The Impact of the Investment Climate on Employment Growth

Does Sub-Saharan Africa Mirror
Other Low-Income Regions?

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Abstract

Using survey data from 86,000 enterprises in 104 countries, including 17,000 enterprises in 31 Sub-Saharan African countries, this paper finds that average enterprise-level employment growth rates are remarkably similar across regions. This is true despite significant differences in the quality of the investment climate in which these enterprises operate. Objective measures of investment climate conditions (including the number of outages, the share of firms with bank loans, and others) indicate that conditions are most challenging within Sub-Saharan Africa, as well as for smaller enterprises. However, enterprises' employment in Sub-Saharan Africa is less sensitive to changes in access to infrastructure and

finance relative to other low-income regions. This can be understood by looking at non-linear effects by firm size—and the finding that these size effects are particularly strong within Sub-Saharan Africa. Although unreliable infrastructure services and inadequate access to finance generally hamper growth, in Sub-Saharan Africa they are actually associated with higher employment growth rates among micro enterprises. Although employment growth is good news in Sub-Saharan Africa, that much of the expanded employment is in small, labor-intensive, less productive enterprises raises longer-run concerns about the efficiency of the allocation of resources and aggregate productivity growth in the region.

This paper—a product of the Macroeconomics and Growth Team, Development Research Group—is part of a larger effort in the department to explore firm dynamics and the microeconomics of growth. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The author may be contacted at mhallward@worldbank.org.

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The Impact of the Investment Climate on Employment Growth: Does Sub-Saharan Africa Mirror Other Low-Income Regions?

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1. Introduction

With the development spotlight increasingly focused on Sub-Saharan Africa (SSA), there is renewed interest in understanding the constraints to higher growth in the region¹. Recent findings have emphasized the role of the broader investment climate in shaping the opportunities and incentives for enterprises to invest, create jobs and expand (World Bank WDR 2004). This paper uses detailed enterprise-level data to examine how different dimensions of the investment climate –availability of infrastructure, access to finance, the regulatory environment and corruption -- affect patterns of employment growth. In addition to testing which dimensions are most associated with higher growth, there remains a question whether the priorities for reform are common across countries. Thus, the aim is to compare the impact of the different dimensions of the investment climate in SSA with those in other regions, particularly to test whether the top constraints faced by entrepreneurs in SSA have a common impact in low-income countries in other regions.

To examine the impact of the investment climate on employment growth, the paper uses data from over 17,000 enterprises in 31 SSA countries included in the World Bank's Enterprise Surveys (ES). To put the experience of SSA into a larger global context, results are compared with those of 48 other low or lower-middle income countries (LOW) and 26 upper-middle or high income countries (HIGH) in other regions.² These datasets are collected with a comparable instrument and sampling strategy, providing a unique source of disaggregated information on many dimensions of interest of the investment climate. Covering the full range of enterprise sizes, they also allow for an analysis of how conditions vary across enterprise types that proves to be important in highlighting priorities for reform.

¹ See the Africa Action Plan, commitments of the G8 to focus on SSA development, the Stern Commission for Africa, the World Bank's Six Strategic Pillars, among others.

² 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 HIGH countries. The one exception noted below is the comparison of productivity across regions, where South Africa's higher productivity can affect averages.

Overall, the data show that the unweighted average rate of employment growth in SSA is similar to that in the other regions.³ This is true if countries are grouped by geographic regions or by income level. While some comparisons are also made to HIGH countries, the paper focuses on the lower income countries and whether and how SSA and non-SSA regions differ. In the low income regions (SSA and non-SSA), micro enterprises are the significant source of employment growth. However, whereas young enterprises are generally relatively more dynamic, we find this is less true in SSA compared to other low-income countries. Enterprises 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.⁴

The paper traces how the investment climate in which an enterprise operates accounts for these growth patterns. We find significant roles for infrastructure services, access to finance, regulations and governance in explaining why some enterprises grow more than others. However, it is not just that the conditions of the investment climate vary significantly across countries – and even across types of enterprises within a country. There are also non-linear responses to investment climate conditions; the paper finds that different types of enterprises do respond differently to the same conditions—and that these patterns vary between SSA and LOW.

Quantitative indicators⁵ reported by businesses of constraints they experience show that conditions are generally more challenging for enterprises in SSA: power outages are more common, enterprises 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 enterprises. Micro and small enterprises face significantly greater interruptions in

³ The paper compares incumbent firms – across regions and across size classifications. The contribution of entry and exit to overall net employment would also be of interest, but such data is not available. As incumbent firms represent a significant share of employment, comparison of their growth is worthy of its own analysis, keeping in mind that the results should be interpreted only with respect to this population of firms.

⁴ Not all the interactions by firm characteristics are shown in Table 2, but they are available upon request.

⁵ Quantitative indicators are time and monetary costs associated with various transactions or access to services.

infrastructure services, have less access to formal finance and pay more in bribes—as percentage of sales—than do larger enterprises. On the other hand, larger enterprises spend significantly more time dealing with officials and red tape.

These weak investment climate conditions, however, do not necessarily translate into lower employment growth in SSA. Allowing for the investment climate to have differential impacts across size classes of enterprises helps explain what is underlying the overall response in SSA. Rather than simply lowering growth, some of the more challenging investment climate conditions are associated with expanding micro-enterprises. Thus, the average growth of enterprises can remain high, mostly due to relatively higher growth among these smaller enterprises. This paper finds this pattern is more pronounced in SSA than in other developing regions.

Among the different dimensions of the investment climate, these effects are strongest for infrastructure and access to finance. However, while the impact of more frequent outages is to lower the employment growth of large enterprises, they serve to encourage the growth of micro-enterprises – in SSA. Part of this is due to the effect on the choice of technology, encouraging a greater substitution of labor for capital, and the proliferation of labor-intensive micro enterprises.

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 SSA compared to other developing regions, even for larger enterprises. Unless other constraints are addressed too, additional finance is unlikely to be sufficient to raise growth.

There are also significant differences across regions on the contribution of government services and governance more generally. While delays and inefficient public services dampen growth, access to public services is generally associated with higher

employment – but only outside SSA. In SSA, more interactions with officials are associated with lower growth of small and medium enterprises than for micro enterprises. In combination with higher rates of bribes among small enterprises, the incentives seem to be to stay below the radar screen of officials.

Taken together, there are two patterns that stand out for SSA. First, the overall impact of a weak investment climate on growth is more muted. For a given level of outages or lack of access to finance, SSA enterprises reduce employment growth by less. Second, this can be understood by more pronounced differences in the response across different sizes of enterprises in SSA. Enterprise responses to potential constraints are more likely to serve to expand growth among the micro enterprises relative to larger enterprises. While this keeps employment growth high among incumbent SSA enterprises, the longer run sustainability of jobs in more labor intensive, less productive activities will need to be addressed as the investment climate is strengthened.⁶

After reviewing the literature in section 2, the paper describes the large enterprise-level dataset used in this work in section 3. The Enterprise Survey dataset has comparable enterprise-level data on both measures of the investment climate and enterprise performance for 104 countries, including 31 from SSA. It also discusses our approach to addressing potential measurement error, endogeneity and omitted variables. 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 the investment climate, focusing on the four areas of finance, infrastructure, governance and regulation. Section 6 then combines these measures to examine their impact on employment growth. Results are presented in two forms. One tests for differential impacts of investment climate conditions across regions. The second allows for further disaggregation of results, allowing non-linear responses across regions and sizes

⁶ Indeed, micro firms in SSA have significantly lower value added per worker – compared to larger enterprises in SSA as well as compared to micro firms in other LOW regions (Table 1c).

of enterprises. Section 7 provides some robustness checks, using alternative measures of the investment climate. It also examines whether the same factors that account for employment growth also explain the choice of technology, namely a enterprise's capital intensity and discuss the implications for productivity and economies of scale. Section 8 concludes.

