

Working Paper Number 56  
February 2005**Business Environment and Comparative Advantage in  
Africa: Evidence from the Investment Climate Data**By Benn Eifert  
Alan Gelb  
Vijaya Ramachandran**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.

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Benn Eifert  
Alan Gelb  
Vijaya Ramachandran

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\*Benn Eifert is junior professional associate at the World Bank. Alan Gelb is director of Development Policy at the World Bank. Vijaya Ramachandran is assistant professor at Georgetown University and visiting fellow at the Center for Global Development. This paper was prepared for the Annual Bank Conference in Development Economics held in Dakar, Senegal, on January 27, 2005. 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 Demba Ba, Francois Bourguignon, George Clarke, Mary Hallward-Driemeier, Lawrence Hinkle, Giuseppe Iarossi, Phil Keefer, Michael Klein, Taye Mengistae, Todd Moss, Leonce Ndikumana, Guy Pfeffermann, Steven Radelet, Gaiv Tata, Manju Shah, an anonymous referee, and seminar participants at the World Bank, the Center for Global Development, and Cornell University, for excellent comments and suggestions. The views expressed in this paper are solely those of the authors.

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## Abstract

This paper considers the impact of high indirect costs and losses in reducing the productivity and competitiveness of African manufacturing, and the complications posed for reforms by business sectors heavily segmented by size, productivity and ethnicity. The conceptual framework is based on trade 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 related sectors. Macroeconomic data from purchasing power parity (PPP) estimates, though imprecisely measured, confirm that Africa is high-cost relative to its levels of income and productivity.

Firm-level estimates using data from surveys undertaken for Investment Climate Assessments in 2000-2004 indicate the importance of high indirect costs and business environment-related losses in further depressing the performance of African firms relative to those in other countries, when performance is expanded from a “factory-floor” concept towards a broader “net productivity” measure. There are differences between African countries, however, with some showing evidence of a stronger business community and better business climate, and these show up in the results.

African business sectors are sparse and fractured along ethnic dimensions (indigenous, minority, and foreign investors), and with wide differences in the productivity of large and small firms. The paper adopts a political-economy perspective on the prospects for reform of Africa’s business climate, considering these features. Minority and foreign investors have far higher productivity and a greater propensity to export; however, Africa’s difficult business climate and the tendency to overcome it by working in ethnic networks slows new entry and may decrease the incentives of key parts of the business community to form an aggressive pressure group for reform. This increases 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, 60 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 (hereafter Africa) has lagged in this process of economic diversification; with the exceptions of 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, falling behind in terms of development outcomes, and 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 some of the factors underlying Africa's slow industrial growth. Although a number of studies have used firm surveys to analyze productivity determinants in Africa (Biggs et al. 1995; 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 does not cover all factors that affect competitiveness, but attempts to analyze the cost structure of firms in Africa relative to those in competitor regions. It also interprets 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, and relevant, perspectives on Africa's slow diversification. The first stresses the role of factor endowments in shaping economic structure and the composition of trade; the second 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; the third emphasizes the important role of firm entry in creating a critical mass of industries able to reap knowledge and other dynamic scale externalities. Taken together, the latter two theories suggest powerful externalities associated with conglomeration effects, but also that these will be hard to achieve in the absence of a low-cost business environment. Deviations of countries' price levels relative to those derived from predicted purchasing power parity (PPP) conversion factors confirm that Africa indeed appears to be a high-cost region.

Section 3 turns to the firm-level investment climate (IC) surveys and assesses the performance gap between Africa and its competitors. As well as estimating conventional total factor productivity, we define a concept of *net total factor productivity* (TFP) and consider the contributions of factory-floor productivity, indirect costs, and certain business environment-related losses to overall differentials in competitiveness. Our data suggest that these losses and indirect costs are crucial determinants of competitiveness..

Section 4 considers the implications of ethnic and size/efficiency cleavages in Africa's business sectors for the political economy of business-related reforms. *Doing Business 2005* (World Bank 2004b) places Africa low on business climate indicators and as a laggard in reform relative to other regions. 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? Part of the reason is the particular severity of physical constraints in Africa, but equally important is the configuration of political interests for and against reforms in areas related to the business climate. Section 4 considers 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 toward business expressed in Afrobarometer surveys and reflected in statements by many prominent African officials. These factors raise the question of whether to attempt reforms across-the-board or to sequence them to create pockets of opportunity that 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.

## **2. COMPARATIVE ADVANTAGE AND COSTS IN SUB-SAHARAN AFRICA**

### **2.1 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 that 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.

Wood and Berge (1997) and Wood and Mayer (2001) compare Africa's factor endowments with those of other regions. With capital assumed mobile in the long run, relative endowments of skills and land (resources) per capita 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 (pervasive financial

and human capital flight) which has shaped Africa today.<sup>1</sup> Krugman (1980, 1981, 1983) shows that comparative advantage is also a function of differences in productivity and costs that *do not* derive from relative factor abundance. The main effects here can be expressed through two approaches, one relating to business-environmental factors and the other to dynamic economies of scale.

The *business environment* may be defined as the nexus of policies, institutions, physical infrastructure, human resources, and geographic features that influence the efficiency with which different firms and industries operate.<sup>2</sup> At firm level, it directly influences costs of production; at the industry level, it often relates to market structure and competition. Its impact is felt more heavily in traded sectors that are not particularly intensive in natural resources (that is, 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). 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 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 a poor business environment.

Dynamic economies of scale generated by learning processes, network effects, and industry-specific spillovers represent a further elaboration 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 (for example, high degrees of specialization in narrow industrial lines; see Burgess and Venables 2004) and within countries (for example, urbanization, industrial clusters, and path-dependence in the development of individual industries; see Krugman 1991). But individual firms do not internalize the social value of the potential economies of scale from their entry into a particular industry. Thus entry, investment, and the development of new industries are 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 1990), and geographic advantages and disadvantages (Krugman 1991).<sup>3</sup> Business environments do not have to be perfect, but they have to be good enough on a number

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<sup>1</sup> 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.

<sup>2</sup> For more discussion see *World Development Report 2005* (World Bank 2004a) and the series of Investment Climate Assessments put out by the World Bank from 1999 to 2004. See also <http://www.worldbank.org/rped> and <http://www.fias.net>.

<sup>3</sup> 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. Although 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—is similar.

of crucial dimensions to stimulate investment and competition sufficient 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) have 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) studied U.S.-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, miss part of the story.<sup>4</sup> African countries often suffer from poor policies, weak institutions, and shoddy infrastructure (see Collier and Gunning 1997, Eifert and Ramachandran 2004). High transport costs and sparseness are also important (Venables and Limao 1994; Winters and Martins 2004): Gross domestic product (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 percent that of China: moreover, the GDP of the median country, is barely \$3 billion, suggesting that effort to overcome high regulatory costs will not be rewarded by large 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. Africa's factor endowment may be 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 toward higher value-added processing.

## **2. 2 Are African Countries Really High Cost? Macroeconomic Evidence.**

PPP conversion factors—here expressed as the ratio of a country's GDP measured in market prices to its income measured in PPP prices—provide 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 Organization for Economic Cooperation and Development (OECD) countries (see table 2.1). Unfortunately, the price deflators for PPP calculations were last updated for the 1993–

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

<sup>6</sup> Linkage between Africa and other regions proceeded through price comparisons with the United States 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.



1996 period, 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 the 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 under way, but it will take some time for this effort to be completed.<sup>6</sup>

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 nontradeables, while rich countries also have higher demand for nontraded goods and services. Nontraded goods and services 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 nontraded goods, 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 nontraded goods prices will do so through a wide range of indirect costs: transport, logistics, electricity, telecommunications, rent, security, and so forth.

With per capita incomes averaging \$300, 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 percent and 35 percent higher, respectively, than those for these two regions.. Table 2.1 compares actual to predicted costs. Africa’s poor countries are 31 percent more costly than predicted, whereas China and South Asia (India, primarily) are 20 percent and 13 percent below their predicted levels, respectively.<sup>7</sup> These results are broadly compatible with the estimates from Sala-i-Martin and Artadi (2003) that show 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 surprisingly high in Africa. But they suggest that cost divergences extend more widely beyond capital goods to encompass a wide range of goods and services.

**Table 2.1: Ratio of Exchange Rate to PPP Conversion Factor, by Region, 1993–96**

	OECD	LAC	MENA	ECA	EAP	SAR	SSA
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<sup>7</sup> As noted above, these estimates are subject to considerable error.

		<i>South Am.</i>	<i>Central Am.</i>	<i>Caribbean</i>			<i>All</i>	<i>China</i>		<i>All</i>	<i>Poor<sup>a</sup></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

\* A value of 1 implies that cost levels are equal to those predicted by the Balassa trend-line relating income level to PPP ratios. Regions with costs or prices higher than predicted have values above 1.

a. Excluding South Africa, Namibia, Botswana, Mauritius, and Cape Verde, all of which are middle-income well-managed countries.

Moving to country level, while income explains 90 percent of the cross-country variation in price levels, some countries lie substantially above or below the regression line. Even the noisy PPP data shows some systematic patterns. The most deviant outlier is the Republic of Congo, an oil-producing country with a record of political instability, poor governance and economic management, low capacity, poverty and high inequality, and 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 2.2 illustrates countries' price levels and their deviations 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 also holds within Africa: price levels in Africa's better-performing countries, including South Africa and Mauritius which have shifted from primary to manufactured exports, are also close to predicted values. Countries above the line are typically weak performers, and most are still at primary exporting stage.

