturing firms; on average, it accounted for about half of all exports, with Europe the next largest destination.

Figure 2. Percentage of Firms Exporting at least 20 percent of production

3.2 Productivity Gaps between Africa and its Competitors

This section dissects the firm-level data on productivity and costs. It provides some quantifiable indicators of relative competitiveness, and suggests that hostile, high-cost business environments may depress competitiveness in Africa through mechanisms that are not commonly studied.

A number of studies (Dollar, Hallward-Driemeier and Mengistae 2003 & 2004, Clarke 2004, Batsos and Nasir 2004) estimate proxies for factory-floor productivity and then link them to components of the business environment. These generally show substantial adverse impacts in African countries, but it can be difficult to isolate the impact of individual investment climate variables because of multicollinearity and the possibility that others, out of a wide possible range, have been excluded. Some studies do not appear to control for country fixed effects and this leaves open the attribution of productivity differentials to any variables that differ between the countries. Those which do include fixed effects generally find little independent role for most BE variables, but the implications are not clear because some such variables (like port quality, for instance) are essentially cross-country in nature. With a widening range of surveys and data, further econometric work is likely to shed more light on the impact of different aspects of the business climate. However, this paper applies a simpler, direct method to shed light on a substantial portion of the variance in productivity. We point specifically at indirect costs and business losses which seem to be strongly tied to the quality of the business environment.

The first challenge is to measure the operational performance of firms in a relevant way. Our interest in comparative advantage and economic structure suggests a focus on broad notions of performance. To motivate our discussion, consider profitability (sales / costs) and return on capital (profits / capital stock), which measures the viability of firms at the most fundamental level.¹² At a glance, it is quickly evident that firms in most African countries, with the exception of Senegal, report substantially lower profit margins at the median than in higher-performing comparator countries like China, India, Nicaragua and Bangladesh (see Figure 3). Median profits appear to be modestly positive in Kenya, Uganda and Eritrea (in line with Bolivia and Morocco), near-zero in Ethiopia, Tanzania and Mozambique, and modestly negative in Zambia.¹³ Profit

¹² Of course, if output prices differ due to trade barriers and protected markets, import-competing firms may be profitable and internationally uncompetitive at the same time. The fact that African economies are more concentrated and expensive than their comparators emphasizes the significance of the gap in profitability.

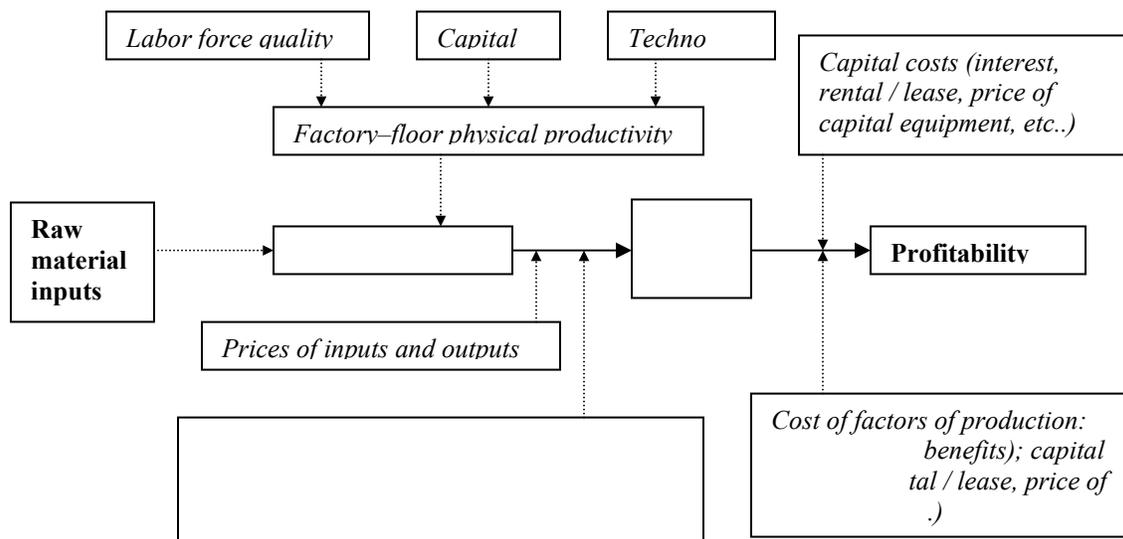
¹³ There is the possibility of under-reporting of profits by African firms. However, it is not immediately evident that firms in our African countries have a greater incentive to under-report profits than, for instance, Chinese firms.

dispersion is still significant, so there are pockets of profitable firms in most countries, but most African firms seem to be struggling to compete. These numbers are consistent with data on export performance in manufacturing (e.g. Figure 2).

Figure 3. Profit margins and return on capital

Profitability itself is a product of a chain of factors, including raw materials costs, factory-floor productivity, factor costs (wages and capital costs), indirect costs for operations and logistics, and output prices; see Diagram 1. Severe bottlenecks in any of these areas can thwart competitiveness, despite good performance in other areas. While much work on competitiveness traditionally focuses on factory-floor productivity and labor costs, our data suggest that indirect costs are one such bottleneck for many African firms, as well as (to a lesser extent) additional losses stemming from poor infrastructure, logistics and security. The next section compares factory-floor (gross) productivity with broader concepts of productivity, illustrating the quantitative importance of these off-the-factory-floor factors.

Diagram 1. The Business Process



Factory-Floor Productivity

Much firm-level research focuses on factory-floor productivity – how much it differs across firms and countries, and why. Focused case studies document differences in variables like physical output produced per worker per day within a particular industry. Broader work that

cannot compare physical output usually estimates proxies for total factor productivity (TFP), using the value of sales achieved using a given quantity of inputs:

$$[1] \quad \ln(A_i) = \ln(Y_i) - \alpha \ln(K_i) - \beta \ln(L_i) - \chi \ln(M) - \delta \mathbf{Z}_i$$

Alternatively,

$$[1'] \quad \ln(A_i) = \ln(Y_i - M_i) - \alpha \ln(K_i) - \beta \ln(L_i) - \delta \mathbf{Z}_i$$

where A is gross TFP, Y is the gross value of sales, K is capital, L is labor, M is raw materials (and thus Y-M is gross value-added), α is the capital share, β is the labor share, χ is the materials share, \mathbf{Z} is a vector of sector and country dummies and interaction effects; and δ is the corresponding vector of parameters. This approach is used in a number of studies of manufacturing in developing countries, including an important recent contribution by Dollar, Hallward-Driemeier and Mengistae (2003). Gross TFP is important: if a firm can produce more physical output or value of sales for a given quantity and cost of inputs, its competitiveness clearly improves. As such, factory-floor productivity, either as gross value-added per worker or gross TFP, is often compared to labor costs to make statements about relative competitiveness.

From most accounts, factory-floor TFP tends to be lower in African firms than in their competitors. Skills and human capital shortages (Wood and Mayer, 2001) and technology (Basant and Fikkert 1996) play a major role here. In addition, the IC surveys provide a lens into another set of factors that depress factory-floor productivity. Hostile business environments often push firms' revenue below potential due to losses related to infrastructure shortcomings, crime, and so forth. For example, variants of the following question were widely asked: "What percent of your annual sales did you lose last year due to power outages or surges from the public grid? Please include losses due to lost production time from the outage, time needed to reset machines and production that may be ruined due to processes being interrupted." Similar questions were asked about delivery delays, shipment losses, and crime.¹⁴ Figure 4 illustrates their relative magnitude across countries, suggesting that firms in most African countries suffer disproportionately from these types of losses. These losses push output and sales below their potential,¹⁵ suggesting a useful metric, *potential gross TFP*:

$$[2] \quad \ln(A_i^*) = \ln(Y_i - M_i + LO_i) - \alpha \ln(K_i) - \beta \ln(L_i) - \delta \mathbf{Z}_i$$

where LO_i is a measure of business-environment related losses.

Figure 4. Business environment related losses

¹⁴ Because (like all larger-scale studies) TFP is a proxy for factory-floor productivity based on *sales revenue*, the depressing effect of some types of losses are definitionally considered to impact TFP though they do happen outside of the factory floor. A good example is a sales shipment lost in transit.

¹⁵ As such, these losses are perhaps in part related to low average capacity utilization rates in Africa (see below). This is a subject for further study, but preliminary evidence indicates a link between capacity utilization and losses from power outages.

However, it is not immediately evident that factory-floor productivity is low enough (relative to wages) in most African countries to single-handedly explain the continent's weak manufacturing competitiveness. In a study of garment industries, Cadot and Nasir (2001) find that the countries with the lowest factory-floor labor productivity (Mozambique and Ghana) are at roughly half the level of China, a differential that is more than made up by lower wages (see Table 5). If factory-floor productivity were the bottom line for competitiveness, garment firms in Madagascar, Kenya, Ghana, Mozambique and Lesotho would dominate those in Chinese export-processing zones, with 40-60% of the physical unit labor costs (per men's casual shirt). These findings mirror earlier work by Biggs et al (1996) which suggested that African firms are well-placed to compete on labor costs. Eifert and Ramachandran (2004) note that the African countries with the lowest median unit labor costs (labor costs / gross value-added) at the firm level are Eritrea and Nigeria, while Uganda and Mauritius have high unit labor costs, suggesting that this metric may be of limited usefulness. Evidently, Africa's shortfall in competitiveness arises in large part from other parts of the business process.¹⁶

Table 5. Factory floor productivity and labor costs

Indirect Costs

The impacts of poor business environments on firms are often felt through *indirect costs*. Many African firms incur heavy costs for transport, logistics, telecom, water, electricity, land and buildings, marketing, accounting, security, bribes, and so forth. These may be regarded as quasi-fixed costs reflecting prices and quantities of a range of intermediate business inputs.¹⁷ In developed countries where these costs are low and relatively invariant, research in industrial organization pays them little attention. But it is crucial to take these costs into account in developing countries where they are high and variable. Firms which are quite good at producing physical output at low cost within the factory gates may be unable to survive due to high costs outside of the productive process.

Figure 5 provides a cross-country comparison of firms' cost structures, including indirect costs, labor costs, capital costs and intermediate input costs. In strong performers like China, India, Nicaragua, Bangladesh, Morocco and Senegal, indirect costs tend to be 7-12 percent of total costs on average, around half the level of labor costs. In contrast, indirect costs in African countries (excluding Senegal) tend to account for 20-30 percent of total costs, often dwarfing their labor costs.

Figure 5. Cost structures, % of total costs, average

¹⁶ Unsurprisingly, Soderbom and Teal (2003) find that TFP is a strong predictor of African firms' propensity to invest and export, with causality running in both directions. We find the same strong correlation in our larger dataset.

¹⁷ Our survey data allow us to decompose these to some degree – for instance, we know that transport costs are usually a large share (25-30%) – but in general the category is a residual which usually includes various specific lines plus a line described as “other overhead costs”.

The importance of indirect costs in doing business in developing countries suggests a method for constructing a broader indicator of productivity than gross TFP:

$$[3] \quad \ln(\hat{A}_i) = \ln(Y_i - M_i - IC_i) - \alpha \ln(K_i) - \beta \ln(L_i) - \delta Z_i$$

Where IC is indirect costs, such that (Y-M-IC) is *net value-added*, and \hat{A}_i is *net TFP*. Indirect costs squeeze net value-added and thus reduce net TFP, so the latter is a broader indicator of the productivity of a firm's operations than gross TFP. It includes "factory-floor" productivity but is not limited to it, because it encompasses the competitiveness of the entire business process, from the firm's involvement in the upstream value-chain to the entire set of operating costs to the final transport, marketing and sale of goods. To move from net TFP to the broader concept of profitability, one needs only consider factor usage and factor prices: a firm with high net productivity will be profitable as long as its labor and capital costs are not excessive.

Productivity Analysis

This section extends traditional productivity analysis in a simple manner. We estimate average firm-level \hat{A} (net TFP) across countries using equation [3], and then use comparisons with equations [1'] and [3] to decompose differences in \hat{A} between China (the most productive country, and the best on both indirect costs and losses) and the others into three parts:

- underlying differences in factory-floor productivity (*differences in A**);
- differences in factory-floor productivity due to BE-related losses (*differences in A less differences in A**);
- differences in indirect costs (*differences in \hat{A} less differences in A*).