2. Literature Review

There are two strands of literature that this work draws on. The first is the literature that looks at enterprise sizes and growth in the context of development. The second is the growing importance given to measures of 'institutions' or the investment climate in which enterprises operate and how they can impact employment growth across countries. The focus is on work using enterprise-level data within SSA.⁷

a) Enterprise size, growth and income-levels

Our finding that it is the smallest enterprises that are expanding their employment in low income countries fits into a broader literature. It is not just that small and micro enterprises typically represent the largest share of enterprises and employment in developing countries, many studies find a negative correlation between the extent of small-scale production and income-per-capita -- both across countries and within countries across time (Banarji (1978); Little et al. (1987); and Liedholm and Mead (1999), ILO (2003), Kantis et al. (2004); Simmons (2004).) If the smallest enterprises 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 Biesebeek (2005) among others), implying that in these countries small enterprises have difficulty evolving into larger enterprises. There is also evidence that in

⁷ For more general discussions of the challenges of increasing growth in Africa, see: Azam et al. 2002, Collier 2007, Collier and Gunning 1999, World Bank 2000.

SSA, larger enterprises are relatively more likely to have been started as large enterprises than to have grown into large enterprises (Soderbom and Teal (2004); Sleuwaegen and Goedhuys (2002)). While Tybout (2000) dispels misconceptions that developing countries exhibit less competition or turnover than industrialized countries, he acknowledges that adverse investment climate conditions can pose greater obstacles for small enterprises. Beck et al. (2005) do find evidence that small enterprises can be particularly hurt by limited property rights and access to finance.

Van Biesebroeck (2005) based on a rich enterprise-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 may imply that resources are not being allocated efficiently and that productivity growth will suffer as a result. Using a larger set of countries, the results here indicate that smaller enterprises' lower contribution to overall productivity is of particular concern in SSA compared to other low income regions.

b) Investment climate and enterprise performance in SSA

A number of the authors cited above conjecture that the broader investment climate in which enterprises operate could play a critical role in explaining these patterns of enterprise 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 investment climate matter for growth and improved performance. This is true within the media, where publications such as the Global Competitiveness Report and Doing Business are widely quoted, as well as in the academic literature, e.g. the importance of institutions in explaining longer run growth

patterns (Acemoglu et al. 2001; Rodrik et al. 2004). Several papers that examine a particular dimension of the investment climate using aggregate data have found significant results (e.g. the effect of labor regulations (Botero et al, 2004; Heckman and Pages, 2004), regulations of entry (Djankov et al, 2002, Klapper et al. 2006.) or creditor rights (Levine, 2005)).

However, there are a number of shortcomings within this literature. 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. Too often these measures either rely on the responses of a small number of experts or are based only on perception surveys. This paper fits in the growing literature that instead uses enterprise-level data and disaggregated measures of the investment climate. It uses quantitative measures of the investment climate based on the actual experiences of the full range of enterprises.

Looking at the entire cross-country dataset, Aterido et al. (forthcoming) find a significant role for multiple dimensions of the investment climate on enterprise growth, addressing many of the methodological concerns discussed above. Those results suggest strong composition effects; a weak investment climate shifts downward the size distribution of enterprises. It also found significant non-linearities on the impact of investment climate conditions by size of enterprise. However, it did not explore how these relationships might vary across regions or focus on conditions within SSA.

The collection of new enterprise-level datasets in SSA, of which the ES surveys are a significant contribution,⁸ has enabled new research into the determinants of enterprise performance within SSA. Eifert et al. (2007) show how much higher indirect costs of production are for SSA enterprises compared to enterprises in Asia. Higher costs for transportation, electricity, water, security, and marketing and accounting services can more

⁸ 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 (see Biggs et al. 1999). 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.

than offset any advantage from greater productivity on the factory floor or from lower wage costs.

Many papers have analyzed the impact of a specific dimension of the investment climate, usually finding significant results. 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. Nevertheless, 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.

Van Biesebroeck (2005) using manufacturing firm level data from nine African countries finds that credit constraints and failures in contract enforcement inhibit firms in the domestic market from exploiting economies of scale. However, Frazer (2005) finds that despite inefficiencies in the investment climate, 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, Clark et al. (2004) finds only weak evidence that transportation constraints lower exports. Bigsten et al. (2003) argue in favor of using more quantitative 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, especially exporters. Using more objective information on the costs and time delays associated with infrastructure services is more convincing (Hallward-Driemeier and Aterido 2009).

Reinikka and Svensson (2002), using firm data from Uganda, find that weak public infrastructure lowers private investment, 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 country differences, including GDP per capita, in cross-country regressions, or for looking at differences within countries.

Fisman and Svensson (2007) use panel data from Uganda to show that corruption has significant effects in lowering sales growth. They find the effect 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 results. It will be interesting to test here for the effects in the broader set of countries and whether they differ across regions.

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 et al. 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. 2003; Van Biesebroeck 2005).

These studies indicate that investment climate conditions do affect firm decisions. This paper extends the existing literature in a number of dimensions. It is the first to examine a range of investment climate conditions together and to link them to employment growth in SSA. It looks at multiple dimensions of the investment climate 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 enterprises' 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 over 100 countries. It also brings in additional evidence that shows while average enterprise employment growth is as high in SSA, the greater concentration in labor intensive micro enterprises raises concerns about productivity growth and the efficiency of resource allocation.

3. Data

To better address questions about investment climate conditions and their impact on the performance of a wide variety of enterprises, the World Bank launched its program of Enterprise Surveys in 2001. To date, it has interviewed 86,036 entrepreneurs and senior managers in 104 countries. Of particular interest here are the 16,738 interviews in 31 countries in SSA.

The ES 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 in a comparable manner: 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 enterprise, how the actual investment climate conditions affect the productivity and employment growth of respondents. Fourth, large, randomly selected samples of enterprises allow for results to be compared across types of enterprises, with particular attention paid to enterprise size. For many of the countries in the region, this is the only source of detailed information on enterprise performance and disaggregated objective indicators of a wide variety of investment climate indicators.

Questionnaires are administered using a common methodology.⁹ 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 include countries in six different regions, covering the years 2000-2008.¹⁰ The median sample size is 350 enterprises, with several large countries having substantially larger samples (China, India, Turkey and Vietnam have samples over 1500) (see Table A1 in the annex). The sample of enterprises in each country is stratified by size, sector and location.¹¹ Because of this stratification, large enterprises are, in general, over-sampled in the ESs compared to their

⁹ From <http://rru.worldbank.org/InvestmentClimate/Methodology.aspx>

¹⁰ 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 somewhat smaller set of countries.

¹¹ 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

share in the number of enterprises, but not in terms of their contribution to GDP. The unit of analysis is the “establishment” in the manufacture and service sectors.¹²

The ES data was developed to provide information on aspects of the investment climate faced by enterprises as well as information on enterprises’ performance. One question asks managers the extent by which various aspects of the investment climate are perceived as obstacles to enterprises’ 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 question (i.e. access to finance, corruption etc.) with its perceived impact on the enterprise. Access to finance, corruption, regulatory burdens and infrastructure are among the issues with the biggest relative differences across size of enterprises and so particular focus is given to these dimensions in their impact on enterprise growth. However, these variables also need to be interpreted with some caution, particularly due to concerns that they may reflect more on how the business is faring than on the investment climate itself.¹³

One of the strengths of the dataset is that it also contains a set of objective or quantitative measurements (e.g. time or monetary costs) of those same aspects of the investment climate as they are actually being experienced by the enterprise. As such they are measures of de facto investment climate conditions.¹⁴ For example, rather than just reporting whether unreliable infrastructure is a constraint on a scale of 0 to 4, respondents are asked for the frequency of outages, whether they use a generator, what losses they incur due to outages. Summary statistics of these measures are available on Table 1d. With many potential variables available, we selected ones according to the major dimensions of the investment

¹² 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.