Table 2.2 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, but the pattern is quite strong. It suggests that countries with high costs have low efficiency in producing a wide range of nontraded goods and services that serve directly as intermediate inputs to production or that underpin the efficient provision of services, such as finance, which are essential for production. As countries move progressively down the efficiency frontier, the costs to manufacturing firms of obtaining these inputs rise, which 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.<sup>8</sup>

If the costs facing many African firms are even close to these estimates, they will impact on competitiveness. In addition, to the extent that households and workers also face high prices, the

<sup>8</sup> 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, English-speaking labor. But such cases are likely to be rare.

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. The next section analyzes microeconomic evidence at the firm level, which throws more light on the nature of high business costs in Africa.

**Table 2.2: Costs and Export Structure, Countries under \$1,000 per Capita, 1993–96**

<i>Country</i>	<i>Manufacturing % exports</i>	<i>ER:PPP</i>	<i>Balassa gap<sup>a</sup></i>	<i>Country</i>	<i>Manufacturing % exports</i>	<i>ER:PPP</i>	<i>Balassa gap<sup>a</sup></i>
<b>Major exporters</b>	<b>69</b>	<b>0.25</b>	<b>0.78</b>	<b>Negligible exporters</b>	<b>4</b>	<b>0.51</b>	<b>1.48</b>
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
<b>Moderate exporters</b>	<b>19</b>	<b>0.30</b>	<b>1.01</b>	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				

*Notes:* Export data are not available for Vietnam and Angola. Vietnam's manufacturing sector accounts for 20 percent of GDP; Angola's accounts for 4 percent of GDP.

a. A value of 1 implies that a country's cost or price level is as predicted by the regression line relating price and income levels.

*Source:* World Development Indicators, World Bank, Washington, D.C.

### 3. FIRM COSTS AND PRODUCTIVITY: EVIDENCE FROM INVESTMENT CLIMATE SURVEYS

This section turns to the microeconomic data gathered by the World Bank's Investment Climate firm surveys over the 2001–2004 period.<sup>9</sup> We consider a range of losses and indirect costs that are estimated in these surveys, and show that they represent a significant drag on manufacturing competitiveness which often escapes attention in the literature on growth and firm performance. There are other types of costs and risks which are related to the business environments that are beyond the scope of this paper (see World Bank, *World Development Report*, 2005).

#### 3.1 Countries and the Surveys

Our cross-sectional data cover 15 countries: Eritrea, Ethiopia, Kenya, Mozambique, Nigeria, Senegal, Tanzania, Uganda, and Zambia, and as comparators Bangladesh, Bolivia, China, India, Morocco, and Nicaragua. We have data for around 7,000 firms in six industry categories (textiles, garments, and leather; food and beverage processing; metals and machinery; chemicals and paints; wood and furniture; and other). Of these firms, around 2,700 are in Africa and 1,800 in Sub-Saharan Africa. There is a fairly large spread across firm size groups, although in the African and Latin American cases, more firms are micro, small, and medium enterprises relative to samples in Bangladesh and China.

Table 3.1 presents an overview of the economies considered here. The Sub-Saharan African countries (hereafter referred to as “African”) are small and generally poorer, along with India and Bangladesh, and tend to be more agrarian. Investment rates also tend to be lower, although Mozambique and Eritrea recently benefited from large investments. Manufacturing sectors in African countries tend to be modest with very low exports—the manufacturing share of merchandise exports is two-thirds or more in China, Bangladesh, and Morocco relative to the average of 15 percent for African countries.

There are also important differences between the African countries. The surveys in Ethiopia and Eritrea took place in the aftermath of a damaging conflict; this particularly affected Eritrea's economy, with continuing conscription creating severe labor shortages. By closing off access to Eritrean ports, the conflict also exacerbated the long-standing isolation of Ethiopia's economy, where state control of private activity is pervasive, with low levels of foreign direct investment (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. In contrast, Kenya, Mozambique, Senegal, Tanzania, Uganda, and Zambia share a recent legacy of wide-ranging policies to open their economies to trade and foreign investment. Of these, only Senegal and Kenya have avoided severe disruption to their established business communities

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<sup>9</sup> For more information, visit <http://www.worldbank.org/rped> or <http://rru.worldbank.org>.

<sup>11</sup> Senegal, Tanzania, and Uganda are rated in the top tercile in Africa by the World Bank's Country Policy and Institutional Assessments (CPIA). Mozambique is also well rated, but weaker in some areas, esp. financial sector.

since independence, whether through revolutions and civil conflict (Uganda, Mozambique) or phases of socialist development and widespread nationalization (Mozambique, Tanzania, Zambia). In this group, Mozambique, Senegal, Tanzania, and Uganda would be considered as the better managed,<sup>11</sup> with Kenya suffering from an extended period of poor governance and Zambia having experienced an extended period of inconsistent reforms, macroinstability, and a series of controversial privatizations that strained relations among the government, donors, and a business sector traditionally dependent on mining-related activities.<sup>12</sup>

**Table 3.1. Selected Economic Indicators, 2000–2002**

Country	GNI per capita, \$	Trade %GDP	Ag %GDP	Investment (FDI), %GDP	Manufacturing %GDP (growth)	Mfg, % exports	Capital per worker in mfg, \$ median
Eritrea	160	111	21	39 (5.3)	8 (5.4)	-	20,600
Ethiopia	100	49	52	18 (1.2)	7 (5.0)	9.8	2,350
Nigeria	290	81	35	20 (2.4)	4 (3.7)	0.2	20,200
Kenya	360	57	19	14 (0.4)	13 (1.0)	22	9,150
Mozambique	210	79	23	40 (8.6)	13 (9.2)	7.5	5,400
Senegal	480	38	18	18 (1.3)	13 (7.3)	37	8,900
Tanzania	280	71	45	17 (3.7)	8 (5.9)	18	3,350
Uganda	250	40	31	20 (2.6)	10 (2.9)	6.5	1,800
Zambia	330	75	22	18 (2.9)	11 (4.5)	17	8,000
China	940	52	15	37 (3.7)	38 (8.7)	88	6,700
Bangladesh	380	33	23	23 (0.3)	16 (5.6)	92	1,050
India	480	31	23	22 (0.6)	15 (5.6)	77	2,050
Morocco	1,190	66	16	25 (4.2)	17 (4.0)	64	8,050
Bolivia	900	49	15	16 (9.3)	15 (1.9)	17	5,650
Nicaragua	720	73	18	29 (5.0)	14 (1.2)	13	2,450

*Sources:* Investment Climate Surveys (capital/worker) and World Development Indicators, World Bank.

### 3.2 Estimates of Gross and Net Total Factor Productivity: Africa in Comparative Perspective

This section compares the performance of African firms with those in a number of comparator countries. We begin with technical efficiency or (gross) productivity, a common focus in the literature, but then broaden the discussion. We first note the effect of business-environment related losses, identified in the surveys as percentages of sales, that depress productivity, and then consider the cost of energy as well as a range of indirect costs such as transport, telecom, security, land, bribes, marketing etc, which are not often considered in the analysis of TFP. We argue that netting out these costs from value-added yields a concept of “net value added” and a corresponding measure of “net total factor productivity,” which comes closer to influencing profitability. This broader view of firm performance, which extends beyond the traditional emphasis on factory-floor productivity and labor costs, is important to understanding economic outcomes in Africa. Together with the losses that depress (gross) productivity, indirect costs associated with operating expenses—energy, transport, telecom, security, land, bribes, marketing, and so on—represent a heavy drag on net productivity and profitability in most African countries in our sample and serve as a brake on competitiveness.

<sup>12</sup> For a comparative review of some of these countries see Devarajan et al. (2001).

It is important to note that earlier analyses of firm survey data from Africa also attempted to account for indirect costs when measuring value added of firms (Biggs, Shah and Srivastava, 1995). However, due to lack of availability of comparator data outside Africa, these studies were not able to place Africa in a global perspective. In this paper, we use direct cost accounting as well as econometric techniques to investigate productivity and losses and costs, across African and non-African countries and to highlight their respective impact. In doing so, we do our best to deal with a number of confounding issues, including price differences across countries. No previous dataset that we are aware of has provided the level of detail on sales, costs, and inputs to reliably document these issues and study their implications.

### ***Gross (Factory-Floor) Productivity***

Much firm-level research focuses on productivity, examining differences in physical output produced for a given quantity of inputs. Econometric analyses of productivity often use data on the value of sales and inputs to estimate TFP, a “factory-floor” concept associated with firms’ capacity to translate inputs into outputs. In the Cobb-Douglass form, the natural log of TFP is often estimated in the following manner:

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

where  $A$  is (in our terminology) gross TFP,  $Y$  is sales revenue,  $M$  is raw materials,  $K$  is capital,  $L$  is labor,  $\alpha$  is the capital share,  $\beta$  is the labor share,  $\chi$  is the materials share,  $\mathbf{Z}$  is a vector of sector and country dummies and interaction effects, and  $\delta$  the corresponding vector of parameters.<sup>13</sup> In equation 1,  $Y-M$  is (gross) value added. This approach, sometimes estimated in Constant Elasticity of Substitution (CES) or translog form, or augmented in order to address endogeneity concerns, is the classic approach to firm performance at the micro level.

Many analyses of African industry have focused on total factor productivity (TFP), including the World Bank’s Investment Climate Assessments and several analyses carried out using African firm survey data from the 1990s (World Bank 2001-2004; Biggs, Srivastava, and Shah, 1995; Soderbom and Teal 2003). These analyses suggest that average TFP tends to be quite low in African firms. Skills and human capital shortages and technology gaps are possible reasons for this problem. The IC surveys also suggest that hostile business environments depress firm sales due to losses related to infrastructure and service shortcomings, as discussed below.

