

What Matters to African Firms?

The Relevance of Perceptions Data

Alan Gelb

Vijaya Ramachandran

Manju Kedia Shah

Ginger Turner

The World Bank
Development Economics Vice Presidency
December 2007



Abstract

Can perceptions data help us understand investment climate constraints facing the private sector? Or do firms simply complain about everything?

In this paper, the authors provide a picture of how firms' views on constraints differ across countries in Sub-Saharan Africa. Using the World Bank's Enterprise Surveys database, they find that reported constraints reflect country characteristics and vary systematically by level of income—the most elemental constraints to doing business (power, access to finance, ability to plan ahead) appear to be most binding at low levels of income. As countries develop and these elemental constraints are relaxed, governance-related constraints become more problematic. As countries move further up the income scale and the state becomes more capable, labor regulation is perceived to be more of a problem—business is just one among several important constituencies.

The authors also consider whether firm-level characteristics—such as size, ownership, exporter status, and firms' own experience—affect firms' views on the severity of constraints. They find that, net of country and

sector fixed effects and firm characteristics, firms' views do reflect their experience as evidenced by responses to other questions in surveys. The results suggest that there are both country-level and firm-level variations in the investment climate.

Turning to the concept of “binding constraints,” the Enterprise Surveys do not generally suggest one single binding constraint facing firms in difficult business climates. However, there do appear to be groups of constraints that matter more at different income levels, with a few elemental constraints being especially important at low levels and a few regulatory constraints at high levels, but a difficult range of governance-related constraints at intermediate levels. Adjusting to a constraint does not mean that firms then do not recognize it—for example, generator-owning firms are not distinguishable from other firms when ranking electricity as a constraint. Overall, firms do appear to discriminate between constraints in a reasonable way. Their views can provide a useful first step in the business-government consultative process and help in prioritizing more specific behavioral analysis and policy reforms.

This paper—a product of the Development Economics Vice Presidency—is part of a larger effort in the department to understand the determinacy of private sector development. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The author may be contacted at agelb@worldbank.org.

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

**WHAT MATTERS TO AFRICAN FIRMS?
The Relevance of Perceptions Data**

Alan Gelb (World Bank)
Vijaya Ramachandran (Center for Global Development)
Manju Kedia Shah (World Bank)
Ginger Turner (Oxford University)

The authors are grateful to George Clarke, Michael Clemens, William Cline, Benn Eifert, Ana Fernandes, Alan Hirsch, Alvaro Gonzalez, Giuseppe Iarossi, Aart Kraay, Steve Knack, Phil Keefer, Taye Mengistae, Jean Michel Marchat, Luis Serven, David Roodman, and seminar participants at the Center for Global Development, Cornell University, and the World Bank for helpful suggestions. Comments are welcome and can be sent to Alan Gelb at agelb@worldbank.org or Vijaya Ramachandran at vramachandran@cgdev.org.

The findings, interpretations and conclusions expressed in this paper do not represent the views of the World Bank, its Executive Directors or the countries they represent.

I Introduction: Firm Perceptions of the Investment Climate

In common with many other surveys, the Enterprise Surveys conducted by the World Bank collect both quantitative data on firm performance and perceptions-based data on the severity of a number of potential constraints facing the firm. Perceptions-based data are sometimes used in economic analysis, but there has been some debate on their value for assessing constraints. Firms' benchmarks may differ by country—much as a poor family in a country belonging to the Organization for Economic Cooperation and Development may feel “poorer” than a more deprived one in a low-income country, a firm in South Africa may see corruption as a more serious problem than a firm in, say, Nigeria even if corruption is more endemic in the latter country. Benchmarks may be influenced by waves of pessimism and euphoria reflecting adverse or favorable trends. Since firms and entrepreneurs enter and exit in response to opportunities and constraints, they are endogenous to the investment climate and their opinions may not accurately reflect the severity of constraints as perceived by potential or discouraged entrants.

How seriously a firm rates a particular “external” investment climate constraint could also be influenced by its severity relative to other constraints. Whether studies should rate or rank constraints is a live issue, particularly in the light of efforts to find the “binding constraint” to growth (Hausmann, Rodrik, and Velasco, 2005). Firms may not recognize the origin of their problems—for example, slow customs clearance could reflect an “external” difficulty (corruption, slow procedures) or factors internal to the firm (an inability to provide proper documentation).

Despite these shortcomings, views on the severity of investment climate constraints are widely used to frame priorities for reforms and investments. They are increasingly complemented by “Doing Business” indicators based on expert surveys (*Doing Business*, 2004-07). The latter provide a more comparable cross-country perspective across a detailed range of regulation, but not a firm-level view of the de facto severity of regulatory and infrastructural obstacles. In principle, such approaches are

complementary, but combining approaches is only valuable if each supplies useful information.

The objective of this paper is therefore to provide an initial analysis of firms' perceptions of constraints on the business climate, as reported across a number of the World Bank's Enterprise Surveys, with special emphasis on Africa.¹ How does the reported severity of these constraints compare across countries and across different types of constraints, such as macroeconomic management and governance, regulation, factor markets and infrastructure? Does the probability that a firm rates a constraint as serious appear to vary systematically by type of firm as well as across countries? Do firms' ratings conform to patterns expected from other survey data, where available? Do the cross-country patterns confirm to other cross-country evidence?

In this paper, we look at perceptions of firms regarding the investment climate across twenty-six African countries where similar questions have been included—Burundi, Democratic Republic of Congo, Ethiopia, Malawi, Guinea-Bissau, Eritrea, Uganda, Gambia, Madagascar, Mozambique, Tanzania, Mali, Burkina Faso, Zambia, Benin, Kenya, Mauritania, Senegal, Lesotho, Angola, Cape Verde, Swaziland, Namibia, South Africa, Mauritius, and Botswana—in surveys encompassing almost five thousand firms. The Enterprise Surveys were carried out between 2002 and 2006 by the Africa Private Sector Group of the World Bank.

In Section II we review some existing literature on firm perceptions, including studies bearing on the choice of whether to ask firms to rank or to rate constraints. Section III provides a picture of how views on constraints differ across countries, and also considers whether cross-country perception patterns are reasonably consistent with other data. Section IV shifts towards firm-level analysis--we offer a simple conceptual model of firms' responses and test this using Probit regressions, to see whether factors such as size,

¹ More information on the World Bank's Enterprise Surveys can be found at www.enterprisesurveys.org. These surveys are also sometimes referred to as the World Bank's Investment Climate Surveys or ICA data.

ownership and exporter status drive firm perceptions as expected. We also test whether firms' views actually reflect their experience, as evidenced by responses to other questions in surveys. Section V concludes.

II What Do Perceptions Tell Us? A Review of the Literature

2.1 Rankings versus Ratings

Any study of perception-based data needs to start off with a clear understanding of what is being measured. As shown by many studies, including those referenced in Iarossi (2006), responses are sensitive to how the question is framed. One debate is whether ratings or rankings are preferable for measuring “values” or other opinion-based variables. Alwin and Krosnick (1987) find that rating and ranking choices can produce different results, but that the difference is eliminated when “non-discriminating” respondents—that is, those who rate most items similarly are removed from the sample. To reduce the incidence of low discrimination, McCarty and Shrum (2000) suggest that first asking respondents to pick their least and most important values, and then to rate all values provides more robust differentiation than using rankings alone. Alwin and Krosnick (1985) also analyze comparisons of ranking and rating. They conclude that ranking may be preferred as forcing stronger expression and relationships. But they include an important caveat—forcing a ranking may induce spurious differentiation for respondents who genuinely do not have major preferences among different choices. One way of interpreting this literature is that, while the choice of ranking and rating will depend on the precise question at hand, elements of ranking and rating may need to be combined to allow responses that are less constrained yet discriminating.

This has implications for investment climate analyses which usually include coverage of many potential constraints. Whether a single “binding constraint” exists is an empirical question. In this case, rating would therefore seem preferable, to allow responses to reflect an essential degree of flexibility. In addition, simply asking firms to rank constraints provides no information on whether the top-ranked constraint is serious or

not. But what is the benchmark against which firms in a given country are expected to rate the severity of a particular constraint? Except possibly for multinationals active in many economies, firms will have no “absolute” scale against which the effect of individual constraints can be assessed. Further, any simple quantitative criterion (how much could sales increase if a particular constraint is relaxed?) can mislead in cases where constraints bind firms simultaneously. In such cases, even if all constraints together are important, no one constraint may be important on its own, and we might expect to see a cluster of constraints identified.