¹³ 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 (2009).

¹⁴ This distinguishes measures from alternatives such as “Doing Business” that provides de jure measures of the regulatory environment. It should be noted that these more quantitative measures still are based on firm responses and are potentially still influenced by respondent’s level of optimism or performance. Taking the location-sector-size average addresses this latter concern.

climate, with alternatives capture different aspects within the category. Thus, for ‘infrastructure’, we use the frequency of outages and the losses from poor transportation. For ‘corruption’, we use the frequency of payments to ‘get things done’ with the frequency with which inspectors ask for ‘gifts’ or additional payments.

Recognizing that some of the responses measuring investment climate indicators could still be endogenous to enterprise performance, this paper takes three steps. First, it relies on the quantitative rather than subjective measures of the investment climate when analyzing the impact of the investment climate on employment growth. While these measures avoid some of the potential shortcomings of subjective measures (Carlin et al. 2006), they do not fully avoid endogeneity concerns, e.g. better performing enterprises may be targets for bribes or better able to access finance. So, as a second step, we use location-sector-size averages (minus enterprises’ own responses) of the investment climate measures rather than the enterprise’s own response (Dollar et al. 2005, Aterido et al. forthcoming). This captures the broader environment in which the enterprise operates and allows the enterprise’s own contribution to the average to be excluded. To ensure adequate numbers of enterprises in each location-sector-size cell average, if there were fewer than 5 observations, dimensions were combined for those enterprises in the small cell. The approach also has the benefit of not losing those observations where an enterprise did not answer all the individual investment climate questions.¹⁵

The third step is to match these average investment climate conditions based on an appropriate measure of enterprises’ size. As discussed in Aterido et al. (forthcoming), this is important to avoid reintroducing endogeneity into the regressions. As demonstrated in Table

¹⁵ This approach is very similar to using location-sector-size dummies as instruments, including these dummies and then applying the test of over-identifying restrictions. Using our basic specification in Table 5, the null hypothesis that the instruments are valid cannot be rejected at $p=0.3$. However, there are other drawbacks to this approach: 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.) As a result, we opt instead to use the average values of the investment climate variables directly in the regressions.

4, investment climate conditions do vary widely by enterprise, with larger enterprises generally experiencing more favorable conditions. If growing enterprises are given their new (ex post) indicator of the investment climate, this builds into the data a positive relationship between growth and the investment climate. Thus, averaged investment climate conditions are matched to enterprises based on their *earlier* size.¹⁶ For example, an enterprise that was on average small and is now large will have “IC_small_enterprise” investment climate indicators based on the responses of all the small enterprises. Thus, instead of assuming the conditions remain constant over time, even if enterprises are changing considerably, we make the less restrictive assumption that conditions facing a size of enterprise now is a good proxy for the conditions a similar sized enterprise faced in the earlier period.

This paper focuses on comparing SSA to non-SSA low-income countries (LOW) to test whether, within the same income level, the impact of investment climate constraints are the same. Across these regions, average rates of employment growth are very similar, however, as the next sections show, there are significant differences between them in the role of the investment climate—both due to objective differences in investment climate conditions and enterprises’ responses to them.

4. Patterns of Employment Growth

There is a large amount of dynamism among the incumbent enterprises in the survey, with relatively high shares of enterprises expanding. More than half of all the incumbent enterprises in SSA report having increased the number of workers they employ. Twenty percent of incumbent enterprises in SSA and 25 per cent in other regions reduced their number of workers, with the remaining 25 percent of enterprises in SSA and 30 percent in other regions maintained the same number of workers.

¹⁶ In selecting the earlier size, ‘initial size’ is one possibility. However, Haltiwanger (2009) argues for using average size to avoid the effects of temporary adjustments in employment relative to longer run employment trends. Both yield consistent results here; what matters most is having investment climate conditions of firms like what the enterprise was ex ante and not what the enterprise is ex post.

Micro enterprises grow at a significantly higher rate than larger enterprises. Some of this is simply a result of their starting off small so that the same increase in the number of employees is proportionately much higher for micro enterprises. This concern that growth rates can be so high for small enterprises is partly addressed by using Davis-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 (Davis and Haltiwanger 1992).

$$\text{Employment growth} = \frac{(L_t - L_{t-s})}{\frac{(L_t + L_{t-s})}{2}}$$

This bounds growth rates between -2 and 2, greatly diminishing the impact of large outliers¹⁷. (e.g. growing from 2 employees to 10 employees would be a 400% growth, or alternatively on the Davis-Haltiwanger measure, $(10-2)/6=1.33$). Even using the Davis-Haltiwanger measure of growth, there are differences across sizes of enterprises in growth rates.¹⁸ Across all countries, micro enterprises are growing 14 percent faster than small enterprises, which in turn are growing 10 percent faster than very large enterprises. Table 1a shows the differences between sizes are particularly striking in lower-income regions.¹⁹

What is striking is that the average rate of growth across enterprises does not vary significantly across regions. Table 2 shows the results of regressing average enterprise growth on a series of enterprise characteristics, country controls and region dummies.

¹⁷ The relevant period over which the growth rate is calculated is based on time t, when the survey was completed, and the earliest employment figures (t-s), where the period is most commonly 3 years, but in some cases is 2 or even 1 year. In the regressions, additional dummies are included to control for the length of the growth period. Simply restricting the sample to those with 3 year growth figures leads to consistent results.

¹⁸ 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 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.

¹⁹ 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.

Controlling for country characteristics (GDP per capita, GDP per capita squared, lagged GDP growth, inflation and exports as a share of GDP) and enterprise characteristics (age, size, city, export status, ownership and sector), regional dummies are not significant. This is true whether regions are defined by geography (col. 1) or by income (col. 3).

We then test whether there are significant differences across sizes of enterprises between SSA and the rest of the world. Size dummies are interacted with dummy variables for geographic regions (col. 2) or by income groups (col. 3). The results show that small, medium and large enterprises 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 enterprises in SSA compared to other low-income regions, there does appear to be differences in the dynamism of enterprises. Column 5 reports the result of a probit estimate of the probability of an enterprise that began as a micro enterprise was able to pass the threshold and become a small enterprise, i.e. to expand above 10 employees. The rate is 10 percent higher in LOW countries – which is substantial given the observed probability is 17 percent. With the same average growth yet lower transition rates, the growth in SSA really appears to be concentrated among the very smallest enterprises.

The statistics in Table 1b illustrate the dynamism using another measure. For each size category, it looks at the distribution of ages of enterprises. In SSA, the micro enterprises are more likely to be younger enterprises (39 percent vs. 30 percent in LOW vs. 21 percent in HIGH countries). This higher share of young enterprises is consistent with greater entry, but also likely signals a higher failure rate of enterprises as fewer are able to remain in business for long periods of time. Being able to capture the contributions of exit and entry directly would, of course, be desirable. Unfortunately this is not possible with the data available.

However, what this paper can compare are incumbent enterprises – and whether the contribution of incumbent enterprises varies across size classifications and across regions.

5. Comparing Investment Climate Constraints

To examine the possible role of the investment climate 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 across investment climate dimensions for each respondent acts like an individual fixed effect and helps address concerns about measurement error (see Hallward-Driemeier and Aterido, 2009). 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.