First, in a comparative exercise such as this it is crucial to deal with issues of relative prices. Firms in different countries (or even different sectors or regions within a given country) likely face different prices for their outputs and their capital and intermediate inputs.¹⁸ Productivity will appear higher where output prices are inflated and will appear lower where capital goods prices are inflated. The authors are not aware of any effort in the firm-survey literature that attempts to deal with this problem. To enable some sensitivity analyses of the impact of pricing differences, we combine our data on aggregate price levels from Section 2 with information on the relative prices of investment and consumption goods from Sala-i-Martin et al (2003). Capital inputs are adjusted using investment good prices, and outputs are adjusted using consumption good prices. Table 6 illustrates this correction process.

¹⁸ For instance, firms in concentrated markets may receive oligopoly rents in the form of high output prices, and firms in remote areas with poor transport systems may pay a very high price for capital equipment and thus have fewer machines per dollar than their comparators, but may also be able to sell comparable products at higher prices because transport costs provide a degree of natural protection.

Table 6. Price corrections: investment goods (P_I) and consumption (P_C) goods

Table 7 shows simple comparisons of net value-added and capital intensity per worker across countries in nominal terms; the price-corrected table can be found in the Appendix. Median value-added per worker in most African countries is low, particularly in the micro, small and medium enterprises (MSMEs) that dominate the African business landscape. Value-added per worker tends to climb for larger firms, though in some countries a bell-curve effect is visible, with the largest firms (often state-owned or monopolistic) being less productive than medium-sized counterparts. Capital-labor ratios are surprisingly high in Africa, and remain so even allowing for the higher cost of investment goods. Capital stocks tend to be used inefficiently however, with capacity utilization lying in the 50-60 percent range (with the exception of Senegal), compared to 70-80 percent for most strong performers and developed countries (see Figure 3).¹⁹ Though the nature of the link is a subject for future research, low capacity utilization is almost certainly related to low factory-floor productivity.²⁰

Table 7. Net value-added per worker and capital per worker, median by firm size

Figure 6. Median capacity utilization, percentage

Several different methodologies were used across the pooled sample of firms, including Cobb-Douglass and Constant Elasticity of Substitution production functions and OLS and Stochastic Frontier estimations. All of these yielded very similar results for the dummy variables in which we are interested. Therefore throughout our analysis, we use the simplest method, the Cobb-Douglass estimation. We estimate equations of the forms [1'], [2] and [3], using country dummy variables to capture average differences in firm-level productivity across countries.

Table 8 provides the results of the estimation of [2] with and without interaction effects, which make little difference to the country dummy coefficients. The other two regressions look very similar, so we do not present them here; we focus below on the different magnitudes of the coefficients on country dummy variables.

Table 8. Results of equation [1]

¹⁹ The co-existence of low capacity utilization and complaints about access to finance in Africa reflects the role of credit in day-to-day operations and cash flow rather than strictly for investment. Many African firms cite major cash flow problems which impede their ability to operate smoothly.

²⁰ The reasons for low capacity utilization are worth exploring in detail. These may include investment in lumpy technology where minimum scale is greater than effective demand, particularly in small countries. Also, capacity buildup during periods of import substitution may now be underutilized. Finally, in some African countries, capital stocks tend to be rather old suggesting lower dynamism and entry and slower technological change. However, this is not a universal pattern.

Using the coefficients from the estimations of [1'] – [3], Figure 7 presents the results of this exercise.²¹ Average net TFP differentials between China and India at the high end and Zambia at the low end are nearly ten-fold, with most African countries in the range of 20 percent to 40 percent as productive as China. The strongest African performer is Senegal (80 percent) followed by Kenya and Tanzania (45 percent). For a more comprehensive picture, Table 9 shows the frequency distribution of firms across five categories of productivity. Firms in African countries are usually clustered in the very low, low and moderate productivity categories (with the exception of Senegal). To compare the effect of the price corrections, Annex Figure 1.1 shows TFP estimates using unadjusted prices; the pattern is similar, but countries with high price levels (especially Zambia, Senegal, Tanzania) appear somewhat stronger.

Figure 7. Decomposition of Net TFP

The decomposition of the gaps in net TFP is particularly revealing.²²

Gaps in actual factory-floor productivity are represented by the sum of the grey and vertically-striped bars. Firms in most African countries have significantly lower gross TFP than their counterparts in high-performing economies, but the gaps are generally in the range of 2.5:1 or less, findings that are consistent with previous research. These gaps are in part generated by lost sales revenue due to electricity fluctuations, supply delays, shipment losses and crime (light grey bars). The remaining, “underlying” gaps in gross-TFP, represented by the vertically striped bars alone, reflect gaps in firm characteristics (especially skills and technology) as well as unobserved differences in market conditions and output prices. Our data unfortunately does not allow us to separate these two types of factors, so oligopolistic firms with market power inevitably appear more productive, an issue to which we return later.²³ As measured, the African countries with the best gross TFP are Kenya and Senegal, though Kenyan firms suffer heavily from losses (particularly power- and crime-related); a finding that corresponds with intuition. The poorest are Ethiopia, Nigeria, Zambia and Mozambique within Africa, and Bolivia outside of Africa.

Though gaps in factory-floor productivity are significant, the further effect of African firms being squeezed heavily by indirect costs is enormous: a further twofold expansion of the productivity gap in the case of Mozambique, and threefold in the case of Zambia. The mid-range African countries which were in the range of 60-80% of the gross TFP of China fall to 40-60%

²¹ We assume additivity in the losses and indirect costs. In other words, the alpha and beta coefficients in the production function are assumed to remain unchanged as business costs are reduced to China’s level. We recognize that lower losses or indirect costs may result in a change in technology of production or use of intermediate inputs. However, we assume that these changes are very small; indeed estimations of the production function using several different functional forms did not result in significant changes in the coefficients.

²² To compare the effect of the price corrections, Annex Figure 1.1 shows net TFP estimates using unadjusted prices; the pattern is similar, but countries with high price levels (especially Zambia, Senegal, Tanzania) appear somewhat stronger.

²³ We have data on self-reported domestic market share, which correlates strongly with productivity, but the relationship is likely bidirectional (better firms naturally garner higher market share; firms facing relatively little competition face higher output prices and thus generate more value-added), so netting out the effect of market share in a productivity estimation would artificially compress the productivity dispersion.

of the net TFP. Only in Senegal are indirect costs modest enough that the effect is mild. This broader measure of productivity illustrates the relative importance of factory-floor productivity relative to indirect costs: in Zambia, the most extreme case, three-quarters of the overall gap in net TFP relative to China is due to excess indirect costs, and less than one-quarter is due to underlying gaps in factory-floor TFP (skills, technology, etc.).

These numbers tell a powerful story. Zambia and Mozambique provide examples of countries where firms find their value-added squeezed so badly that relief from excessive costs would have an enormous effect. Kenya's strong potential gross TFP but much weaker net TFP shows what the combination of a strong business community plus low indirect costs and losses could do for competitiveness. Senegal's strong performance on gross TFP as well as net TFP indicates that its business environment provides a relatively hospitable environment where firms can do well.

Though an extensive treatment of the propensity to export is beyond the scope of this paper, preliminary estimates strongly support the finding of Soderbom and Teal (2003) regarding the relationship between firm-level productivity (net TFP) and propensity to export. African firms which are productive enough are often able to export; the problem is that most are not, as Table 9's frequency distribution of net TFP illustrates.²⁴

Table 9. Frequency distribution of productivity (percentage of firms in each quintile)

We now turn to possible explanations for the numbers described above, which in turn may help us design policy solutions to address the problems described above.

4 REFORMING THE BUSINESS CLIMATE: A POLITICAL ECONOMY PERSPECTIVE

“Why should we open our economy all for the benefit of South African and Asian business?”
Comment to World Bank during the discussion of an ICA in Africa.

The third theory of comparative advantage discussed above stresses the value of having dense networks of firms operating in a competitive environment and able to generate “thick markets” and learning externalities. This highlights the importance of entry for Africa's extremely sparse economies (Wood 2002). The ICAs indicate a long list of entry barriers; many governments in Africa are now more aware of these constraints and are taking action to improve the business climate. But overall, progress has lagged other developing regions. Recently, the World Bank's vice president for Africa remarked in a speech in Nairobi that despite a vast amount of analytical work on the private sector, no real dialogue has emerged between the private sector and the government. Why is change not faster?

²⁴ Our preliminary analysis shows that the relationship appears to be quadratic, with the propensity to export rising rapidly at first with productivity and then slowly leveling off.

Money is part of the problem – easing the severe infrastructure constraints identified in the surveys requires major investments. But many other aspects of the business climate involve improving the delivery of business services and reflect the need to consider the political economy that underlies state performance and capacity. We argue that reforms will need to confront the presence of long-established rent-seeking arrangements that benefit both the political and private sector elites. These arrangements are remarkably stable, reflecting the coexistence of strong presidential systems of governance, weak administrative and technical capacity, non-credible donor conditionality, and small domestic private sectors dominated by a few large and highly profitable firms, often foreign or minority-owned. The investment climate data reinforce the findings of the political economy literature which must be considered in designing economic reforms.

4.1 Is the African Private Sector in a Low-Level Political Equilibrium?

Political analyses of Africa, both old and new, shed light on the twin problems of slow growth and partially successful reforms. In his analysis of the political economy of the African private sector, Tangri argues that the minority Asian community in East Africa, which has thrived even in difficult times, often coexists with a small, wealthy, Black private sector. The latter is often closely aligned with the president or his associates. The success of this group is more defined by political connections and rent-sharing, than by entrepreneurial talent (Tangri, 1999). A recent, comprehensive analysis of African economies reinforces this perspective (van de Walle, 2003). Van de Walle argues that the political elite in Africa have learned to adapt to the currency of reform, while finding ways to preserve rent-seeking arrangements (p.170):

“Leaders’ notion of the political viability of reform has changed over time. Their initial reaction was almost entirely negative because they viewed rapid reform as incompatible with the methods of rule they had fashioned over several decades of rule. Over time, this has changed: from the view that reform was not viable, leaders have understood that they had no choice but to adapt their methods of rule to the evolving environment... ..over time and through experimentation, they found that their hold on power could withstand the partial implementation of adjustment programs. It remains true that political elites do not believe they can survive without recourse to a policy regime of systematic interference, but they have learned to adapt this interference...”

Thus, as donor-driven reforms have been introduced the government has simply changed its methods of rent-seeking. This has translated into a series of partial reforms without much change in the ability of the private sector to do business, leading to what is termed a “permanent crisis” in Africa. For the private sector, it has meant keeping up with ever-changing forms of government interference, as the sources of rents and the modalities of rent-seeking have shifted with reform efforts.

According to Van de Walle, in contrast to Asia and Latin America, there has been little policy learning in Africa. Technocrats within the government have often been hostile to reforms because their involvement and inputs are limited relative to foreign experts. Moreover, partial reforms have been largely successful at keeping donors satisfied, often leading to repeated

rounds of financing to address the same issues, and ultimately resulting in toothless conditionality, the preservation of rent-seeking arrangements and little real reform despite apparent progress at the macro level.²⁵ All of this has served to reinforce the lack of momentum on private sector development.

While ICAs are mostly technical, some recent studies have begun to focus on the political feasibility of business climate reform. Reducing administrative barriers in Africa is enormously difficult, not because of technical feasibility but because state apparatus have long been used as patronage vehicles (Emery, 2003; World Bank, 1995). Privatization programs have not been entirely successful at eliminating rent-seeking parastatals, and the privatization process itself has offered various opportunities for rent-seeking and patronage. In a detailed analysis of the administrative requirements for setting up a business in Africa, Emery notes how “overall complexity places a premium on means of circumventing, or speeding up the process, which creates a flourishing environment for corruption.” Most, if not all, businesses are operating outside the law in at least one or more aspects, and are vulnerable to government inspectors, no matter how minor the deviance. The survival of a business is consequently heavily dependent on a personal relationship with a minister or other high government official, which is often difficult to document or quantify. These relationships are crucial to firms which need to anticipate *ad hoc* policy or regulatory changes – a major concern of business as shown in the ICA surveys. Emery concludes that “this vulnerability, combined with the arbitrary nature of enforcement arising from poor governance means that firms can be closed down or worse for operating in exactly the same way as their neighbors, their competitors, or their clients and suppliers (Emery, 2003).”

