

Putting African Employment Growth in a Global Context: Impact of Access to Finance, Infrastructure and Regulations Across Firms

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Abstract: Using survey data from over 60,000 enterprises in 104 countries (including 11,000 enterprises in 34 Sub-Saharan African countries), the paper finds average firm-level employment growth rates are remarkably similar across regions. However, there are differences in the composition of firms that are growing. In low-income countries, the growth is relatively concentrated in the smallest firms, with medium and large firms growing less rapidly than in upper-middle and high income countries. Variations in the business environment in which firms operate helps explain these patterns along two dimensions. First, the relative importance of constraints differs across regions. Infrastructure weaknesses have a bigger impact in Africa, while improved finance and public services help raise employment growth relatively more in low-income countries outside SSA. In higher income countries, corruption has more of a detrimental effect. Second, there are significant differences in the impact of the same constraints across sizes of firms, with the effects particularly strong within SSA. Thus, while weak infrastructure generally lowers employment growth, within SSA this is true for larger firms while it is associated with raising employment among micro firms. Improved access to finance has a positive effect on employment growth across the size distribution in other low-income countries outside Africa, while within Africa, larger firms report less benefits. Overall, to understand the impact on employment growth, the impact of the business environment needs to be disaggregated not only across different types of constraints, but also to allow for non-linear effects in their impacts across firms. While employment growth remains high is good news in SSA, unless incentives and opportunities for micro firms to grow into larger firms are strengthened, there are longer run concerns about the efficiency of the allocation of resources and aggregate productivity growth.

* These views expressed here do not necessarily represent the views of either the World Bank or the Inter-American Development Bank or their Boards of Executive Directors.

I. Introduction

With the development spotlight increasingly focused on Africa, there is renewed interest in understanding the constraints to higher growth in the region. Recent findings have emphasized the role of the broader investment climate in shaping the opportunities and incentives for firms to invest, create jobs and expand (World Bank WDR 2005). This paper uses detailed firm-level data to examine how different dimensions of the business environment affect patterns of employment growth – comparing the recent experience in Sub-Saharan Africa (SSA) with other regions. The aim is to test whether the priorities for reform in SSA mirror those of other regions, in particular whether the top constraints faced by entrepreneurs in SSA are common across low income countries in other regions.

To examine the impact of the business environment on employment growth, the paper uses data from over 11,500 firms in 32 Sub-Saharan countries included in the World Bank's Enterprise Surveys. To put the experience of SSA into a larger global context, results are compared with those of 64 developing countries and 8 developed countries in other regions. The focus here is on employment growth as there is interest in understanding the scope for expanding opportunities for more people and as job creation is ultimately the vehicle for raising incomes in the region. These data are collected with a comparable instrument and sampling strategy, providing a unique source of disaggregated information on many dimensions of interest of the business environment. Covering the full range of firm sizes, they also allow for an analysis of how conditions vary across firm types that proves to be important in highlight priorities for reform.

Overall, the data shows that the average rate of employment growth in SSA is similar to the average in the other regions (Table 2, col 1 and 2). However, dividing by income groups provides some difference. To test how SSA countries could vary from other low income regions, countries are classified into three groups: low and lower-middle income SSA countries¹, non-African low or lower-middle income countries (LOW) and upper-middle or high income countries (HIGH). Table 2, column 3 tests whether the average

¹ Three of the SSA countries in our sample are upper-middle income countries (Botswana, Mauritius and South Africa). For the results presented here they are classified as SSA. Results are robust to their exclusion or their inclusion with upper-middle and high-income countries.

growth in LOW countries and in HIGH countries differ. They do not. However, what is different are the types of firms that are growing across the regions. Significantly more of this growth is concentrated in micro firms (those with less than 10 employees) in low-income countries, while small, medium and large firms are growing relatively faster in higher income regions (Table 2, col. 4). Among low-income countries, the overall size pattern in Africa mirrors that of other regions. However, whereas young firms are generally relatively more dynamic, we find this is less true in SSA, even compared to other low-income countries. Firms in smaller cities and towns are growing more slowly than those in the capital or other larger cities, with the gap even larger in SSA.

The paper traces how the business environment in which a firm operates accounts for these growth patterns. The paper finds a significant role of access to finance, infrastructure services, regulations and governance in explaining why some firms grow more than others. However, it is not just that the objective conditions of the business environment vary significantly across countries – and even across types of firms within a country. There are also non-linear responses to business environment conditions; the paper finds that different types of firms do respond differently to the same conditions. While some comparisons are made with the higher income countries, most of the attention is focused on low-income countries, comparing differences between Africa and other low-income regions.

Objective indicators of the business environment show that conditions are generally more challenging for firms in SSA. Power outages are more common, firms receive less formal external financing and can face greater delays in their interactions with officials. Within SSA, the constraints are often greatest for the smallest firms. Micro and small firms face significantly greater interruptions in infrastructure services, have less access to formal finance and pay more in bribes—as percentage of sales-- than do larger firms. On the other hand, larger firms spend significantly more time dealing with officials and red tape.

What is striking, however, is that these weak business environment conditions do not necessarily translate into lower employment growth in SSA. Allowing for the business environment to have differential impacts across size classes of firms helps explain what is underlying the overall response in SSA. Rather than simply lowering growth, some of the

more challenging business environment conditions are associated with expanding micro-firms. Average growth can thus remain high, mostly due to relatively higher growth among the smaller firms. This paper finds this pattern is more pronounced in SSA than in other developing regions.

Among the different dimensions of the business environment, the paper finds particularly strong roles for access to finance, infrastructure services and the regulatory environment. While greater access to finance is associated with higher growth, the beneficial association is smaller in SSA. The same level of finance translates into smaller increases in employment growth in Africa compared to other developing regions, particularly for larger firms. Unless other constraints are addressed too, additional finance is unlikely to be sufficient to raise growth.

For infrastructure, outages are more common in SSA, particularly for small and micro firms. However, while the impact is to lower the employment growth of large firms, they serve to encourage the growth of micro-firms in SSA. Part of this is due to the effect on the choice of technology and by encouraging greater substitution of capital for labor and the proliferation of labor-intensive micro firms.

There are also significant differences across regions on the contribution of government services and governance more generally. While delays and inefficient services dampen growth, access to public services is generally associated with higher employment – but only outside of SSA. In SSA, more interactions with officials have little impact or lower the growth of larger firms – but are associated with the growth of micro firms. In combination with higher rates of bribes among small firms, the incentives are to stay below the radar screen of officials.

Taken together, there are two patterns that stand out for SSA. First, the overall impact of the business environment on growth is more muted. For a given level of outages or access to finance, SSA firms reduce employment growth by less. Second, this can be understood by more pronounced differences in the response across different sizes of firms in SSA. Firm responses to potential constraints are more likely to serve to expand growth among the micro firms relative to larger firms.

After reviewing the literature in the next section, the paper describes the large firm-level dataset used in this work. The Enterprise Survey dataset has comparable firm-level data on both measures of the business environment and firm performance for 100 developing countries, including 30 from SSA. Section 4 then describes some of the differences in growth patterns in SSA compared to the rest of the world. Section 5 describes differences in more objective measures of the business environment, focusing on the four areas of infrastructure, finance, governance and regulation. Section 6 then combines these measures to examine their impact on employment growth. Results are presented in two forms. One looks at differences across countries, simply controlling for basic country characteristics such as GDP per capita, inflation, trade openness and recent GDP growth. Recognizing that there could be other important country characteristics that are not being controlled for, the second set of regressions includes country dummies, so that the variation being exploited is within country. It also analyzes whether there are non-linear responses to investment climate conditions across different size classes of firms. Section 7 provides some robustness checks, using alternative measures of the business environment. It also examines whether the same factors that account for employment growth also explain capital intensity. Section 9 concludes.

II. Literature Review

There are two strands of literature that this work draws on. The first is the literature that looks at firm sizes and growth in the context of development. The second is the growing importance given to measures of ‘institutions’ or the business environment in which firms operate and how they can impact employment growth across countries. Again, the discussion here focuses on the work done at the firm-level within SSA.

a) Firm size, growth and income-levels

Our finding that it is the smallest firms that are expanding employment in low income countries fits into a broader literature. It is not just that small and micro firms typically represent the largest share of firms and employment. There have been many studies that find a negative correlation between the extent of small-scale production and income-per-capita -- both across countries and within countries across time (Liedholm and Mead (1987); Banarji

(1978); Little, Mazumdar, and Page (1987); and Steel (1993), ILO 2003, Kantis, Angellini, and Koenig, 2004; Simmons, 2004.) If the smallest firms are most predominant in low income regions, lowering barriers to their growth could have substantial impact on aggregate employment.

There has also been much discussion of a 'missing middle' reported in low-income countries (De Soto (1989); Gauthier and Gersovitz (1997); Sleuwaegen and Goedhuys (2002); Van Biesebroeck (2005b) among others), implying that in these countries small firms have difficulty evolving into larger firms. There is also evidence that in Africa, larger firms are relatively more likely to have been started as large firms than to have grown into large firms (Soderbom and Teal (2004); Sleuwaegen and Goedhuys (2002)). Tybout (2000) reviews and discuss the main empirical findings regarding the manufacturing sector in developing countries and finds that contrary to extended misconceptions, developing countries do not exhibit less competition or turnover than industrialized countries, and that the dispersion of productivity is comparable to industrialized countries. However, he reports relatively greater obstacles for small firms to grow into larger scale firms.

Van Biesebroeck (2005b) based on a rich firm-level panel data highlights differences in the evolution of the size and productivity between firms in nine African countries and other developed countries. He observes that while surviving small American firms reach industry size and productivity levels in a relative short period of time, large and productive African firms contribute disproportionately to aggregate productivity growth. This raises concerns that while employment growth clearly has benefits, that it is occurring at higher rates in small firms implies that resources are not being allocated efficiently and that productivity growth suffers as a result.

b) Business environment and firm performance in SSA

A number of the authors cited above conjecture that the broader business environment in which firms operate could play a critical role in explaining these patterns of firm dynamics, although few have the data available to test this directly. This is in line with a broader interest in looking at which dimensions of the business environment matter for growth and improved performance. Publications such as the Global Competitiveness Report

and Doing Business are widely quoted and their rankings quoted in the media and by those advocating reforms that would improve their country's rankings. The macroeconomic literature stresses the importance of institutions in explaining longer run growth patterns. Several papers that examine a particular dimension of the business environment have found significant results (e.g. the effect of labor regulations (Botero et al, 2004; Heckman and Pagés, 2004), regulations of entry (Djankov et al, 2003, Klapper et al.) or creditor rights (Levine, 2005)). However, looking only at a single dimension carries the risk of omitted variable bias. Also, these aggregate indicators do not allow one to explore the rich diversity of experiences within a single country. This paper fits in the growing literature that uses firm-level data and disaggregated measures of the investment climate based on the actual experiences of the full range of firms.