As a way of describing the perceived constraints in more detail, Table 3 shows the results of regressing the perceived relative constraint on enterprise 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 column in the table. The first column looks at the overall average level of constraint, finding no significant difference between SSA and LOW, but that potential constraints are on average ranked significantly lower in HIGH.

There are three areas where constraints are relatively more constraining in SSA: electricity, access to finance, and transportation. Electricity (col. 2) is 0.6 points (almost one

standard deviation) lower on average in LOW and 0.85 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. Access to finance (col. 3) is 0.52 points lower in LOW and 0.28 points lower in HIGH. On the other hand, tax administration (col. 6) is reported as relatively more concerning for non-SSA entrepreneurs. It is more constraining in LOW countries and even more so in HIGH.

There are also significant differences by exporting status and ownership. SSA exporters are particularly concerned about electricity and somewhat more concerned about labor and corruption, while less concerned about access to finance. Foreign owned, and to an even greater degree government owned enterprises, report fewer constraints overall. While foreign owned enterprises report being relatively less constrained in the other regions, this is not true for SSA. Foreign enterprises are particularly concerned with corruption and crime, the two areas that had received lower rating overall in SSA.

One of the benefits of the ES data is that these qualitative rankings can then be correlated with more objective measures of how these areas of the investment climate impact enterprises. To gain more insight into how these quantitative variables vary by size within regions, Table 4 presents results interacting region and size. The results demonstrate that there is a reason why infrastructure is the dimension with the biggest differences in severity of reported constraint. Enterprises in SSA experience more frequent interruptions in service than do enterprises in other regions. The frequency of outages falls with size, generally as larger enterprises are more likely to invest in generators. Clearly this is an area where SSA enterprises 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. The share of working capital financed by banks is 2.2 percentage points lower in SSA than in LOW, which

is about 20 percent lower given the extensive reliance on retained earnings for financing in both regions.²⁰ While larger enterprises have greater access to finance, the relative lack of access of micro enterprises is much more significant in SSA. Micro and often small enterprises outside of SSA are much more likely to have loans, sales credit or an overdraft.

The results on corruption are more intriguing. LOW countries had complained relatively more about corruption. The data on the frequency of bribes shows that they are asked for bribes more frequently and that the amount paid to ‘get things done’ is indeed higher in LOW than 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. The other striking difference is that micro enterprises 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 enterprises compared to those in other developing countries. And, there are differences across enterprise sizes that are more pronounced in SSA. Together, three patterns emerge: First, outages are more common in SSA. There is little size difference outside SSA, but within SSA, larger enterprises face more frequent interruptions. Second, micro enterprises do have less access to finance—particularly in SSA. Third, while larger enterprises tend to spend more time with officials, micro enterprises in SSA spend even less than those in non-SAS LOW – and pay less in bribes. The next section then looks to see how these differences then translate into employment growth in different regions and across the size distribution of enterprises.

²⁰ These results come from regressions that do not interact the regional dummies by size; the table is available upon request.

6. The Investment Climate and Employment Growth

Tables 5 then relays these objective measures of the investment climate to enterprises' growth performance. Four dimensions are focused on: infrastructure, finance, corruption and regulations. These correspond to the areas where constraints are seen as significant and where there were differences in objective conditions across regions or across enterprise sizes within countries. Incorporating multiple dimensions of the investment climate simultaneously deals seriously with concerns of omitted variable bias of studies that only include a single dimension, e.g. labor regulations or finance. Results reported here include country controls to capture any country effects that could be influencing employment growth. Table 5 tests whether there are differences in the impact of each dimension across regions, as well as with size-region interactions. Table 6 shows the robustness of results selecting alternative measures of the investment climate variables, providing greater nuance into the interpretation of the results.

The specification for tables 5 and 6 is as follows:

$$Empg_{it:t-s} = \beta_0 small_{i,t-s} + \beta_1 medium_{i,t-s} + \beta_2 large_{i,t-s} + \sum_{IC1-4} (\beta_{3IC} ICvariable_{\sim i,jksc} + \beta_{4IC} LOW * ICvariable_{\sim i,jksc}) + \beta_5 Z_i + \beta_6 C_t + \lambda_j + \lambda_t + \varepsilon_{it}$$

where $Empg_{it:t-s}$ refers to the growth of employment of enterprise i in industry j in country c between period $t-s$ and t , small refers to enterprises between 11 and 50 employees, medium refers the enterprises between 51 and 200 and large to enterprises above 200 employees. Thus, the omitted size category is micro enterprises employing between 1 and 10 employees. To avoid a possible feedback from employment growth to size, size categories are measured as the average size over the period of observation (Haltiwanger et al. 2009). Various enterprise characteristics are controlled for in Z_i : Age of the enterprise is specified in three categories: young, from 1 to 5 years old, mature, between 5 and 15 years old and older, above

15 years old. Similarly, Foreign takes the value of 1 in enterprises with more than 10 percent participation of foreign capital and exporter identifies enterprises that export more than 10 percent of their sales at the time of the survey. Government identifies enterprises with participation of more than 10 percent from the government, and small_city identifies enterprises that are in small cities (less than one million habitants and not the capital city). A vector C_t captures country controls (GDP per capita, GDP per capita squared, average GDP growth over previous 3 year period, trade/GDP and inflation).

ICvariable~i,jksc thus refers to the set of investment climate variables, i.e. reliability of infrastructure services, access to finance, corruption or regulations. As discussed earlier, they are averages for the country(c)-city(k)-sector(j)-size(s) cell, excluding the enterprise's own response and matched to enterprises based on their lagged size. Each of the investment climate variables are interacted with region dummies to test if the impact of these conditions are different by income group or between SSA and LOW regions. Table 5 column1 shows that there are significant regional differences in the impact of each of the four investment climate dimensions.²¹

Greater outages are associated with reduced growth in LOW -- but with *higher* growth in SSA. These results seem surprising; one would have expected that interruptions to power would make production difficult and would hamper enterprises' growth prospects. To understand the pattern, the same specification is repeated in Col (3), this time allowing the results to vary by size within regions.

²¹ To save space, while all the HIGH interactions were included, they are not reported here. Overall, access to finance is positive associated with growth in HIGH, weak infrastructure is negatively correlated. Corruption is more positively associated with growth in HIGH, while regulations are more mixed. The full set of results is available on request.

$$\begin{aligned}
Empg_{it:t-s} = & \beta_0 small_{it-s} + \beta_1 medium_{it-s} + \beta_2 large_{it-s} + \beta_3 ICvariable_{\sim i,jkc} \\
& + \sum_{SSA, LOW} \sum_{IC, 1-4} (\beta_4 small_{it-s} * Region * ICvariable_{\sim i,jksc} \\
& + \beta_5 medium_{it-s} * Region * ICvariable_{\sim i,jksc} + \beta_6 large_{it-s} * Region * ICvariable_{\sim i,jksc}) \\
& + \beta_7 Z_i + \beta_8 C_t + \lambda_j + \lambda_t + \varepsilon
\end{aligned}$$

The positive finding that outages are associated with higher growth is strongest for micro enterprises in SSA, with the effect more than offset for large enterprises. The negative effects on growth also rise with size in LOW. So, the explanation comes from understanding why micro enterprises in SSA can grow where outages are more prevalent. This finding would be consistent with weak infrastructure reducing market access and thus competition, allowing for less efficient enterprises to exist, and in some cases to expand. This hypothesis that micro enterprises in SSA are adopting different technologies is explored in the next section.