Failure to broaden the base of the business community increases the public’s skepticism of the private sector, and particularly of foreign-owned firms, in sub-Saharan Africa. While the World Bank and other donors focus their dialogue on technical solutions to private sector development such as better roads, more power generation and reduction of the regulatory burden, dialogues in the domestic press in Africa have focused largely on the proposition that the persistence of a private sector elite (whether foreign, ethnic minority, or Black) has prevented economic empowerment of the majority of Black Africans.

This configuration of interests increases the likelihood of countries falling into a low-level equilibrium. With a dominant part of the business sector identified as not indigenous, and shielded from “outside” entry by the adverse business environment, the fractured business community has less ability, and perhaps less incentive, to act as a powerful pressure group in favor of business climate reform. The difficulty of shifting out of such an equilibrium is mirrored in African attitudes towards the private sector. While support for market-based approach to growth and development may be growing, it is still far from widespread, as measured by public attitude surveys¹. The Afro-Barometer surveys are particularly useful (Bratton et al, 2004) in that they reveal widely differing and contradictory views of the private sector as provided by respondents in 15 African countries (Botswana, Cape Verde, Ghana, Kenya, Lesotho, Malawi, Mali, Mozambique, Namibia, Nigeria, Senegal, South Africa,

²⁵ Trade reforms in Africa, for example, been driven by adjustment programs negotiated with the Bretton Woods Institutions rather than a reciprocal process of negotiation with other countries to open market access. It is therefore less surprising to see the persistence of widespread impediments to exporting firms despite declines in levels of protection. (Can Africa Claim the 21st Century? Chapter 7).

Tanzania, Uganda and Zambia) . Only in 6 out of 15 countries did a majority of respondents feel that a market economy was preferable to an economy run by the government. The percentage of respondents indicating this preference averaged to about 54 percent; Uganda was the highest at 57 percent. Only 24 percent of respondents in Botswana expressed a preference for a free market over a government-run economy; that number is 26 percent for Lesotho, 39 percent for Namibia and 37 percent for South Africa. In most countries, well over 50 percent of respondents supported the government being in charge of planning production and distribution of all goods and services.

A majority of respondents in most countries surveyed indicated that the government should bear the main responsibility for ensuring the well-being of people: in Ghana, for example, 66 percent of respondents believed that “the government should retain ownership of its factories, businesses and farms.” Despite the recognition that corruption was widespread, over 72 percent of respondents agreed that “all civil servants should keep their jobs, even if paying their salaries is costly to the country.” Finally, 58 percent of all respondents indicated that the government should be primarily responsible for job creation in the economy. Most reform programs are greeted with lukewarm support or opposition—62 percent of respondents supported user fees, 54 percent supported market pricing, but only 35 percent support privatization and 32 percent supported civil service reform across the countries surveyed. The results appear to indicate that most Africans do not believe that the private sector will deliver broad-based growth; this belief is consistent with the discussions in the press of elite capture of the private sector.

4.2 Beneath Aggregate Gaps: Size, Ethnicity, and Foreign Ownership in Africa

While firm-level productivity and propensity to export is considerably lower in most African economies than in other parts of the world, African economies are often segmented, with small clusters of large, foreign and/or ethnic minority-owned firms which are quite different in character from their indigenous counterparts.²⁶ The performance of this small cluster appears to be much better; they tend to be considerably more productive and to be much more likely to export. They also seem to have more market power, and a sustained presence in Africa despite economic and political uncertainties. Our data, and the existing literature (Tangri, 1999; van de Walle, 2001), suggest that this group relies on trust between its members and on alliances with the political elite to generate rents on a continuing basis.

Table 10 provides data on average firm size (by employment) by ownership. There is a strong relationship in almost all our countries between foreign ownership and firm size. In Africa, this relationship also extends to ethnic minority ownership: in Uganda, the average indigenous African firm has 16 employees, compared to 60 for Asian-owned firms, 104 for European-owned firms, and 138 for Middle-Eastern-owned (mostly Lebanese) firms. With regard to domestic versus foreign ownership, the gap is 19 to 68.

Table 10 Average Firm Size by Ownership

²⁶ In some countries, ethnic fragmentation between indigenous groups is also an issue: for Ethiopia, see Mengistae (2001).

Large, foreign, and minority-owned firms in Africa also tend to be more productive than indigenous firms (Figure 8) and to export more than their smaller indigenous counterparts. Foreign and ethnic-minority firms outperform indigenous firms by a substantial margin in every country except Ethiopia and Eritrea. African business is segmented: small indigenous firms struggle to survive, while small numbers of larger, foreign and ethnic-minority firms have productivity levels closer to those of the average firm in high-performing economies like China and India. The most productive firms in Kenya, Nigeria, Mozambique, Tanzania, Uganda and Zambia also tend to be large, except that most state-owned enterprises are large but usually show low productivity. On average, SMEs in India, China, Bangladesh and Morocco have productivity levels only slightly lower than of the levels of larger firms, but in Africa, the ratio is usually around 50% (Appendix Table 1.6).²⁷

Figure 8 Productivity Index by Ownership

Productivity differentials between small, indigenous firms and larger, foreign or minority-owned firms have been persistent over time (see several RPED country studies, 1995-present) and do not seem to be primarily driven by differences in indirect or opportunity costs. Large firms still incur heavy costs for self-provided infrastructure, transport, logistics, security, and other items. Market power reflected in higher product prices probably also plays a role--an increase of 10 percent in market share is associated with a 4.5% – 7.5% increase in measured productivity, controlling for country fixed effects. While large firms are more likely to be exporters, many also sell to the domestic market, often with very high market share (see Table 11). Nigeria, the country with the least competition, is also perhaps the country with the least support for liberalization from the business community.

Table 11 Median of Firm's Self-reported Market Share, by Size and Ownership

Various investment climate indicators suggest that, while large firms may face many of the same constraints as small firms, they are able to adapt to this climate in different ways. The best example is generator ownership: most large firms in Africa own a generator – except in Senegal where the power system works relatively well, and firms are notified well in advance of rolling blackouts – but not so for small firms (Table 12).

Finance is another service segmenting the private sector, as shown in Table 13. The share of large firms with access to a loan is much higher than that of small firms in many countries in Africa. Productivity differentials are in part related to access to finance; controlling for country fixed effects, firms which have a loan or overdraft account are around 6 percent more productive. Finally, Table 14 shows the amount of time that firms are in contact with the government. It is clear that large firms bear a substantially greater burden of dealing with regulations and regulators. But these data may also shed light on how rents and favors are shared between business and government. The persistence of profitability of a limited number of large, foreign-owned and/or ethnic minority firms is consistent with larger amounts of time spent appeasing the government, as seen in our data.

²⁷ Stochastic frontier analyses show that small firms in Africa are well below the production frontier.

Table 12 Share of Firms owning a Generator by Size

Table 13 Share of Firms with Access to Loans by size

Table 14 Median Inspection Days and Time Spent dealing with Regulations by Size

Finally, it is worth pointing out the role of networks in the African private sector. Networks, usually of ethnic minorities, help firms to overcome the limitations of financial markets by increasing access to trade credit (Fafchamps, 2004; Biggs and Shah, 2004). These networks are based on trust between members of a relatively small group. Such ethnic networks operate in many other regions including fast-growing Asia and have similarly positive effects in enabling their members to compensate for dysfunctional market institutions. But their overall impact is likely to be different in economically dense and sparse regions. In the former, their adverse effect in stifling competition is likely to be small because of the competitive pressure of many firms belonging to many networks; in Africa's very small economies, the adverse effect is likely to be far larger. Firms in sparse Africa are therefore likely to weigh more heavily the costs and risks of business environment reforms in encouraging entry than firms in dense economies, particularly in Asia.

5 CONCLUSION

The macroeconomic and microeconomic evidence described in this paper identify the key factors which influence the ability to diversify the economy away from primary products. Macro data based on PPP conversion factors confirm that Africa is a relatively high cost region, with price levels some 30% above levels that would be predicted on the basis of income per head. In contrast, developing countries that have successfully emerged as manufactured exporters and developed a critical mass of firms able to provide a wide range of goods based on cheap local labor and inputs, show low cost levels, some 20% below those predicted by income level.

The Investment Climate Surveys carried out over 2000-2004 provide a micro-level look at these issues. We define a relatively broad concept of *net TFP*, demonstrate that it varies much more across countries than gross TFP or factory-floor productivity alone, and then decompose differences in net TFP into 1) unexplained differences in gross TFP; 2) differences in gross TFP explained by business losses from power outages, logistical failures and crime; and 3) differences in indirect costs. We thus advance the discussion of performance from its traditional focus on labor costs and the skills and the technical capacity of firms, finding that the hostile business environments facing many African firms are reflected in disproportionately high indirect costs and losses which squeeze value-added. In many African countries the problem is not so much that labor is high-cost relative to factory-floor productivity; it is rather that a weak business climate lowers the return to labor in production and thus depresses labor demand and real wages.

The story varies considerably across and within countries. Zambian and Mozambican firms have relatively weak factory-floor productivity to begin with, and their value-added is heavily squeezed by high costs, with three-fourths of Zambia's net TFP shortfall relative to China

accounted for by excess indirect costs. This is also true, if to a somewhat lesser extent, in Nigeria and Ethiopia. Uganda and Tanzania appear to be middle-of-the-road performers, in addition to Eritrea, though the data on the latter are probably heavily influenced by state favoritism and anticompetitive rents. In Kenya, a long history of entrepreneurship is reflected in strong potential factory-floor productivity, but high costs and losses impede competitiveness. Senegal provides an example of what an African country can achieve with a strong business community and a relatively good business environment.

Within African countries, business sectors appear to be strongly segmented on the basis of ownership and firm size. Large foreign and minority firms typically have much stronger factory-floor productivity than their smaller indigenous counterparts, though they still face high costs. However, while these firms are more likely to export, they also sell domestically, tend to have significant market power, and often do not exhibit a drive to expand, suggesting that in part their high value-added reflects noncompetitive rents.

This story of high costs and market segmentation so far lends itself to standard technical recommendations. While unfavorable geography is a problem in some countries, there is much African governments could do to mitigate the effects of geography and to reduce costs across their economies. High-yielding business climate reforms typically include improving roads and transport systems, building low-cost and predictable electricity systems, improving public protection and police forces, reducing corruption, facilitating trade and regional integration, increasing entry and competition into markets, and so forth.

However, business environments usually improve only slowly, and in Africa, these reforms seem to have occurred even more slowly than elsewhere. A search of World Bank documents revealed that the Bank argued no less than 14 times between 1990 and the present that Africa was about to turn the corner in terms of policy reform (Easterly, 2003). Donors have contributed billions of dollars to road construction across Africa, but the overall quality of road networks has improved little due to poor maintenance. Easterly, 2003, observes that the World Bank has made several loans to Kenya for road improvements with little to show for it. This suggests that the utility of straightforward technical recommendations may be limited.

Analysts have increasingly pointed to political economy factors in obstructing change. Poor business environments increase costs, but also generate entry barriers that provide larger firms with anticompetitive rents. The large firms which might potentially push for reform are faced with a choice between a hostile business environment which they have learned to negotiate and an unknown situation with potentially large increases in entry and competition. The risk is that Africa will remain locked into a slowly evolving low-level equilibrium, characterized by rent-seeking behavior on the part of the public sector and quiet acquiescence on the part of the private sector. The likelihood that this equilibrium is sustained is buttressed by the ambivalent attitudes towards the business sector expressed in AfroBarometer surveys. The fact that in most countries the business sector is heavily segmented, with expatriate and minority firms occupying the upper echelons in terms of productivity and capacity to export, does nothing to make this situation less complex. In the low-level equilibrium, measures to open Africa's economies by reducing levels of protection will have a limited effect because of the failure to focus on business services and the institutional ingredients of competitiveness.

How can the momentum of reform be accelerated? Benchmarking performance in the various areas highlighted by ICAs will facilitate more constructive dialog on business-climate variables in discussions between governments, firms and donors. However, in thinking about moving forward on the BE agenda, solutions need to be framed by political economy considerations, if donors are not to end up making the same loan over and over again, as in the agricultural sector in Kenya over the 1990s (Dollar and Easterly 1999).