There is no simple answer to such questions. Firms’ responses are likely to embody a blend of rating and rankings—constraints will be stressed if seen as seriously problematic, and particularly if seen as serious relative to other constraints experienced by the firm. To help firms discriminate in this way, without forcing an absolute ranking, the procedure advocated by McCarty and Shrum seems the most appropriate. First introduce a “showcard” with all alternatives to help firms to consider the most and least important ones, then ask for ratings. The Enterprise Surveys discussed below do not formally use the showcard method. However, we understand that in practice managers are usually informed about the list of constraints before being asked to rate their importance, so that the procedure in general conforms to the McCarty-Shrum recommendation.²

Another important issue raised by Iarossi (2006) and others concerns the ordering of alternatives. This has been shown by studies to potentially influence responses. One approach to this problem could be to randomize the order of options. This is not done in the ICA surveys; however, the ordering of the options is the same across all countries, so that differences in response cannot be ascribed to order changes. Finally, Bourguignon (2006) notes the importance of distinguishing between the perception of a constraint and the impact on performance if this constraint is relaxed. This bears on how the question should be framed and the importance of confirming opinion-based indicators with

² From discussions with World Bank staff fielding survey instruments, it is clear that in some cases, enumerators are instructed to show managers the entire list. In other case, they may do so anyway in order to speed up the response process.

behavioral evidence. The present paper does not go as far as this, but focuses on the factors shaping the opinions and what they suggest about investment climate priorities in Africa.

2.2 Some Previous Studies

Most firm surveys request qualitative views on aspects of the investment climate, but few studies provide cross-country information comparing their patterns and their relationships with “objective” constraints. Two of the few are Hellman et al (2000), and Fries, Lysenko and Polanec (2003), which use BEEPS (Business Environment and Enterprise Performance) data to assess changes in the business climate across a number of countries in Central and Eastern Europe. The former paper focuses on governance, corruption and state capture. Among other results, it concludes that there is little evidence pointing to “country perception bias” associated with the use of different benchmarks. The latter paper concludes that qualitative measures of the business environment appear to provide reasonably accurate measures of its quality and of changes over time. It also shows relationships between these qualitative measures and quantitative behavioral variables, such as firms’ investment and growth rates.

The question of whether firms’ perceptions of the severity of constraints is reflected in actual behavior is more contentious however, particularly in the area of finance. Ayyagari, Demirguc-Kunt and Maximovic (2006) assess evidence on the severity of constraints from the World Business Environment survey on firm-specific sales growth rates. They find considerable differences between the relative severity of constraints as described by firms and the factors that appear to be most correlated with differences in growth. In particular, recent growth rates appeared to be strongly influenced by whether firms considered access to finance as a serious constraint even when finance was not widely identified as a key binding constraint. Some analysts have argued the converse. Although access to credit is often flagged by firm managers as a constraint in African surveys, Teal, (1998), Swamy and Raturi (1999) and others suggest that evidence does not support the argument that limited credit is the main reason why firms are not

investing more in their own operations, even though some firms may be credit constrained. This could be because marginal returns to investment are well below the average and therefore act as a disincentive to expansion, even when firms have retained earnings.

A recent, comprehensive paper on firm perceptions looks at the issue of finance as well as several other key components of the investment climate across a very large set of countries (Carlin, Schaeffer and Seabright, 2006). Carlin et. al. find that small firms complain about finance while large firms complain about almost everything else. Their result raises an interesting question—if small firms' concerns about finance are not related to their actual credit constraints, could it be the case that large firms' perceptions are spurious as well? In particular, are large firms complaining about actual constraints or are they complaining about other things because they do not have a problem with access to finance? We approach this issue in our econometric analysis, by looking at the pairwise correlations between firm perceptions and quantitative measures of the investment climate, across small, medium and large firms in our data sample.

In an overview of subjective data that relies on a wide range of empirical literature, Bertrand and Mullainathan argue that subjective data must be treated with skepticism (Bertrand and Mullainathan, 2006). They argue that subjective data should not generally be used as dependent variables because of a host of problems related to measurement errors. But they also note that these data can be used as explanatory variables as long as caution is exercised with regard to causality. The authors also argue that changes in answers to questions do not appear to be useful in explaining corresponding changes in behavior, based on their review of studies conducted in the U.S.

In our analysis, although we consider correlations between subjective and objective measures, we do not yet have panel data and are as yet unable to assess whether these correlations are the same or different over time.

III Constraints in Enterprise Surveys

3.1 Country Profiles and Country-Level Differences in Firm Perceptions

Many Enterprise Surveys ask firms the following question, with answers ranging from No Obstacle to Very Severe:

Do you think that the following present any obstacle to the current operations of your establishment?

1	Telecommunications	
2	Electricity	
3	Transportation	
4	Access to Land	
5	Tax Rates	
6	Tax Administration	
7	Customs and Trade Regulations	
8	Functioning of the Courts	
9	Labor Regulations	
10	Inadequately Educated Workforce	
11	Business Licensing and Permits	
12	Access to Finance (availability and cost)	
13	Political Instability	
14	Macroeconomic Instability	
15	Corruption	
16	Crime, Theft and Disorder	
17	Practices of competitors informal sector	

Obstacle	
No Obstacle	1
Minor Obstacle	2
Moderate	3
Major Obstacle	4
Very Severe	5

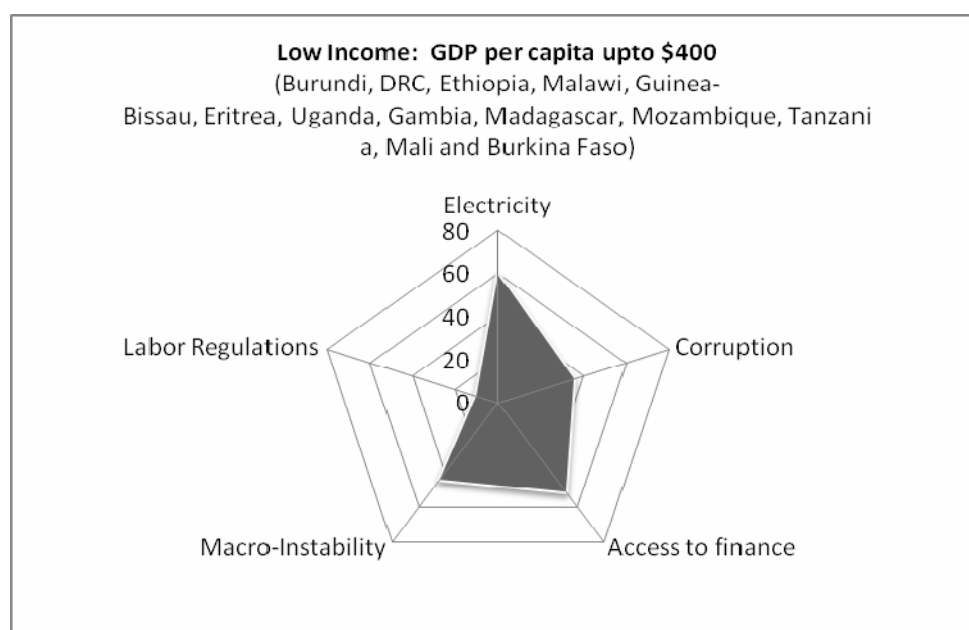
We begin our analysis by looking at five constraints—electricity, access to finance, corruption, macro-instability, and labor regulations—which are fairly representative of the range of infrastructure, factor-market, governance and regulatory constraints that firms typically face. We also widen our analysis, as we go along, to consider a slightly larger set of constraints that are related to the five mentioned above.