Access to finance is associated with higher employment growth – but only in LOW.²² In SSA, the effect is even negative. Again, looking at non-linearities by size in Col (3) provides some more insight; the effects are most negative for micro enterprises in SSA, but the overall effect is not significant for larger enterprises. It is possible, that as many of the other investment climate conditions in SSA are more challenging in objective terms, access to finance is less beneficial without these other areas of the investment climate being addressed. Another interpretation is that the variable is acting as a proxy for the extent of market development. As more enterprises are able to access finance, market forces and competition should intensify – making it harder for less efficient micro enterprises to grow or even to maintain their size. It could be that the micro sector in SSA has a disproportionate share of lower productivity enterprises that are then relatively hurt when conditions improve that

²² Recall that the finance variable is defined so that improvements are seen as beneficial, while the others are measured on the inverted scale, where increases indicate additional constraints. If the financial measure was flipped to measure a lack of access, the interpretation is then that with more limited access to finance, micro firms in SSA are relatively more likely to grow.

strengthen competitive pressures. Together with the results on power, the findings point to these issues of greater market segmentation encouraging micro enterprises as more prevalent in SSA than LOW.

The results on corruption are not significant, but there are differences in the effect of the regulatory environment between SSA and LOW. Spending more time with government officials is negatively related to growth in SSA, with no similar effect in LOW. Looking at the differences by size of enterprise, the negative effect is most pronounced for small and medium enterprises (in both regions, but significantly so in SSA). This would be consistent with red tape acting as a deterrent on enterprises' growth, particularly those that are passing the threshold where regulatory compliance becomes an issue. On the other hand, micro enterprises appear to have a positive (if not significant) effect, implying that remaining under the radar screen could be an optimal strategy.

Overall, while the average employment growth rates are the same between LOW and SSA, the impacts of three of the four dimensions of the investment climate in SSA and LOW are statistically different from each other. Compared to enterprises in LOW countries, enterprises in SSA contract employment by less in the face of weak infrastructure, expand more slowly in response to expanded access to finance and government services, and are less likely to expand in the face of red tape.

These results not only confirm the overall importance of investment climate conditions – but that there are significant differences in the impact of conditions between micro and larger enterprises. Aterido et al. 2009 show that merging micro and small enterprises into a single category or the elimination of the micro enterprises from the analysis greatly mutes the message that smaller enterprises that would benefit from a stronger investment climate. Results across enterprise sizes are most pronounced in SSA, with results often driven by micro enterprises responding positively to outages and negatively to financial

competition compared even to small enterprises. This reinforces the need for analysis in the region to be disaggregated to gain a fuller understanding of the constraints and their impact across enterprises.

7. Robustness and Extensions

A number of robustness checks and extensions were conducted.

Selection

One concern is that endogeneity is operating at another level, that enterprises might be selecting locations based on the quality of their investment climate. A correlation between a better environment and better performance could simply reflect that better enterprises are more likely to locate there. To address this concern, we repeated the basic regressions in Table 5 col(1) in col(2), excluding all enterprises that are most likely to be footloose, or likely to choose a location other than the one where the entrepreneur is from. Foreign owned enterprises are mobile in this regard and larger enterprises are also more likely to be more strategic in their choice of location. The regressions are thus run again for domestically owned enterprises only, excluding large enterprises. The results are extremely robust, casting doubt that selection is much of the story.

Choice of variables

The robustness of the results is shown in Table 6 by substituting alternative measures within each of the 4 broad investment climate categories. Each column represents a separate regression, with one variable substituted at a time. The substitutions are made by thematic block. To compare all the results for a particular theme, the basic specification (col.1) (repeated from Table 5 col. 1) plus the regressions with the shaded variables should be looked at (e.g. for finance, col 1 and col 3 show the different finance measures).

Using the alternative measures supports the earlier results. Using the measures of transportation costs, the effects are positive in SSA, while not for LOW. Again this is

primarily due to effects on the micro enterprises in SSA that expand in the face of higher losses in transportation. This finding reinforces the view that market segmentation is a larger concern in SSA.

For access to finance, we use another measure, obtaining financing for working capital. With wider availability, this would be expected to have less of a role in affecting competition. Indeed, the effects are more muted. Still, the benefits are significantly larger in LOW than in SSA.

For corruption, rather than a general measures of whether payments are needed to ‘get things done’, we include a measure about whether ‘gifts’ are asked for or are expected during inspections. While the former was not significant, here the effect is significantly negative in SSA, and positive for LOW. What is also interesting is that the results on management time are now no longer significant. Using time in inspections rather than the broader measure of management time with officials is not significant. However, using the two narrower definitions, gifts and time in inspections gives a similar story: such interactions are associated with greater benefits for enterprises in LOW than in SSA. As enterprises in LOW do interact more with officials than those in SSA, it implies that while gifts or additional payments may be a factor, these enterprises still appear to receive relatively more services or access to public goods that are then beneficial to their growth.²³

Effects on choice of technology and productivity

As raised in the introduction, there can be a trade-off between productivity and employment growth. Part of this can reflect overall efficiency, but it can also reflect differences in the choice of technology. The finding that greater frequency of power interruptions can actually raise employment growth in micro enterprises in SSA raises the question of whether this is due to the substitution of labor for capital; rather than indicating

²³ 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.

overall growth of the enterprise, the higher employment growth reflects a move to more labor intensive practices.

Table 7 presents the results, using an enterprise's capital intensity as the dependent variable. These results are only available for a subset of countries as the information was not included in all the surveys. The results in column 1 do indicate that in areas with more frequent outages, micro enterprises 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. That micro-enterprises in SSA respond to weaknesses in infrastructure and finance by increasing their labor intensity compared to other enterprises and regions clearly helps explain why overall firm employment growth rates are comparable in SSA, but it raises concerns for the longer run productivity associated with such an allocation of resources.

8. Conclusion

The paper has documented how the investment climate in which enterprises operate varies significantly across types of enterprises. Enterprises in SSA do face greater obstacles in terms of infrastructure, finance, public services and governance. And within SSA, the constraints are often greatest for the smallest enterprises. However weak investment climate conditions do not necessarily translate into lower average employment growth. Particularly in SSA, weaknesses in the investment climate are associated with lowering the relative growth of larger enterprises while expanding the growth of micro-enterprises. These results confirm that to understand the impact on employment growth, the effects of the investment climate not only need to be disaggregated across different types of constraints, but also to allow for non-linear effects in their impacts across enterprises.

The econometric results using the objective measures of the investment climate provide implications for priorities for reform in SSA. First, among the areas of the investment climate, 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. The likely effect of reform is estimated to be higher in SSA compared to other low income countries. However, it raises the challenge to policy makers that reform may have perverse effects on employment growth in the short run, especially as micro enterprises adopt less labor intensive technologies. While the results indicate more reliable electricity would allow larger enterprises to expand more – and given their larger size, enough to provide an overall net expansion of employment opportunities – adequate safety nets may still be needed if there is a shift in the qualification profile of individuals seeking employment.

Second, improving access to finance would help raise enterprise growth of larger enterprises, but again raises the need to support the potentially detrimental effect on micro enterprises in SSA. The results also indicate that improved access to finance alone is not sufficient, particularly where other constraints are significant. This may help explain why the impact of expanding access to finance is lower in SSA than in other low income regions.

Third, improving the efficiency of 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 officials, work to reduce red-tape and to improve the quality of government services is needed to turn this around and to help enterprises grow and to encourage formality.

Fourth, corruption is a corollary to government inefficiency – and is associated with the extent of discretion exercised by officials. The evidence here shows that lowering discretion on the part of officials has a payoff. While a lot of focus has been put on the governance agenda in the literature and in public discourse, the evidence presented here finds that corruption has a larger impact on countries in upper-middle and high income groups. In lower income countries, variations in corruption have little significant effect once finance and infrastructure constraints are controlled for.