The collection of new firm-level datasets in SSA, of which the Enterprise Surveys are a significant contribution,² have enabled new research into the determinants of firm performance within SSA. Eifert, Gelb and Ramachandran (2007) show how much higher indirect costs of production are for SSA firms compared to firms in Asia. Higher costs for transportation, electricity, water, security, marketing and accounting services can more than offset any advantage from greater productivity on the factory floor or from lower wage costs. A number of papers have looked at the effects of different individual dimensions of the business environment.

Bigsten et al. (2003) do find evidence of credit constraints among manufacturing firms in 6 countries in SSA. However, controlling for whether firms had a demand for credit and their productivity, the effects were significantly smaller. However, size effects did remain, with larger firms more likely to receive a loan. Fisman and Raturi (2004) also find significant links between trade credit and the degree of competition. Competition can actually encourage trade credit as a means of gaining customer loyalty. However, competition can be limited by infrastructure bottlenecks and small market size.

² A significant source of such data are the Regional Program on Enterprise Development (RPED) surveys carried out by the World Bank since the early 1990s. They were a precursor to the current Enterprise Surveys that have expanded the objective indicators collected as well as being fielded in countries around the world.

Van Biesebroeck (2005a) using manufacturing firm level data from nine African countries finds that credit constraints and failures in contract enforcement inhibit firms in the domestic market to exploit economies of scale. However, Frazer (2005) finds that despite inefficiencies in the business environment, at least in Ghana it is not the case that more productive firms are driven from the market and inefficient ones remain in business.

Collier and Gunning (1999a) argue that poor infrastructure is significant in promoting the proliferation and growth of small firms as local markets remain small. However, Clarke (2005) finds only weak evidence that transportation constraints lower exports. Bigsten et al. (2004) confirm the importance of using more objective measures as subjective measures can be endogenous to firm performance. For example, SSA firms most likely to complain about infrastructure were those that were most productive and in particular exporters. Using more objective information on the costs and time delays associated with infrastructure services is more convincing.

Reinikka and Svensson (2002) find that weak public infrastructure lowers private investment using firm data from Uganda, thus lowering capital intensity. Some firms do respond by investing in private solutions to problems in unreliable electricity and transportation, but they find the installed capital is often of lower quality when there is little complimentary public investment available.

Svensson (2005) notes that there is a significant correlation between corruption and a country's level of income. He finds that the level of corruption in SSA, while higher than in more developed countries, is where it would be expected given its lower level of income. This reinforces the importance of controlling for basic countries differences, including GDP per capita, in cross-country regressions, or for looking at differences with-in countries.

Fisman and Svensson (2007) use panel data from Uganda to show that corruption has significant effects in lowering sales growth. They find the effects of paying bribes to be three times larger than the effect of taxes. However, bribes can act as grease money, speeding up processes and delivering positive amounts. Here it will be interesting to test for the effects on the broader set of countries and for its effects on employment growth.

Beyond the direct benefits to individuals of expanding employment opportunities, there are additional benefits to having firms grow. One is the effect on productivity. With greater economies of scale, firms can raise their productivity and use their inputs more efficiently. They can be more likely to adopt more advanced technologies, reinforcing greater productivity (Collier, 2000; Bigsten and Soderbom 2006). And size has been found to be a significant predictor of the probability of exporting, controlling for sector and capital intensity (Rankin, Soderbom and Teal 2006). Given the smaller market size in SSA, this offers a significant way to expand market opportunities. It has also been found to have ‘learning-by-exporting’ benefits as firms gain greater knowledge about additional production, managerial and distribution techniques (Bigsten et al. 2004; van Biesebroeck 2005a).

These studies indicate that business environment conditions do affect firm decisions. This paper is the first to examine a range of them together and to link them to employment growth in SSA. It looks at multiple dimensions of the business environment simultaneously, minimizing concerns of omitted variable bias. Rather than relying on subjective rankings, it emphasizes the objective measures, i.e. monetary and time costs associated with completing various transactions or interactions with government officials. The paper addresses endogeneity concerns associated with subjective rankings of constraints by using objective measures and by using location-sector-size averages instead of firms’ own responses. It also considers whether selection is an issue driving the results. This paper is also the first to undertake a systematic comparison between SSA and the broader set of developing countries, drawing on data from 100 countries.

III. Data

To better address questions about business environment conditions and their impact on the performance of a wide variety of firms, the World Bank launched its program of Enterprise Surveys in 2001. To date, it has interviewed over 70,000 entrepreneurs and senior managers in 100 developing countries and 8 high income countries. Of particular interest here are the 11,600 interviews in 34 countries in SSA.

The Enterprise Surveys have four distinguishing features that make it particularly useful in this study. First, it can benchmark not only subjective rankings of investment

constraints to business performance (e.g. the extent to which electricity is rated as a problem), but also objective measures of these constraints (e.g. the frequency and duration of outages, production lost from outages, and the use and cost of generators). Second, it covers a wide range of issues: from access to financial and infrastructure services, crime, corruption and government regulations, allowing a ranking of these issues. Third, the data can also go beyond benchmarking to test directly the impact of these objective conditions on the actual performance of the firm, how the actual investment climate conditions affect the productivity and employment growth of respondents. Fourth, large, randomly selected samples of firms allow for results to be compared across types of firms, with particular attention paid to firm size. For many of the countries in the region, this is the only source of detailed information on firm performance and disaggregated objective indicators of a wide variety of business environment indicators.

Questionnaires are administered using a common methodology.³ The questionnaires use a common core survey, a set of identical questions that enable cross-country analyses. Countries have the option to add a limited number of additional questions to gather additional information on selected areas of particular interest to policy makers. The data includes countries in six different regions, covering the years 2000-2006.⁴ The median sample size is 350 firms, with several large countries having substantially larger samples (Brazil, China, India, Turkey and Vietnam have samples over 1500) (see Table A1 in the annex.) The sample of firms in each country is stratified by size, sector and location.⁵ Because of this stratification, large enterprises are, in general, over-sampled in the ESs compared to their share in the number of firms, but not in terms of their contribution to GDP. The unit of analysis is the “Establishment” in the manufacture and service sectors.⁶

³ From <http://rru.worldbank.org/InvestmentClimate/Methodology.aspx>

⁴ The exact set of questions asked does have some variation across countries, particularly among the earlier surveys, so regressions with multiple investment climate variables are based on a smaller set, generally approximately 48,000 firms in 80 countries.

⁵ From <http://www.enterprisesurveys.org/Methodology/default.aspx#weights>: ES have been conducted following simple random sampling or random stratified sampling. In a simple random sample, all members of the population have the same probability of being selected and no weighting of the observations is necessary. In a stratified random sample, all population units are grouped within homogeneous groups and simple random samples are selected within each group

⁶ In Europe and Central Asia, the unit is the ‘firm’; in all other regions it is the plant or establishment. As over 90% are single plant firms, the distinction is not likely to affect the results.

The ES data was developed to provide information on aspects of the business environment faced by firms as well as information on firms' performance. One question asks firm managers the extent by which a various aspects of the business environment are perceived as obstacles to firms' operations and growth on a scale of 0 (no constraint) to 4 (very severe). These perceptions are useful as they combine an assessment of the condition in questions (i.e. access to finance, corruption etc.) with its perceived impact on the firm. Access to finance, corruption, regulatory burdens and infrastructure are among the issues with the biggest relative differences across size of firms and so particular focus is given to these dimensions in their impact on firm growth.

The dataset also contains a set of objective measurements or time or monetary *costs* of those same perceived aspects of the business environment as they are being experienced by the firm. The larger set of variables that measure finance, infrastructure, regulations, rule of law, and labor and skills are in the appendix⁷.

Recognizing that some of the responses to the questions measuring business environment indicators could be endogenous to firm performance⁸, this paper takes two steps. First, it relies on objective rather than subjective measures of the business environment when analyzing the impact of the business environment on employment growth. Thus, instead of using the extent to which firms complain about finance or electricity, it uses information on the actual access to trade credit or bank loans, and the frequency of outages and the costs associated with these outages. Second, it uses location-sector-size averages (minus firms' own responses) of the business environment measures rather than the firm's own response. This captures the broader environment in which the firm operates and allows the firm's own contribution to the average to be excluded. To ensure adequate numbers of firms in each location-sector-size cell average, if there were fewer than 4 observations dimensions were combined for those firms in the small cell. The approach also has the

⁷ See Table A2 for a complete list of investment climate variables: perceptions and costs

⁸ It is not always obvious which way performance may influence responses. If firms are doing well, they may not see conditions as constraining and report lower levels of constraints. On the other hand, it could be that expanding firms are precisely the ones bumping up against constraints and that they complain more. These issues are explored in greater detail in Hallward-Driemeier and Aterido (2007).

benefit of not losing those observations where a firm did not answer all the individual business environment questions.⁹

This paper looks at SSA in comparison to non-African low-income countries (LOW) as well as to higher income countries (HIGH). The non-African countries are grouped on income rather than geography as this appears to be the more relevant dimension for comparison. Average rates of employment growth are very similar across geographic regions; however, the relative greater contribution of the smaller firms is common to low-income countries regardless of geography. The comparison of SSA and LOW also highlights how the impact of the investment climate does differ across the lower-income regions – both due to objective differences in investment climate conditions and firms’ responses to them.

IV. Patterns of Employment Growth

There is a large amount of dynamism among the incumbent firms in the survey with relatively high shares of firms expanding. Fully half of all the incumbent firms in SSA report having increased the number of workers they employ. Between 20-25% of firms reduced their number of workers, with the remaining 25-30% of firms maintaining the same number of workers.

What is striking is that the average rate of growth across firms does not vary significantly across regions (Table 2, col 1). Controlling for country characteristics (GDP per capita, lagged GDP growth, inflation and exports as a share of GDP) and firm characteristics (age, size, city, export status, ownership and sector), dummies for LOW and HIGHG countries are also not significant (Table 2, column 3).

However, there are differences across sizes of firms in growth rates.¹⁰ Micro firms grow at a significantly higher rate. Some of this is simply a result of their starting off small

⁹ This approach is very similar to using location-sector-size dummies as instruments (except that the firm’s own value is not excluded in this calculation, the number of observations averaged in a cell may be very small, and the additional observations cannot be recovered if a single investment climate variable is not available.). The test of overidentifying restrictions could not be estimated using the full specification due to the large number of dummies and instruments. However, in other work using smaller samples, the restrictions could not be rejected at the 0.3 level.