Our data strongly support the proposition that gross TFP is lower on average in most African countries than in their higher-performing counterparts in the developing world. We estimated

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<sup>13</sup> The usual concern is that a firm  $i$ , knowing its level of productivity  $A_i$ , will choose to use more flexible inputs (for example,  $L_i$  and  $M_i$ ), so the OLS (ordinary least squares) estimates of  $\alpha$  and  $\beta$  will be biased. Methods of dealing with the problem include obtaining panel data (a moot point for our analysis), instrumental variables (which has shortcomings), and structural approaches taken by Olley and Pakes (1996) and Levinsohn and Petrin (forthcoming), which are subject to substantial problems (Akerberg, Caves, and Frazer 2005). We acknowledge the theoretical issues but are not trying to replicate these approaches in our analysis.

this for our pooled sample of 15 countries, using a number of techniques to deal with some of the estimation and robustness issues.<sup>14</sup>

One of the main estimation issues is the issue 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 for capital and intermediate inputs.<sup>15</sup> For instance, firms in remote areas may on the one hand receive rents from natural protection and market domination and on the other hand, pay high prices for capital equipment and raw materials. Productivity will appear higher where output prices are inflated and will appear lower where capital goods prices are inflated. To enable 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 and Artadi (2003). We adjust capital inputs using investment good prices and outputs using consumption good prices.<sup>16</sup>

Production function estimates from our gross TFP estimations shown in Table 3.2 indicate that the shares of capital and labor range across sectors from 0.26-0.40 and 0.58-0.86 respectively. Constant returns to scale cannot be rejected at the 5 percent level in any sector. Productivity differentials among sectors are large and in some cases significant; food and beverages and wood and furniture firms appear particularly productive, whereas metals and machinery firms appear less so. Alternative estimations (available on request) using translog production functions and stochastic frontier methods produce very similar results.

Using equation 1, we convert the residuals to an index of TFP relative to China, and report the results in Figure 3.1. African countries exhibit a wide range of productivity relative to the average TFP of China.<sup>17</sup> Indian, and Moroccan firms appear to be the best performers, followed by their

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<sup>14</sup> One question of potential concern is the possibility of systematic bias in the response rates to questions on sales and costs. Response rates do differ across countries, but within countries they are remarkably uniform across categories of firms—domestic/foreign, ethnic/indigenous, exporter/nonexporter—that are known to correlate strongly with productivity. The only strong pattern in response rates is that micro firms (those 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 firms, in particular, are likely to understate sales. If true, this will tend to accentuate the ethnic productivity gaps shown by the data. Although selection bias is always a concern in any survey, we think it unlikely to pose a major problem for the broad pattern of results.

<sup>15</sup> For instance, firms in remote areas with poor transport systems may on the one hand receive rents from natural protection and market domination and on the other pay high prices for capital equipment and raw materials.

<sup>16</sup> A second and related point is that firms with substantial product-market power likely face higher output prices and thus artificially appear to be more productive. Causation also runs in the other direction—more productive firms will likely win a larger share of their markets—so an appropriate approach for controlling for market power requires a multi-stage instrumental variables approach. Unfortunately, the quality of the market share data and the availability of instruments are poor. We have performed production function estimations with a very imperfect measure—self-reported market share—included directly as an independent variable; the pooled results suggest that the combined relationship (with causation in both directions) is strong, with the difference between near-zero market share and 25% (50%) market share associated with an output price differential of 9% (13%), and is much stronger in some African countries.

<sup>17</sup> To understand the effect of the price corrections, we re-estimated using nominal prices. The results in adjusted prices are perhaps a better reflection of underlying firm characteristics; the results in nominal prices may be a better reflection of how firms are actually doing in the sense that the local price levels determine profits, holding firm



Senegalese, Nicaraguan, and Kenyan counterparts, which are in the range of 75-80 percent of Chinese productivity. Ethiopia, Uganda, Tanzania, Nigeria, and Bolivia follow in the range of 45-60 percent, and Zambia, Eritrea, and Mozambique are in the range of only 30-35 percent of Chinese firms (Table 3.2 and Figure 3.1). These results are in line with most previous findings.

**Table 3.2. Results of Equations [1], OLS, Adjusted Prices**

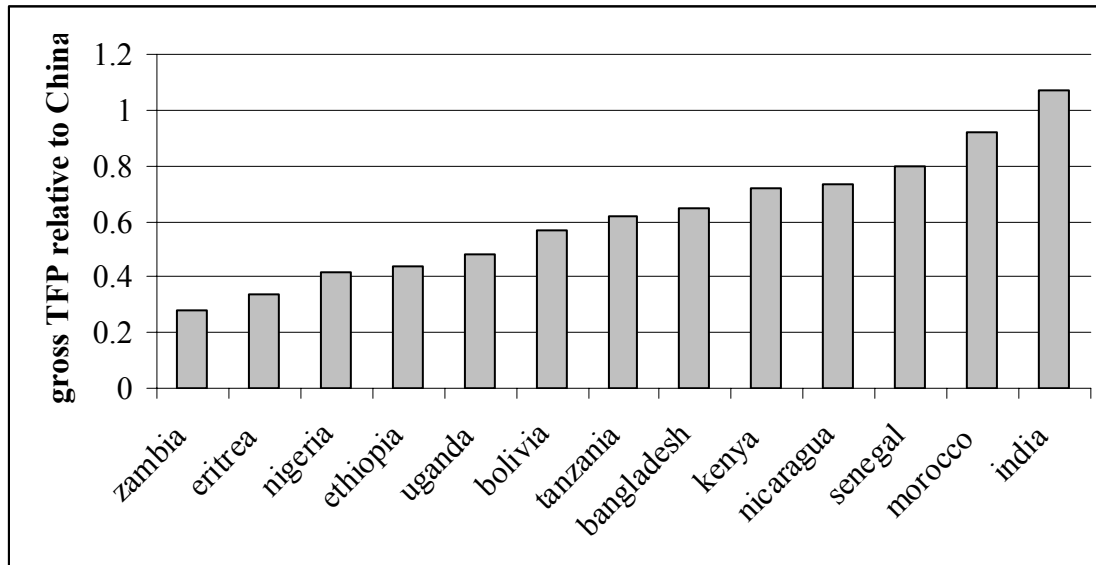
	$\tilde{A}$ [1]	
	Coefficient	Std error
Constant	4.38	0.23
Log Capital	0.40	0.02
Log Labor	0.66	0.04
Bangladesh	1.11	0.11
Bolivia	0.96	0.13
China	1.53	0.11
Eritrea	0.43	0.19
Ethiopia	0.69	0.13
India	1.62	0.11
Kenya	1.20	0.14
Morocco	1.46	0.11
Mozambique	0.38	0.18
Nicaragua	1.21	0.12
Nigeria	0.67	0.15
Senegal	1.30	0.15
Tanzania	1.08	0.14
Uganda	0.80	0.14
Chemicals	0.27	0.35
Food & beverage	0.67	0.29
Metals & machinery	-0.06	0.31
Textiles, garments & leather	0.21	0.28
Wood & furniture	0.74	0.40
L*ch (interaction)	0.11	0.06
L*fb	0.07	0.05
L*m	0.04	0.05
L*tgl	-0.12	0.04
L*w	0.20	0.08
K*ch	-0.04	0.03
K*fb	-0.07	0.03
K*m	-0.02	0.03
K*tgl	-0.14	0.03
K*w	-0.14	0.04
observations	7,011	
R <sup>2</sup>	0.65	

*Notes:* Omitted country: Zambia. Omitted sector: other. Re-estimation without the “other” firms makes little difference to coefficients on factors or country dummy variables.

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characteristics constant. The patterns in the results are similar, but countries with high price levels (especially Zambia, Senegal, and Tanzania) appear somewhat stronger using nominal figures.

**Figure 3.1. Average Gross TFP by country, relative to China**



### ***Results of Previous Analyses of African Productivity***

Previous studies suggest that while factory-floor productivity is relatively low in many African countries, it is not low enough (relative to wages) to explain the continent’s weak manufacturing competitiveness. For instance, 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, but that this differential is more than made up by lower wages (see table 3.3). If factory-floor productivity is the bottom line for competitiveness, garment firms in Madagascar, Kenya, Ghana, Mozambique, and Lesotho might dominate those in Chinese export-processing zones, with 40-60 percent of the physical unit labor costs (per men’s casual shirt).

These findings mirror earlier work by Biggs et al. (1995), which suggests that African firms are well placed to compete on labor costs. Gelb and Tidrick (2000) cite evidence on the cost structures of African firms in the 1990s, suggesting that labor costs are a relatively small share of total costs (less than 20 percent) and that other types of costs may be more important. Eifert and Ramachandran (2004) note that the ratio of labor costs to value added at the firm level (a common proxy for unit labor costs) has less predictive power than previously suggested with respect to manufacturing performance at the country level within Africa.<sup>18</sup> This finding indicates that the focus on factory-floor productivity and labor costs might be too narrow.

<sup>18</sup> The “most competitive” countries using this benchmark appear to be Eritrea and Nigeria, whereas Mauritius (Africa’s only major manufacturing success story) and Uganda (which has experienced rapid growth in manufacturing over the 1990s) have relatively high unit labor costs.

**Table 3.3. Factory-Floor Productivity and Labor Costs in Garment Assembly**

	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)

Much of the literature on the business environment spurred by the IC surveys has focused on explaining variation in (gross) TFP using “hard” (non-perceptions-based) indicators in areas such as infrastructure quality, regulatory burden, and product market competition.<sup>19</sup> On the one hand, studies that exclude country fixed effects find large effects of business environment variables on TFP (Batsos and Nasir 2004). However, the problem of unobserved variables is vast: any explanatory variable that differs enough between Africa and its higher-performing comparators produces large, significant effects. The indirect nature of potential linkages between business environment variables and TFP further compounds the omitted variables problem. On the other hand, studies that include fixed effects find a lesser role for business environment variables (Dollar, Hallward-Driemeier, and Mengistae 2003). In the case of variables that are essentially cross-country in nature (such as port quality), identification is very difficult. Pooled multi-country estimations—even those that include country dummies—are limited in understanding the complex interactions of the explanatory variables. If the binding constraints on firm performance vary across countries, there is no reason to expect similar-magnitude effects of individual business environment components across countries.<sup>20</sup> In general, while further econometric on firm-level TFP with a set of business environment variables on the right hand side may advance the state of our knowledge, we take a different approach, first considering the impact of losses in reducing TFP and then including indirect costs available as percentages of sales. This does not include all business environment-related costs, risks and losses, but provides some idea of how aspects of the environment affect competitiveness.<sup>21</sup>

<sup>19</sup> Some of this literature focuses on the propensity to export and finds this to be strongly correlated with productivity measures (Clarke 2004; Dollar, Hallward-Driemeier, and Mengistae 2003).