While a weak investment climate is generally associated with lower growth, this effect is more muted in SSA. Indeed, some of the distortions, particularly from unreliable infrastructure, provide incentives that encourage the expansion of micro enterprises and more labor intensive technologies. This does help expand employment. But, it raises concerns about the longer run contribution to productivity and the allocation of resources. It also cautions policy makers that as reforms are introduced, it will be important to have safety nets in place as workers are displaced and that special attention needs to be placed on barriers that discourage micro enterprises from growing into SMEs and larger enterprises so that net employment does not fall.

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Table 1: Summary Statistics**Region Classification:**

SSA (Sub-Sahara Africa); LOW (non-African low income); HIGH (non-African upper and high income)

Table 1a. Employment growth by firm size¹ and age

	SSA	LOW	HIGH
size 1-10	0.24	0.24	0.16
size 11-50	0.09	0.07	0.07
size 51-200	0.02	0.02	0.05
size +200	-0.02	-0.02	0.02
age 1-5	0.23	0.21	0.23
age 6-15	0.16	0.09	0.10
age +16	0.06	0.01	0.05

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

	SSA			LOW			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	39.0	42.7	18.3	29.5	49.1	21.4	20.6	52.7	26.7
size 11-50	28.2	40.7	31.1	19.0	48.5	32.5	12.7	47.5	39.8
size 51-200	16.4	32.6	51.0	15.2	44.0	40.8	8.5	42.5	49.1
size 201-500	15.5	21.7	62.8	12.6	37.7	49.7	5.9	35.1	59.0

Table 1c. Value Added per Worker (constant US\$)

	SSA		LOW		HIGH	
	median	mean	median	mean	median	mean
size 1-10	\$1,810	\$7,444	\$3,198	\$8,459	\$18,381	\$31,662
size 11-50	\$2,903	\$8,793	\$3,993	\$9,346	\$17,768	\$33,719
size 51-200	\$3,722	\$10,030	\$4,760	\$11,599	\$18,735	\$36,319
size 201+	\$3,768	\$9,774	\$4,642	\$11,456	\$24,856	\$43,992

Table 1d: Variable Description

Variable	Description	mean	sd
Emp-gr	Employment growth	0.11	0.40
Labor,t	Firm number of employees last year (log)	3.28	1.64
No-power	Power outages experienced during the last year	36.30	80.35
Losstransit	Percentage of the average cargo's value lost while in transit	1.51	5.60
Invest-fin	Share of investments financed externally	0.22	0.35
Wcap-fin	Share of working capital financed externally	0.20	0.30
Bribe	Firms in comparable activities bribe to get things done (yes-no)	0.42	0.49
Gift	Whether gifts are expected during inspections (yes-no)	0.16	0.30
Mngt time	Time senior management spends dealing with officials and reg	8.91	14.70
Days-insp	Days visited by officials to conduct inspections	17.10	33.91

¹ 'Size' corresponds to employment categories in the initial time period

Table 2. Patterns of growth

						Transition out of micro
	(1)	(2)		(3)	(4)	(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)
EH1	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)	
SAR	0.002 (0.026)	-0.042 (0.079)	HIGH*small		0.046* (0.023)	
EAP*small		-0.014 (0.103)	HIGH*medium		0.081*** (0.029)	
EAP*medium		-0.020 (0.119)	HIGH*large		0.104*** (0.030)	
EAP*large		-0.036 (0.129)	Small	-0.143*** (0.013)	-0.151*** (0.018)	
ECA *small		0.027 (0.021)	Medium	-0.200*** (0.018)	-0.223*** (0.024)	
ECA *medium		0.010 (0.028)	Large	-0.263*** (0.025)	-0.289*** (0.026)	
ECA *large		0.023 (0.029)	Mature	-0.094*** (0.010)	-0.092*** (0.010)	-0.034*** (0.009)
EH1*small		0.115*** (0.023)	Older	-0.149*** (0.010)	-0.148*** (0.010)	-0.063*** (0.010)
EH1*medium		0.173*** (0.029)	Export	0.086*** (0.008)	0.086*** (0.008)	0.129*** (0.014)
EH1*large		0.184*** (0.035)	Foreign	0.046*** (0.007)	0.045*** (0.007)	0.060*** (0.015)
LAC*small		-0.031 (0.028)	Government	-0.013 (0.011)	-0.009 (0.011)	0.090*** (0.027)
LAC*medium		0.004 (0.037)	Non-capital-small city	-0.026*** (0.007)	-0.025*** (0.008)	-0.020** (0.010)
LAC*large		0.019 (0.037)	SECTOR F.E.	YES	YES	YES
MENA *small		-0.023 (0.052)	COUNTRY CONTROLS	YES	YES	YES
MENA *medium		0.017 (0.056)	Constant	0.095 (0.149)	0.126 (0.154)	Obs Pr: 0.169 Pred Pr: 0.153
MENA *large		0.039 (0.056)	Observations	58592	58592	19413
SAS*small		0.025 (0.071)	R-squared	0.09	0.09	Wald 703.9
SAS*medium		0.081 (0.079)				
SAS*large		0.099 (0.080)				
Firm controls	YES	YES				
Country controls	YES	YES				
Constant	0.279*** (0.028)	0.114 (0.219)				
Observations	58592	58592				
R-squared	0.08	0.09				

EAP: East Asia & Pacific, ECA: East Europe and Central Asia, EH1: Europe High Income, LAC: Latin America and Caribbean, MENA: Middle East and North Africa, SAS: South Asia

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

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

Table 3: Perceived Business Constraints -- By Region

	(1) Av. of all constraints	(2) Electricity	(3) Transportation	(4) Access Finance	(5) Corruption	(6) Tax Administration
LOW	-0.020** (0.009)	-0.587*** (0.015)	-0.446*** (0.012)	-0.515*** (0.014)	0.432*** (0.013)	0.164*** (0.011)
HIGH	-0.174*** (0.013)	-0.849*** (0.021)	-0.445*** (0.017)	-0.275*** (0.019)	-0.094*** (0.019)	0.484*** (0.017)
Small	0.067*** (0.007)	-0.092*** (0.012)	-0.032*** (0.010)	-0.123*** (0.011)	0.023** (0.011)	-0.007 (0.010)
Medium	0.113*** (0.009)	-0.102*** (0.015)	-0.002 (0.012)	-0.228*** (0.013)	-0.059*** (0.013)	-0.013 (0.012)
Large	0.078*** (0.011)	-0.083*** (0.018)	0.067*** (0.015)	-0.291*** (0.016)	-0.108*** (0.016)	-0.066*** (0.015)
Exporter	0.083*** (0.008)	-0.102*** (0.012)	0.016 (0.010)	-0.048*** (0.011)	-0.016 (0.011)	0.016 (0.010)
Foreign	-0.040*** (0.009)	-0.049*** (0.015)	0.050*** (0.013)	-0.279*** (0.013)	0.008 (0.013)	0.005 (0.012)
Government	-0.203*** (0.012)	-0.092*** (0.018)	0.091*** (0.017)	0.166*** (0.018)	-0.192*** (0.017)	-0.052*** (0.016)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Cntry Controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.852*** (0.025)	2.047*** (0.043)	0.193*** (0.036)	1.267*** (0.039)	0.329*** (0.038)	0.540*** (0.035)
Observations	70421	70168	69179	67536	68505	69354
R-squared	0.094	0.144	0.055	0.081	0.059	0.022

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

Dependent variables are relative rankings, controlling for individuals' average level of complaint. Firm avgs are used in col (1).