¹⁰ Other firm characteristics have the expected sign in terms of their correlation with growth. New firms are growing faster. Firms in capital cities are also growing slightly faster, possibly due to better access to services

so that the same increase in the number of employees is proportionately much higher for micro firms. This concern that growth rates can be so high for small firms is partly addressed by using Haltiwanger's method of converting traditional percent changes calculation of growth rates into the ratio of the absolute difference in numbers of employees divided by the average number of employees (Haltiwanger). This bounds growth rates between -2 and 2, greatly diminishing the impact of large outliers. (e.g. growing from 2 employees to 10 employees would be a 400% growth, or alternatively on the Haltiwanger measure, $(10-2)/6=1.33$). Even using the Haltiwanger measure of growth, micro firms are growing 14 percent faster than small firms, which in turn are growing 12 percent faster than very large firms.¹¹

Columns 1 and 3 then looks to see if there are significant differences across sizes of firms between SSA and the rest of the world. Size dummies are interacted with dummy variables for regions or for LOW and HIGH countries. The results show that small, medium and large firms are all growing faster in the richer countries. However, for low-income countries, there is no statistically significant difference in the growth rate of the size categories across regions.

While there is no difference in the average growth rates of micro firms in Africa compared to other low-income regions, there does appear to be differences in the dynamism of firms. Column 5 reports the result of a probit estimate of the probability of a firm that began as a micro firm was able to expand above 10 employees. The rate is 10 percent higher in LOW countries – which is substantial given the observed probability is 16 percent. With the same average growth yet lower transition rates, the growth in SSA really appears to be concentrated among the very smallest firms.

Table 1b gives another measure of dynamism. For each size category, it looks at the distribution of ages of firms. In SSA, the micro firms are more likely to be younger firms (38

and larger markets. Foreign owned firms are growing about 4.5 percent faster and exporters 8.5 percent faster. Compared to garments (the omitted category), textiles, food and agro-industry, and chemicals/plastics are growing faster, while retail employment was growing at a slower pace.

¹¹ Whether micro firms are actually creating more jobs requires additional information on the representation of these firms within the overall distribution of firms. What is true is that even with the higher growth rates, there would need to be substantially more micro firms growing to offset the impact of changes in larger firms, changes that while proportionally are small may still include a large number of people.

percent vs. 29 percent in LOW vs. 21 percent in HIGH countries). This higher share of young firms is consistent with greater entry, but also likely signals a higher failure rate of firms as fewer are able to remain in business for long periods of time.

V. Business environment: Comparing constraints between SSA, LOW and HIGH

To examine the possible role of the business environment in explaining these patterns, we begin with what entrepreneurs themselves identify as leading obstacles. Respondents are asked to rank 17 potential constraints and the degree to which they are obstacles to the operation and growth of their business. They are rated on a scale of 1 (no obstacle) to 4 (severe obstacle). Given concerns about differences in respondents' level of optimism or willingness to complain, the ratings are converted to a relative score. Subtracting the mean complaint for each respondent acts like an individual fixed effect (see Hallward-Driemeier and Aterido, 2007). The relative rankings of issues should help motivate which issues are worth exploring in more detail. Infrastructure, finance, regulation and corruption are all listed as top constraints in at least one region, but particularly striking here, are the differences in their relative importance across regions.

Table 3a shows the results of regressing the perceived relative constraint on firm characteristics, sector dummies and country controls (GDP per capita, growth, inflation and exports as a share of GDP) and dummies for LOW and HIGH countries. Thus, results should be interpreted relative to the levels in SSA, with each constraint a different row in the table. The first row looks at the overall average level of constraint, finding no significant difference between SSA and LOW, but that potential constraints are on averaged ranked significantly lower in HIGH.

There are three areas where constraints are relatively more constraining in SSA: access to finance, electricity and transportation. Electricity is 0.85 points (almost one standard deviation) lower on average in LOW and 0.99 points lower in HIGH. Access to finance is 0.46 points lower in LOW and .50 points lower in HIGH. Electricity is the top constraint in the SSA region, but is much lower down the list in all other regions except South Asia. On the other hand, a number of potential issues are reported as relatively more concerning for non-SSA entrepreneurs. Labor regulations are reported as more constraining

in LOW countries and even more so in HIGH, with labor skills also significantly more of an issue in HIGH. Policy uncertainty, the legal system and tax administration also rank relatively higher outside of SSA.

Table 3b then looks to see if there are significant differences in size patterns across regions in terms of constraints identified.¹² Interestingly, micro firms are overall less likely to report constraints, with the average level of complaint rising with size in SSA and LOW. In HIGH countries there is little relation of the overall level of complaint and firm size. For finance, the constraints are felt most strongly for micro firms in SSA, but significantly less so in LOW or HIGH countries. For infrastructure, complaints rise with firm size most strongly in SSA; smaller firms outside of SSA report electricity as much less constraining. On the other hand, labor regulations are more constraining for larger SSA firms, for LOW and HIGH they are more constraining even for smaller firms.

One of the benefits of the Enterprise Survey data is that these subjective responses can then be correlated with more objective measures of how these areas of the business environment impact firms. As shown in Table 4, there is a reason why infrastructure is the dimension with the biggest differences in severity of reported constraint. Firms in SSA experience more frequent interruptions in service and incur greater losses from these interruptions than do firms in other regions. In addition, they experience greater delays in getting access to infrastructure service; the time to get a phone line is 57 percent longer. The percent of production lost due to power outages is 4-5 percentage points higher in SSA. Clearly this is an area where SSA firms face greater challenges than their counterparts in most other regions, affecting their choices of technology, capital intensity and growth potential.

SSA entrepreneurs also face greater challenges in accessing finance. This is both true for simpler financial services such as an overdraft, where on average 17 percent fewer firms

¹² There are also significant differences across exporting and foreign owned firms (not shown but available on request). SSA exporters are particularly concerned about electricity and somewhat more concerned about labor and corruption, while less concerned about access to finance. While foreign owned firms report being relatively less constrained in the other regions, this is not true for SSA. Foreign firms are particularly concerned with corruption and crime, the two areas that had received lower rating overall in SSA.

have access to an overdraft in SSA than in HIGH, or in the trade credit offered by other firms. For bank credit, the share of working capital financed by banks is 4.2 percentage points lower in SSA than in LOW, which is about forty percent lower given the extensive reliance on retained earnings for financing in both regions. These findings corroborate emphasis placed on electricity and finance in the subjective rankings.

The results on corruption are more intriguing. LOW countries had complained relatively more about corruption. Yet, the data on the frequency of bribes is comparable to SSA and less than in HIGH, and the cost of the bribes paid “to get things done” as a share of sales are highest in SSA. For greater insights into this finding it is worth considering the results on broader interactions with the government and their impact on employment. As seen in the next section, government interactions have a positive effect in LOW but not in SSA. Demands for bribes may detract from these benefits more so in LOW, hence the higher reported level of constraints in those countries.

Table 4b further disaggregates the results to test if objective conditions vary across firm sizes and whether the pattern is different within SSA. While size matters for most dimensions (e.g. access to finance rises with firm size as does the time spent with officials or in inspections), the regional variation is most pronounced for finance. The evidence on access to finance shows that while larger firms have greater access to finance, the relative lack of access of micro firms is much more significant in SSA. Micro and often small firms outside of SSA are much more likely to have loans, sales credit or an overdraft. The other striking difference is that micro firms outside of SSA pay smaller bribes and spend less time in inspections.

This evidence on the objective conditions demonstrates that there are large and significant differences in conditions facing SSA firms compared to those in other developing countries. And, there are differences across firm sizes that are more pronounced in SSA. Together, three patterns emerge: First, micro firms do have less access to finance and face greater costs associated with corruption – particularly in SSA. Second, outages are more common in SSA. There is little size difference outside SSA, but within SSA, larger firms face more frequent interruptions. Third, while larger firms tend to spend more time with

officials, micro firms in SSA spend even less than those in non-SAS LICs. The next section then looks to see how these differences then translate into employment growth in different regions and across the size distribution of firms.

VI. The Business Environment and Employment Growth

Table 5 then relays these objective measures of the business environment to firms' growth performance. Four dimensions are focused on, finance, infrastructure, corruption and regulations, corresponding to the areas where constraints are seen as significant and where there were differences in objective conditions across regions or across firm sizes within countries. Incorporating multiple dimensions of the business environment simultaneously deals seriously with concerns of omitted variable bias of papers that only include a single dimension, e.g. labor regulations or finance. Results reported here include country dummies to capture any country effects that could be influencing employment growth. Table 5a tests whether there are differences in the impact of each dimension across regions, while Table 5b adds size-region interactions. Tables 6a and 6b show the robustness of results selecting alternative measures of the investment climate variables.

Table 5a column1 shows that there are significant regional differences in the impact of each of the four investment climate dimensions. Col 1 and Col 2 differ by the choice of infrastructure variable selected. Col 1 includes the frequency of outages and controlling for a firm's access to a generator. As this information is not available in Eastern Europe and Central Asia (ECA) countries, the sample size is smaller. Col 2 uses losses from outages as the infrastructure variable. Col 3 repeats the specification for the same sub-sample that has information on a generator to see if differences are due to sample selection issues.

Table 5a shows that access to finance is associated with higher employment growth – but not in SSA. For infrastructure, the frequency of outages does not come in as significant overall, although it does lower employment growth for LOW countries. The effect of losses from power is negative for all regions. While the effect is even more negative in LOW and HIGH countries, the effects are not significant unless ECA is excluded (Col 3). Corruption is associated with lower employment growth, particularly in HIGH countries when ECA is included. The findings on regulations are more sensitive to the infrastructure measure. With

‘frequency of outages’, the variable is not significant. With ‘losses from outages’, regulations are positive overall, and even more positive for LOW with the inclusion of Eastern Europe and Central Asia (ECA). This is consistent with an interpretation that spending time with officials is an indication of accessing public services.¹³

With average employment growth rates the same between LOW and SSA, the differences in the investment climate constraints help explain why. Compared to firms in LOW countries, firms in SSA grow more quickly in the face of infrastructure outages, while they expand more slowly in response to access to finance and government services.

Table 5b then looks in more detail at how the business environment impacts firms by size. The results provide interesting differences that allow for a better understanding of how the regional differences in investment climate priorities impact firms. For finance, the finding that finance is less beneficial for employment growth in SSA is due to significant differences across sizes of firms. The benefits are there for micro firms. However, these are almost completely offset for larger firms, even those in the 10-49 employee range. Certainly micro-finance has received a great deal of attention recently and microfinance has expanded in SSA greatly. What the challenge is then working to ensure that the benefits of expanded access to finance also apply to larger firms in the region. It is also worth noting that while micro firms in SSA are benefiting, they are still benefiting by less than their counterparts in other low-income countries, particularly if the Eastern Europe and Central Asia region is included. The result also underscores that simply addressing constraints to finance without addressing larger investment climate issues in the region are unlikely to deliver widespread results.