Table 1: Percentage of Firms Ranking a Constraint as Major or Severe

	PER CAPITA INCOME	Electricity	Corruption	Access to finance	Macro instability	Labor regulations
Low Income						
Burundi	100.0	79.10	14.93	67.91	47.01	2.24
DRC	120.0	84.78	15.22	67.39	63.59	16.85
Ethiopia	160.0	42.45	39.00	42.82	35.28	4.57
Malawi	160.0	60.51	46.79	42.04	75.80	12.74
Guinea-Bissau	180.0	73.77	29.51	86.89	54.10	4.92
Eritrea	220.0	36.76	1.52	54.39	80.88	5.8
Uganda	280.0	87.63	20.97	62.90	21.51	1.61
Gambia	290.0	72.95	14.75	68.03	27.05	3.28
Madagascar	290.0	41.72	45.99	59.06	64.71	14.98
Mozambique	310.0	64.02	63.74	79.33	62.84	38.25
Tanzania	340.0	57.92	50.97	49.03	42.86	12.26
Mali	380.0	22.56	49.25	56.49	11.81	3.73
Burkina Faso	400.0	68.63	54.90	76.47	35.29	17.65
Lower Middle Income						
Zambia	490.0	37.71	47.70	54.60	76.00	17.14
Benin	510.0	69.02	85.08	74.32	49.71	36.41
Kenya	530.0	48.22	74.41	44.31	52.80	22.87
Mauritania	560.0	46.51	27.91	53.49	18.60	8.14
Senegal	710.0	31.65	40.43	55.98	26.50	14.89
Lesotho	960.0	35.62	36.11	39.44	40.00	17.57
Angola	1350.0	62.03	35.44	62.45	24.05	13.5
Cape Verde	1870.0	70.45	13.64	47.73	13.64	13.64
Upper Middle Income						
Swaziland	2280.0	18.09	27.66	36.17	15.96	13.83
Namibia	2990.0	13.04	25.55	36.33	24.64	14.49
South Africa	4960.0	9.28	16.32	12.89	33.51	33.39
Botswana	5180.0	9.38	25.78	42.19	35.16	10.16
Mauritius	5260.0	13.00	36.73	33.33	39.70	28.14

Table 1 shows the percentage of firms ranking each of these constraints to be major or severe, in the twenty six countries used in this analysis.³ Figures 1a-1c shows spider charts with the percentages of firms rating constraints as major or severe across three income groups. These suggest a pattern, with constraints such as power and finance dominating at low levels, corruption becoming a more serious problem at middle levels, and a decline in perceived problems at high levels except for labor regulation.

Figure 1a:
Percentage of Firms Ranking a Constraint as Major or Severe
in countries with income up to \$400 per capita



³ Additional calculations available from the authors show the perceptions of firms with regard to the five constraints for individual countries, as well as the results for all constraints, by country and by aggregated groups.

Figure 1b
Percentage of Firms Ranking a Constraint as Major or Severe
in countries with income between \$400 and \$2000 per capita

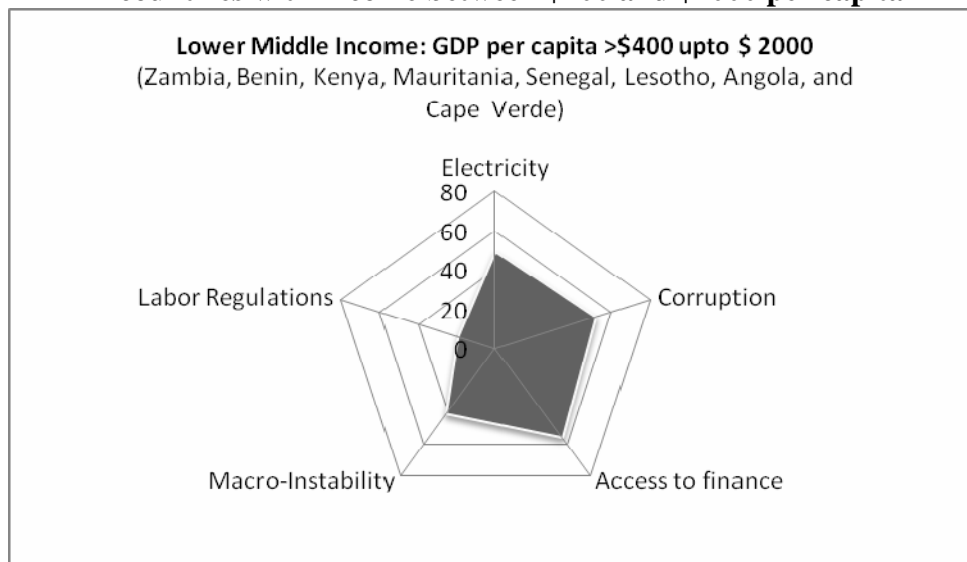
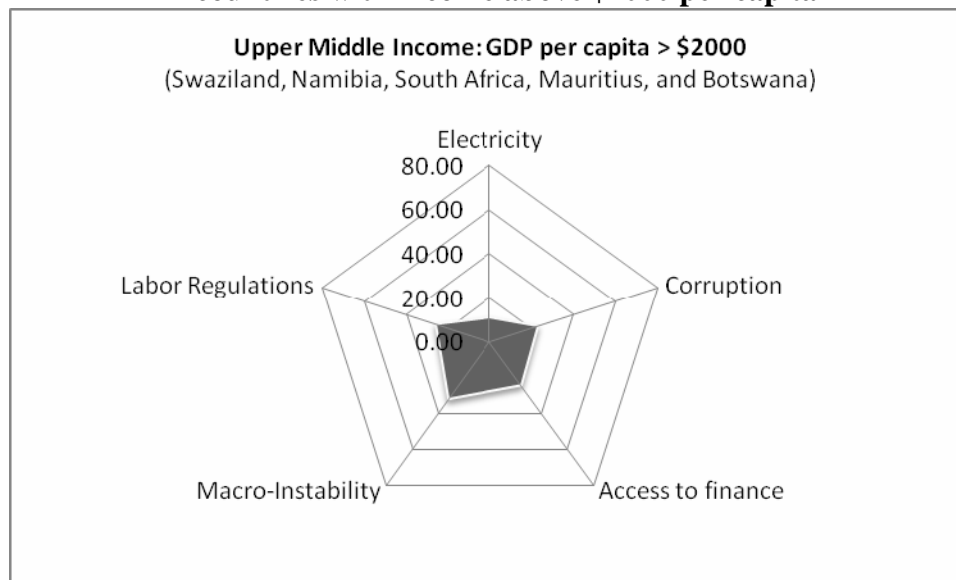


Figure 1c
Percentage of Firms Ranking a Constraint as Major or Severe
in countries with income above \$2000 per capita



To illustrate the evolution of constraints in a more dynamic way, Figures 2a-2c show three sets of constraint perceptions by income, together with fitted polynomial trend-lines. Figure 2a shows the set of constraints that decrease in perceived severity with income. Of primary concern is electricity—almost 70 percent of African firms at the

lowest end of the income scale complain about the lack of power or unreliable power. Also important in this class are macroeconomic instability and access to finance. Of lesser importance but still declining in severity with income is access to land. Since Africa is land-rich, this does not reflect actual scarcity in a physical sense; rather it refers to shortages of serviced, industrial premises, which tend to be closely associated with deficient infrastructure. Power, finance, land and the ability to plan are basic requirements for a dynamic business; we therefore term these *elemental* constraints.

Figure 2b shows the set of constraints that appear to be particularly problematic for firms in the middle of our income range. These include corruption, tax rates and administration, and crime. Concerns about corruption follow a path similar to concerns about taxes and crime, *but with a slight lag*—it is as if firms take a little longer to be convinced that corruption is decreasing. These constraints tend to be related to the quality of *governance and state effectiveness*.

Figure 2c shows the set of constraints that peak at the upper end of the income scale-- labor regulations and skill shortages. These problems tend to be perceived as more serious once the basic elements are present for the firm to do business, and once the most pressing governance-related problems are attenuated by improvements in state capacity. They reflect the need for skilled labor, especially in more sophisticated economies—as noted below, skills shortages are seen as more serious than labor regulations in almost all countries in the sample. They also reflect the fact that, as the regulatory capacity of the state strengthens, business will be but one constituency among many, and that it will need to compete with other interests, including organized labor and possibly environmental and other constituencies. These impediments to business are more likely to be of a *policy* nature rather than related to infrastructure or governance.