Firm controls include age, city, and sector and country dummies

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

Table 4: Experienced Business Conditions - By Region and Size

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	No-power	Loss-transit	Invest-fin	Wcap-fin	Bribe	Gift	Mngt-time	Days-inspec
SSA_Small	-0.183*** (0.037)	0.361** (0.175)	0.068*** (0.008)	0.035*** (0.005)	-0.002 (0.010)	0.013* (0.007)	2.338*** (0.216)	0.304*** (0.028)
SSA_Medium	-0.274*** (0.049)	0.770*** (0.241)	0.151*** (0.013)	0.084*** (0.008)	-0.060*** (0.014)	-0.003 (0.009)	2.860*** (0.351)	0.487*** (0.040)
SSA_Large	-0.414*** (0.069)	0.304 (0.380)	0.127*** (0.017)	0.060*** (0.013)	-0.067*** (0.019)	0.017 (0.014)	3.981*** (0.600)	0.508*** (0.060)
LOW_Micro	-1.236*** (0.031)	-0.626*** (0.144)	0.042*** (0.007)	-0.079*** (0.004)	0.113*** (0.009)	0.057*** (0.007)	2.660*** (0.209)	-0.499*** (0.025)
LOW_Small	-1.193*** (0.030)	-0.609*** (0.139)	0.093*** (0.006)	-0.017*** (0.004)	0.134*** (0.008)	0.063*** (0.006)	3.987*** (0.197)	-0.189*** (0.024)
LOW_Medium	-1.158*** (0.034)	-0.758*** (0.145)	0.139*** (0.008)	0.027*** (0.005)	0.128*** (0.010)	0.052*** (0.007)	4.072*** (0.240)	0.136*** (0.027)
LOW_Large	-1.303*** (0.038)	-0.932*** (0.150)	0.177*** (0.008)	0.054*** (0.006)	0.115*** (0.011)	0.037*** (0.008)	2.893*** (0.265)	0.425*** (0.030)
HIGH_Micro	-1.070*** (0.037)	-1.276*** (0.180)	-0.018* (0.009)	-0.172*** (0.006)	0.059*** (0.011)	-0.027** (0.013)	-3.017*** (0.282)	-0.299*** (0.031)
HIGH_Small	-0.843*** (0.039)	-1.249*** (0.179)	0.066*** (0.010)	-0.101*** (0.007)	0.139*** (0.012)	0.013 (0.011)	-0.560* (0.315)	0.044 (0.033)
HIGH_Medium	-0.870*** (0.042)	-1.357*** (0.189)	0.089*** (0.012)	-0.081*** (0.008)	0.061*** (0.013)	0.028** (0.013)	0.223 (0.368)	0.188*** (0.036)
HIGH_Large	-1.042*** (0.045)	-1.277*** (0.217)	0.104*** (0.013)	-0.069*** (0.009)	0.064*** (0.015)	0.013 (0.017)	-1.415*** (0.388)	0.325*** (0.041)
Firm Controls	YES	YES	YES	YES	YES	YES	YES	YES
Cntry Controls	YES	YES	YES	YES	YES	YES	YES	YES
Constant	7.550*** (0.063)	2.463*** (0.247)	-0.096*** (0.014)	0.010 (0.010)	0.966*** (0.018)	0.213*** (0.014)	3.163*** (0.481)	3.844*** (0.052)
Observations	63490	47006	43136	65346	56073	34213	66572	59034
R-squared	0.339	0.017	0.077	0.076	0.072	0.041	0.051	0.153

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

Firm Controls: age, exporter, foreign owned, government, city, and sector and country dummies

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

Table 5: Impact of Investment Climate on Employment Growth

<i>by region</i>			<i>by region and size</i>		
	(1)	(2)		(3)	(3) cont.
	Basic	Domestic SME		Basic*size	Basic*size
No-power	0.019** (0.008)	0.014* (0.008)	No-power	0.020** (0.008)	Mngt-time 0.003 (0.003)
No-power*LOW	-0.026*** (0.009)	-0.022** (0.009)	(SSA *small)*No-power	-0.000 (0.009)	(SSA *small)*Mngt-time -0.009*** (0.004)
Invest-fin	-0.166*** (0.052)	-0.216*** (0.059)	(SSA *medium)*No-power	-0.020 (0.013)	(SSA *medium)*Mngt-time -0.010** (0.005)
Invest-fin*LOW	0.268*** (0.061)	0.308*** (0.069)	(SSA *large)*No-power	-0.032 (0.021)	(SSA *large)*Mngt-time 0.000 (0.006)
Bribe	0.002 (0.029)	0.014 (0.030)	(LOW *micro)*No-power	-0.019* (0.010)	(LOW *micro)*Mngt-time 0.001 (0.004)
Bribe*LOW	0.034 (0.036)	0.035 (0.038)	(LOW *small)*No-power	-0.029*** (0.011)	(LOW *small)*Mngt-time -0.005 (0.004)
Mngt-time	-0.003* (0.002)	-0.002 (0.002)	(LOW *medium)*No-power	-0.033*** (0.011)	(LOW *medium)*Mngt-time -0.001 (0.004)
Mngt-time*LOW	0.004** (0.002)	0.003 (0.002)	(LOW *large)*No-power	-0.022* (0.012)	(LOW *large)*Mngt-time -0.002 (0.004)
Firm Controls	Yes	Yes	Invest-fin	-0.197* (0.116)	Bribes (Freq. bribes) 0.002 (0.053)
Cntry Controls	Yes	Yes			
Constant	0.065 (0.058)	0.084 (0.061)	(SSA *small)*Invest-fin	0.093 (0.129)	(SSA *small)*Bribes -0.039 (0.049)
Observations	50829	41171	(SSA *medium)*Invest-fin	0.107 (0.148)	(SSA *med)*Bribes 0.013 (0.076)
R-squared	0.055	0.054	(SSA *large)*Invest-fin	-0.011 (0.188)	(SSA *large)*Bribes -0.081 (0.134)
			(LOW *micro)*Invest-fin	0.220* (0.130)	(LOW *micro)*Bribes 0.063 (0.062)
			(LOW *small)*Invest-fin	0.290** (0.128)	(LOW *small)*Bribes 0.051 (0.066)
			(LOW *medium)*Invest-fin	0.373*** (0.126)	(LOW *med)*Bribes 0.014 (0.065)
			(LOW *large)*Invest-fin	0.367*** (0.134)	(LOW *large)*Bribes -0.028 (0.066)
				Firm Controls	Yes
				Cntry Controls	Yes
				Observations	50829
				R-squared	0.057

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

Firm controls include: Firm characteristics (size, age, export status, ownership), sector and year dummies

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

Standard errors are clustered on country-location-sector-year cell used to construct the investment climate averages.