<sup>20</sup> In our data, productivity regressions on BE variables such as time to enforce a contract, number of inspector visits, and the percentage of senior management time spent dealing with regulation do not produce strong results.

<sup>21</sup> Recent work by Escribano and Guasch (2005) provides useful methodological bases that point in this direction.

### *The Impact of Direct Losses on Factory-Floor Productivity*

The investment climate surveys provide information on a range of business losses which are helpful in understanding productivity shortfalls. One example is losses due to power outages. Variants of the following question were widely asked: “What percent of 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 ruined due to processes being interrupted.” Similar questions were asked about problems with infrastructure-related issues such as delays in logistics, and transport failures, all areas that may be plausibly interpreted as costs to the firm (that is, production or sales revenue would have been higher if the failures had not occurred). Our data indicate that losses due to shipping delays or holdups at ports are significant in some countries. Unfortunately only losses due to power failures are systematically available for all the countries in our sample.

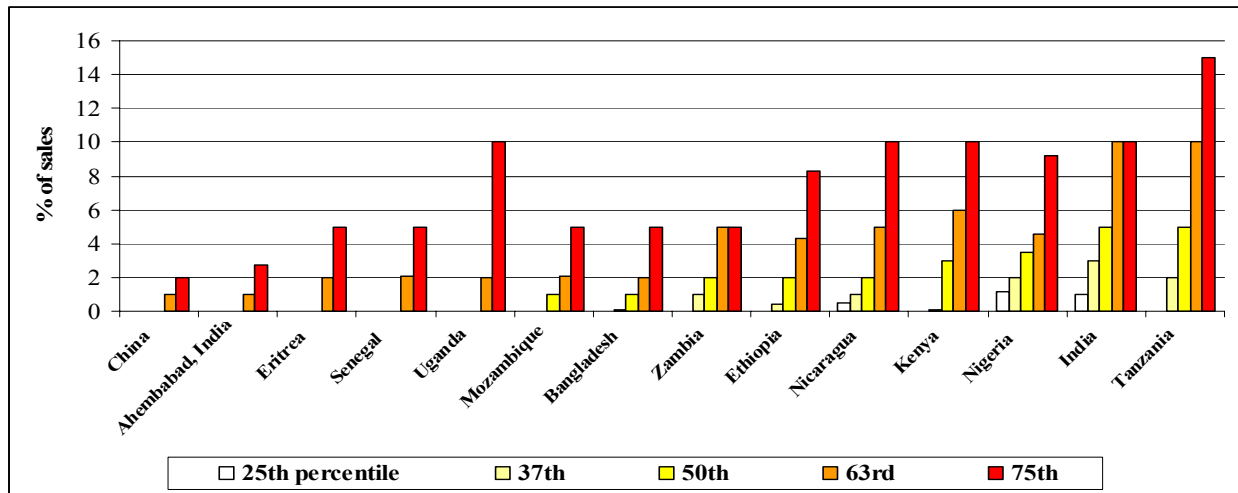
African firms report substantially higher losses than their counterparts in higher-performing countries (Figure 3.2), which translates into a corresponding decline in measured productivity. This result also holds up when regressing the log of gross TFP on losses from power outages. From our data, the coefficient is roughly 0.01, so a reported loss of 1 percent of sales is statistically associated with 1 percent lower gross TFP. A substantial portion of the variance in measured productivity between China and several African countries (especially Zambia, Ethiopia, Kenya, Nigeria, and Tanzania) can be attributed to infrastructure and logistics-related losses rather than their intrinsic capabilities. In Kenya, losses from power failure amount to 6% of sales for the median firm; in China, they are only 1% of sales. Interestingly, power failure is the one variable that Dollar, Hallward-Driemeier, and Mengistae (2003) found to be robustly associated with TFP.<sup>22</sup>

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<sup>22</sup> Further econometric on firm-level TFP with a set of business environment variables on the right hand side may advance the state of our knowledge on productivity (Escribano and Guasch, 2005).

<sup>28</sup> We recognize that transport costs are often not included in measures of productivity because they do not directly affect the productivity of the firm. Our estimation of net value added lies somewhere between the strict definitions of productivity and profitability and consequently, we include the full set of indirect costs faced by the firm.

**Figure 3.2. Losses from Power Outages, Percentage of Sales, 25<sup>th</sup>-75<sup>th</sup> Percentiles**



***The Impact of Indirect Costs on Productivity***

We now focus on a range of indirect costs identified in various degrees of detail in the surveys. Table 3.4 displays the breakdown of indirect costs for each country at the level of detail available (some surveys have more disaggregated costs than others). Energy is consistently the largest component of indirect costs, averaging around one-third of the total. Transport tends to follow in the range of 5-15 percent, land costs cluster at around 10 percent, telecom and security in the range of 2-8 percent, and water at around 2 percent.<sup>28</sup> Marketing is often a significant cost (8-16 percent) where it is known. A range of items fall under the heading “other costs,” which typically includes items such as insurance, office supplies, travel costs, accounting, maintenance, and spare parts. This breakdown shows the relatively large burden of infrastructure and public services—energy, transport, telecom, water, and security costs—that together account for more than half of all costs described in this table.

Figure 3.3 provides a cross-country comparison of firms’ cost structures, including labor (wages, benefits), capital (interest, finance charges, machine depreciation), raw materials, and other indirect costs. In strong performers such as China, India, Nicaragua, Bangladesh, Morocco, and Senegal, the combination of energy and indirect costs are 13-15 percent of total costs, around half the level of labor costs. In contrast, this combination in most African countries accounts for 20-30 percent of total costs, often dwarfing labor costs. It is worth noting that capital costs—also tightly related to the business environment—appear to be a major component of costs in Ethiopia, Nigeria, and Zambia.

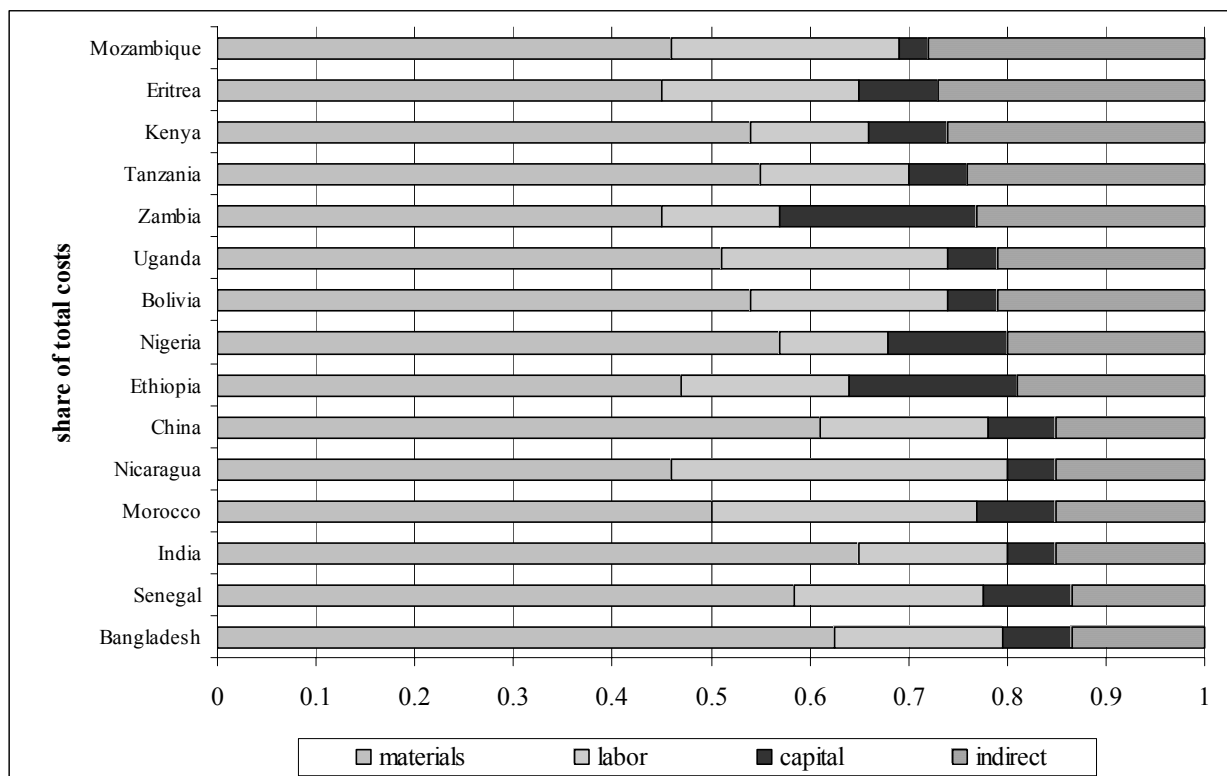
**Table 3.4. Composition of Indirect Costs by Country**

Category	Ban	Bol	Chi	Eri	Eth	Ind	Ken	Mor	Moz	Nic	Nig	Tza	Sen	Uga	Zam
Energy	0.18	0.16		0.26	0.45	0.37	0.35	0.51	0.20	0.32	0.28	0.59	0.59	0.21	0.32
Land rent	0.08	0.00	0.32		0.05	0.01	0.05	0.10	0.05	0.07	0.05	0.09	0.10	0.12	0.02
Transport	0.06	0.15	0.16	0.04	0.05	0.21	0.16	0.09	0.06		0.06				
Telecom	0.02	0.02		0.05	0.01	0.08	0.08	0.03	0.02		0.05				
Royalties	0.02	0.02			0.00	0.00	0.01	0.02				0.00			0.01
Water		0.05		0.02			0.02		0.01		0.02				
Subcontracting		0.05	0.18												
Security				0.00	0.02		0.07	0.03	0.02						0.04
Maintenance		0.04		0.09					0.08		0.32				
Spare parts		0.06													
Insurance		0.02	0.03						0.02						
Marketing		0.08	0.21	0.01					0.01		0.16				
Independent Professionals		0.03													
Office supplies		0.01							0.01						
Tickets, travel		0.02													
Export expenses		0.03	0.01												
Accounting				0.02							0.01				
Other costs	0.64	0.27	0.10	0.52	0.41	0.32	0.27	0.22	0.53	0.61	0.06	0.32	0.31	0.67	0.62

*Note:* The China ICS included energy costs as part of total raw materials costs; we assume that energy costs account for one-third of total indirect costs in China, equal to the average across the other 14 countries.