Accelerating reform requires the difficult task of breaking up alliances between the private sector elite and the political elite. One possibility is gradual or segmented reform whereby rents in established areas are slowly eroded over time, while new opportunities are created for the private sector. This can help to convince the private sector elite that the profits in a relatively open economy may well be greater than current levels, particularly if costs can be significantly reduced at the same time. Policies that encourage the arrival of new entrants into the private sector are also very useful. Several policy suggestions emerge:

(a) *Enclave Growth: EPZs and Clusters.* Even if political resistance and weak capacity stalls sweeping country-wide reforms, it may be feasible to radically improve business environments in limited, high-profile areas such as export processing zones. Within EPZs, service delivery standards can be benchmarked and regularly evaluated with the assistance of donors. EPZs also help address the problem of dispersed spatial distribution and low firm density in Africa; they can reduce infrastructure costs and encourage technology diffusion and knowledge spillovers. The *World Development Report* highlights individual country experiences where firms in EPZs have developed backward linkages to small suppliers (WDR, 2005). EPZs may also serve to attract new entrants.

(b) *Level the Playing Field.* Building strong domestic political support for private sector development will require improving the performance and capacity of indigenous firms, removing the perception that BE reforms primarily benefit foreigners or minorities. Programs to mitigate political risk, for example, are currently only available to foreign investors; they should be extended to domestic investors on similar terms. Tax incentives should be extended to small businesses as well as large ones. Capacity-building is needed for the private sector as well as the public sector; for example, outside of South Africa, Sub-Saharan Africa has not a single accredited business school.

(c) *Use Gains to Build Constituencies for Reform.* Success in even a single enclave sector can generate demonstration effects across an economy, weakening the perception among large firms and governments that a low-level equilibrium characterized by high costs and low competition is preferable. Press accounts of the Indian experience suggest that the enormous success of the high-technology sector in the early 1990s (accomplished largely without government assistance) set the standard for the rest of India's private sector; both firms and the government wanted to share the limelight and started to move away from the old model of the "license raj." In Africa, examples such as Kenya's agribusiness sector (which links large firms, small firms and farms) and the EPZs of Mauritius and Madagascar, offer potential examples, which should become far better known. In China, successful local development rebounded directly to the advantage of local officials, setting up strong competition between local governments to attract investments

(Byrd and Gelb 1988). Africa might consider how such incentives can be structured to boost, rather than retard, productivity. For example, top customs officials might receive incentive payments based on both revenue and clearance time standards, along the lines of Tanzania's SASE program (Levy and Kpundeh 2004).

(d) Enhance the Credibility of Reforms and Donor Support through New Instruments. Donor-funded programs could be developed to enable firms to purchase insurance against shortfalls in service delivery from standards agreed as part of reform programs – for example, customs clearance times, or VAT rebates for exporters, initially within EPZs. This would both provide impetus for accurate measurement of performance (and targets to focus capacity-building efforts) and ensure that lapses in performance were speedily raised to a high policy level. Once confirmed, these service standards and the insurance programs could be rolled out more broadly across the economy.

(e) Capitalize on the Concern over Donor Dependence. Increasing donor dependence is inevitable for African countries if they are to embark on a determined push towards achieving the MDGs. Yet countries such as Uganda and Mozambique, with 50% of their budgets dependent on donors, perceive the political implications of this and aim to reduce donor dependence from present levels. In a recent speech, the president of Uganda urged his countrymen to become less dependent on foreign aid. Tanzania, which hosts 1000 donor meetings every year and prepares 2500 donor reports every quarter, may also feel the need to reduce donor dependence (Birdsall 2004). More explicit political linkage between private sector development and a reduction in donor dependence may serve to hasten the implementation of reform.

References

- Basant, Rakesh and Fikkert, Brian (1996), "The effects of R&D, foreign technology purchase, and domestic and international spillovers on productivity in Indian firms," *Review of Economic Statistics*, 78, 2: 187-99
- Batsos, Fabiano and Nasir, John (2004), "Productivity and the Investment Climate: what matters most?" World Bank Policy Research Working Paper #3335
- Biggs, Tyler et al (1996), « Technological Capabilities and Learning in African Enterprises, » RPED Working Paper #AFT288, The World Bank.
- Biggs, Tyler and Shah, Manju (2004), "African SMEs, Networks and Manufacturing Performance," Mimeo.
- Birdsall, Nancy (2004), "New Issues in Development Assistance," mimeo.
- Bratton, Michael, Robert Mattes, and E. Gyimah-Boadi (2005), "Public Opinion, Democracy and Market Reform in Africa," Cambridge: Cambridge University Press.
- Byrd, William and Gelb, Alan "Why Industrialize? The Incentives for Rural Community Governments" in Byrd W. and Lin Qingsong
- Burgess, Robin and Venables, Anthony (2004), "Towards a microeconomics of growth," World Bank Policy Research Working Paper 3257.
- Chenery, Hollis and Syrquin, Moshe (1975), *Patterns of Development: 1950-1970*, (Oxford: Oxford University Press).
- Clarke, George (2004) "Why Don't African Manufacturing Enterprises Export More? The Role of Trade Policy, Infrastructure Quality and Enterprise Characteristics," mimeo.
- Collier, Paul (2000), "Africa's Comparative Advantage," in H. Jalilian, M. Tribe and J. Weiss (eds), *Industrial Development and Policy in Africa*, (Cheltenham: Edward Elgar).
- Collier et al (2000), "Exports and firm-level efficiency in African manufacturing," CSAE WPS/2000-16
- Collier, Paul; Hoeffler, Anke and Patillo, Catherine (1999), 'Flight Capital as a Portfolio Choice,' World Bank Working Paper no. 2066.
- Collier, Paul and Gunning, Jan (1997), "Explaining African Economic Performance," WPS/97-2.2, Center for the Study of African Economies, 1997.
- Devarajan, Shantayan et al. (2001), *Aid and Reform in Africa*, (Washington, DC: The World Bank).

Dollar, David, Hallward-Driemeier, Mary and Mengistae, Taye (2003), "Investment Climate and Firm Performance in Developing Economies," mimeo.

Dollar, David, Hallward-Driemeier, Mary and Mengistae, Taye (2004), "Investment Climate and International Integration," World Bank Policy Research Working Paper no. 3323.

Dollar, David and Easterly, William (1999), "The Search for the Key: Aid, Investment and Policies in Africa," World Bank Policy Research Working Paper no. 2070.

Durkin, J. (1997), "Perfect Competition and Endogenous Comparative Advantage", *Review of International Economics*, Vol. 5, no 3, pp. 401-411

Easterly, William (2002), "The Cartel of Good Intentions: The Problem of Bureaucracy in Foreign Aid," *Journal of Policy Reform*, December; 5(4): 223-50

Easterly, William (2003), "Can Foreign Aid Buy Growth?" *Journal of Economic Perspectives*; 17, No. 3:23-48, Summer.

Eifert, Benn and Ramachandran, Vijaya (2004), "Competitiveness and Private Sector Development in Africa: Cross-Country Evidence from the World Bank's Investment Climate Data," *Institute for African Studies, Cornell University, Occasional Paper Series*.

Emery, James (2003), "Governance and Private Investment in Africa," in Van de Walle, Ball and Ramachandran, eds., *Beyond Structural Adjustment: The Institutional Context of African Development* (New York: Palgrave Macmillan).

Fafchamps, Marcel (2004), *Market Institutions in Sub-Saharan Africa: Theory and Evidence*, (Cambridge, MA: The MIT Press).

Foellmi, Reto and Zweimuller, Josef (2002), "Structural change and the Kaldor facts of economic growth," IZA Discussion Paper No. 472; Zurich IEER Working Paper No. 111

Gelb, Alan and Tidrick, Gene (2000), "Growth and job creation in Africa," in *Strategies for Growth and Job Creation in Southern Africa*, Gaborone, Botswana: Friedrich Ebert Stiftung

Grossman, Gene and Helpman, Elhanan (1990), "Comparative advantage and long-run growth," *The American Economic Review*, 80, 4: 796-815

Krugman, Paul (1980), "Scale economies, product differentiation, and the pattern of trade," *The American Economic Review*, 70, 5: 950-959

– (1981), "Intraindustry specialization and the gains from trade," *Journal of Political Economy*, 89, 5: 959-973

– (1983), "New theories of trade among industrialized countries," *The American Economic Review*, 73, 2: 343-347

– (1991), “Increasing returns and economic geography,” *Journal of Political Economy*, 99, 3: 483-499

– (1991), “History and industry location: the case of the manufacturing belt,” *The American Economic Review*, 81, 2: 80-83

Levy, Brian and Kpundeh, Sahr (2004) eds., *Building State Capacity in Africa: new approaches, emerging lessons*, (Washington, DC: WBI Development Studies, The World Bank).

Mengistae, Taye (2001), “Indigenous ethnicity and entrepreneurial success in Africa: some evidence from Ethiopia,” World Bank Policy Research Working Paper #2534

Mengistae, Taye and Pattillo, Catherine (2002), “Export Orientation and Productivity in Sub-Saharan Africa,” IMF Working Paper WP/02/89.

Montobbio, Fabio (2002), “An evolutionary model of industrial growth and structural change,” *Structural Change and Economic Dynamics*, 13: 387-414

Ngai, Rachel and Pissarides, Christopher (2004), “Structural change in a multi-sector model of growth,” working paper, available at www.iue.it/ECO/ResearchActivities/ResearchWorkshops/papers2004-5/Term1/Pissarides.pdf

Qian, Yingyi (2003), “How Reform Worked in China,” in Dani Rodrik, ed, *In Search of Prosperity*, (Princeton, NJ: Princeton University Press).

Radelet, Steven (1999), “Manufactured Exports, Export Platforms and Economic Growth,” Harvard Institute for International Development, CAER Discussion Paper no. 43.

Ramachandran, Vijaya and Shah, Manju (1999) “Minority Entrepreneurs and Private Sector Growth in sub-Saharan Africa,” *Journal of Development Studies*, vol. 36, no.2, December.

Regional Program on Enterprise Development (1995-present), Africa Private Sector Group, The World Bank, various papers, www.worldbank.org/rped

Sala-i-Martin, Xavier and Artadi, Elsa (2003), “The Tragedy of the Twentieth Century: Growth in Africa,” Columbia University Economics Discussion Paper 0203-17

Soderbom, Mans and Teal, Francis (2003), “Are Manufactured Exports the Key to Economic Success in Africa?” *Journal of African Economies*, Vol 12, no.1, pp. 1-29.

Tangri, Roger (1999), *The Politics of Patronage in Africa* (Trenton, NJ: Africa World Press).

United Nations Industrial Development Organization (UNIDO) (2004), *Industrialization, Environment and the Millenium Development Goals in Sub-Saharan Africa*, Vienna, UNIDO

Van de Walle, Nicolas (2001), *African Economies and the Politics of Permanent Crisis, 1979-1999*, (Cambridge: Cambridge University Press).

Venables, Antony and Limao, Nuno (1994), "Infrastructure, geographical disadvantage and transport costs," The World Bank.

Wood, Adrian and Berge, Kersti (1997), "Exporting Manufactures: human resources, natural resources, and trade policy," *Journal of Development Studies*; 34: 35-59, October.

Wood, Adrian and Mayer, Jorg (2001), "Africa's export structure in a comparative perspective," *Cambridge Journal of Economics*, 25: 369:394

Wood, Adrian (2002), "Could Africa Be More Like America?" Mimeo.

World Bank, *Investment Climate Assessments*, various, 1999-2004, available at http://www.worldbank.org/privatesector/ic/ic_ica.htm and www.worldbank.org/rped

World Bank, 2004a, *World Development Report 2005: A Better Investment Climate for All* (Oxford: Oxford University Press).

World Bank 2004b *Doing Business 2005* (Oxford University Press, 2005)

World Economic Forum (2004), *Africa Competitiveness Report 2004* (Geneva: World Economic Forum).

Winters, Alan and Martins, Pedro (2004), "When comparative advantage is not enough: business costs in small, remote economies," *World Trade Review*, 3: 1-37

Table 1. Ratio of exchange rate to PPP conversion factor, by region, 1993-96

	OECD	LAC			MENA	ECA	EAP		SAR	SSA	
		<i>South Am.</i>	<i>Central Am.</i>	<i>Caribbean</i>			<i>All</i>	<i>China</i>		<i>All</i>	<i>Poor*</i>
Costs	1.19	0.64	0.46	0.55	0.42	0.42	0.29	0.23	0.22	0.37	0.31
Ratio of costs to predicted costs	1.07	1.16	0.93	1.07	0.93	0.90	0.91	0.80	0.87	1.07	1.28
Income per capita (market prices)	26,500	4,000	2,850	3,200	2,200	2,450	750	550	375	550	300

*less South Africa, Namibia, Botswana, Mauritius & Cape Verde, middle-income well-managed countries.