For infrastructure, the overall finding was that unreliable access lowered employment only in LOW countries. However, looking at differences by size and controlling for access to generators provides an important nuance to this result. In SSA, micro-firms actually expand employment by more in the face of outages. For larger firms the effect is negative. Overall, the two offset each other. But separately they show how infrastructure weaknesses

¹³ However, there is a limit to this finding. Inclusion of a quadratic term is negative, with the turning point occurring at a level that would affect about 10 percent of firms. (Aterido, Hallward-Driemeier and Pages 2007).

can work to shift down the average size of firm – lowering those of large firms while raising those of micro firms. Implications on the choice of technology are examined below.

For corruption, there are few significant differences by size. Within the HIGH categories, the effects are more detrimental as size increases (not shown, but available on request). However, despite differences across sizes of firms in the frequency and amount of bribes, there is no further non-linearity among LOW categories in the impact of corruption.

The beneficial impact of interactions with government officials was found to be missing in SSA for any but the micro firms. This is seen as being due largely to the lack of benefit to small firms. As these are the firms for whom access to public services is supposed to be an important incentive for joining the formal sector and growing, more needs to be done to reduce red tape and/or improve the quality of services provided by the government. Otherwise, their incentive will be to remain small and stay under the radar screen and avoid as many of the regulatory requirements.

These results confirm the overall importance of business environment conditions – and that there are significant differences in the impact of conditions between micro and small firms as well as between micro and large firms. In fact, in other work (Aterido et al. 2007), the merging of micro and small firms into a single category or the elimination of the micro firms from the analysis greatly mutes the message that it is the smaller firms that would benefit from a stronger business environment. With results across firm sizes most pronounced in SSA, analysis in the region needs to be disaggregated to gain a fuller understanding of the constraints and their impact across firms.

VII. Robustness

A number of robustness checks and extensions were conducted.

Selection: One concern is that endogeneity is operating at a different level, that firms might be selecting locations based on the quality of their business environment. A correlation between a better environment and better performance could simply reflect that better firms are more likely to locate there. To address this concern, the results are repeated in Table 5, columns 4, excluding all firms that are most likely to be footloose, or likely to

choose a location other than the one where the entrepreneur is from. Foreign owned firms are mobile in this regard and larger firms are also more likely to be more strategic in their choice of location. The regressions are thus run again for domestically owned firms only, excluding large firms. The results are extremely robust, casting doubt that selection is much of the story.

Other dimension of growth -- sales: The basic specifications from Tables 5a and 5b column 1 are repeated using sales growth as the dependent variable in the last columns of these tables. The most striking finding is the similar role that finance plays – or rather only seems to play only for micro firms in SSA and the more positive role for all firms in LOW. Corruption now appears to have a small positive effect on sales for micro firms in SSA.

Other investment climate variables: The other dimension to illustrate the robustness of the results is to include other measures of the four areas of the business environment of interest. Table 6 uses the availability of an overdraft as another proxy for the availability of finance; the frequency of government kickbacks on contracts instead of the size of bribe payments and two alternative dimensions of regulations, the time to clear customs and the consistency of enforcement. The results do provide some nuances to the story, although the overall message remains.

Finance: The alternative measure of finance gives even stronger results. Greater access to finance, even of a less formal nature, is associated with higher employment growth overall, but the effect is still smaller in SSA and the benefit drops off with firm size. This underscores the importance of tackling financial access in the region, not only regarding longer term credit, but even measures to deal with short-run cash flow concerns.

Infrastructure: Another dimension of infrastructure that appeared important in the ranking of constraints was transportation. The measure included here captures losses from delays in transportation. The overall impact is actually positive in SSA, while negative in LOW. Large firms in LOW are particularly hit by losses in transportation.

Bribes: For bribes, there was little difference in measures used. Without ECA and the use of ‘outages’ as the infrastructure variable, there is little influence of the effects of

corruption except in HIGH countries. Results using the frequency rather than the cost of bribes yielded similar results.¹⁴

Regulations: For access to public services or regulations, two measures were used. The first measures the consistency with which regulations are enforced (col 3). This measure had no impact in SSA except for the largest firms, although it was associated with higher growth for all but micro firms in LOW countries. Column 4 looked at the efficiency with which a particular regulation is enforced, namely the time it takes to get goods through customs. Here, the overall effect is significantly negative, with no differences in impact across regions. This confirms that red-tape and bureaucratic inefficiencies are costly. Thus, the original measure, the overall time managers spend with officials, appears to provide a middle ground between these other two measures. On the one hand, interactions with officials are associated with access to some public services. And this has a significant positive effect on employment growth, an effect that is particularly concentrated among micro firms. This is good news for encouraging the smallest firms to grow and underscores the potential benefits of becoming formal.

Effects on capital intensity of firms

As discussed earlier, the greater frequency of outages is associated with tilting growth towards micro firms, particularly in SSA. One explanation is that in the face of more frequent outages, micro firms make different choices in terms of technology. To test this, Table 7 looks at firms' capital intensity. These results are only available for a subset of countries as the information was not included in all the surveys. The results do indicate that in areas with more frequent outages, micro firms in SSA are indeed likely to have significantly lower capital intensity, but that for other size classes the effect is not significant. What is also striking is that increased access to finance is not associated with greater capital intensity in SSA, although it is in other regions. Looking at losses from power outages, there is a similar finding that it is associated with lower capital intensity in micro firms in SSA, but not for larger firms. In LOW countries the effect is even positive (not controlling for generators). That micro-firms in SSA respond to weaknesses in infrastructure and finance by increasing

¹⁴ Olken's paper on the determinants of bribes paid in Aceh, Indonesia explores this link between the frequency of bribes and their size.

their labor intensity compared to other firms and regions clearly helps explain why overall employment growth is comparable in SSA, but it raises concerns for the longer run productivity associated with such an allocation of resources.

VIII. Conclusion

The paper has documented how the business environment in which firms operate varies significantly across types of firms. Firms in SSA do face greater obstacles in terms of finance, infrastructure, public services and governance. And within SSA, the constraints are often greatest for the smallest firms. What is striking, however, is that weak business environment conditions do not necessarily translate into lower employment growth. They are associated with shifting down the size distribution, lowering the relative growth of larger firms, but, in some cases expanding the growth of micro-firms.

The results provide implications for priorities for reform in SSA. First, among the areas of the business environment, improving access to finance would help raise firm growth across the size distribution. It would particularly benefit the smaller firms that have less access and for whom a given increase in finances is associated with a greater increase in employment. However, improved access to finance alone is not sufficient, particularly where other constraints are significant. For larger firms to share in the benefits of improved finance, some of these other constraints will need to be addressed.

Second, addressing weaknesses in infrastructure, particularly reliable electricity and transportation would reduce the distortions affecting the choices of technology and capital intensity that should lead to higher productivity and the more efficient use of resources.

Third, improving government services would significantly lower incentives to remain very small so as to avoid costly burdens of compliance and increase the benefits of public services (property rights, access to credit etc.). In SSA, where there is less evidence of the beneficial effects of interactions with government official, work to reduce red-tape and to improve the quality of government services would do a great deal to help firms grow and to encourage formality.

Fourth, corruption is a corollary to government efficiency – and is associated with the extent of discretion exercised by officials. Lowering discretion has a large payoff, but currently in SSA it is only shared by the largest firms. Again, this is a disincentive for the small firms to grow.

While a weak business environment can be associated with lower growth, this effect is more muted in SSA. Underlying this are incentives that encourage the expansion of micro firms. While greater employment is surely desirable, reforms that would improve the incentives and opportunities for firms to grow into SMEs and larger firms would have even greater payoffs – for employment and the productive use of resources.

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Table 1a. Employment growth by initial firm's size and age

	AFRICA		NON-SSA LOW		NON-SSA HIGH		TOTAL	
	<i>mean</i>	<i>median</i>	<i>mean</i>	<i>median</i>	<i>mean</i>	<i>median</i>	<i>mean</i>	<i>median</i>
size 1-10	0.242	0.182	0.243	0.000	0.157	0.000	0.209	0.000
size 11-50	0.092	0.061	0.072	0.000	0.074	0.000	0.075	0.000
size 51-200	0.022	0.026	0.022	0.000	0.049	0.027	0.030	0.000
size 201-500	-0.021	0.000	-0.015	0.000	0.018	0.000	-0.007	0.000
size +500	-0.082	-0.029	-0.061	0.000	-0.028	0.000	-0.056	0.000
age 1-5	0.225	0.154	0.214	0.051	0.225	0.000	0.219	0.066
age 6-15	0.159	0.103	0.093	0.000	0.098	0.000	0.102	0.000
age +16	0.055	0.000	0.007	0.000	0.045	0.000	0.026	0.000

Table 1b. Firm age and size matrix (frequency - %)

	AFRICA			NON-SSA LOW			NON-SSA HIGH		
	age 1-5	age 6-15	age +16	age 1-5	age 6-15	age +16	age 1-5	age 6-15	age +16
size 1-10	38.79	42.47	18.24	29.31	48.78	21.21	20.53	52.47	26.54
size 11-50	28.03	40.47	30.90	18.35	46.92	31.45	12.58	47.18	39.56
size 51-200	16.10	32.13	50.24	14.55	42.05	39.02	8.34	41.95	48.43
size 201-500	16.22	19.73	62.97	13.73	38.38	43.98	5.99	37.11	56.44
size +500	13.85	23.85	60.38	10.13	34.06	53.46	5.67	31.17	63.16
Total	30.55	38.90	29.81	18.90	44.46	33.71	13.88	46.68	38.77