These cost breakdowns do not capture all factors that affect competitiveness. For instance, transport costs in Africa are much higher than in Asia and Latin America. To the extent that part of the excess is incurred indirectly in the form of higher prices for raw materials which we cannot directly observe, Figure 3.3 underestimates the magnitude of “real” indirect costs in Africa and the productivity gaps shown above are biased upwards, because African firms facing high transport costs may be using less physical raw materials than the dollar values suggest. Similarly, if particular services are complementary to capital and labor and firms choose to use less of these due to their high prices, there may well be a negative impact on sales and measured productivity. But on the other hand, if transport costs also raise the prices of outputs, the bias goes the other way. PPP adjusted exchange rates are a poor attempt to capture such subtle effects.

**Figure 3.3. Cost Structures, Firm-Level Average by Country**

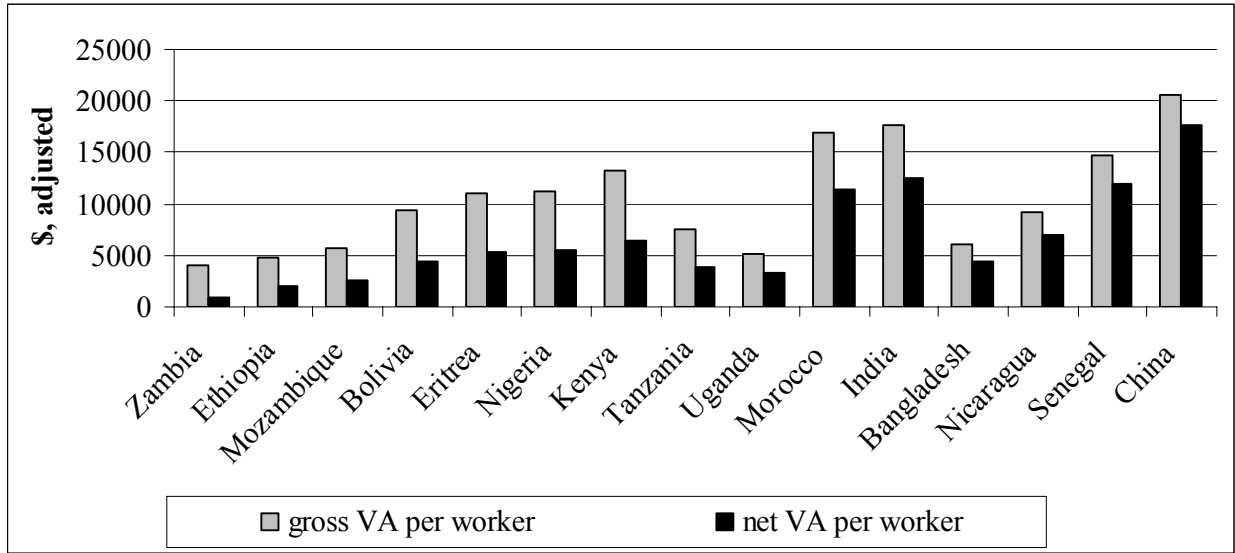


*Net value added is now defined as gross value added less indirect costs.*<sup>29</sup> As such, it is a broader indicator of firm performance than gross value added. Figure 3.4 compares these two concepts of value added in per-worker terms. In high-performing economies with relatively low indirect costs, median net value added is a high share of gross value added: 67 percent (Morocco), 71 percent (India), 74 percent (Bangladesh), 76 percent (Nicaragua), 82 percent (Senegal), and 85 percent (China). For Bolivia, Eritrea, Mozambique, Nigeria, Tanzania and Kenya, the range is 42-51 percent, suggesting a significant impact of cost disadvantages in these countries. For Zambia (22 percent), gross value added is already a small percentage of sales, so that indirect costs (including the cost of energy) badly squeeze the viability of manufacturing firms.

<sup>29</sup> Note that energy is included in our definition of net value added by including it in indirect costs (rather than including it in raw materials), so our term *gross value added* does not quite correspond to studies that include energy costs in raw materials. The breakdown of indirect costs and energy is given in Table 3.4. In the rest of this discussion, our use of the term “indirect costs” includes the cost of energy.

<sup>31</sup> In our data, some firms that have positive gross value added have high enough indirect costs that their net value added is negative. These firms are then dropped from the net TFP regression. This biases the estimated gap between net and gross TFP downward, because firms with low gross TFP are dropped. To correct for this, the estimated average net TFP level by country is corrected for the number of firms for whom net TFP is essentially zero.

**Figure 3.4. Gross and Net Value Added per Worker, \$ Adjusted**



Note: Dollars are adjusted for purchasing power parity and cost of consumption versus investment goods.

Net TFP is then estimated as:

$$[2] \quad \ln(\hat{A}_i) = \ln(Y_i - M_i - IC_i) - \alpha \ln(K_i) - \beta \ln(L_i) - \delta Z_i$$

Where  $\hat{A}_i$  is net TFP,  $IC$  is indirect costs, and  $(Y-M-IC)$  is net value-added. We estimate country averages of firm-level net TFP using country dummy variables to estimate gaps.<sup>31</sup> As before, several different methods were used to test for robustness including translog and CES functions and stochastic frontier methods. Again, all yielded very similar results for the country dummy variables. Therefore, we use the results for the simplest method--OLS estimates of a Cobb-Douglass production function. The index computed from the residuals of this estimation is shown in Table 3.5.



**Table 3.5: Estimation of [2]: Net Productivity Regression**

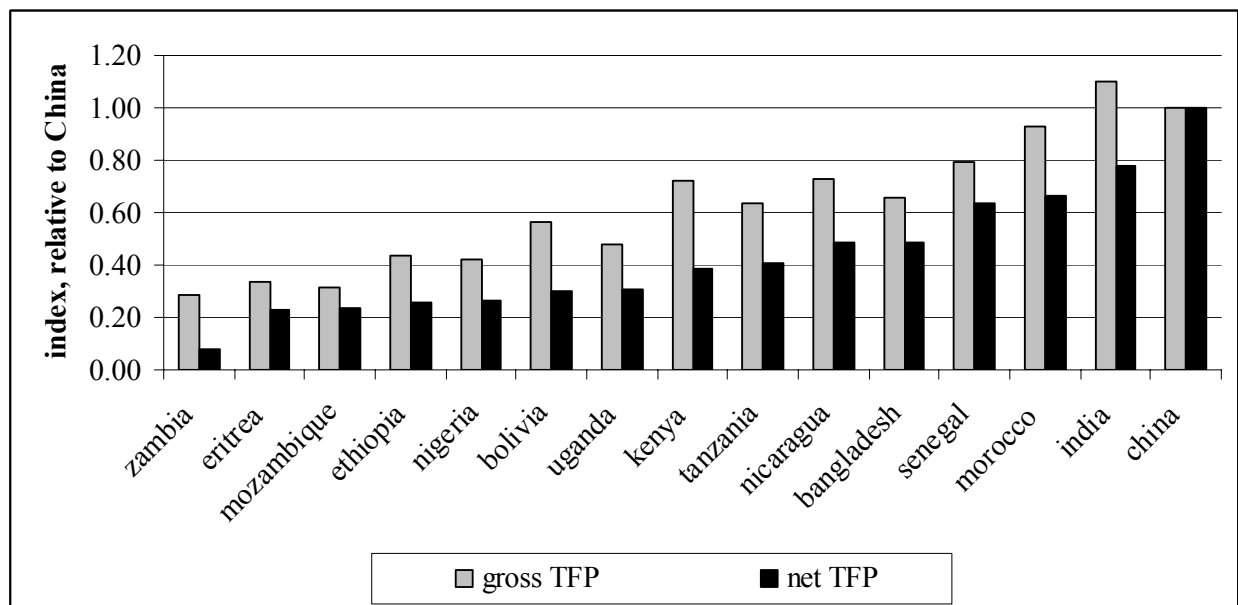
Variable	Coefficient	Std error
Constant	3.62	0.26
Log Capital	0.41	0.02
Log Labor	0.62	0.04
Bangladesh	1.70	0.14
Bolivia	1.42	0.15
China	2.27	0.14
Eritrea	1.16	0.23
Ethiopia	1.41	0.16
India	2.24	0.13
Kenya	1.61	0.17
Morocco	2.04	0.14
Mozambique	1.11	0.21
Nicaragua	1.79	0.15
Nigeria	1.18	0.18
Senegal	1.98	0.18
Tanzania	1.64	0.17
Uganda	1.36	0.16
Chemicals	0.49	0.39
Food & beverage	1.08	0.33
Metals & machinery	-0.07	0.34
Textiles, garments & leather	2.55	0.30
Wood & furniture	1.37	0.45
L*ch (interaction)	0.09	0.06
L*fb	0.11	0.06
L*m	0.03	0.06
L*tgl	-0.06	0.05
L*w	0.32	0.09
K*ch	-0.06	0.04
K*fb	-0.11	0.03
K*m	-0.02	0.04
K*tgl	-0.18	0.03
K*w	-0.22	0.05
observations		
R <sup>2</sup>		

The gap between African and other firms widens when we move from gross to net TFP, as indirect costs interact with other firm characteristics (Figure 3.5). African countries in the mid-range of 40-60 percent of Chinese gross TFP fall to 20-40 percent when net TFP is compared. Kenya, which appears relatively strong on gross TFP, falls dramatically on net TFP as a result of

<sup>33</sup> Trade reforms in Africa, for example, have 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 (World Bank 2000, chapter 7).

very high indirect costs. Zambia, the most extreme case, falls from 30 percent to 10 percent. Only in Senegal—the strongest African performer on both gross and net TFP—is the effect of indirect costs relatively low. African countries have shortfalls in factory-floor productivity, but high indirect costs further weakens their relative performance.