Figure 2a:
Percentage of Firms Ranking the Constraint as Major or Severe by GDP/capita—
“elemental” constraints that decline with income

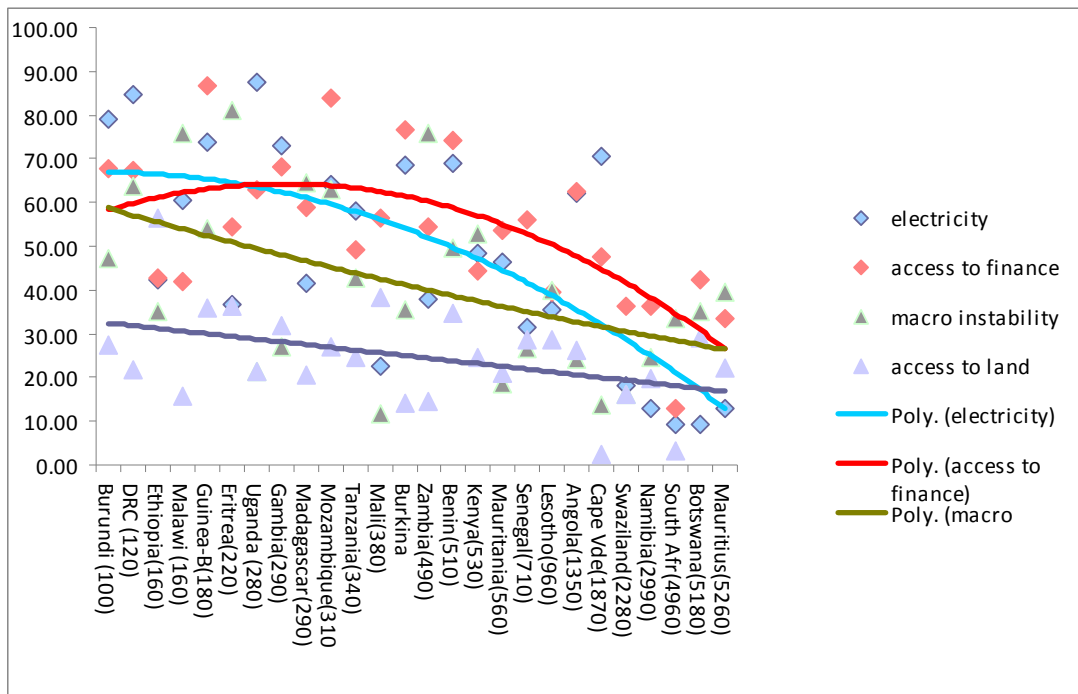


Figure 2b:
Percentage of Firms Ranking the Constraint as Major or Severe by GDP/capita—
“governance” constraints that peak in the middle of the income range

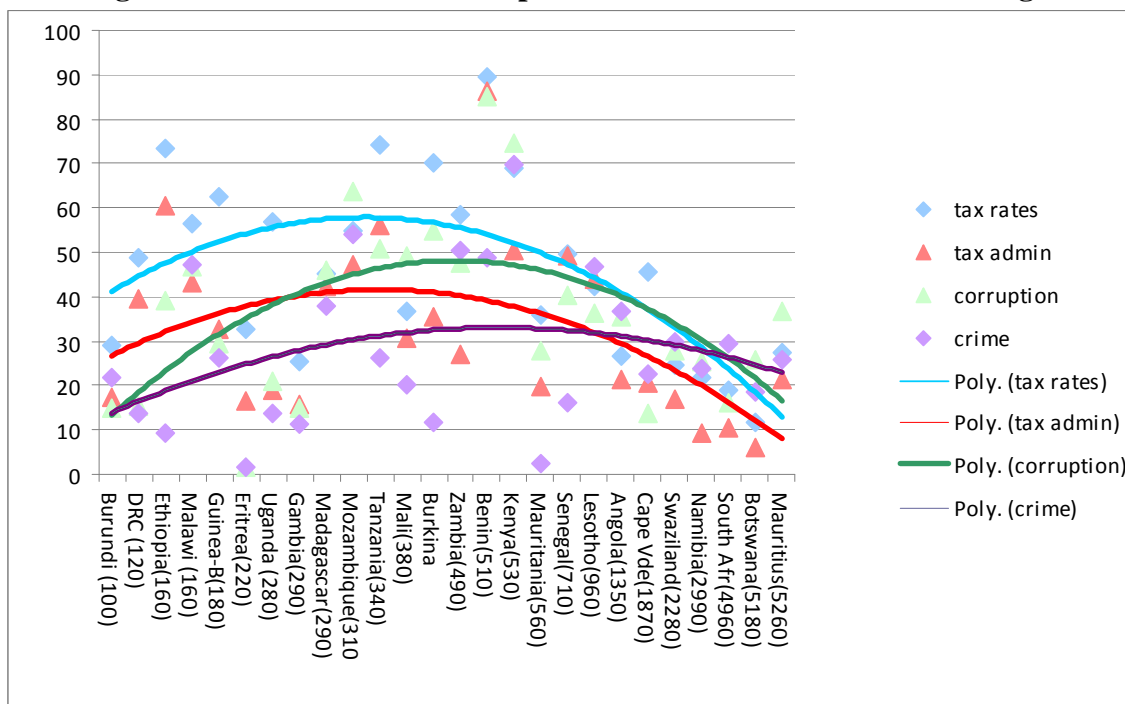
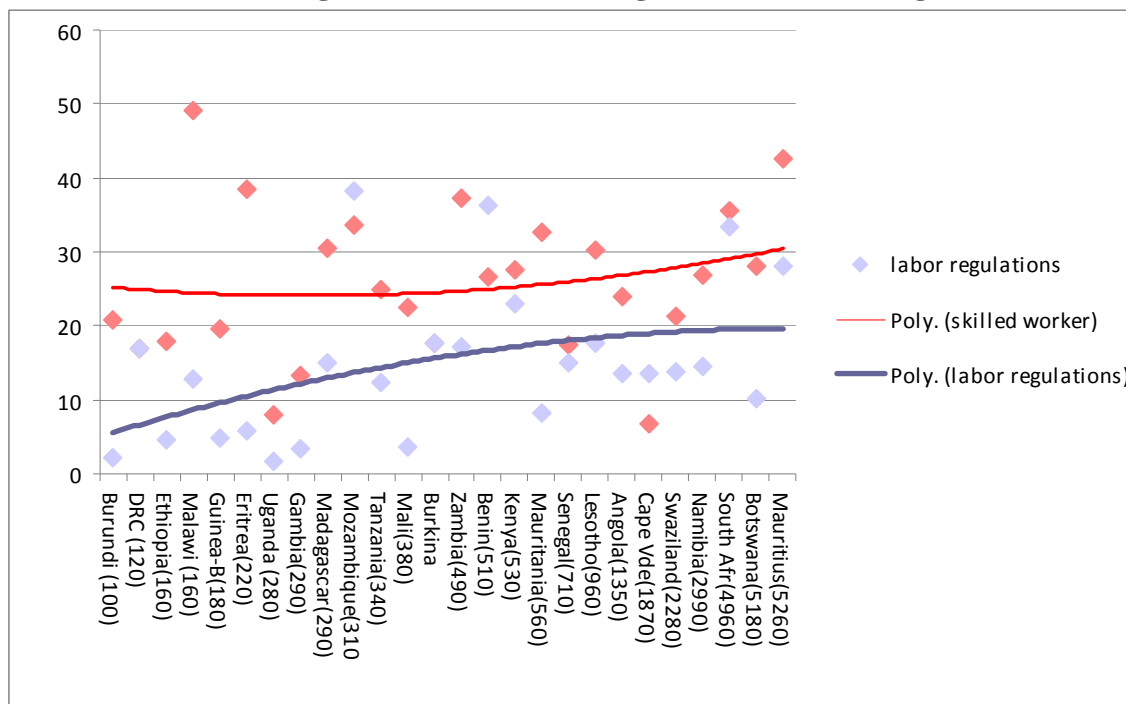