Table 2. Patterns of growth

	(1)	(2)		(3)	(4)	Transition out of micro (5)
EAP	0.001 (0.028)	0.027 (0.098)	LOW	0.019 (0.020)	0.035 (0.032)	0.102*** (0.029)
ECA	0.034 (0.038)	0.027 (0.043)	HIGH	0.009 (0.026)	-0.034 (0.033)	0.081** (0.035)
EHI	0.022 (0.056)	-0.033 (0.061)	LOW_Small		-0.021 (0.028)	
LAC	0.036 (0.025)	0.046 (0.037)	LOW_Medium		-0.015 (0.037)	
MENA	0.037 (0.025)	0.040 (0.050)	LOW_Large		-0.017 (0.043)	
SAS	0.002 (0.026)	-0.042 (0.079)	HIGH_Small		0.046* (0.023)	
EAPsmall		-0.014 (0.103)	HIGH_Medium		0.081*** (0.029)	
EAPmedium		-0.020 (0.119)	HIGH_Large		0.104*** (0.030)	
EAPlarge		-0.036 (0.129)	Small	-0.143*** (0.013)	-0.151*** (0.018)	
ECAsmall		0.027 (0.021)	Medium	-0.200*** (0.018)	-0.223*** (0.024)	
ECAmedium		0.010 (0.028)	Large	-0.263*** (0.025)	-0.289*** (0.026)	
ECAlarge		0.023 (0.029)	Mature	-0.094*** (0.010)	-0.092*** (0.010)	-0.034*** (0.009)
EHIsmall		0.115*** (0.023)	Older	-0.149*** (0.010)	-0.148*** (0.010)	-0.063*** (0.010)
EHImedium		0.173*** (0.029)	Export	0.086*** (0.008)	0.086*** (0.008)	0.129*** (0.014)
EHIlarge		0.184*** (0.035)	Foreign	0.046*** (0.007)	0.045*** (0.007)	0.060*** (0.015)
LACsmall		-0.031 (0.028)	Government	-0.013 (0.011)	-0.009 (0.011)	0.090*** (0.027)
LACmedium		0.004 (0.037)	Non-capital-small city	-0.026*** (0.007)	-0.025*** (0.008)	-0.020** (0.010)
LAClarge		0.019 (0.037)	Constant	0.095 (0.149)	0.126 (0.154)	Obs Pr: 0.169 Pred Pr: 0.153
MENAsmall		-0.023 (0.052)	Observations	58592	58592	19413
MENAmedium		0.017 (0.056)	R-squared	0.09	0.09	Wald 703.9
MENAlarge		0.039 (0.056)	FIRM CONTROLS	YES	YES	YES
SASsmall		0.025 (0.071)	COUNTRY CONTROLS	YES	YES	YES
SASmedium		0.081 (0.079)				
SASlarge		0.099 (0.080)				
Constant	0.279*** (0.028)	0.114 (0.219)				
Observations	58592	58592				
R-squared	0.11	0.09				
FIRM CONTROLS	YES	YES				
COUNTRY CONTROLS	YES	YES				

Country controls: GDPgrowth, GDPpercapita, GDPpercapita-sq, inflation, %export to GDP

Firm controls: age, ownership, export, capital city, sector

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Table 3a: African Perceived Business Constraints - By Region

Constraint to business:										
relative value	LOW	HIGH	Small	Medium	Large	Exporter	Foreign	Constant	R-sq.	N. Obs.
Average all constraints	-0.096 (0.081)	-0.189** (0.094)	0.104*** (0.030)	0.129*** (0.047)	0.088** (0.044)	0.048 (0.036)	-0.083*** (0.030)	1.433*** (0.070)	0.07	60016
Access finance	-0.461*** (0.090)	-0.504*** (0.089)	-0.065*** (0.025)	-0.152*** (0.047)	-0.254*** (0.050)	-0.028 (0.026)	-0.303*** (0.027)	0.777*** (0.077)	0.07	57710
Electricity	-0.850*** (0.205)	-0.992*** (0.210)	-0.069 (0.042)	-0.110* (0.065)	-0.056 (0.084)	-0.061 (0.040)	-0.038 (0.048)	1.042*** (0.191)	0.09	59301
Transportation	-0.366*** (0.083)	-0.337*** (0.071)	-0.038* (0.022)	-0.006 (0.034)	0.073 (0.045)	0.050* (0.026)	0.064** (0.026)	0.001 (0.067)	0.03	58495
Telecom	-0.143 (0.091)	-0.107 (0.093)	-0.062* (0.032)	-0.022 (0.053)	0.029 (0.044)	0.011 (0.037)	0.122*** (0.027)	-0.477*** (0.089)	0.03	53922
Anticompetitive	0.112 (0.083)	0.136* (0.077)	-0.030 (0.022)	-0.113*** (0.035)	-0.200*** (0.047)	-0.150*** (0.029)	-0.075*** (0.027)	0.267*** (0.068)	0.02	57024
Corruption	0.395*** (0.087)	0.041 (0.100)	-0.007 (0.024)	-0.088** (0.038)	-0.141*** (0.046)	-0.045* (0.025)	-0.015 (0.025)	0.196** (0.078)	0.05	57086
Crime	-0.006 (0.105)	-0.193** (0.097)	-0.037 (0.023)	-0.049 (0.037)	-0.047 (0.040)	-0.100*** (0.022)	0.015 (0.028)	0.058 (0.092)	0.02	54663
Licenses	0.117 (0.090)	0.208** (0.100)	0.002 (0.023)	0.005 (0.041)	-0.006 (0.040)	0.019 (0.024)	0.020 (0.025)	-0.312*** (0.086)	0.03	57574
Customs	0.043 (0.061)	-0.061 (0.071)	0.043** (0.020)	0.174*** (0.032)	0.243*** (0.040)	0.308*** (0.027)	0.238*** (0.020)	-0.425*** (0.060)	0.05	54504
Labor Regulations	0.218* (0.116)	0.527*** (0.129)	0.106*** (0.030)	0.207*** (0.050)	0.243*** (0.059)	0.060** (0.028)	0.027 (0.030)	-0.774*** (0.097)	0.06	58370
Skills	0.079 (0.099)	0.260** (0.100)	0.162*** (0.025)	0.269*** (0.046)	0.282*** (0.058)	0.028 (0.028)	0.039 (0.029)	-0.430*** (0.081)	0.03	58754
Macroeconomic	0.151 (0.111)	0.159 (0.110)	0.013 (0.024)	0.022 (0.037)	0.032 (0.052)	0.052 (0.032)	0.019 (0.033)	0.286*** (0.102)	0.01	57767
Policy	0.378*** (0.083)	0.178** (0.087)	0.010 (0.034)	0.013 (0.042)	0.025 (0.055)	-0.018 (0.023)	0.058* (0.035)	0.008 (0.075)	0.02	45744
Legal	0.329*** (0.080)	0.351*** (0.081)	0.039* (0.020)	0.138*** (0.030)	0.149*** (0.032)	0.077*** (0.027)	0.060** (0.023)	-0.686*** (0.068)	0.03	47445
Tax rates	-0.087 (0.102)	0.085 (0.113)	-0.021 (0.033)	-0.078 (0.051)	-0.158*** (0.050)	-0.112*** (0.034)	-0.091*** (0.034)	0.552*** (0.099)	0.02	58673
Tax Admon	0.164* (0.084)	0.223** (0.090)	-0.005 (0.027)	-0.063 (0.042)	-0.092** (0.042)	-0.011 (0.027)	-0.024 (0.024)	0.086 (0.081)	0.01	58370
Land	-0.190** (0.089)	-0.146 (0.098)	-0.022 (0.028)	-0.092* (0.053)	-0.062 (0.052)	-0.056** (0.028)	-0.057* (0.030)	-0.246*** (0.082)	0.03	56528

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Each regression includes firm controls: age, government, sector, city

Table 3b: African Perceived Business Constraints -- By Region and Size

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constraint to business:	All						
relative value	(average)	Finance	Electricity	Corruption	Crime	Labor	Skills
LOWmicro	-0.042 (0.067)	-0.592*** (0.090)	-0.977*** (0.210)	0.529*** (0.099)	0.117 (0.109)	0.280*** (0.079)	0.145* (0.084)
LOWsmall	-0.113 (0.094)	-0.483*** (0.082)	-0.881*** (0.222)	0.325*** (0.097)	0.015 (0.105)	0.276** (0.119)	0.083 (0.092)
LOWmedium	-0.114 (0.158)	-0.228 (0.139)	-0.634** (0.262)	0.240** (0.095)	-0.254* (0.138)	0.073 (0.206)	-0.055 (0.190)
LOWlarge	-0.227 (0.162)	-0.087 (0.173)	-0.438 (0.268)	0.334** (0.132)	-0.253 (0.162)	-0.111 (0.269)	-0.047 (0.246)
HIGHmicro	-0.181** (0.082)	-0.601*** (0.085)	-1.127*** (0.217)	0.100 (0.104)	-0.100 (0.097)	0.606*** (0.092)	0.320*** (0.087)
HIGHsmall	-0.189* (0.105)	-0.524*** (0.079)	-0.956*** (0.224)	-0.013 (0.110)	-0.171* (0.098)	0.568*** (0.139)	0.284*** (0.100)
HIGHmedium	-0.149 (0.165)	-0.304** (0.138)	-0.774*** (0.260)	-0.055 (0.120)	-0.414*** (0.131)	0.384* (0.225)	0.115 (0.191)
HIGHlarge	-0.358** (0.169)	-0.119 (0.174)	-0.703*** (0.257)	-0.000 (0.133)	-0.452*** (0.157)	0.171 (0.272)	0.084 (0.241)
Small	0.080*** (0.017)	-0.083** (0.033)	0.120*** (0.030)	0.055* (0.030)	-0.066** (0.028)	0.023 (0.022)	0.161*** (0.028)
Medium	0.104*** (0.025)	-0.260*** (0.047)	0.174*** (0.042)	0.018 (0.044)	-0.009 (0.042)	0.089** (0.036)	0.312*** (0.042)
Large	0.214*** (0.034)	-0.409*** (0.057)	0.184*** (0.056)	-0.104* (0.056)	-0.026 (0.052)	0.249*** (0.049)	0.317*** (0.055)
Constant	1.407*** (0.067)	0.869*** (0.074)	1.147*** (0.198)	0.117 (0.085)	-0.028 (0.088)	-0.829*** (0.075)	-0.480*** (0.077)
Observations	60016	57710	59301	57086	54663	58370	58754
R-squared	0.07	0.07	0.10	0.05	0.02	0.06	0.03
FIRM CONTROLS	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Firm Controls: age, exporter, foreign owned, government, sector, city