**Figure 3.5. Net and Gross TFP, Adjusted Prices**



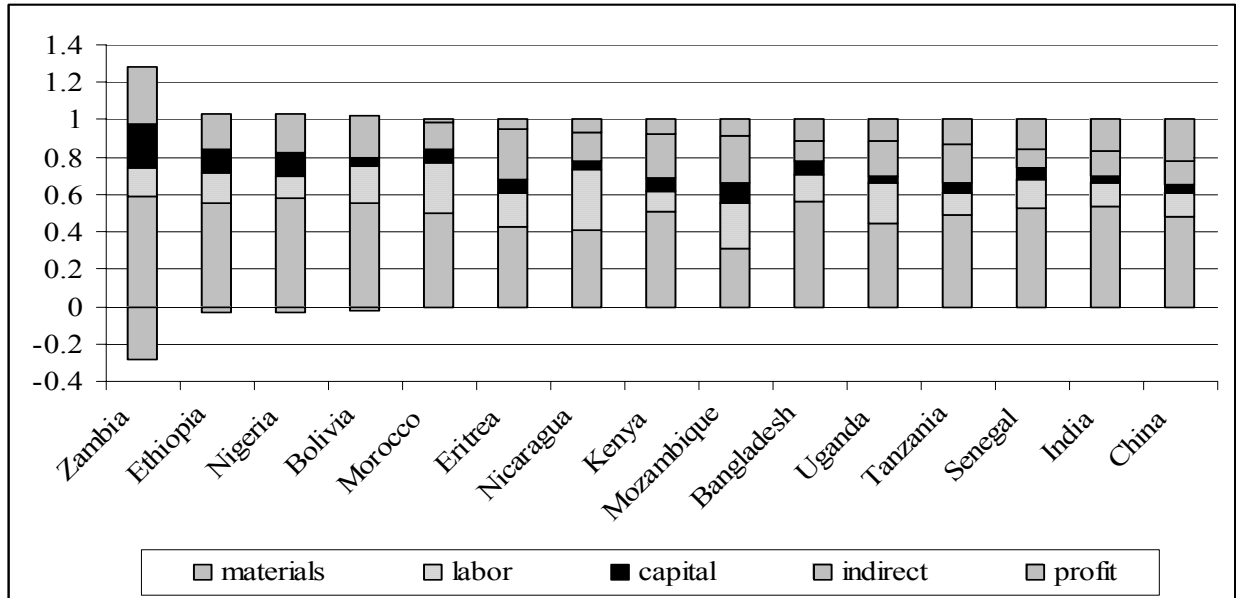
### *Profitability and Returns to Capital*

We now turn to a brief discussion of profitability. In figure 3.6, profits and cost subcategories are divided by sales and arrayed vertically so that the sum of profits and costs is one. Few African surveys indicate manufacturing sectors with high profit margins; this is further reflected in the returns to capital. Senegal, Tanzania, and Uganda stand out here as the strongest African performers, Senegal because of its high productivity and low indirect costs, and Tanzania and Uganda because of low capital intensity and labor costs. These three compare favorably to Nicaragua and Morocco on profitability, because firms in the latter countries face extremely high labor costs. However, China and Morocco have relatively low labor costs, high productivity, and low indirect costs, and firm profitability in these countries reflects these factors. Other than Senegal, Tanzania, and Uganda, returns in Africa are quite low, and sharply negative in Zambia.

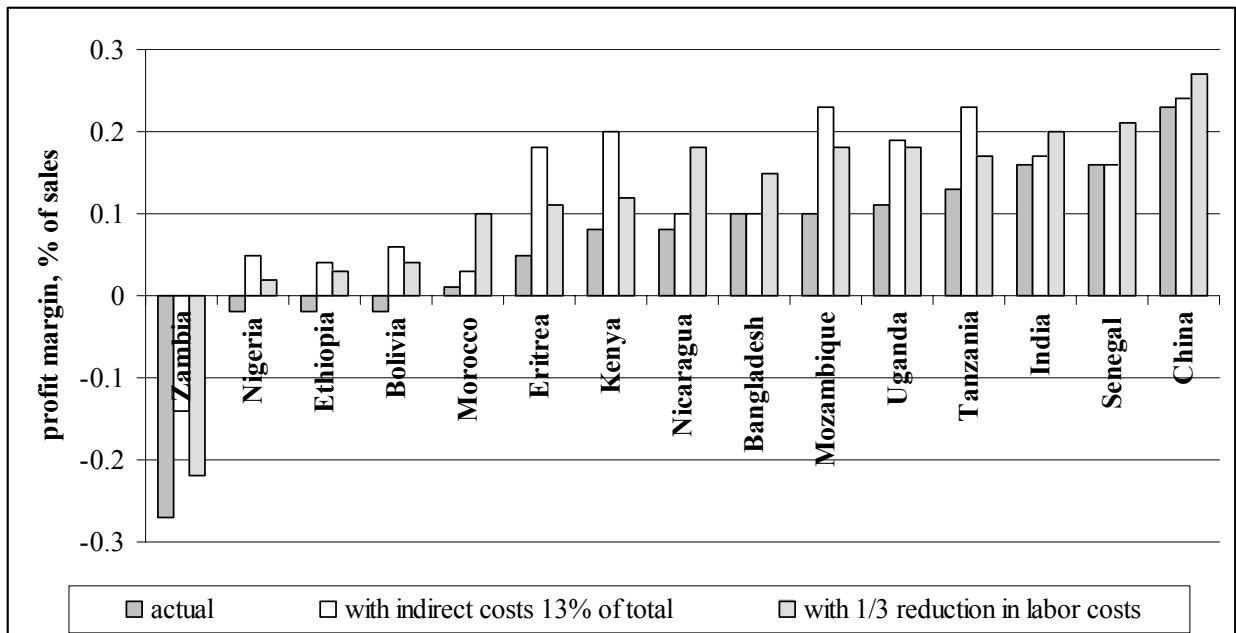
Figure 3.6 shows that indirect costs squeeze African firms heavily. Moderate reductions would sharply increase the viability of African manufacturing enterprises, pushing many firms out of the red and making just-profitable firms much more lucrative. For most African countries, even reducing indirect costs as a share of total costs to the level of Senegal would have a greater effect on profit margins than would a halving of labor costs. Figure 3.7 and Table 3.6 present

the results of alternative scenarios of cost reduction for African firms, showing profitability levels and rates of return with reductions in indirect costs versus reductions in labor costs. On a related note, the three African countries with high capital costs as a share of total costs (Zambia, Ethiopia, Nigeria) are also the three least profitable countries.

**Figure 3.6. Cost Structures and Profits in Manufacturing**



**Figure 3.7. Profitability, Actual and Counterfactuals\***



\*means, 5<sup>th</sup> to 95<sup>th</sup> percentiles

**Table 3.6. Return on Capital, Actual and Counterfactuals (Firm-Level Medians)**

Country	Actual	With indirect costs reduced to 13% of total costs	With 1/3 labor cost reduction
Zambia	-0.18	-0.08	-0.12
Bolivia	0.00	0.10	0.07
Ethiopia	0.01	0.04	0.03
Morocco	0.02	0.03	0.08
Nigeria	0.02	0.04	0.03
Mozambique	0.03	0.14	0.08
Eritrea	0.04	0.07	0.05
Kenya	0.08	0.20	0.11
Uganda	0.16	0.31	0.29
Nicaragua	0.17	0.19	0.40
Senegal	0.21	0.21	0.28
Tanzania	0.26	0.57	0.33
Bangladesh	0.35	0.35	0.54
China	0.38	0.39	0.45
India	0.71	0.76	0.93

*Note:* Return on capital is calculated as profit / replacement cost of capital stock.

Reducing indirect costs might be expected to boost profitability by an equivalent amount, but the complex interactions between costs and firm behavior suggest that simple arithmetic is not always on target. For instance, firms facing lower indirect costs and more reliable power supplies may use different technologies and more business services, further increasing their productivity and profitability. Also, part of the increases in profit margins may accrue to workers in the form of rent-sharing and higher wages. This suggests that further work should study the role of different types of costs in more sophisticated models of firm behavior.

#### **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 by high government official 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 sparse economies. The ICAs indicate a long list of entry barriers; the *Doing Business* indicators confirm that they tend to be high in Africa and that progress in reducing them 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?

Money is part of the problem—easing the severe infrastructure constraints identified in the surveys and contributing to high indirect costs requires major investments. But many other aspects of the business climate involve improving the delivery of business services, 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. The 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. These structural and institutional features of African business sectors contribute to the political economy problem.