Figure 2c:
Percentage of Firms Ranking the Constraint as Major or Severe by GDP/capita—
constraints rising with income: labor regulations and shortage of skills



Figures 2a-2c suggest an approach to classifying constraints and the way in which firm's perceptions of their difficulties are likely to vary with income level. At the low end of the scale, manufacturing firms are most likely to be concerned about the most basic constraints to doing business. Is there a reliable power supply? Can finance and premises be secured? Can the firm plan ahead, or does macroeconomic instability make this impossible? In some countries, individual constraints can be at a level where they can be considered as truly binding. Electricity tariffs in Uganda would have to increase to almost \$ 0.29 per kWh if the consumer were to bear the full costs of electricity including the expensive thermal generation used in attempts to plug capacity gaps. The cost of load shedding to the economy is significant, and expensive back-up generation has impacted the competitiveness of industrial production. The cost of un-served energy has been estimated at about US\$0.39 per kWh excluding multiplier effects⁴. Not surprisingly, 87% of Ugandan forms considered electricity as a major or severe constraint in 2006. These constraints do not die away completely as the business climate

⁴ Power Planning Associates, 2007.

improves—in South Africa, for example, macroeconomic instability is rated as a serious problem by many exporters, concerned about the volatility of the Rand. But their relative importance declines once these basic requirements for doing business are established.

Moving up the scale to lower-middle-income, firms must confront a number of problems caused by weak governance and low administrative and bureaucratic capacity. These include the tax system (rates and administration), corruption and the control of crime and violence. Poor governance may, of course, be responsible for some of the elemental constraints (corruption means that investments in power generation do not go ahead) but the firms do not experience these effects directly. Some aspects of regulation will be less troubling to firms in these settings—even if labor laws are stringent, the weak capacity of the state to enforce them means that they are less likely to be perceived as a serious problem.

Moving further up to middle-income, unless higher income is due to “exogenous” factors such as large rents from oil and gas, the state tends to be more capable of enforcing regulations. Civil society may become better organized, and checks and balances stronger, causing corruption to be less of a serious problem. Concerns about infrastructure, access to finance, and access to land also decrease considerably; even concerns about crime fall off relative to perceived difficulties in the “low-middle” category. But business will not be the only constituency--labor is also exercising its voice. Policies become more serious determinants of the business climate at this stage, largely because the state has stronger capacity to implement them.

The shortage of skilled labor is regarded as a more serious constraint than labor regulations over the entire spectrum of countries. While it is more frequently cited in the higher income group of countries, this does not prove that the skills constraint is actually more serious. Skills may be cited because concerns over many of the other constraints have declined to low levels. However, within individual economies, it is also the case that larger and more technically advanced firms express greater concerns over labor skills than smaller, low-productivity firms (see discussion below, in Table 3), and this provides

some support to the proposition that skills shortages become more acute constraints in relatively sophisticated, high-productivity, economies.

3.2 Country Profiles and Other Country-Level Indicators.

Having developed a picture of how constraints are perceived to bind at different levels of income, we consider whether the incidence of complaints aligns with cross-country indicators of the business environment. Table 2 contains a summary of some comparisons, first with a number of macroeconomic and survey-based indicators and then with several *Doing Business* (DB) indicators.

From Table 2, the intensity of perceived constraints is reasonably well-correlated with a number of country-level indicators. Considering first the six macroeconomic and survey-based indicators, there is a close relationship between firms' perceptions of the severity of the electricity constraint and an indicator of estimated losses due to power outages (which is also taken from the Enterprise Surveys). Firm perceptions of corruption are significantly correlated with the WorldWide Governance Indicator (formerly Kaufmann-Kraay Indicator) measure of corruption at the country level. Concern over access to finance is very strongly correlated with macro-level indicators, being less frequent in countries with financial depth as measured by high ratios of private credit/GDP and with higher *Institutional Investor* ratings. Concern over the cost of finance is strongly correlated with country-level interest-rate measures. In areas where the linkage could be considered as less direct –for example, between concern over macroeconomic instability and measures of government effectiveness, the relationship is not significant but is of expected sign.

Table 2: Correlations between Firm Perceptions and External Data

Perception Area (Enterprise Survey Data and Selected Comparators)	Pearson's Correlation Coefficient ($P > r $)
Electricity	Sales Lost due to Power Outages (Surveys) 0.39** (0.05)
Corruption	Control of Corruption (<i>KK</i>) -0.35* (0.08)
Access to Finance	Domestic Credit to the Private Sector (<i>IMF</i>) (% of GDP, 2004) -0.89*** (0.01)
Access to Finance	Investor Rating (<i>Institutional Investor</i>) -0.80*** (0.01)
Cost of Finance	Interest Rate (<i>IMF</i>) 0.72*** (0.01)
Macroeconomic Instability	Government Effectiveness (<i>Kaufmann Kray</i>) -0.28 (0.17)
Business Licensing	Days to Get a License (<i>DB</i>) 0.41** (0.04)
Business Licensing	Number of Licensing Procedures (<i>Doing Business</i>) -0.01 (0.96)
Economic Instability	Strength of Legal Rights Index (<i>DB</i>) -0.01 (0.95)
Corruption	Strength of Legal Rights Index (<i>DB</i>) -0.22 (0.29)
Corruption	Investor Protection Index (<i>DB</i>) 0.26 (0.20)
Access to Finance	Depth of Credit Info Index (<i>DB</i>) 0.27 (0.19)
Economic Instability	Investor Protection Index (<i>DB</i>) -0.15 (0.45)
Tax Administration	Number of Tax Payments (<i>DB</i>) -0.13 (0.54)
Tax Administration	Time to Pay Taxes (<i>DB</i>) 0.32 (0.12)
Customs and Trade	Trading Cost for Exports (<i>DB</i>) 0.22 (0.29)
Customs and Trade	Trading Cost for Imports (<i>DB</i>) 0.16 (0.42)
Access to Land	Property Registration, days (<i>DB</i>) 0.06 (0.78)

Note: Figures in parentheses represent levels of confidence

One recognized caution over using access to finance as an indicator of the quality of the business climate is that access is endogenous. Weaker and usually smaller firms are most

likely to complain (Carlin et al, 2006). While this effect may influence the responses of individual firms, the strength of the cross-country relationship lends support to the view of finance as an economy-wide constraint. Deeper financial markets facilitate access by firms that would be unable to access credit in shallower financial markets. Moreover, the results suggest that firms cannot compensate in a simple and low-cost way for inadequate financial markets or power grids. We return to this question later.

Correlations with the *Doing Business* indicators, however, are not strong. The *Doing Business* measure of the time needed to get a business license is aligned with the corresponding perceptions of firms, but other measures are not significantly correlated with firm perceptions. The low correlations are likely for two reasons. First, the indicators focus on very detailed regulatory areas and capture particular components of regulation. Second, compliance rates may be low at the low levels of income of most African countries because rules are not generally enforced. In their analysis of the ease of starting a business, Kaufmann et al point out that “the magnitude and significance of the objective measure is in general, smaller in the developing country sample, and larger in the industrial country sample...these results suggest that firm perceptions of the ease of starting a business depend both on de jure rules, as well as the institutional environment in which those rules are applied” (Kaufmann et al, p. 31).

IV Firm-Level Analysis

4.1 A Model of Firm Responses.

We now consider the determinants of responses at firm level, and whether these relate to more “objective” measures of the business climate. The probability that a particular firm considers a particular constraint to be severe could be expected to depend on a number of factors. Some constraints might impact differently on large versus small firms, on exporting firms versus those selling locally, on foreign-owned versus domestic firms, or on firms in different sectors. Perceptions are also likely to reflect individual experience, for example, of power outages, of costs of security, or of the need to pay bribes. Also, as noted above, ratings are likely to reflect a mixture of relative and absolute perceptions of severity.