** Note: a value of 1 implies that a group lies right on the Balassa trend-line from Figure 1.

Figure 1. Cost levels versus log income, regional aggregates

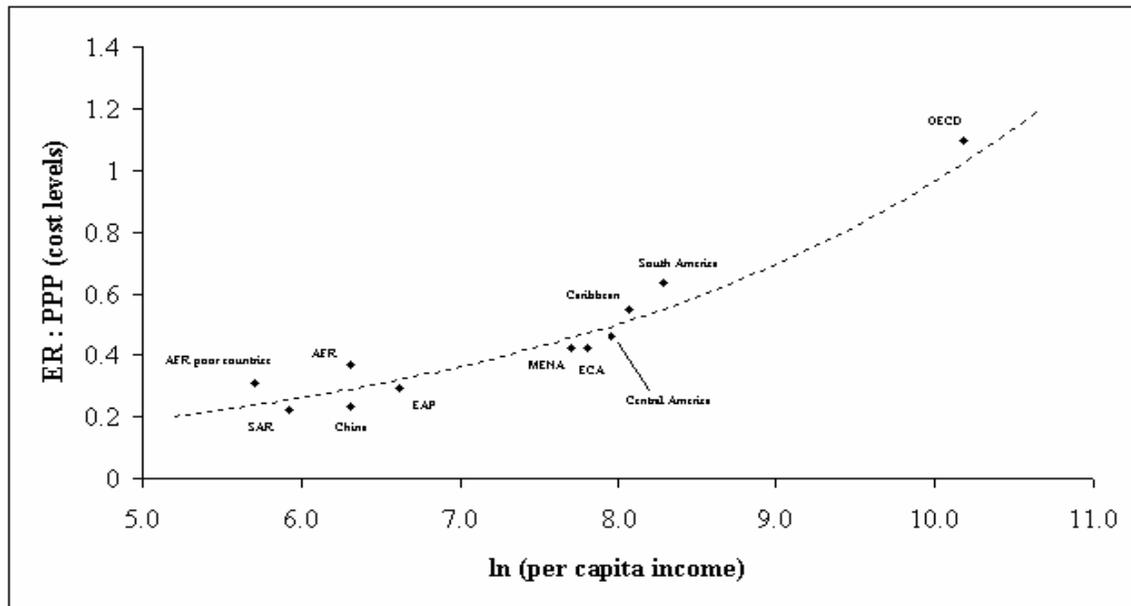


Table 2. Costs and Export Structure, 1993-96, countries under \$1,000 per capita

<i>country</i>	<i>Manufacturing % exports</i>	<i>ER:PPP</i>	<i>Balassa gap*</i>	<i>country</i>	<i>Manufacturing % exports</i>	<i>ER:PPP</i>	<i>Balassa gap*</i>
Major exporters	69	0.25	0.78	Negligible exporters	4	0.51	1.48
Nicaragua	33.7	0.19	0.60	Sudan	2.8	0.23	0.66
Vietnam	**	0.20	0.67	Guinea-Bissau	0.2	0.23	0.95
India	72.4	0.21	0.68	Burundi	1.3	0.24	0.96
Ukraine	67.8	0.24	0.65	Togo	5.8	0.25	0.80
China	84.4	0.24	0.73	Niger	0.5	0.29	1.02
Bangladesh	87.2	0.26	0.86	Mauritania	0.4	0.30	0.72
Haiti	76.7	0.26	0.76	Burkina Faso	4.4	0.30	1.02
Pakistan	83.8	0.27	0.96	Angola	**	0.31	0.79
Sri Lanka	72.5	0.29	0.85	Nigeria	1.1	0.37	1.19
Kyrgyz Republic	38.4	0.33	1.06	Mali	2.1	0.40	1.36
				Cameroon	8.0	0.41	1.24
Moderate exporters	19	0.30	1.01	Papua New Guinea	4.0	0.45	1.17
Ethiopia	11.2	0.18	1.18	Benin	3.7	0.47	1.54
Ghana	13.2	0.23	0.75	Malawi	8.6	0.48	1.21
Gambia, The	19.6	0.23	0.78	Zambia	7.0	0.48	1.79
Azerbaijan	20.0	0.25	0.77	Cote d'Ivoire	6.1	0.56	1.64
Rwanda	13.8	0.24	0.92	Yemen, Rep.	0.6	0.71	1.38
Mozambique	16.7	0.25	0.97	Congo, Rep.	2.7	0.72	2.3
Uganda	13.0	0.27	1.03				
Comoros	33.4	0.29	0.91				
Honduras	23.6	0.29	0.91				
Madagascar	15.1	0.29	1.08				
Moldova	20.3	0.30	1.09				
Mongolia	10.2	0.30	0.97				
Guinea	20.1	0.32	1.06				
Kenya	26.4	0.34	1.12				

*i.e. a value of 1 implies that a country lies perfectly on the regression line.

**Export data not available. Vietnam's manufacturing sector accounts for 20% of GDP. Angola's accounts for 4% of GDP. *Source: World Development Indicators*

Table 3. Number of firms with productivity data, by size-class (employees)

Country	Micro	Small	Medium	Large	Very Large	Total
	<10	11-50	51-249	250-1000	>1000	
Eritrea	8	35	12	13	1	69
Ethiopia	162	118	18	43	23	364
Nigeria	..	41	33	75	29	178
Kenya	9	82	38	65	28	222
Mozambique	20	50	16	15	..	101
Senegal	28	104	30	37	9	208
Tanzania	41	100	45	43	15	244
Uganda	53	139	30	43	9	274
Zambia	..	70	51	48	6	175
Bolivia	17	178	41	70	18	324
Nicaragua	180	198	33	29	6	446
Bangladesh	24	178	115	465	167	949
India	315	936	156	188	78	1673
China	15	97	159	375	316	962
Morocco	4	404	145	272	27	852

Table 4. Selected Economic Indicators, 2000–2002

Country	GNI per capita, \$	Trade %GDP	Ag %GDP	Investment (FDI), %GDP	Manufacturing %GDP (growth)	Manufacturing, % merchandise exports
Eritrea	160	111	21	39 (5.3)	8 (5.4)	-
Ethiopia	100	49	52	18 (1.2)	7 (5.0)	9.8
Nigeria	290	81	35	20 (2.4)	4 (3.7)	0.2
Kenya	360	57	19	14 (0.4)	13 (1.0)	22
Mozambique	210	79	23	40 (8.6)	13 (9.2)	7.5
Senegal	480	38	18	18 (1.3)	13 (7.3)	37
Tanzania	280	71	45	17 (3.7)	8 (5.9)	18
Uganda	250	40	31	20 (2.6)	10 (2.9)	6.5
Zambia	330	75	22	18 (2.9)	11 (4.5)	17
China	940	52	15	37 (3.7)	38 (8.7)	88
Bangladesh	380	33	23	23 (0.3)	16 (5.6)	92
India	480	31	23	22 (0.6)	15 (5.6)	77
Algeria	1,720	61	10	23 (1.6)	8 (-1.0)	2.3
Morocco	1,190	66	16	25 (4.2)	17 (4.0)	64
Bolivia	900	49	15	16 (9.3)	15 (1.9)	17*
Nicaragua	720	73	18	29 (5.0)	14 (1.2)	13

*was 40% in 1999, but oil & gas production has reduced it rapidly since

Figure 2. Percentage of firms exporting at least 20 percent of production

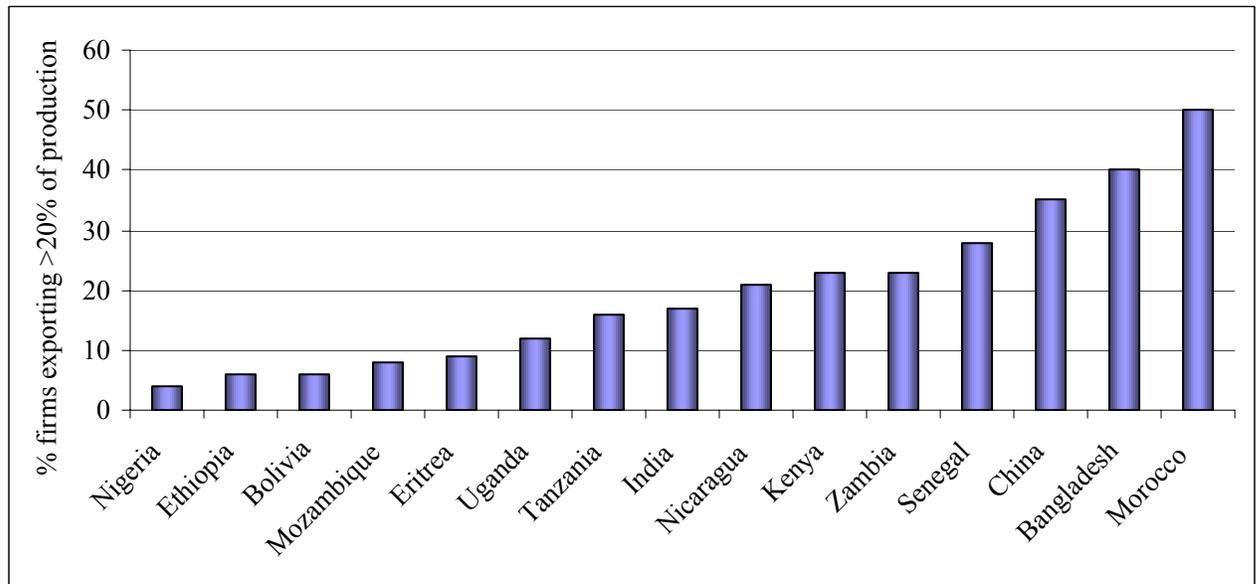
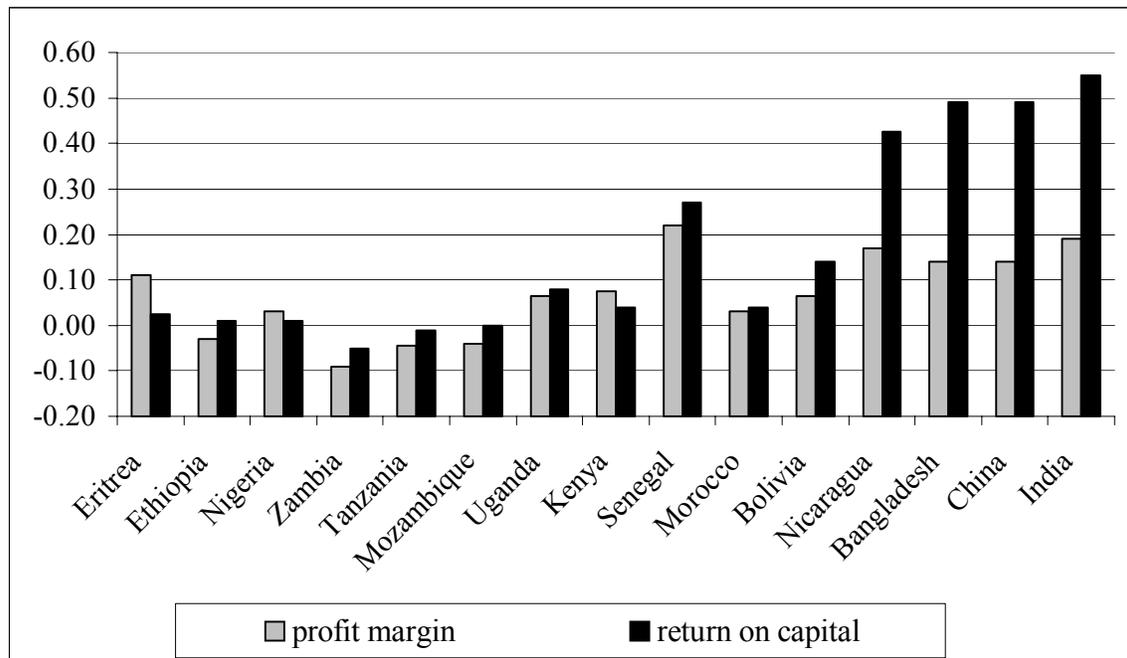