#### **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 (1999) 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, 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 business expertise (Tangri 1999). Van de Walle (2001) reinforces this perspective, arguing that the political elite in Africa have learned to adapt to the currency of reform, while finding ways to preserve rent-seeking arrangements:

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. (p. 170)

Thus, governments have simply changed their methods of rent-seeking in response to donor-driven reforms. 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.

Van de Walle argues that there has been little policy learning in Africa relative to Asia and Latin America. Technocrats within the government have often been hostile to reforms because their involvement and inputs are limited relative to foreign experts. 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.<sup>33</sup> All of this has served to reinforce the lack of momentum on private sector development.

ICAs are mostly technical, but some studies have begun to focus on the political feasibility of business climate reform. Reducing administrative barriers in Africa is enormously difficult, mainly because the state apparatus has long been used as to dispense patronage (Emery, 2003). Privatization programs have not been entirely successful at eliminating rent-seeking parastatals, and the privatization process itself has offered 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 that 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. Although 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 an adverse business environment, the fractured business community has less ability, and perhaps less incentive, to act as a powerful pressure group in favor of reform.

The difficulty of shifting out of such an equilibrium is mirrored in African attitudes toward 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 surveys. The Afrobarometer surveys are particularly useful (Bratton et al. 2005) in that they reveal widely differing 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, Tanzania, Uganda, and Zambia). Only in 6 countries did a majority of respondents feel that a market economy was preferable to an economy run by the government: in these, the percentage of respondents indicating this preference averaged only 54 percent. Only 24 percent of respondents in Botswana expressed a preference for a free market over a government-run economy, with 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.

In most countries a majority of respondents believe 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. Most reform programs are greeted with lukewarm support or outright opposition—62 percent of respondents supported user fees and 54 percent supported market pricing, but only 35 percent supported privatization, and 32 percent supported civil service reform across the countries surveyed. The results indicate that most Africans are skeptical that the private sector will deliver broad-based growth. This is consistent with the discussions in the press of elite capture of the private sector.<sup>34</sup>

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

African business is often segmented, with small clusters of large, foreign, and ethnic minority-owned firms that are quite different in character from their indigenous counterparts.<sup>35</sup> The performance of this small cluster appears to be much stronger than the average firm. Its firms tend to be considerably more productive and to be much more likely to export. They also seem to have far more market power, and to be able to sustain their presence in Africa despite economic and political uncertainties. 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.

This business cleavage is reflected in the surveys. In almost all the countries there is a strong relationship between foreign ownership and firm size (Table 4.1). In Africa, this relationship also extends to ethnic minority ownership: the average indigenous African firm in Uganda has 16 employees, compared with 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 4.1: Average Firm Size (Number of Workers) by Ownership**

Country	Domestic	Foreign	African	European	Asian	Middle Eastern	Other
Bangladesh	149	340					

<sup>34</sup> Nellis(2005) discusses the difficult political economy of privatization in Africa.

<sup>35</sup> In some countries, ethnic fragmentation between indigenous groups is also an issue. For more on this in Ethiopia, see Mengistae (2001).

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	

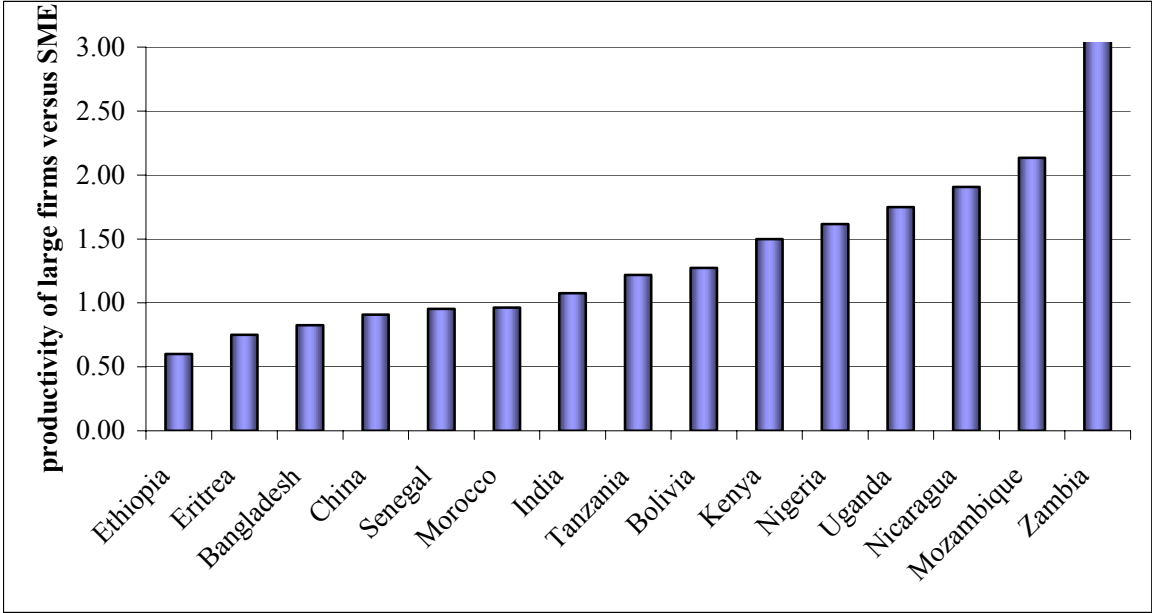
Large, foreign, and minority-owned firms in Africa tend to have higher productivity than indigenous firms and to export more than their smaller indigenous counterparts. Foreign and ethnic-minority firms outperform indigenous firms by a substantial margin in every country except Ethiopia and Eritrea. African business is thus segmented: small indigenous firms struggle to survive, while small numbers of larger, often foreign and ethnic-minority-owned firms have productivity levels closer to those of the average firm in high-performing economies such as 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, small and medium enterprises (SMEs) in India, China, Bangladesh, and Morocco have productivity levels only slightly lower than of those of larger firms, but in Africa, the ratio is usually around 50 percent (Figure 4.2).<sup>36</sup>

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<sup>36</sup> Stochastic frontier analyses show that small firms in Africa are well below the production frontier.

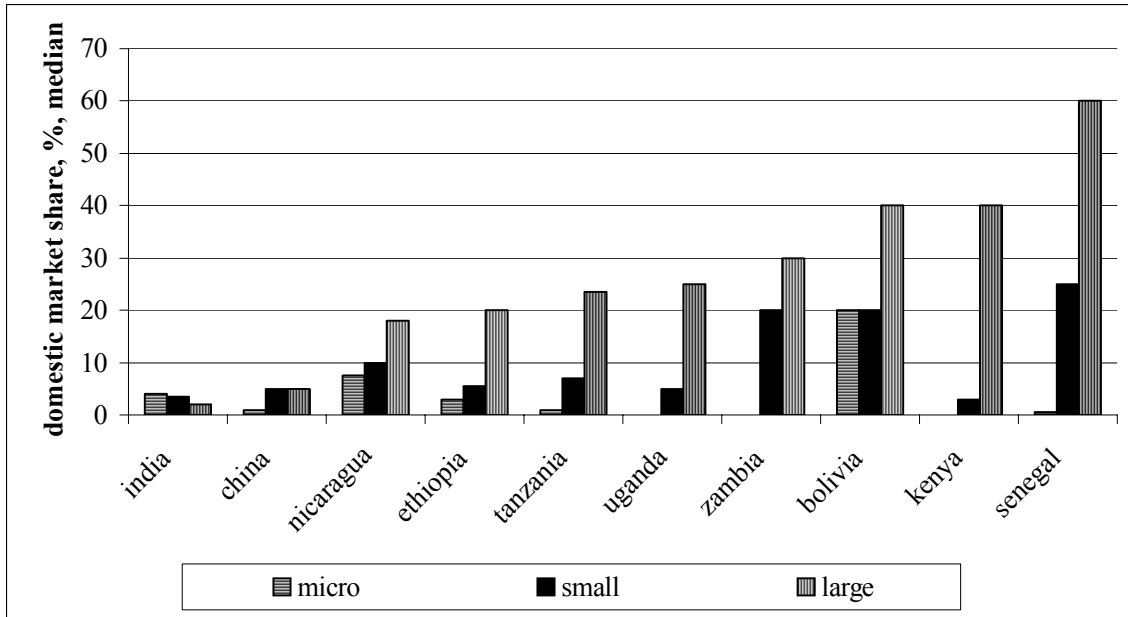


**Figure 4.2: Relative Productivity of Large Firms and SMEs**



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 possibly plays a role: although large firms are more likely to be exporters, many also sell to the domestic market and enjoy very high market shares (see figure 4.3.) Nigeria, the country with the least competition, is also perhaps the country with the least support for liberalization from the business community.

**Figure 4.3: Median of Firms’ Self-Reported Market Share, by Size and Ownership**



Although large firms face many of the same constraints as small firms, they are able to adapt to this climate in different ways. For example, 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 4.2). Finance is another service segmenting the private sector -- in many countries in Africa and elsewhere, the share of large firms with access to credit is much higher than that of small firms. Productivity differentials are in part related to access to finance; controlling for country fixed effects, firms that have a loan or overdraft account are around 6 percent more productive.

Table 4.3 shows the amount of time that firms are in contact with the government, and that large firms bear a substantially greater incidence of dealing with regulations and regulators. This may be a real burden but, given the persistent profitability of most large, foreign-owned, and ethnic minority firms, this is also consistent with larger amounts of time spent exchanging favors with government and its representatives.