Table 6: Impact of the Investment Climate on Employment Growth by Region

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Infrastructure</i>						
No-power	0.019** (0.008)		0.019** (0.008)	0.022*** (0.008)	0.019** (0.008)	0.023*** (0.008)
LOW*No-power	-0.026*** (0.009)		-0.028*** (0.009)	-0.028*** (0.009)	-0.029*** (0.009)	-0.030*** (0.009)
Losstransit		0.006** (0.003)				
LOW*Losstransit		-0.006* (0.004)				
<i>Finance</i>						
Invest_fin	-0.166*** (0.052)	-0.177*** (0.055)		-0.135** (0.055)	-0.207*** (0.049)	-0.141*** (0.051)
LOW*Invest_fin	0.268*** (0.061)	0.239*** (0.068)		0.235*** (0.067)	0.302*** (0.059)	0.241*** (0.063)
Wcap_fin			0.038 (0.059)			
LOW*Wcap_fin			0.167** (0.066)			
<i>Corruption</i>						
Bribes y-n	0.002 (0.029)	-0.003 (0.026)	-0.002 (0.028)		-0.005 (0.028)	
LOW*Bribes y-n	0.034 (0.036)	0.047 (0.034)	0.052 (0.035)		0.035 (0.036)	
Gift y-n				-0.114* (0.066)		-0.141** (0.066)
LOW*Gift y-n				0.215*** (0.082)		0.215*** (0.082)
<i>Government</i>						
Mngt-time	-0.003* (0.002)	-0.004** (0.002)	-0.003** (0.001)	-0.002 (0.002)		
LOW*Mngt-time	0.004** (0.002)	0.004** (0.002)	0.005*** (0.002)	0.002 (0.002)		
Days-insp					-0.009 (0.010)	-0.008 (0.011)
LOW*Days-insp					0.008 (0.012)	0.023* (0.013)
Icvariable*HIGH	YES	YES	YES	YES	YES	YES
Firm Controls	YES	YES	YES	YES	YES	YES
Cntry Controls	YES	YES	YES	YES	YES	YES
Observations	50829	38313	49156	31175	45822	31504
R-squared	0.055	0.052	0.055	0.057	0.055	0.057

Firm controls include: Firm characteristics (size, age, export status, ownership), sector and year dummies

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

S.E. are clustered on country-location-sector-year cell used to construct the investment climate averages.

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

DEPENDENT VARIABLE	Capital per worker	
	(1) Freq. of outages	(2) Losses from outages
ICInfrastructure	-0.528 (0.163)***	-0.037 (0.019)*
(SSA*small)*ICInfrastructure	0.422 (0.113)***	0.036 (0.015)**
(SSA*medium)*ICInfrastructure	0.572 (0.137)***	0.033 (0.017)**
(SSA*large)*ICInfrastructure	0.368 (0.222)*	0.014 (0.020)
(LOW*micro)*ICInfrastructure	0.698 (0.195)***	0.058 (0.029)**
(LOW*small)*ICInfrastructure	0.689 (0.193)***	0.117 (0.041)***
(LOW*medium)*ICInfrastructure	0.725 (0.196)***	0.120 (0.033)***
(LOW*large)*ICInfrastructure	0.460 (0.219)**	0.100 (0.062)
Invest-fin	-0.009 (0.007)	-0.003 (0.008)
(SSA*small)*Invest-fin	0.001 (0.009)	-0.005 (0.009)
(SSA*medium)*Invest-fin	0.009 (0.010)	0.006 (0.010)
(SSA*large)*Invest-fin	0.015 (0.011)	0.012 (0.011)
(LOW*micro)*Invest-fin	0.022 (0.009)**	0.009 (0.009)
(LOW*small)*Invest-fin	0.016 (0.009)*	0.008 (0.009)
(LOW*medium)*Invest-fin	0.018 (0.009)**	0.012 (0.008)
(LOW*large)*Invest-fin	0.020 (0.010)**	0.015 (0.009)*
Observations	15439	26160
R-squared	0.78	0.82
INCOMESize*Bribes	YES	YES
INCOMESize*Mngt-time	YES	YES
Firm Controls	YES	YES
Country fixed effect	YES	YES

Robust standard errors in parentheses; clustered 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 HICs-income countries, were included.

Firm Controls: size, age, exporter, foreign, government, and sector dummies. Use of generator included in (2)

Table A1. Dataset

SSA		LOW				HIGH	
<i>Survey</i>	<i>N.obs.</i>	<i>Survey</i>	<i>N.obs.</i>	<i>Survey</i>	<i>N.obs.</i>	<i>Survey</i>	<i>N.obs.</i>
Angola2006	540	Albania2002	170	Kyrgyzstan2002	173	Chile2004	948
Benin2004	197	Albania2005	204	Kyrgyzstan2003	102	CostaRica2005	343
Botswana2006	444	Algeria2002	557	Kyrgyzstan2005	202	Croatia2002	187
BurkinaFaso2006	139	Argentina2006	1,063	Laos2005	246	Croatia2005	236
Burundi2006	407	Armenia2002	171	Mexico2006	1,480	Czech2002	268
Cameroon2006	172	Armenia2005	351	Moldova2002	174	Czech2005	343
CapeVerde2006	98	Azerbaijan2002	170	Moldova2003	103	Estonia2002	170
DRC2006	444	Azerbaijan2005	350	Moldova2005	350	Estonia2005	219
Ethiopia2002	427	Bangladesh2002	1,001	Mongolia2004	195	Germany2005	1,196
Gambia2006	301	Belarus2002	250	Montenegro2002	100	Greece2005	546
Ghana2007	616	Belarus2005	325	Morocco2004	850	Hungary2002	250
Guinea2006	327	Belarus2008	273	Nicaragua2003	452	Hungary2005	610
GuineaBissau2006	296	BiH2002	182	Nicaragua2006	478	Ireland2005	501
Kenya2003	284	BiH2005	200	Pakistan2002	965	Latvia2002	176
Kenya2007	781	Bolivia2006	613	Panama2006	604	Latvia2005	205
Lesotho2003	75	Brazil2003	1,642	Paraguay2006	613	Lebanon2006	354
Madagascar2005	293	Bulgaria2002	250	Peru2002	576	Lithuania2002	200
Malawi2005	160	Bulgaria2004	548	Peru2006	632	Lithuania2004	239
Mali2003	155	Bulgaria2005	300	Philippines2003	716	Lithuania2005	205
Mali2007	619	Cambodia2003	503	Romania2002	255	Malaysia2002	902
Mauritania2006	361	Chile2006	1,017	Romania2005	600	Oman2003	337
Mauritius2005	212	China2002	1,548	Russia2002	506	Poland2002	500
Mozambique2007	599	China2003	2,400	Serb&Mont2002	250	Poland2003	108
Namibia2006	429	Colombia2006	1,000	Serb&Mont2005	300	Poland2005	975
Niger2005	125	Dom.Republic2005	225	Serbia2003	408	Portugal2005	505
Nigeria2007	2,387	Ecuador2003	453	SriLanka2004	452	Russia2005	601
Rwanda2006	340	Ecuador2006	658	Syria2003	560	Slovakia2002	170
Senegal2003	262	Egypt2004	977	Tajikistan2002	176	Slovakia2005	220
Senegal2007	626	Egypt2006	996	Tajikistan2003	107	Slovenia2002	188
SouthAfrica2003	603	ElSalvador2003	465	Tajikistan2005	200	Slovenia2005	223
SouthAfrica2007	1,057	ElSalvador2006	693	Tajikistan2008	360	SouthKorea2005	598
Swaziland2006	429	FYROM2002	170	Thailand2004	1,385	Spain2005	606
Tanzania2003	276	FYROM2005	200	Thailand2006	1,043	Turkey-b2005	1,323
Tanzania2006	484	Georgia2002	174	Turkey2002	514	Turkey2005	557
Uganda2003	300	Georgia2005	200	Turkey2008	1,152		
Uganda2006	663	Georgia2008	373	Ukraine2002	463		
Zambia2002	207	Guatemala2003	455	Ukraine2005	594		
Zambia2007	603	Guatemala2006	522	Ukraine2008	851		
		Guyana2004	163	Uruguay2006	621		
		Honduras2003	450	Uzbekistan2002	260		
		Honduras2006	436	Uzbekistan2003	100		
		India2002	1,827	Uzbekistan2005	300		
		India2006	4,234	Uzbekistan2008	366		
		Indonesia2003	713	Venezuela2006	500		
		Jamaica2005	94	Vietnam-b2005	500		
		Jordan2006	503	Vietnam2005	1,150		
		Kazakhstan2002	250	WestBGaza2006	401		
		Kazakhstan2005	585				
Total AFRICA	16,738	Total LOW		54,289		Total HIGH	15,009