Figure 3. Median profit margin & median return on capital



*profit margin = (profits / sales - 1); return on capital = (profits / capital - 1)

Figure 4. BE-related losses, % of sales, average of 5th to 95th percentiles of sample

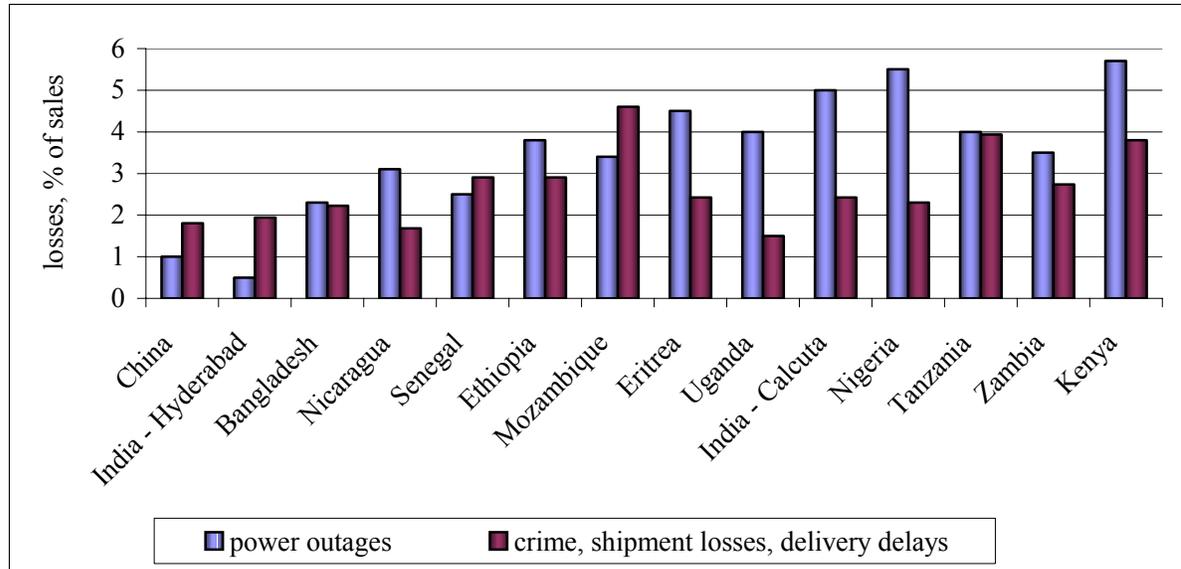


Table 5. Factory floor productivity and labor costs

	Men's casual shirts per machine operator per day	Semi-skilled machine operator monthly wage	Labor cost per shirt
Madagascar	14-15	\$55-65	\$0.16
Kenya	12-15	\$60-65	\$0.18
Ghana	12	\$30-45	\$0.12
Mozambique	10-11	\$40-50	\$0.16
Lesotho	18	\$82-95	\$0.19
South Africa	15	\$255	\$0.65
India	16	\$70-75	\$0.17
EPZ China	18-22	\$150	\$0.29

Source: Cadot and Nasir (2001)

Figure 5. Cost structures: % of total costs, average

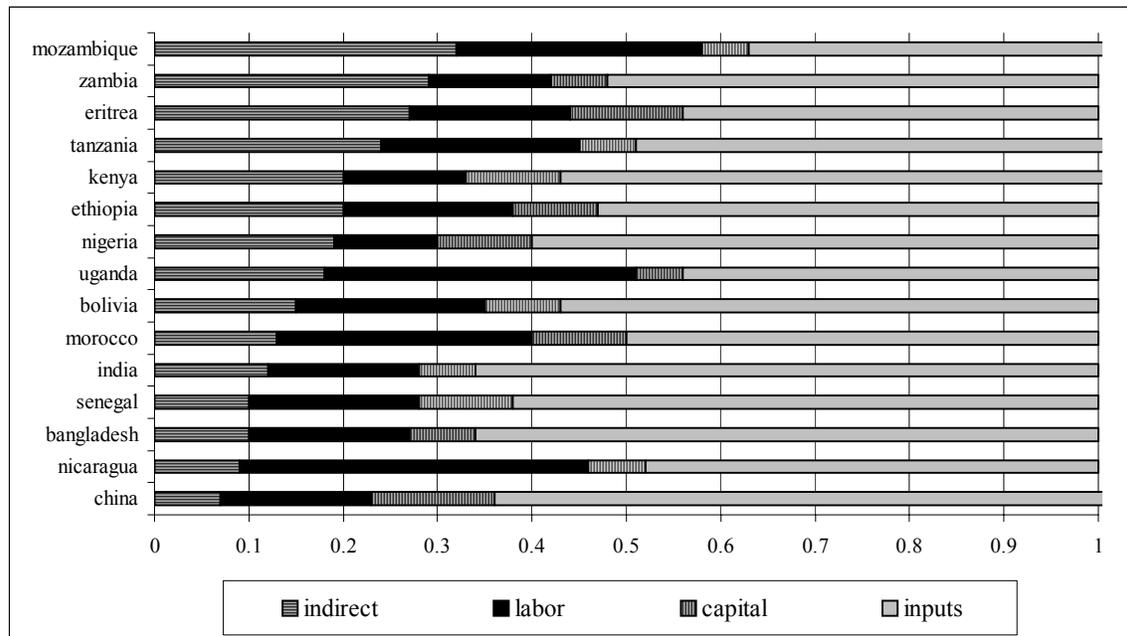


Table 6. Price corrections: investment goods (P_I) and consumption (P_C) goods

Region / country	Aggregate cost level P_I / P_C^{**}		Investment % GDP (nominal)	Consumption % GDP (nominal)	Investment % GDP (adjusted)	Consumption % GDP (adjusted)	P_C	P_I
AFR	0.37	1.20	0.17	0.83	0.12	0.88	0.36	0.43
MENA	0.42	1.54	0.23	0.77	0.11	0.89	0.40	0.61
OECD	1.19	0.70	0.21	0.79	0.35	0.65	1.33	0.93
EAP	0.29	0.70	0.33	0.67	0.50	0.50	0.34	0.24
Eritrea	0.24	1.20	0.39	0.61	0.31	0.69	0.23	0.27
Ethiopia	0.18	1.20	0.18	0.82	0.13	0.87	0.18	0.21
Nigeria	0.35	1.20	0.20	0.80	0.15	0.85	0.34	0.41
Kenya	0.34	1.20	0.14	0.86	0.10	0.90	0.33	0.40
Mozambique	0.26	1.20	0.40	0.60	0.32	0.68	0.24	0.29
Senegal	0.43	1.20	0.18	0.82	0.13	0.87	0.42	0.50
Tanzania	0.39	1.20	0.17	0.83	0.12	0.88	0.38	0.46
Uganda	0.31	1.20	0.20	0.80	0.15	0.85	0.30	0.36
Zambia	0.55	1.20	0.18	0.82	0.13	0.87	0.54	0.64
China	0.24	0.70	0.42	0.58	0.60	0.40	0.29	0.20
India*	0.21	1	0.22	0.78	0.24	0.76	0.21	0.20
Bangladesh*	0.26	1	0.23	0.77	0.25	0.75	0.26	0.25
Bolivia*	0.43	1	0.16	0.84	0.17	0.83	0.43	0.41
Nicaragua*	0.30	1	0.29	0.71	0.31	0.69	0.30	0.29
Morocco	0.32	1.54	0.25	0.75	0.12	0.88	0.30	0.46

*Sala-I-Martin relative investment/consumption price data not available for South Asia and Latin America; value of 1 used, which lies roughly between Africa and East Asia and seems to fit intuitively.

**data from Sala-I-Martin and Artadi (2003)

Table 7. Net value-added per worker and capital per worker, median by firm size

country	VA / L, \$					K / L, \$				
	Micro	small	medium	large	very large	Micro	small	medium	large	very large
Eritrea	2,900	2,450	5,450	2,000	1,600	14,750	17,700	52,050	52,650	14,500
Ethiopia	600	550	750	1,050	650	950	2,450	3,750	4,600	4,400
Nigeria	..	1,400	1,500	2,850	3,100	..	17,200	12,850	24,900	19,150
Kenya	..	1,750	3,100	6,300	2,300	12,600	6,800	11,700	10,000	6,800
Mozambique	350	1,250	2,800	2,200	..	2,700	6,200	5,600	12,250	..
Senegal	6,150	7,500	17,100	15,600	14,500	9,450	6,900	11,300	11,950	1,000
Tanzania	1,350	1,850	4,200	3,400	6,800	1,050	5,900	4,750	13,250	13,150
Uganda	925	1,000	1,600	4,800	950	800	1,550	4,700	8,850	1,050
Zambia	..	800	950	1,250	2,500	..	9,650	14,000	6,700	13,750
Bangladesh	950	1,300	1,650	1,200	1,150	400	1,450	1,650	800	1,150
India	1,850	3,500	3,200	3,800	5,750	1,500	1,500	1,850	2,850	6,000
Bolivia	1,300	1,700	3,050	2,450	7,350	1,200	2,150	4,700	5,350	11,050
Nicaragua	2,100	2,450	3,650	10,200	3,700	950	1,300	1,250	5,700	1,350
China	1,850	2,350	4,150	3,850	4,250	1,400	850	1,250	1,400	4,200
Morocco		4,100	4,850	3,600	5,250		5,750	4,350	2,150	2,550

Figure 6. Median capacity utilization, percentage

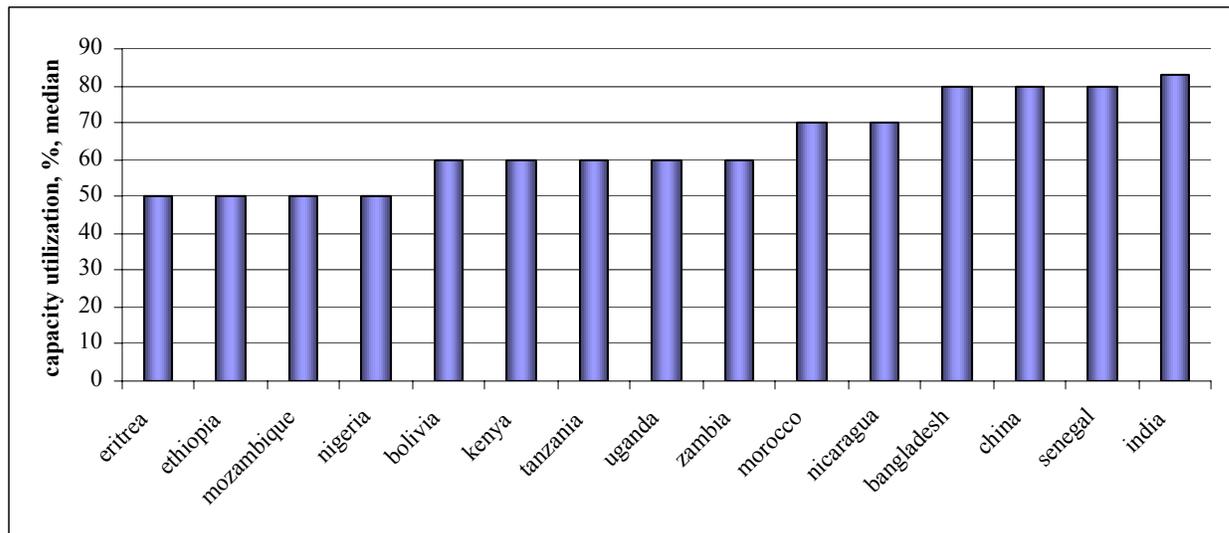
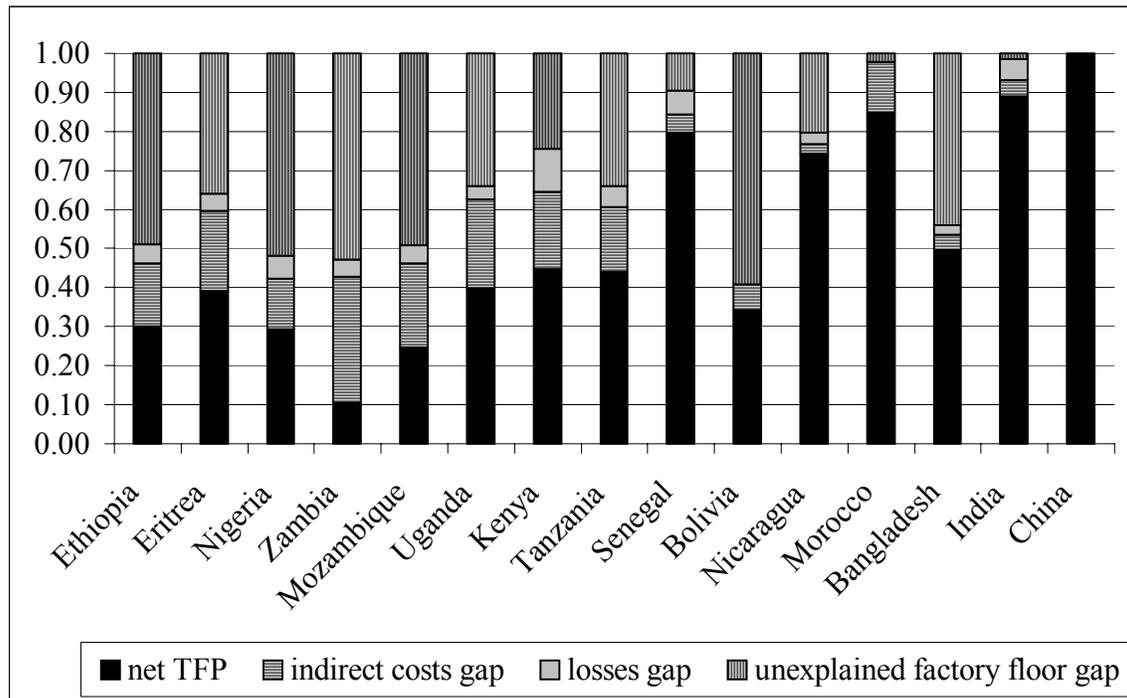