**Table 4.2: Share of Firms Owning Generator by Firm 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 4.3: Interaction with Government by Firm Size**

Country	<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

Finally, the role of networks in the African private sector is crucial to understanding the nature of the cleavages. Biggs and Shah 2004, show that the ethnicity of firms' proprietors remains an important determinant access to credit, and a number of other performance variables, even when variables such as the education level of proprietors and title to marketable assets are included in regressions. Networks, usually of ethnic minorities, and based on trust between members of a relatively small group, help firms to overcome the limitations of financial markets (Fafchamps

2004); at the same time, they effectively exclude outsiders from areas of business. Networks operate in many other regions, including fast-growing Asian countries where they may have similarly positive effects in enabling their members to compensate for dysfunctional market institutions. But their overall impact is likely to be different in Asia and Africa, because of differences in economic density and market size. In Asia, their adverse effect in stifling competition is likely to be small because of the competitive pressure of many firms belonging to many networks. However, in Africa's very small economies, the adverse effect of a few dominant networks or firms is likely to be far larger. Firms in sparse economies are likely to weigh more heavily the costs and risks of encouraging entry through reforms than are firms in dense economies..

Small, sparse, industrial sectors dominated by a few firms with high market share are therefore likely to see less dynamic competition. The greater access of the larger and networked firms to technology, credit and business expertise creates rents which, even if shared with government, would be dissipated by more open entry. This can reduce the incentive to push hard for better regulation and business services. And even though much of the benefit of reforms may accrue to small firms, these doubt their ability to compete and are anyway often not the dominant business sector. At the same time, the prominent role of minority and expatriate business increases public reservations over the market economy model, including over large privatizations (Nellis (2005)). The danger is a low-level equilibrium, with limited pressure for reform from the business community and the public, and limited response from government.

Business environments usually improve slowly, but some argue that 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 also observes that the World Bank has made several loans to Kenya for road improvements with little to show for it. Technical recommendations for change will need to take into account this complex political economy.

## **5. CONCLUSION**

The main issue raised in this paper is the importance of including losses and indirect costs in firm-level analysis. Not all risks and costs characteristic of poor business environments are covered, only a set distinguished in firm surveys and expressed relative to sales revenues. Conventional or "gross" TFP, a "factory floor" concept, can be extended to "net" TFP by incorporating indirect costs into a net analog of value-added, so including a wider span of operational costs born by the firm. Net TFP varies much more across countries than gross TFP. In general, African firms rate low on gross TFP, in the range of 40-80% of China's level, depending on how estimation is done. Part of this gap in gross TFP is accounted for by excessive output losses caused by factors external to the firm. The relative performance of African firms drops further when net TFP is used to compare firms across countries, to only 20-40% of China's productivity. For most African countries, reducing indirect costs even to the

level of Senegal, the best performer in the African group, would have a greater impact on profit margins than halving labor costs.

Macroeconomic data confirm that Africa tends to be a “high cost” region, and the firm-level estimates provide confirming evidence of how high costs impact on industrial competitiveness. Countries that have been able to diversify into manufactured exports tend to have low cost levels relative to PPP predictions and also lower indirect costs to firms. In many African countries, the problem is not so much that labor is high cost relative to factory-floor productivity. It is rather that high indirect costs and losses lower the return to labor in production and thus depresses labor demand and real wages. This 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, although 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 working in a relatively good business environment.

The second issue raised in the paper is the segmentation of African business sectors on the basis of ethnicity, ownership and firm size. Large, foreign, and minority firms typically have much higher factory-floor productivity than their smaller indigenous counterparts, although they still face high costs. Even though these firms are more likely to export, they also sell domestically, and tend to have very large shares in their small, sparse markets. This may reduce competitive pressure and the drive to innovate and expand. Ethnic and structural cleavages in African business sectors also have implications for the political economy of reform. Poor business environments generate entry barriers that provide larger firms with anticompetitive rents. Firms that might potentially push for reform are therefore faced with a choice between a hostile business environment that they have learned to negotiate and an unknown situation with potentially large increases in entry and competition.

The likelihood that this equilibrium will be sustained is buttressed by the ambivalent attitudes toward 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. 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, quiet acquiescence on the part of the private business sector, slow entry, continuing sparseness of firms and entrepreneurial activity, and limited gains from competition and conglomeration. In the low-level equilibrium, measures to open Africa’s economies and improve regulation will have a limited effect because of the limited incentives to focus on business services and the institutional underpinnings 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 among governments, firms, and donors. However, in thinking about moving forward on the business environment agenda, solutions need to be framed by political economy considerations. Accelerating reform requires the difficult task of breaking up alliances between the private sector elite and the political elite. One approach is to pursue partial reforms which create new opportunities for the private sector while rents in established areas are slowly eroded over time. 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 will also be very useful in increasing economic density.

- *Focus on reducing the most severe indirect costs faced by firms.* In most countries, the availability and reliability of power emerges as a clear priority. Transport and logistics-related losses and costs are high in most countries, while telecommunications and security costs are high in others. The ICAs can help to benchmark some of these costs against more competitive countries, including within Africa itself.
- *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 reforms primarily benefit minorities or foreigners. 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 if offered to large ones. Capacity building is needed for the private sector (especially the indigenous private sector where productivity is low) as well as the public sector, Sub-Saharan Africa has not a single accredited business school outside of South Africa.
- *Enclave Growth to Increase Business Density.* Even if political resistance and weak capacity stalls sweeping countrywide reforms, it may be feasible to improve business services in limited, high-profile areas such as export processing zones (EPZs). Within EPZs, service delivery standards can be benchmarked and regularly evaluated; EPZs can also help to address the problem of low firm density; they can reduce infrastructure costs and encourage technology diffusion and knowledge spillovers. The *World Development Report 2005* highlights individual country experiences where firms in EPZs have developed backward linkages to small suppliers. EPZs may also serve to attract new entrants.
- *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 that 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 1990). 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 Selective Accelerated Salary Enhancement Scheme (SASE) (Levy and Kpundeh 2004).

- *Enhance the Profile and Credibility of Reforms.* Social sector indicators and reforms currently enjoy a higher profile in country-donor discussions, than business-related reforms, and the focus on performance standards has not yet carried through into the latter area. Innovative instruments could increase the visibility of business-related reforms. For example, donor-funded facilities could enable firms to purchase insurance against shortfalls in service delivery from standards agreed as part of reform programs—in customs clearance times, or value-added tax (VAT) rebates for exporters, initially within EPZs, or possibly against power outages. This would provide impetus for accurate measurement of performance (and targets to focus capacity-building efforts) and also ensure that lapses in performance are speedily raised to a high policy level. Once confirmed, these service standards and the insurance programs could be implemented more broadly across the economy. The objective is less to compensate business than to ensure that business-related services receive greater attention.
- *Capitalize on the Concern over Donor Dependence.* Increased donor dependence is inevitable for African countries if they are to embark on a determined push toward achieving the Millennium Development Goals. Yet countries such as Uganda and Mozambique, with 50 percent 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 1,000 donor meetings every year and prepares 2,500 donor reports every quarter, may also feel the need to reduce donor dependence (Birdsall 2004). More explicit linkage between private sector development and a reduction in donor dependence may serve to hasten the implementation of reform.

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## Appendix: Additional Data on Firm-Level Costs

### A.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 A.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 A.1.3. Response Rates by Size**

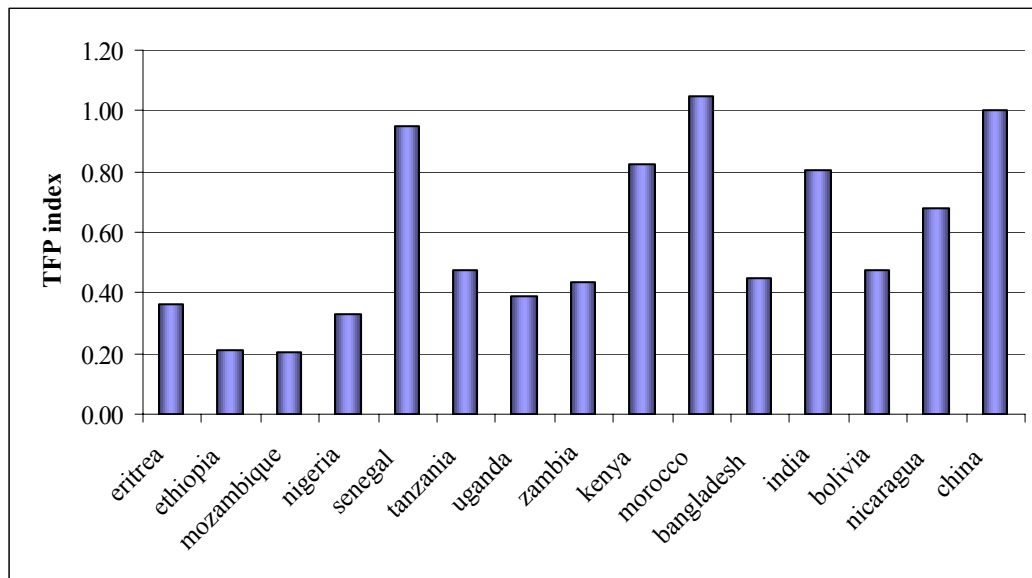
	Micro		Small		Medium		Large		Very Large	
	<i>Sales</i>	<i>Costs</i>	<i>Sales</i>	<i>Costs</i>	<i>Sales</i>	<i>Costs</i>	<i>Sales</i>	<i>Costs</i>	<i>Sales</i>	<i>Costs</i>
Bangladesh	0.68	0.6	1	0.91	1	0.94	1	0.89	1	0.94
Bolivia	0.22	0.11	0.86	0.58	0.87	0.72	0.83	0.67	0.87	0.78
China	1	0.38	0.99	0.69	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 A.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 <sup>a</sup>	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

a. 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 A.1.1 TFP Index Calculated Using Nominal Prices**



**Table A.1.5 Age Structure of Capital, Average (%)**

<i>Country</i>	<i>&lt;10 years</i>	<i>&gt;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 A.1.7: 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 A.1.8 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