Table 4a: African Experienced Business Constraints -- By Region

	LOW	HIGH	Small	Medium	Large	Exporter	Foreign	constant	obs.	R-sq.
External finance: investment	0.386 (2.557)	3.351 (2.709)	5.604*** (0.775)	11.742*** (1.603)	15.544*** (2.430)	4.471*** (0.979)	-3.595*** (0.889)	9.957*** (2.482)	37886	0.05
External finance: working capital	4.191** (1.744)	3.053 (1.858)	4.527*** (0.648)	10.049*** (1.103)	13.844*** (1.894)	4.178*** (0.905)	-2.637*** (0.725)	6.249*** (1.491)	56358	0.07
Overdraft	0.112 (0.071)	0.169* (0.085)	0.142*** (0.023)	0.254*** (0.039)	0.303*** (0.042)	0.076*** (0.025)	0.015 (0.021)	0.173*** (0.047)	40033	0.12
Freq. of power outages	-0.845*** (0.239)	-1.378*** (0.231)	0.126** (0.050)	0.193* (0.112)	0.131 (0.214)	0.082 (0.066)	-0.252** (0.117)	2.346*** (0.219)	51711	0.13
Losses from power outages	-4.292*** (1.054)	-5.505*** (1.006)	0.082 (0.254)	-0.648 (0.407)	-1.123** (0.478)	-0.208 (0.192)	-0.611*** (0.199)	7.389*** (1.019)	47610	0.07
Freq. of bribes	-0.011 (0.063)	-0.153** (0.062)	0.051*** (0.013)	0.052** (0.025)	0.063 (0.039)	0.018 (0.015)	-0.029 (0.020)	0.440*** (0.053)	44344	0.04
Bribes as share of sales	-0.631 (0.415)	-1.237** (0.601)	0.097 (0.190)	-0.219 (0.308)	-0.460** (0.212)	-0.061 (0.086)	-0.249** (0.126)	3.118*** (0.375)	44344	0.02
Management time with officials	1.426 (1.127)	0.865 (1.285)	1.883*** (0.334)	2.081*** (0.523)	0.969 (0.718)	-0.349 (0.643)	0.398 (0.331)	7.531*** (0.854)	54352	0.03
Freq. inspections	-0.412** (0.181)	-0.922*** (0.193)	0.276*** (0.050)	0.565*** (0.083)	0.801*** (0.134)	0.054 (0.060)	0.059 (0.060)	2.111*** (0.184)	43571	0.14
Time clear customs (import)	-0.195 (0.172)	-0.263 (0.170)	0.028 (0.045)	-0.020 (0.068)	-0.083 (0.084)	-0.175*** (0.067)	-0.220*** (0.045)	1.907*** (0.160)	17035	0.09
Time clear customs (export)	0.001 (0.121)	-0.024 (0.096)	0.009 (0.052)	-0.032 (0.072)	-0.048 (0.084)	-0.121 (0.083)	-0.229*** (0.045)	1.371*** (0.137)	13956	0.04
Freq. labor inspections	0.005 (0.121)	-0.171 (0.121)	0.164*** (0.047)	0.308*** (0.051)	0.459*** (0.074)	0.011 (0.034)	0.083** (0.034)	0.651*** (0.116)	29094	0.07
Consistency of enforcement	-0.142 (0.113)	-0.070 (0.124)	0.039 (0.034)	0.083 (0.054)	0.191*** (0.067)	-0.000 (0.037)	-0.005 (0.046)	3.349*** (0.120)	52080	0.01

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Each row is a separate regression that includes firm controls: age, government, sector, city

TABLE 4b: African Experienced Business Constraints -- By Region and Size

	External finance: investment	External finance: working capital	Overdraft	Freq. of power outages	Losses from power outages	Freq. of bribes	Bribes as share of sales	Manage- ment time with officials	Freq. inspections	Freq. labor inspections	Consistency of enforcement
Small	7.553*** (2.157)	4.879*** (1.206)	0.204*** (0.042)	0.182 (0.119)	-0.108 (1.016)	-0.007 (0.036)	-0.643** (0.281)	2.473*** (0.847)	0.257** (0.120)	0.296*** (0.081)	-0.004 (0.083)
Medium	15.584*** (1.912)	11.776*** (1.995)	0.430*** (0.073)	0.434* (0.223)	-1.285 (1.415)	-0.082 (0.098)	-1.750*** (0.551)	4.271*** (1.145)	0.599*** (0.162)	0.428*** (0.109)	0.046 (0.134)
Large	16.769*** (2.779)	14.812*** (3.261)	0.567*** (0.066)	0.502* (0.303)	-0.627 (2.135)	-0.129 (0.118)	-2.075*** (0.607)	5.759*** (1.658)	0.624*** (0.175)	0.506*** (0.081)	-0.002 (0.137)
LOWmicro	0.534 (1.801)	3.617*** (1.191)	0.214*** (0.071)	-0.702*** (0.245)	-4.170*** (1.106)	-0.071 (0.060)	-1.004** (0.451)	3.101*** (0.894)	-0.438** (0.205)	0.106 (0.148)	-0.183 (0.143)
LOWsmall	-0.668 (3.091)	3.680* (2.084)	0.112 (0.076)	-0.849*** (0.232)	-4.152*** (1.279)	-0.010 (0.058)	-0.487 (0.401)	1.430 (1.279)	-0.434** (0.203)	-0.054 (0.143)	-0.131 (0.113)
LOWmedium	-1.063 (3.982)	3.989 (3.236)	-0.004 (0.092)	-1.065*** (0.326)	-3.968*** (1.362)	0.097 (0.106)	0.247 (0.569)	-0.404 (1.734)	-0.462** (0.216)	-0.036 (0.112)	-0.135 (0.147)
LOWlarge	2.719 (5.149)	5.448 (4.851)	-0.101 (0.082)	-1.142** (0.468)	-5.179** (2.042)	0.168 (0.131)	0.522 (0.575)	-2.861 (2.250)	-0.224 (0.225)	0.065 (0.141)	0.038 (0.143)
HIGHmicro	6.765*** (2.304)	4.674*** (1.424)	0.271*** (0.087)	-1.334*** (0.233)	-5.965*** (1.011)	-0.210*** (0.060)	-2.162*** (0.426)	1.229 (0.964)	-0.946*** (0.210)	-0.075 (0.149)	-0.109 (0.153)
HIGHsmall	4.087 (3.480)	4.352* (2.463)	0.183** (0.089)	-1.324*** (0.258)	-5.569*** (1.239)	-0.118* (0.061)	-0.831 (0.750)	1.453 (1.647)	-0.890*** (0.224)	-0.193 (0.137)	-0.052 (0.124)
HIGHmedium	-1.206 (3.153)	-0.394 (2.896)	0.016 (0.103)	-1.516*** (0.292)	-4.430*** (1.390)	-0.066 (0.104)	0.225 (1.047)	-0.224 (1.826)	-1.009*** (0.222)	-0.200 (0.127)	-0.065 (0.155)
HIGHlarge	-0.583 (3.875)	-1.383 (3.897)	-0.062 (0.094)	-1.740*** (0.329)	-5.560*** (2.048)	-0.029 (0.119)	-0.031 (0.715)	-3.446* (1.964)	-0.826*** (0.193)	-0.197 (0.120)	0.099 (0.149)
Constant	8.668*** (1.972)	5.948*** (1.237)	0.106*** (0.033)	2.270*** (0.246)	7.480*** (0.999)	0.486*** (0.055)	3.623*** (0.396)	6.692*** (0.677)	2.135*** (0.208)	0.565*** (0.134)	3.381*** (0.151)
Observations	37886	56358	40033	51711	47610	44344	44344	54352	43571	29094	52080
R-squared	0.05	0.07	0.13	0.14	0.07	0.05	0.02	0.03	0.14	0.07	0.01
FIRM CONTROLS	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Firm Controls: age, exporter, foreign owned, government, sector, city

Table 5a. AFRICA and Investment Climate Impact on Firm Performance -- by Income

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable:	Emp. Gr.	Emp. Gr.	Emp. Gr.	Emp. Gr.	Sales Gr.	Empg
ICInfrastructure	Freq. outages	Losses from outages	Losses from outages	Freq. outages Domestic	Freq. outages	Freq. outages Same as
SAMPLE	ALL	ALL	Same as (1)	MSMEs	ALL	(5)
ICFinance	0.001 (0.001)	0.002 (0.001)***	0.002 (0.001)***	0.002 (0.001)**	0.000 (0.001)	-0.000 (0.001)
(LOW)*ICFinance	0.003 (0.001)**	0.003 (0.001)***	0.004 (0.001)***	0.003 (0.002)**	0.002 (0.001)	0.004 (0.001)***
(HIGH)*ICFinance	0.004 (0.001)***	0.004 (0.001)***	0.006 (0.001)***	0.003 (0.002)**	0.003 (0.002)**	0.005 (0.002)***
ICInfrastructure	0.023 (0.023)	-0.006 (0.002)***	-0.006 (0.002)***	0.031 (0.028)	0.008 (0.035)	0.036 (0.029)
(LOW)*ICInfrastructure	-0.046 (0.027)*	-0.006 (0.003)	-0.007 (0.004)*	-0.040 (0.033)	0.003 (0.039)	-0.049 (0.031)
(HIGH)*ICInfrastructure	-0.055 (0.038)	-0.008 (0.007)	-0.013 (0.007)*	-0.065 (0.042)	-0.032 (0.041)	-0.071 (0.043)
ICCorruption	-0.007 (0.003)*	-0.005 (0.003)*	-0.006 (0.003)*	-0.008 (0.004)**	0.011 (0.006)*	-0.003 (0.004)
(LOW)*ICCorruption	0.002 (0.005)	-0.003 (0.004)	-0.001 (0.005)	0.005 (0.006)	-0.014 (0.007)**	-0.002 (0.006)
(HIGH)*ICCorruption	-0.009 (0.008)	-0.014 (0.007)**	-0.008 (0.007)	-0.003 (0.009)	-0.006 (0.008)	-0.012 (0.009)
ICRegulations	0.003 (0.002)	0.004 (0.002)**	0.005 (0.002)***	0.002 (0.003)	-0.003 (0.004)	0.001 (0.003)
(LOW)*ICRegulations	0.003 (0.003)	0.004 (0.002)*	0.003 (0.003)	0.003 (0.003)	0.002 (0.004)	0.004 (0.003)
(HIGH)*ICRegulations	0.005 (0.003)	0.004 (0.003)	0.002 (0.003)	0.008 (0.004)**	0.008 (0.004)*	0.010 (0.004)**
Small	-0.218 (0.012)***	-0.171 (0.009)***	-0.194 (0.012)***	-0.229 (0.013)***	-0.059 (0.012)***	-0.239 (0.015)***
Medium	-0.376 (0.021)***	-0.261 (0.013)***	-0.292 (0.019)***	-0.401 (0.023)***	-0.108 (0.018)***	-0.422 (0.025)***
Large	-0.510 (0.027)***	-0.331 (0.015)***	-0.382 (0.022)***	0.000 (0.000)	-0.131 (0.023)***	-0.568 (0.032)***
Constant	-0.031 (0.104)	0.365 (0.096)***	0.401 (0.074)***	0.512 (0.058)***	0.591 (0.183)***	0.354 (0.178)**
Observations	27019	45135	27019	35738	19037	19037
R-squared	0.17	0.13	0.14	0.13	0.12	0.20
FIRM CONTROLS	YES	YES	YES	YES	YES	YES
COUNTRY FIX EFFECTS	YES	YES	YES	YES	YES	YES
CONTROL GENERATOR*INC	YES	NO	NO	YES	YES	YES