Table 8. Results of equation [2]	<i>Model 1</i>		<i>Model 2</i>	
	<i>coefficient</i>	<i>t-statistic</i>	<i>coefficient</i>	<i>t-statistic</i>
log capital	0.28	30.6	0.28	13.4
log labor	0.76	49.9	0.77	22.2
Constant term	4.56	28.5	4.27	17.3
Bangladesh	1.54	10.9	1.61	11.4
Bolivia	1.17	8.1	1.15	7.9
China	2.25	15.9	2.23	15.8
Eritrea	1.31	5.4	1.33	5.6
Ethiopia	1.05	6.7	1.05	6.6
India	2.22	17.7	2.21	17.6
Kenya	1.44	9.6	1.45	9.2
Morocco	2.08	17.1	1.99	17.1
Mozambique	0.85	3.9	0.87	3.8
Nicaragua	1.95	15.5	1.98	15.6
Nigeria	1.02	5.9	1.00	5.9
Senegal	2.02	14.2	1.99	14.3
Tanzania	1.53	9.6	1.49	9.5
Uganda	1.33	8.6	1.34	8.5
Chemicals	0.08	1.2	-0.58	-1.6
Construction materials	0.11	0.6	0.09	1.2
Food & beverage processing	0.01	0.2	-0.16	-0.5
Metals and machinery	-0.22	-3.8	-0.33	-1.0
Plastics	-0.09	-0.7	0.19	2.0
Paper, printing and publishing	-0.16	-1.2	-0.23	-0.3
Textiles, garments and leather	-0.27	-5.2	0.09	3.4
Wood and furniture	-0.44	-5.1	-0.10	-0.3
Capital * chemicals			0.04	1.0
Capital * construction materials			-0.09	-1.2
Capital * food and beverage			0.02	0.6
Capital * metals and machinery			0.03	0.8
Capital * plastics			-0.21	-2.5
Capital * paper, printing and publishing			-0.06	-0.8
Capital * textiles, garments and leather			-0.07	-2.5
Capital * wood and furniture			-0.03	-0.7
Labor * chemicals			0.06	1.0
Labor * construction materials			0.13	0.7
Labor * food and beverage			-0.01	-0.3
Labor * metals and machinery			-0.07	-1.2
Labor * plastics			0.24	1.9
Labor * paper, printing and publishing			0.26	1.9
Labor * textiles, garments and leather			-0.07	-1.6
Labor * wood			0.03	0.4
Model R ²	0.717		0.714	

Figure 7. Decomposition of Net TFP



*Notes: vertical height of dark blue bars indicate net TFP relative to China. Gaps between each country and China are decomposed into three parts: gap due to excess indirect costs; gap in factory-floor productivity due to excess losses from power outages, delivery delays, shipment losses and crime; and underlying gaps in factory-floor productivity, which may be related to skills, technology, etc.

**Note: no data on excess losses for Morocco or Bolivia.

Table 9. Frequency distribution of net TFP (%)

	Very low	Low	Medium	High	Very high
	<10 th percentile	10 th to 33 rd	33 rd to 66 th	66 th to 90 th	>90 th percentile
Bangladesh	5.5	43.6	37.7	11.3	1.9
Bolivia	13.1	27.3	38.5	17.3	3.8
China	4.8	13.7	24.5	39.2	17.8
Eritrea	12.4	43.8	31.4	12.4	0.0
Ethiopia	38.6	34.5	19.9	5.6	1.4
India	5.1	18.0	39.1	30.4	7.4
Kenya	10.5	27.2	33.8	21.0	7.5
Morocco	14.9	16.5	21.4	21.3	25.9
Mozambique	35.5	24.2	29.1	6.4	4.9
Nicaragua	3.7	14.8	45.0	28.7	7.9
Nigeria	19.6	32.2	33.0	11.8	3.3
Senegal	3.3	12.1	23.8	36.5	22.3
Tanzania	13.4	29.9	22.8	22.8	11.1
Uganda	22.6	20.4	32.9	16.0	8.1
Zambia	36.0	34.1	17.0	8.9	4.0

Table 10. Average firm size (# workers) by ownership

Country	Domestic	Foreign	African	European	Asian	Middle Eastern	Other
Bangladesh	149	340					
China	232	284					
Eritrea	38	52	40	52			
Ethiopia	22	15					
India	27	252					
Kenya	73	230	60	90	59	85	249
Morocco	52	100					
Mozambique	34	45					
Nicaragua	14	60					
Nigeria	81	252	84	310	216	156	904
Senegal	29	63	24	65	28	35	
Tanzania	29	159	23	84	46	43	
Uganda	19	68	16	104	60	138	

Figure 8. Productivity index by ownership

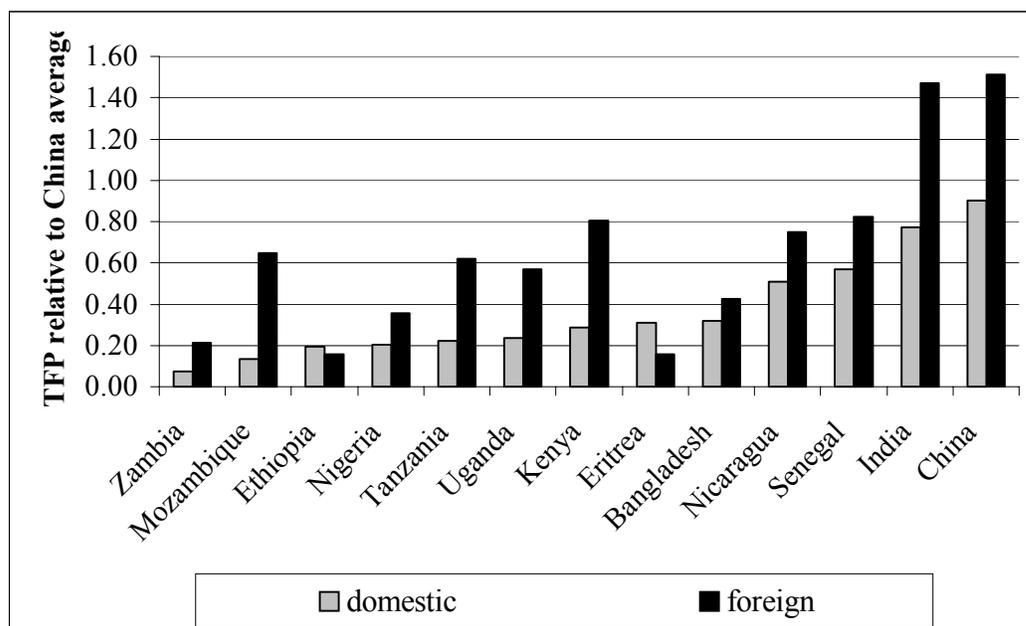


Figure 8b. Relative productivity of large firms and SMEs

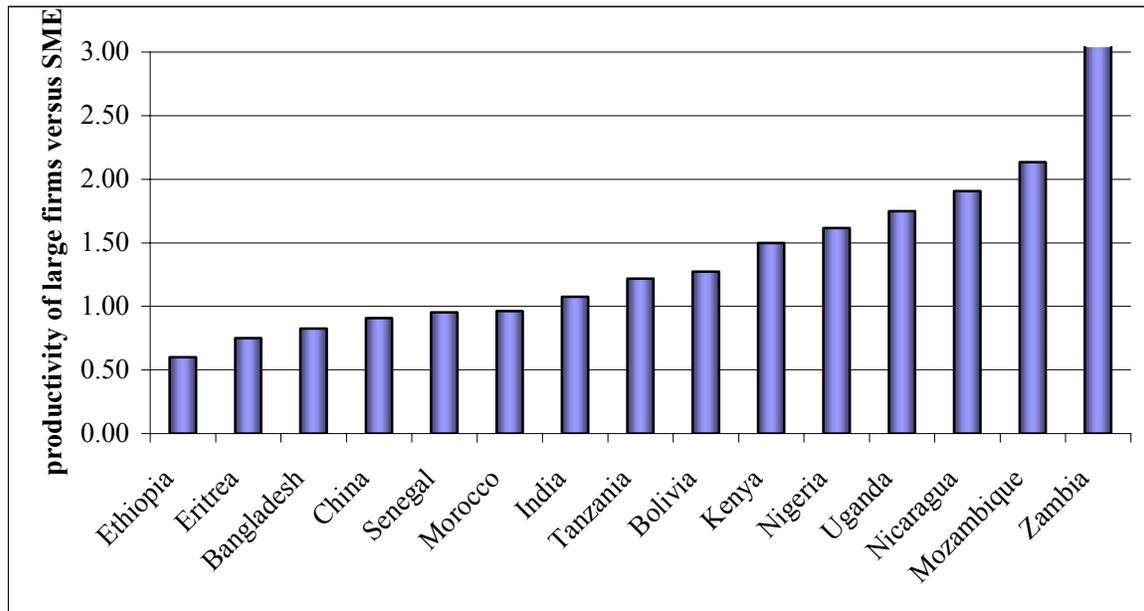


Table 11. Median of firms' self-reported market share, by firm size

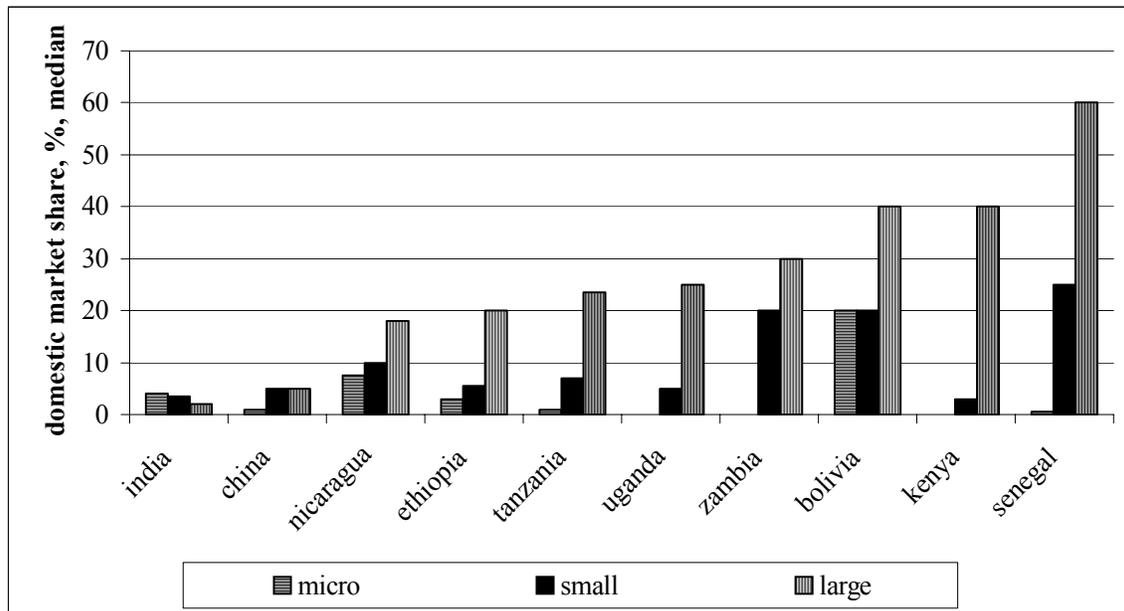


Table 12: Share of Firms Owning Generator by Size

Country	Micro	Small / Medium	Large / Very Large
Bangladesh	0.28	0.53	0.88
Bolivia	0.13	0.11	0.31
China	0.0	0.14	0.38
Eritrea	0.38	0.43	0.63
Ethiopia	0.03	0.23	0.43
India	0.23	0.76	0.91
Kenya	0.46	0.67	0.89
Morocco	0.14	0.15	0.28
Mozambique	0.20	0.23	0.63
Nicaragua	0.06	0.29	0.81
Nigeria	0.83	0.96	0.99
Senegal	0.23	0.19	0.16
Tanzania	0.18	0.60	0.89
Uganda	0.04	0.44	0.87
Zambia	0.30	0.28	0.61