A rating in one area is therefore likely to depend on ratings in other areas. In particular, the perceived severity of constraints “external” to the firm is likely to be inversely related to the severity of “internal”, firm-specific, constraints reflecting limited capabilities. The distinction is conceptually clear but may be blurred in practice. For example, the costs imposed by crime may impact on all firms similarly, but a reported constraint in accessing credit could partly reflect firm-specific factors, such as limited collateral, a weak order book, or incapacity or unwillingness to produce adequate business plans and audited financial statements. Many studies have found the level of education of entrepreneurs to be a significant determinant of SME performance. We would expect internal constraints to be more serious for smaller firms less able to access the range of skills and technology available to their larger counterparts. In Africa, many larger firms are owned by expatriates or networked ethnic groups able to increase access to a range of inputs and skills (Biggs and Shah, 2005, Ramachandran and Shah, 2007).

To more systematically frame the determinants of firm perceptions, we construct a simple model. Profits reflect revenues less costs; they can also fall below potential profits because of business-climate related losses, such as those due to power outages and theft.

⁵ Costs and losses are assumed to reflect a mix of external and internal constraints faced by the firm. A profit-maximizing manager will rate each constraint based on how it is expected to impact on the profit function. Firm-specific determinants of the rating can include characteristics such as size, ownership and export status, as well as the experiences of the firm itself.⁶ Other determinants will include sector or country-fixed effects. Based on this approach, we carry out maximum likelihood estimation of a set of Probit regressions:

For firm *i* and constraint *j*:

$$Y_{ij}^* = F(X'\beta) + u$$

where

Y_{ij}^* = underlying probability that firm *i* considers constraint *j* to be major or severe
 Y_{ij} = observed dummy that is set to 1 if $Y_{ij}^* > 0$

Independent variables (vector X) include:

size of firm (number of employees)
ownership of firm (domestic or foreign)
export status of firm (whether an exporter)
sector fixed effect
country groups fixed effect
experience indicator of constraint *j* as reported in survey by firm *i*
 u_{ij} = error term

We expect that perceptions of some constraints will be positively correlated with size. Larger firms have greater internal capabilities; they typically contract at greater distance for inputs and sales, and therefore are more dependent on well-working transport and logistics systems; they will also be more visible to those implementing labor and other regulations. Conversely, we might expect small firms to be more concerned about

⁵ For estimates of losses due to power outages and their impact on total factor productivity see Eifert, Gelb and Ramachandran, 2005.

⁶ It is worth noting that a manager's perceptions may be driven by the expected cost rather than the actual cost. For example, the perception of crime may be driven by events in the neighborhood rather than the individual's own experience. We still expect that this perception will be related to a quantitative measure i.e. in this case, it would be the expenditures on security systems, guards etc.

constraints that reflect scale economies in providing services and weaker internal capabilities, such as access to finance. Certain aspects of the investment climate, such as finance, are likely to affect domestic firms more, whereas foreign firms are likely to complain about customs regulations or other regulatory barriers. Exporting firms may have particular concerns, such as macroeconomic instability, as evidenced by large swings in exchange rates.

Surveys include a number of “objective” variables that reflect firms’ experience of some of the constraint areas. For electricity supply, these include days and sales lost to power outages; for corruption, informal payments as a percentage of sales; for crime, theft and disorder, the cost of security as a percentage of sales (the cost includes wages to security guards, alarm systems etc), for tax administration, days lost due to inspectors’ visits, and for customs and trade regulation the number of days to clear exports. Views on the cost of finance can be compared with the interest rate paid by the individual firm, as derived from the surveys and whether the firm has a loan or overdraft, while views on access to finance can be tested against whether a firm has a loan or overdraft and whether its accounts are audited.

Many other drivers of perceptions are not captured in the model, such as popular opinion about the investment climate (whether the media is reporting heavily about corruption) or whether firms feel able to speak freely to evaluators about sensitive areas. To the extent that all firms within a country are influenced uniformly by this type of event or if firms in some sectors are influenced more than others, the country or sector dummies will capture these effects. However, if individual firms across sectors are influenced unevenly, or if perceptions are driven by the moods of individual managers, the effect would be captured in the residual.⁷ As a first approximation, we assume that the firm-specific indicators pick up the main factors causing responses to different constraints to be related, and thus that error terms are independent across equations.

⁷ Firm-specific effects (such as unobservables related to managerial quality) can be measured only with panel data, which we do not yet have for our sample of countries.

Probit regressions are run for the countries in our sample,. The dependent variable is a 0/1 dummy, set to 1 if the firm ranks a constraint as major or severe. Consistent with the previous breakdown, Table 3a clusters countries into three groups, with the middle income countries as the default group and “other” as the default sector. Table 3b shows results with individual country dummies (the default being Botswana).

Table 3a: Probit Estimation of Firm Perceptions, with Country Groups

	Electricity	Labor Regulation	Corruption	Cost Finance	Access to Finance	Acc Land	Tax admin	Skilled Labor	Custrade
Intercept	-1.61*** (0.10)	-1.36*** (0.10)	-1.03*** (0.09)	-0.87*** (0.12)	-0.03 (0.09)	-0.65*** (0.09)	-1.43*** (0.10)	-1.2*** (0.09)	-0.90*** (0.20)
Size	0.01 (0.02)	0.11*** (0.02)	0.05*** (0.01)	-0.02 (0.02)	-0.14*** (0.02)	-0.08*** (0.02)	0.02 (0.02)	0.13*** (0.01)	0.03 (0.03)
Exportd	0.02 (0.06)	0.06 (0.06)	0.04 (0.05)	-0.02 (0.06)	-0.02 (0.06)	-0.07 (0.06)	0.11* (0.06)	0.005 (0.06)	-0.07 (0.09)
Fknown	-0.02 (0.06)	-0.02 (0.06)	0.07 (0.05)	-0.17** (0.07)	-0.14*** (0.05)	-0.09 (0.06)	-0.03 (0.06)	-0.04 (0.05)	0.05 (0.09)
days lost	0.004*** (0.0003)		---		---	---	---		---
Maj. Union	---	0.016** (0.06)	---	---	---	---	---		---
Bribe pmt	---	---	0.25*** (0.04)	---	---	---	---		---
Overdraft	---	---	---	0.23*** (0.06)	---	---	---		---
Audit	---	---	---	0.07 (0.06)	-0.14*** (0.05)	---	---		---
Ownland	---	---	---	---	---	-0.38*** (0.05)	---		---
Daytax	---	---	---	---	---	---	0.01*** (0.002)		---
Training								0.11** (0.05)	
Exp clear	---	--	---	---	---	---	---		0.01*** (0.005)
low income	1.27*** (0.07)	-0.49*** (0.06)	0.39*** (0.05)	0.98*** (0.07)	0.64*** (0.06)	0.51*** (0.06)	0.94*** (0.07)	-0.18*** (0.05)	0.48*** (0.11)
low middle income	1.07*** (0.07)	-0.04 (0.06)	0.72*** (0.06)	1.35*** (0.07)	0.71*** (0.06)	0.50*** (0.07)	1.08*** (0.07)	-0.09 (0.06)	0.49*** (0.11)
N	4061	4599	4583	2926	4377	4441	3989	4898	1016
Log likelihood	-2354.2	-1852.4	-2867.6	-1812.2	-2784.1	-2321.4	-2356.7	-2704.8	-605.7

Note: Sector dummies are included but not reported in Tables 3a and 3b.