ICFinance=fin-invest_sh; ICCorruption=bribes_sh; ICRegulations=mng-time_sh
Robust standard errors in parentheses; clustered at the size-sector-city level
* significant at 10%; ** significant at 5%; *** significant at 1%
Firm Controls: age, exporter, foreign, government, sector, city, growth period

Table 5b. AFRICA and Investment Climate Impact on Firm Performance by Income and Size

						(1) con't	(2) con't	(3) con't	(4) con't	(5) con't	
Dependent Variable:	Emp. Gr.	Emp. Gr.	Emp. Gr.	Emp. Gr.	Sales Gr.	Dependent Variable:	Emp. Gr.	Emp. Gr.	Emp. Gr.	Emp. Gr.	Sales Gr.
Infrastructure Variables	Freq. outages	Losses from outages	Losses from outages	Freq. outages	Sales Gr. outages	Infrastructure Variable:	Freq. outages	Losses from outages	Losses from outages	Freq. outages	Sales Gr. outages
						Domestic					
SAMPLE	ALL	ALL	Same as Col. 1	MSMEs	ALL	SAMPLE	ALL	ALL	Same as Col. 1	MSMEs	ALL
ICFinance	0.003 (0.001)***	0.004 (0.001)***	0.004 (0.001)***	0.004 (0.001)***	0.005 (0.003)*	ICInfrastructure	0.051 (0.027)*	-0.007 (0.003)***	-0.007 (0.003)***	0.052 (0.031)*	-0.007 (0.050)
(AFRsmall)*ICFin	-0.005 (0.001)***	-0.003 (0.001)*	-0.003 (0.001)**	-0.006 (0.001)***	-0.005 (0.003)*	(AFRsmall)*ICInfra	-0.037 (0.017)**	0.002 (0.003)	0.002 (0.003)	-0.044 (0.019)**	0.025 (0.041)
(AFRmedium)*ICFin	-0.004 (0.002)**	-0.003 (0.002)*	-0.003 (0.002)**	-0.005 (0.002)**	-0.008 (0.003)**	(AFRmedium)*ICInfra	-0.086 (0.021)***	0.000 (0.004)	0.000 (0.004)	-0.083 (0.022)***	0.006 (0.049)
(AFRlarge)*ICFin	-0.006 (0.002)***	-0.005 (0.002)***	-0.005 (0.002)***		-0.006 (0.003)*	(AFRlarge)*ICInfra	-0.084 (0.025)***	-0.001 (0.004)	-0.000 (0.004)		0.014 (0.049)
(LOWmicro)*ICFin	0.002 (0.002)	0.004 (0.002)**	0.003 (0.002)	0.002 (0.002)	-0.002 (0.003)	(LOWmicro)*ICInfra	-0.063 (0.033)*	-0.004 (0.005)	-0.003 (0.006)	-0.058 (0.037)	0.029 (0.053)
(LOWsmall)*ICFin	0.003 (0.002)*	0.003 (0.002)**	0.003 (0.002)	0.003 (0.002)*	-0.002 (0.003)	(LOWsmall)*ICInfra	-0.074 (0.032)**	-0.006 (0.005)	-0.008 (0.006)	-0.057 (0.036)	0.015 (0.053)
(LOWmedium)*ICFin	0.000 (0.002)	0.000 (0.002)	0.001 (0.002)	0.001 (0.002)	-0.005 (0.003)*	(LOWmedium)*ICInfra	-0.090 (0.032)***	-0.013 (0.006)**	-0.014 (0.007)*	-0.068 (0.037)*	0.017 (0.053)
(LOWlarge)*ICFin	-0.000 (0.002)	-0.001 (0.001)	0.000 (0.002)		-0.003 (0.003)	(LOWlarge)*ICInfra	-0.068 (0.035)**	-0.030 (0.010)***	-0.034 (0.013)***		0.046 (0.054)
ICCorruption	-0.001 (0.005)	-0.003 (0.004)	-0.002 (0.004)	-0.004 (0.005)	0.021 (0.012)*	ICRegulations	0.006 (0.004)*	0.008 (0.004)**	0.009 (0.004)**	0.005 (0.003)*	-0.008 (0.005)*
(AFRsmall)*ICCor	-0.007 (0.006)	-0.005 (0.005)	-0.006 (0.005)	-0.003 (0.006)	-0.020 (0.012)*	(AFRsmall)*ICReg	-0.006 (0.003)*	-0.005 (0.003)	-0.006 (0.003)*	-0.006 (0.003)*	0.000 (0.005)
(AFRmedium)*ICCor	-0.009 (0.007)	-0.008 (0.007)	-0.009 (0.008)	-0.005 (0.008)	-0.001 (0.014)	(AFRmedium)*ICReg	-0.006 (0.004)	-0.006 (0.004)	-0.007 (0.004)*	-0.004 (0.004)	0.003 (0.005)
(AFRlarge)*ICCor	-0.008 (0.016)	-0.005 (0.016)	-0.005 (0.016)		-0.012 (0.019)	(AFRlarge)*ICReg	-0.002 (0.004)	-0.006 (0.004)	-0.004 (0.004)		0.012 (0.007)*
(LOWmicro)*ICCor	-0.006 (0.006)	-0.004 (0.006)	-0.006 (0.006)	-0.003 (0.007)	-0.022 (0.012)*	(LOWmicro)*ICReg	0.005 (0.005)	0.006 (0.004)	0.006 (0.004)	0.005 (0.005)	0.009 (0.005)*
(LOWsmall)*ICCor	0.001 (0.008)	-0.006 (0.008)	-0.003 (0.008)	0.006 (0.008)	-0.019 (0.012)	(LOWsmall)*ICReg	-0.006 (0.004)	-0.001 (0.004)	-0.004 (0.004)	-0.005 (0.005)	0.001 (0.005)
(LOWmedium)*ICCor	-0.010 (0.010)	-0.017 (0.009)**	-0.011 (0.009)	-0.006 (0.010)	-0.030 (0.014)**	(LOWmedium)*ICReg	-0.001 (0.004)	-0.000 (0.004)	-0.001 (0.004)	0.001 (0.005)	0.009 (0.005)*
(LOWlarge)*ICCor	-0.003 (0.008)	-0.005 (0.008)	0.000 (0.007)		-0.021 (0.015)	(LOWlarge)*ICReg	0.004 (0.005)	-0.002 (0.004)	0.000 (0.005)		0.009 (0.006)
ICFinance: Share of investment financed from formal external sources						Observations	27019	45135	27019	21369	19037
ICCorruption: Share of bribes						R-squared	0.18	0.13	0.15	0.18	0.13
ICInfrastructure: Days with power interruptions						HIGHsize*IC	YES	YES	YES	YES	YES
ICRegulations: Management time spent with officials						FIRM CONTROLS	YES	YES	YES	YES	YES
Firm Controls: size, age, exporter, foreign, government, sector, city						COUNTRY F.E.	YES	YES	YES	YES	YES
						GENERATOR	YES	NO	NO	YES	YES

Robust standard errors in parentheses; clustered at the size-sector-city level

Table 6a. Robustness - Alternative Measures of Investment Climate (by region)

IC	Robustness: Ivariable				
	(1)	(2)	(3)	(4)	(5)
	ICFinance= Overdraft	ICInfrastructure =Losses from transport failures	ICCorruption= Kickbacks for govt-contract	ICRegulations= Consistency of enforcement	ICRegulations= Time to clear customs
ICFin	0.411 (0.062)***	0.001 (0.001)**	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
(LOW)*ICFinance	0.327 (0.095)***	0.004 (0.001)***	0.003 (0.001)**	0.003 (0.001)***	0.003 (0.001)***
(HIGH)*ICFinance	0.524 (0.101)***	0.004 (0.001)***	0.004 (0.001)***	0.003 (0.001)**	0.003 (0.001)***
ICInfrastructure	0.012 (0.024)	0.008 (0.005)*	0.020 (0.022)	0.027 (0.023)	0.026 (0.023)
(LOW)*ICInfrastructure	-0.014 (0.031)	-0.015 (0.007)**	-0.045 (0.027)*	-0.046 (0.027)*	-0.039 (0.026)
(HIGH)*ICInfrastructure	-0.024 (0.036)	-0.009 (0.007)	-0.085 (0.038)**	-0.069 (0.037)*	-0.064 (0.037)*
ICCorruption	-0.007 (0.004)**	-0.007 (0.003)**	-0.002 (0.003)	-0.007 (0.003)**	-0.006 (0.003)*
(LOW)*ICCorruption	0.006 (0.006)	-0.001 (0.005)	0.005 (0.004)	0.003 (0.006)	-0.000 (0.006)
(HIGH)*ICCorruption	-0.002 (0.007)	-0.013 (0.008)*	-0.024 (0.010)**	-0.009 (0.008)	-0.009 (0.008)
ICRegulations	0.002 (0.002)	0.004 (0.002)*	0.003 (0.002)	-0.013 (0.019)	-0.040 (0.020)**
(LOW)*ICRegulations	0.001 (0.003)	0.004 (0.002)**	0.003 (0.003)	0.067 (0.027)**	0.028 (0.025)
(HIGH)*ICRegulations	0.004 (0.003)	0.008 (0.003)***	0.006 (0.003)*	0.072 (0.036)**	0.002 (0.030)
Small	-0.275 (0.014)***	-0.159 (0.010)***	-0.211 (0.012)***	-0.206 (0.012)***	-0.215 (0.012)***
Medium	-0.489 (0.023)***	-0.248 (0.015)***	-0.376 (0.020)***	-0.361 (0.021)***	-0.376 (0.021)***
Large	-0.663 (0.031)***	-0.329 (0.017)***	-0.522 (0.027)***	-0.499 (0.027)***	-0.523 (0.027)***
Constant	-0.251 (0.133)*	0.311 (0.100)***	0.003 (0.179)	-0.160 (0.120)	0.128 (0.140)
Observations	25239	38236	27891	26888	28798
R-squared	0.20	0.12	0.17	0.17	0.17
GENERATOR*INC	YES	NO	YES	YES	YES
FIRM CONTROLS	YES	YES	YES	YES	YES
COUNTRY F.E.	YES	YES	YES	YES	YES

If not reported in heading: ICFinance=fin-invest_sh; ICInfrastructure=outages; ICCorruption=bribes_sh;
ICRegulations =mng-time_sh