Table 13: Share of Firms with Access to Loans/Overdrafts by Size

	Micro	Small / Medium	Large / Very Large
Bangladesh	0.36	0.74	0.81
Bolivia	0.75	0.76	0.84
China	0.19	0.70	0.84
Eritrea	0.25	0.62	0.75
Ethiopia	0.29	0.66	0.88
India	0.42	0.72	0.88
Kenya	0.17	0.51	0.25
Mozambique	0.32	0.36	0.46
Nicaragua	0.53	0.67	0.72
Nigeria	0.33	0.64	0.89
Senegal	0.1	0.42	0.67
Tanzania	0.08	0.37	0.66
Uganda	0.07	0.35	0.72
Zambia	0.1	0.54	0.80

Table 14: Interaction with Government by Size

<i>Country</i>	<i>Inspection days, median</i>			<i>% senior management time spent dealing with regulation, median</i>		
	<i>Micro</i>	<i>Small / Medium</i>	<i>Large / Very Large</i>	<i>Micro</i>	<i>Small / Medium</i>	<i>Large / Very Large</i>
Bangladesh	6.5	10	12	1	3	3
China				5	5	5
Eritrea	7	4	4	1	2	5
Ethiopia	3	7	6	1	1	1
India	3	7	12	5	10	13
Kenya	11	16	17	7.5	10	10
Morocco	0	1	3			
Mozambique	3	3	3	10	5	8
Nicaragua	4	15	32	6	18	17
Senegal	9	13	13			
Tanzania	12	32	62	5	10	13
Uganda	2	5	17	1	1	6
Zambia	52	64	75	15	11	13

Appendix Tables

1.1. Response rates for sales and costs data by ownership and exporter status

country	domestic		foreign		non-exporter		exporter	
	<i>sales</i>	<i>costs</i>	<i>sales</i>	<i>costs</i>	<i>sales</i>	<i>costs</i>	<i>sales</i>	<i>costs</i>
bangladesh	0.98	0.89	1	0.85	0.87	0.89	1	0.9
bolivia					0.61	0.43	0.67	0.49
china	1	0.79	1	0.79	1	0.74	1	0.81
eritrea	0.52	0.4	0.59	0.53	0.56	0.45	0.29	0.29
ethiopia	0.99	0.92	1	0.95	0.99	0.92	0.96	0.93
india	1	0.63	1	0.73	1	0.53	1	0.61
kenya	0.59	0.57	0.76	0.6	0.6	0.57	0.67	0.61
morocco	1	0.96	1	0.96	1	0.95	1	0.96
mozambique	0.75	0.36	0.67	0.33	0.72	0.34	0.86	0.5
nicaragua	1	0.6	1	0.64	1	0.59	1	0.65
nigeria	0.92	0.75	0.86	0.82	0.89	0.78	1	0.78
senegal	0.89	0.51	0.86	0.55	0.88	0.53	0.92	0.49
tanzania	0.88	0.44	0.78	0.48	0.86	0.42	0.84	0.6
uganda	0.52	0.28	0.52	0.3	0.67	0.26	0.66	0.4
zambia	0.84	0.85	0.72	0.76	0.8	0.84	0.84	0.78

Table 1.2 Response rates by ethnicity

	african		european		asian		middle eastern	
	<i>sales</i>	<i>costs</i>	<i>sales</i>	<i>costs</i>	<i>sales</i>	<i>costs</i>	<i>sales</i>	<i>costs</i>
eritrea	0.53	0.43	0.5	0.5				
kenya	0.61	0.61	0.7	0.6	0.58	0.57		
mozambique	0.7	0.29	0.8	0.39	0.72	0.34		
nigeria	0.93	0.76	0.84	0.76	0.88	0.88	0.74	0.67
senegal	0.92	0.46	0.8	0.53	0.82	0.63		
tanzania	0.86	0.37	0.75	0.44	0.81	0.54	0.9	0.2
uganda	0.69	0.22	0.5	0.5	0.56	0.32		

Table 1.3. Response rates by size

	micro		small		medium		large		Very large	
	<i>sales</i>	<i>costs</i>								
bangladesh	0.68	0.6	1	0.91	1	0.94	1	0.89	1	0.94
bolivia	0.22	0.11	0.86	0.58	0.87	0.72	0.83	0.67	0.87	0.78
china	1	0.38	0.99	0.69	1	0.75	1	0.83	1	0.82
eritrea	0.75	0.25	0.46	0.39	0.43	0.43	0.69	0.63	0.5	0.5
ethiopia	0.97	0.9	1	0.91	1	0.93	1	1	1	0.82
india	1	0.65	1	0.53	1	0.8	1	0.86	1	0.82
kenya	0.3	0.2	0.59	0.62	0.83	0.74	0.65	0.59	0.62	0.5
morocco	1	1	1	0.95	1	0.93	1	0.95	1	0.93
mozambique	0.73	0.29	0.84	0.42	0.57	0.35	0.65	0.31	1	0.5
nicaragua	1	0.48	1	0.63	1	0.82	1	0.86	1	0.67
nigeria	0.5	0.17	0.86	0.57	0.89	0.84	0.93	0.87	0.97	0.91
senegal	0.8	0.33	0.9	0.49	0.92	0.45	0.85	0.47	0.91	0.46
tanzania	0.85	0.1	0.86	0.33	0.81	0.48	0.9	0.66	0.82	0.29
uganda	0.7	0.06	0.67	0.13	0.56	0.12				
zambia	0.1	0.1	0.79	0.8	0.87	0.84	0.89	0.83	0.85	0.92

Table 1.4. Value-added and capital per worker, price-adjusted

country	VA / L, \$					K / L, \$				
	Micro	small	medium	large	very large	Micro	small	medium	large	very large
Eritrea*	12,826	10,836	24,105	8,846	7,077	54,365	65,238	191,843	194,055	53,443
Ethiopia	3,422	3,136	4,277	5,988	3,707	4,515	11,643	17,820	21,860	20,909
Nigeria		4,118	4,413	8,384	9,119		42,164	31,500	61,040	46,944
Kenya		5,252	9,303	18,906	6,902	31,510	17,005	29,259	25,008	17,005
Mozambique	1,431	5,112	11,451	8,997		9,202	21,130	19,085	41,748	
Senegal	14,681	17,903	40,819	37,239	34,613	18,798	13,726	22,479	23,772	1,989
Tanzania	3,548	4,862	11,037	8,935	17,870	2,299	12,921	10,402	29,017	28,798
Uganda	3,072	3,321	5,314	15,942	3,155	2,214	4,290	13,008	24,494	2,906
Zambia		1,493	1,773	2,333	4,666		15,008	21,773	10,420	21,384
Bangladesh	3,654	5,000	6,346	4,615	4,423	1,538	5,577	6,346	3,077	4,423
India	8,810	16,667	15,238	18,095	27,381	7,143	7,143	8,810	13,571	28,571
Bolivia	3,023	3,953	7,093	5,698	17,093	2,791	5,000	10,930	12,442	25,698
Nicaragua	7,000	8,167	12,167	34,000	12,333	3,167	4,333	4,167	19,000	4,500
China	6,329	8,040	14,198	13,171	14,540	6,842	4,154	6,109	6,842	20,527
Morocco		13,665	16,165	11,999	17,498		12,444	9,415	4,653	5,519

*Eritrea's exceptionally high capital numbers are puzzling. They in part reflect a very low aggregate price level (probably much lower than the price of capital goods specifically), as well as very large stocks of very old capital equipment.

Figure 1.1 TFP index calculated using nominal prices

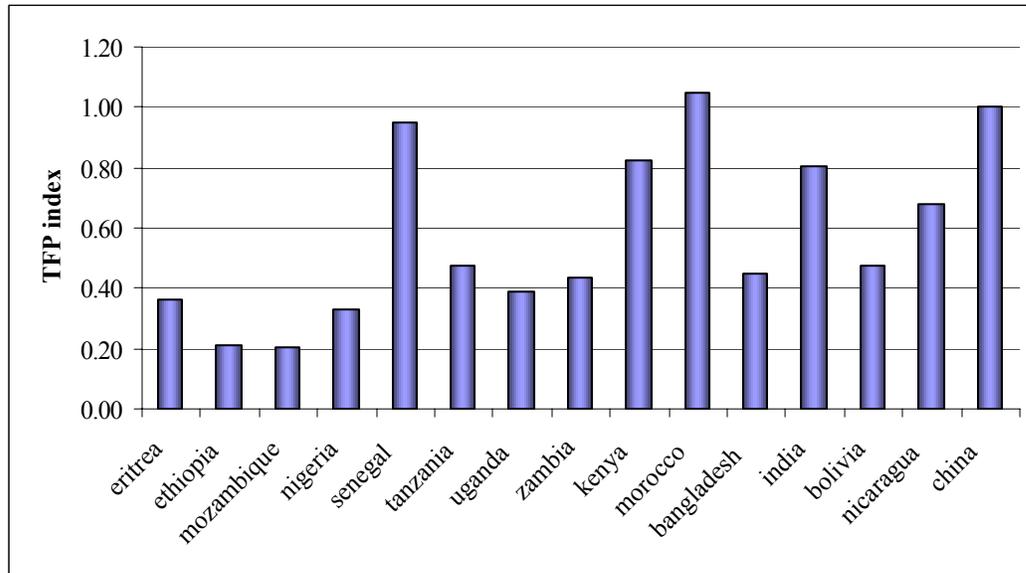


Table 1.5 Age structure of capital, average (%)

<i>country</i>	<i><10 years</i>	<i>>10 years</i>
India	70	30
Morocco	62	28
Eritrea	48	52
Ethiopia	49	51
Kenya	47	53
Morocco	62	28
Mozambique	49	37
Senegal	67	33
Tanzania	47	53
Uganda	75	25
Zambia	78	22

Table 1.6: Relative Net TFP by Firm Size

Country	Micro	Small, Medium	Large, Very large
Bangladesh	0.24	0.23	0.19
Bolivia	0.30	0.22	0.28
China	0.26	0.55	0.50
Eritrea	0.17	0.20	0.15
Ethiopia	0.07	0.10	0.06
India	0.26	0.39	0.42
Kenya	0.26	0.22	0.33
Mozambique	0.05	0.15	0.32
Morocco	..	0.55	0.53
Nicaragua	0.33	0.43	0.82
Nigeria		0.13	0.21
Senegal	0.26	0.64	0.61
Tanzania	0.17	0.32	0.39
Uganda	0.17	0.16	0.28
Zambia		0.08	0.41

Table 1.7 Indirect costs by type, Kenya

<i>Category</i>	<i>Share</i>
transport	0.319
energy	0.185
indirect labor costs (payroll, admin)	0.100
security	0.064
telecommunications	0.045
land	0.025
bribes	0.017
water	0.009
waste disposal	0.004
other overhead costs	0.215