Table 3b: Probit Estimations with Country Fixed Effects

	Electric	Labor Regs	Corruptn	Cost of Finance	Access Finance	Access Land	Tax Admin	Skills	Customs Trade
Intercept	-1.88*** (0.17)	-1.68*** (0.17)	-0.77*** (0.13)	-0.31** (0.15)	0.18 (0.13)	-0.29** (0.14)	-1.57*** (0.18)	-1.10*** (0.13)	-0.79** (0.36)
Size	0.08*** (0.02)	0.08*** (0.02)	-0.002 (0.02)	-0.04** (0.02)	-0.1*** (0.02)	-0.06*** (0.02)	-0.009 (0.02)	0.09*** (0.01)	0.04 (0.03)
Exportd	0.03 (0.07)	0.04 (0.07)	-0.006 (0.06)	-0.07 (0.07)	-0.06 (0.06)	-0.07 (0.07)	0.40 (0.07)	0.02 (0.06)	-0.05 (0.10)
Fgnown	-0.09 (0.06)	0.006 (0.06)	0.10** (0.05)	-0.26*** (0.07)	-0.25*** (0.06)	-0.08 (0.06)	0.03 (0.06)	-0.01 (0.05)	0.04 (0.10)
Days Lost	0.003*** (0.0003)								
Maj. Union		0.09 (0.07)							
Bribe pymt			0.38*** (0.05)						
Overdraft				0.29*** (0.06)					
Audit				0.14** (0.07)	-0.07 (0.05)				
Ownland						-0.32*** (0.05)			
Daytax							0.006*** (0.002)		
Training								0.11** (0.05)	
Days Clear Exports									0.01** (0.005)
Burundi	1.94*** (0.20)	-0.65** (0.28)	-0.68*** (0.18)	--	0.41** (0.16)	-0.09 (0.16)	0.45** (0.21)	-0.31 (0.18)	
DRC	2.24*** (0.19)	0.31 (0.18)	-0.56*** (0.16)	--	0.43** (0.15)	-0.27 (0.15)	1.20*** (0.18)	-0.31 (0.16)	0.49 (0.52)
Ethiopia	0.89*** (0.17)	-0.46** (0.19)	0.44** (0.13)	-0.29** (0.13)	-0.2 (0.13)	0.63*** (0.14)	1.71*** (0.18)	-0.27 (0.14)	0.46 (0.40)
Malawi	1.17*** (0.19)	0.03 (0.19)	0.56*** (0.15)	0.68*** (0.15)	0.04 (0.15)	-0.47** (0.17)	1.23*** (0.19)	0.47*** (0.15)	-0.03 (0.39)
Guinea-Bissau	1.86*** (0.24)	-0.75 (0.42)	-0.15 (0.22)	--	1.18*** (0.25)	0.07 (0.21)	0.98*** (0.24)	-0.05 (0.22)	0.47 (0.96)
Eritrea	0.61** (0.22)	-0.48 (0.28)	-1.24*** (0.32)	0.09 (0.20)	0.21 (0.19)	0.08 (0.22)	--	0.29 (0.18)	-0.65 (0.64)
Uganda	2.20*** (0.18)	-0.84*** (0.22)	-0.34** (0.14)	--	0.32** (0.13)	-0.29** (0.14)	0.59*** (0.18)	-0.73*** (0.15)	-0.33 (0.40)
Gambia	1.37*** (0.23)	-0.51 (0.29)	-0.54** (0.19)	--	0.14 (0.17)	-0.008 (0.17)	0.59** (0.22)	-0.31 (0.19)	
Madagascar	0.83*** (0.17)	0.11 (0.17)	0.46** (0.14)	0.68*** (0.14)	0.38** (0.13)	-0.12 (0.15)	1.31*** (0.20)	-0.06 (0.14)	0.30 (0.34)
Mozamb	1.27*** (0.19)	0.85*** (0.19)	1.01*** (0.16)	1.34*** (0.18)	--	-0.10 (0.17)	--	0.16 (0.16)	0.50 (0.39)
Tanzania	1.56*** (0.18)	0.06 (0.18)	0.64*** (0.14)	0.39*** (0.13)	0.14 (0.13)	-0.03 (0.14)	1.58*** (0.18)	-0.11 (0.14)	0.30 (0.36)
Mali	0.72*** (0.19)	-0.44 (0.24)	0.44** (0.15)	0.37** (0.15)	0.26 (0.15)	0.33** (0.15)	0.92*** (0.20)	-0.13 (0.16)	0.22 (0.42)
Burkina Faso	1.54*** (0.25)	0.19 (0.28)	0.73** (0.22)	0.53** (0.23)	0.87*** (0.24)	-0.55 (0.28)	0.94*** (0.26)	-0.41 (0.26)	0.12 (0.49)
Zambia	0.95*** (0.18)	0.21 (0.18)	0.48** (0.14)	1.27*** (0.16)	0.44*** (0.14)	-0.10 (0.16)	0.95*** (0.19)	0.16 (0.15)	0.03 (0.36)
Benin	1.74*** (0.19)	0.97*** (0.17)	1.46*** (0.16)	1.01*** (0.15)	0.7*** (0.14)	0.20 (0.15)	2.53*** (0.20)	0.01 (0.15)	0.97** (0.39)
Kenya	1.00*** (0.17)	0.49** (0.17)	1.17*** (0.14)	0.77*** (0.14)	0.09 (0.13)	-0.04 (0.14)	1.48*** (0.18)	-0.08 (0.14)	0.28 (0.35)
Mauritania	0.92*** (0.21)	-0.21 (0.25)	-0.34 (0.19)	--	-0.04 (0.17)	-0.27 (0.19)	0.61** (0.22)	0.07 (0.18)	0.25 (0.52)
Senegal	0.87*** (0.12)	0.29 (0.17)	0.32** (0.14)	0.61*** (0.14)	0.36** (0.13)	0.11 (0.14)	1.45*** (0.18)	-0.29 (0.15)	0.23 (0.36)
Lesotho	0.78*** (0.24)	-0.16 (0.27)	0.21 (0.21)	0.24 (0.20)	-0.13 (0.21)	1.21*** (0.25)	1.21 (0.25)	-0.05 (0.21)	-0.24 (0.42)
Angola	1.32*** (0.18)	0.19 (0.18)	0.09 (0.14)	--	0.31** (0.14)	0.61*** (0.18)	0.61*** (0.19)	-0.04 (0.15)	
Cape Verde	1.67*** (0.24)	0.26 (0.27)	-0.35 (0.25)	-0.17 (0.21)	-0.02 (0.21)	0.70** (0.26)	0.70** (0.26)	-0.90*** (0.31)	0.46 (0.92)
Swaziland	0.34 (0.21)	-0.003 (0.22)	-0.01 (0.17)	--	-0.13 (0.16)	0.59** (0.21)	0.60** (0.21)	-0.31 (0.18)	-0.14 (0.41)
Namibia	0.22 (0.21)	0.24 (0.20)	-0.13 (0.17)	--	-0.4** (0.16)	-0.10 (0.24)	-0.10 (0.24)	0.05 (0.16)	0.57 (0.46)
South Africa	-0.16 (0.18)	0.67*** (0.16)	-0.33** (0.14)	-0.87*** (0.13)	-0.87*** (0.13)	0.17 (0.18)	0.17 (0.18)	0.06 (0.13)	-0.34 (0.33)
Mauritius	0.0001 (0.20)	0.55*** (0.18)	0.18 (0.16)	--	-0.24 (0.15)	0.69** (0.25)	0.69** (0.25)	0.26 (0.15)	-0.18 (0.35)
N	4061	4599	4583	2926	4377	4441	3989	4606	1016
Log Likelihood	-2157.1	-1733.0	-2581.9	-1676.6	-2696.7	-2209.5	-2126.1	-2450.2	-587.2

From the tables above, we see that firm characteristics drive perceptions of some constraints but not others. Firm size does not particularly drive the severity of concern about electricity; across the board in low-income and low-middle income Africa firms complain about the severity of this constraint. Sector dummies (suppressed in the tables above) do not show any major difference across sectors in firm complaints.

Governance, as measured by concern about corruption, is of more concern to larger firms, perhaps due to their visibility and need to make informal payments to ease the burden of regulation. Tax administration is seen as more serious problems by exporting firms, suggesting that the *ad hoc* nature of enforcement means that such firms often find themselves vulnerable (Emery, 2003). Large firms also complain more about labor regulations and skill shortages; the coefficients on size are both positive and significant at the 1 percent level of confidence. Domestic and small firms complain significantly more about the access to finance and its cost than do large firms and foreign firms. Smaller firms also complain more about access to land. These results are robust to variations in econometric specification. The pattern and significance of the country dummies reinforces the patterns described in Figures 2a-2c.

These results suggest that smaller African firms tend to work within more restricted markets. They may be less visible to regulators and less appealing targets for predatory officials. They may also require fewer licenses and use less technologically sophisticated production processes that demand fewer skilled workers. They will therefore not be as strongly affected by some investment climate problems, but will face additional internal constraints – a shortage of management, technical and accounting skills or insufficient collateral. The investment climate may pose an increasing challenge to firms as they seek to become larger and more capable. A firm looking to expand will need to weigh potential revenues against the higher costs that include the greater exposure to regulatory predation that comes with increased size and visibility and severe skill shortages.