Robust standard errors in parentheses; clustered at the size-sector-city level

* significant at 10%; ** significant at 5%; *** significant at 1%

Firm Controls: age, exporter, foreign, government, sector, city, growth period

Table 6b. Robustness: Alternative Measures of Investment Climate (by region and size)

	(1)	(2)	(3)	(4)	(5)
	IC=ICFinance	IC=Infrastructure Losses from transportation	IC=ICCorruption Kickback gov't- contract	IC=ICRegulations Consistency of enforcement	Time to clear customs
	Overdraft	failures			
IC	0.509 (0.098)***	0.011 (0.006)**	0.000 (0.004)	-0.022 (0.026)	-0.056 (0.026)**
(AFRsmall)*IC	-0.239 (0.101)**	0.015 (0.009)*	-0.006 (0.005)	0.007 (0.030)	0.008 (0.023)
(AFRmedium)*IC	-0.188 (0.109)*	0.001 (0.006)	-0.009 (0.008)	0.015 (0.034)	0.015 (0.026)
(AFRlarge)*IC	-0.324 (0.127)**	0.014 (0.014)	-0.009 (0.009)	0.087 (0.044)*	0.052 (0.046)
(LOWmicro)*IC	0.400 (0.156)**	-0.005 (0.009)	0.010 (0.007)	0.030 (0.046)	0.049 (0.037)
(LOWsmall)*IC	0.279 (0.140)**	-0.007 (0.008)	0.001 (0.006)	0.106 (0.038)***	0.012 (0.033)
(LOWmedium)*IC	0.367 (0.153)**	-0.010 (0.012)	-0.001 (0.006)	0.083 (0.039)**	0.047 (0.036)
(LOWlarge)*IC	0.502 (0.189)***	-0.052 (0.018)***	-0.007 (0.007)	0.070 (0.035)**	0.030 (0.037)
Observations	25239	38236	27891	26888	28798
R-squared	0.22	0.13	0.18	0.18	0.19
GENERATOR*INC*SIZE	YES	NO	YES	YES	YES
FIRM CONTROLS	YES	YES	YES	YES	YES
COUNTRY FIXED EFFECTS	YES	YES	YES	YES	YES

Regressions include all 4 IC variables interacted by Income and Size;

each column reports only the 1 IC that changes in the specification to economize on space.

Substituting one IC variable did not change the significance of the other three. Full tables available upon request.

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Firm Controls: age, exporter, foreign, government, sector, city, growth period

Table 7. Investment Climate Impact on Capital Intensity -- region-size effects

DEPENDENT VARIABLE	Capital per worker	
	(1)	(2)
ICInfrastructure	Freq. of outages	Losses from outages
ICfinance	-0.009 (0.007)	-0.003 (0.008)
(AFRsmall)*ICfinance	0.001 (0.009)	-0.005 (0.009)
(AFRmedium)*ICfinance	0.009 (0.010)	0.006 (0.010)
(AFRlarge)*ICfinance	0.015 (0.011)	0.012 (0.011)
(LOWmicro)*ICfinance	0.022 (0.009)**	0.009 (0.009)
(LOWsmall)*ICfinance	0.016 (0.009)*	0.008 (0.009)
(LOWmedium)*ICfinance	0.018 (0.009)**	0.012 (0.008)
(LOWlarge)*ICfinance	0.020 (0.010)**	0.015 (0.009)*
ICInfrastructure	-0.528 (0.163)***	-0.037 (0.019)*
(AFRsmall)*ICInfrastructure	0.422 (0.113)***	0.036 (0.015)**
(AFRmedium)*ICInfrastructure	0.572 (0.137)***	0.033 (0.017)**
(AFRlarge)*ICInfrastructure	0.368 (0.222)*	0.014 (0.020)
(LOWmicro)*ICInfrastructure	0.698 (0.195)***	0.058 (0.029)**
(LOWsmall)*ICInfrastructure	0.689 (0.193)***	0.117 (0.041)***
(LOWmedium)*ICInfrastructure	0.725 (0.196)***	0.120 (0.033)***
(LOWlarge)*ICInfrastructure	0.460 (0.219)**	0.100 (0.062)
Constant	6.778 (1.222)***	3.281 (0.615)***
Observations	15439	26160
R-squared	0.78	0.82
INCOMESIZE*ICCorruption	YES	YES
INCOMESIZE*ICRegulation	YES	YES
HIGHSIZE*IC	YES	YES
FIRM CONTROLS	YES	YES
COUNTRY FIXED EFFECTS	YES	YES
CONTROL GENERATOR*INC*SIZE	YES	NO

Robust standard errors in parentheses; clustered at at the size-sector-city level

* significant at 10%; ** significant at 5%; *** significant at 1%

Interactions with corruption and regulation variables, as well as with high-income countries, were included.

Firm Controls: size, age, exporter, foreign, government, sector, city

TABLE A1: DATASET

country-year	N. obs.	Percent	country-year	N. obs.	Percent	country-year	N. obs.	Percent
Albania2002	170	0.25	Georgia2005	200	0.29	Oman2003	337	0.49
Albania2005	204	0.29	Germany2005	1,196	1.73	Pakistan2002	965	1.39
Algeria2002	557	0.8	Greece2005	546	0.79	Panama2006	604	0.87
Angola2006	540	0.78	Guatemala2003	455	0.66	Paraguay2006	613	0.88
Argentina2006	1,063	1.53	Guinea-Bissau2006	296	0.43	Peru2002	576	0.83
Armenia2002	171	0.25	Guinea-Conakry2006	327	0.47	Peru2006	632	0.91
Armenia2005	351	0.51	Guyana2004	163	0.24	Philippines2003	716	1.03
Azerbaijan2002	170	0.25	Honduras2003	450	0.65	Poland2002	500	0.72
Azerbaijan2005	350	0.51	Hungary2002	250	0.36	Poland2003	108	0.16
Bangladesh2002	1,001	1.44	Hungary2005	610	0.88	Poland2005	975	1.41
Belarus2002	250	0.36	India2000	895	1.29	Portugal2005	505	0.73
Belarus2005	325	0.47	India2002	1,827	2.64	Romania2002	255	0.37
Benin2004	197	0.28	Indonesia2003	713	1.03	Romania2005	600	0.87
Bhutan2001	98	0.14	Ireland2005	501	0.72	Russia2002	506	0.73
BiH2002	182	0.26	Jamaica2005	94	0.14	Russia2005	601	0.87
BiH2005	200	0.29	Kazakhstan2002	250	0.36	Rwanda2006	340	0.49
Bolivia2000	671	0.97	Kazakhstan2005	585	0.84	SaudiArabia2005	681	0.98
Bolivia2006	613	0.88	Kenya2003	284	0.41	Senegal2003	262	0.38
Botswana2006	444	0.64	Kosovo2003	329	0.47	Serbia2001	402	0.58
Brazil2003	1,642	2.37	Kyrgyzstan2002	173	0.25	Serbia2003	408	0.59
Bulgaria2002	250	0.36	Kyrgyzstan2003	102	0.15	Slovakia2002	170	0.25
Bulgaria2004	548	0.79	Kyrgyzstan2005	202	0.29	Slovakia2005	220	0.32
Bulgaria2005	300	0.43	Laos2005	246	0.35	Slovenia2002	188	0.27
BurkinaFaso2006	51	0.07	Latvia2002	176	0.25	Slovenia2005	223	0.32
Burundi2006	407	0.59	Latvia2005	205	0.3	SouthAfrica2003	603	0.87
Cambodia2003	503	0.73	Lebanon2006	354	0.51	SouthKorea2005	598	0.86
Cameroon2006	119	0.17	Lesotho2003	75	0.11	Spain2005	606	0.87
CapeVerde2006	47	0.07	Lithuania2002	200	0.29	SriLanka2004	452	0.65
Chile2004	948	1.37	Lithuania2004	239	0.34	Swaziland2006	429	0.62
China2002	1,548	2.23	Lithuania2005	205	0.3	Syria2003	560	0.81
China2003	2,400	3.46	Madagascar2005	293	0.42	Tajikistan2002	176	0.25
Colombia2006	1,000	1.44	Malawi2005	160	0.23	Tajikistan2003	107	0.15
CostaRica2005	343	0.49	Malaysia2002	902	1.3	Tajikistan2005	200	0.29
Croatia2002	187	0.27	Mali2003	155	0.22	Tanzania2003	276	0.4
Croatia2005	236	0.34	Mauritania2006	361	0.52	Tanzania2006	484	0.7
Czech Rep.2002	268	0.39	Mauritius2005	212	0.31	Thailand2004	1,385	2
Czech Rep.2005	343	0.49	Mexico2006	1,480	2.14	Turkey2002	514	0.74
DRC2006	444	0.64	Moldova2002	174	0.25	Turkey2005	1,880	2.71
DominicanRepublic2005	250	0.36	Moldova2003	103	0.15	Uganda2003	300	0.43
Ecuador2003	453	0.65	Moldova2005	350	0.51	Uganda2006	663	0.96
Egypt2004	977	1.41	Mongolia2004	195	0.28	Ukraine2002	463	0.67
Egypt2006	996	1.44	Montenegro2003	100	0.14	Ukraine2005	594	0.86
ElSalvador2003	465	0.67	Morocco2000	859	1.24	Uruguay2006	621	0.9
Estonia2002	170	0.25	Morocco2004	850	1.23	Uzbekistan2002	260	0.38
Estonia2005	219	0.32	Mozambique2002	194	0.28	Uzbekistan2003	100	0.14
Ethiopia2002	427	0.62	Namibia2006	429	0.62	Uzbekistan2005	300	0.43
FYROM2002	170	0.25	Nepal2000	223	0.32	Vietnam2005	1,650	2.38
FYROM2005	200	0.29	Nicaragua2003	452	0.65	Yugoslavia2002	250	0.36
Gambia2006	301	0.43	Niger2006	125	0.18	Yugoslavia2005	300	0.43
Georgia2002	174	0.25	Nigeria2001	232	0.33	Zambia2002	207	0.3
Total							69,305	100

Region	Freq.	Percent	Income	Freq.	Percent
East Asia & Pacific	10,856	15.66	HighIncome: OECD	3,952	5.7
Europe & CentralAsia	20,191	29.13	HighIncome: non-OECD	1,092	1.58
Europe High Income	3,354	4.84	Low Income	17,282	24.94
Latin America & Caribbean	13,588	19.61	Lower Middle Income	30,286	43.7
Middle East & North Africa	6,171	8.90	Upper Middle Income	16,693	24.09
South Asia	5,461	7.88			
Sub-Saharan Africa	9,684	13.97			