In every regression, the coefficients on the experience dummies are of the correct sign, even though a number of other influences, including size, export and ownership status,

sector, country group and country fixed effects are taken into account. In all cases but two they are also significant. The exceptions in Table 3b are majority membership in trade unions and whether the firm has audited accounts. In these two cases the inclusion of country fixed effects dilutes the firm experience effects.⁸ Days lost due to power outages is a significant determinant of the ranking of electricity as a major or severe constraint. Another regression, not reported here, shows that sales lost is also significant. Similarly, the rate of unionization drives perceptions of labor regulations, bribes paid affect perceptions about corruption, days to clear exports are tied to complaints about customs etc. None of these results are surprising—for example, firms with access to overdrafts are more likely to view high interest rates as a constraint. The results on access to finance are also interesting. After netting out for fixed effects (which include the size factor), having accounts audited substantially decreases the probability that a firm considers access to finance as a serious constraint. This suggests the importance of including measures to increase access to accounting and auditing services in programs to widen financial access.

It is worth reflecting on why the experience variables are significant at all when the fixed effects are included in regressions.⁹ If firms are responding to country-level differences in, say, security or power supply, differences should simply appear as fixed effects at the

⁸ Some might argue that the “experience” variables are also subjective in that they record firm responses rather than a measurement of the actual event. While it is indeed true that surveys ask the firm how many outages it suffers rather than observing the outages directly, it is also unreasonable to argue that firms systematically exaggerate or under-report these events. The only experience variable for which this might be plausible is bribe payments but even in this case, the wording of the question (“in your industry, what is the typical payment”) has, in our opinion, resulted in a higher level of accuracy in the reporting of payments. These results reinforce the correlations with external indicators of the investment climate (that is, from data outside of our surveys) to validate firm perceptions.

⁹ Recent research by Mengistae and others uses city level means of IC indicators rather than individual observations thereof in the context of performance (i.e. productivity) regressions as a way of mitigating bias due to reverse causality (Mengistae, 2007). This is because they are concerned with measuring the impact of IC on productivity rather than the other way round. The problem of reverse causality is not as important here since we are relating subjective ratings with objective indicators and firm characteristics. In the relationship between firm characteristics and IC ratings, we are using the former as controls rather than variables of primary interest. That would seem to leave measurement error or omitted variables as sources of bias in the estimates and for this reason we include country fixed effects. For most African countries it is not useful, given the small size of the industrial sector, to use city averages. We are grateful to Taye Mengistae for discussion of this issue.

level of country/income groups. The fact that Tables 3a and 3b show many significant coefficients suggests high levels of arbitrariness and dispersion in the investment climates of Africa, so that some firms suffer from much greater power outages or slow customs clearances more than others. This may be because such public services are delivered on an ad hoc basis, or because certain individual firms are more vulnerable to predation while others have formed political relationships to improve service delivery.

4.2 Camels and Hippos?

Before concluding, it is worth considering the question of “camels and hippos” raised by Hausmann and Velasco, 2005. If you are in the desert and interview camels about the investment climate, the argument goes, you would get a very different idea about what the main problems are of living/working in a desert (probably heavy loads or mean camel riders) than if you could interview hippos who don't live there. Hausmann argues that the really interesting thing to look at is therefore the underlying industrial structure (that is, the camel to hippo ratio) from which you can infer what the real problem is (no water).¹⁰

It is certainly true that the mix of firms surveyed will reflect a degree of self-selection, whether for regulatory/governance issues or other country characteristics. One would not expect to find many hi-tech computer firms in Burundi, or a vibrant shipbuilding industry in Botswana.¹¹ However, there are also several indications from our results that suggest that in practice, these sorting effects do not dominate the firms' responses:

--Within countries, responses are relatively uniform across types of firm, including foreign-owned firms which are presumably able to compare across countries. Deviations in the firms' responses are appreciable only where expected (for example,

¹⁰ We are grateful to George Clarke for discussions on this subject.

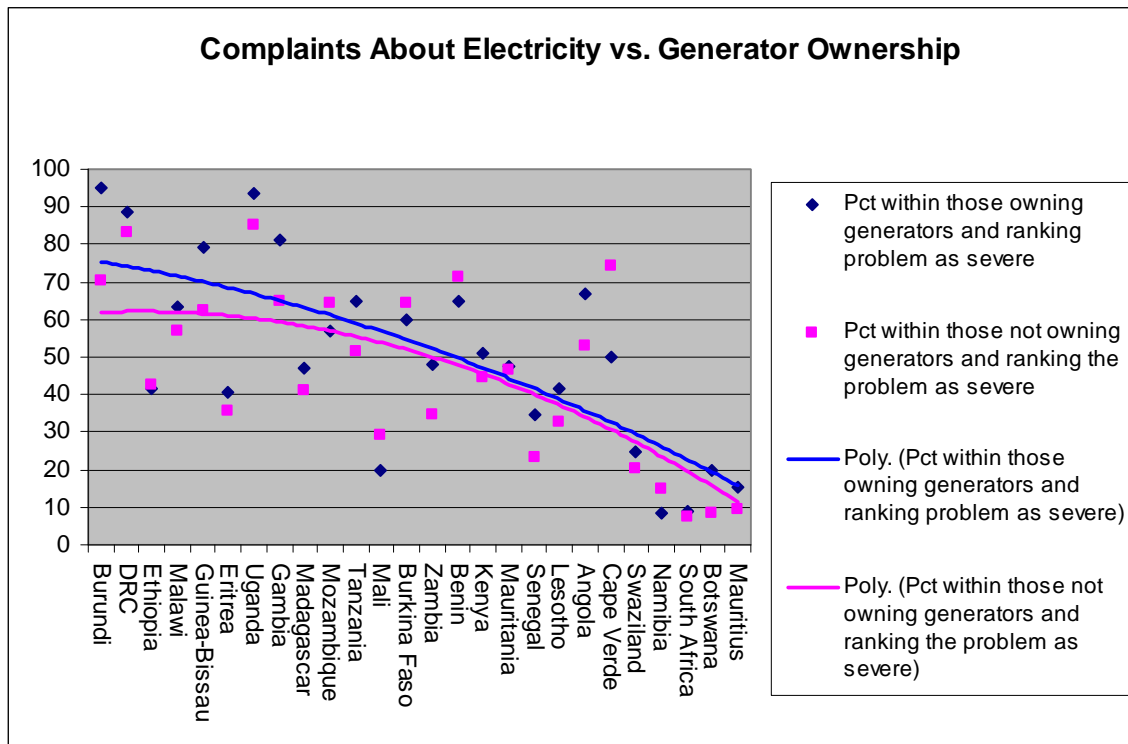
¹¹ The approach taken by the World Economic Forum to construct their annual competitiveness report adjusts for country differences by weighting different constraints differently at different levels of development. The proposition that firms self-select is also implicit in theories of comparative advantage, which can be shaped by costs of non-traded goods and services as well as factor proportions. In extreme cases, the economy will consist of only subsistence farming and offshore oil rigs or, as in rural Niger, cattle.

foreign firms are less constrained by finance).

--Cross-country, the intensity of complaints correlates with other country indicators. For example, complaints about finance are far more prevalent in countries with low financial depth. On the camels and hippos argument, firms in countries with low financial depth should be self-selected, and not see this as a particularly severe constraint.

Perhaps the most convincing evidence is generated by looking at firms that have adjusted to a constraint. Firms are not passive in the face of constraints. Where possible they will adjust to them, and the question arises whether the ability to adjust means that the constraint is no longer recognized as serious. To answer this question, we take one example—whether perceptions about the electric power constraint are affected by ownership of a generator (Figure 4). The results show that firms do not identify absent or unreliable power as less constraining when they own a generator. Firms with generators actually complain slightly more about electricity in many countries; this may reflect the fact that these tend to be more dependent on electricity and generator power costs some three times more than power from the grid.

Figure 4: Perceptions on the severity of the electricity constraint, disaggregated by generator ownership



Evidence on the absence of an effect of generator ownership on the perception of whether power is a severe constraint suggests that firms recognize a constraint even when they can adapt to it. Indeed, the camels/hippos argument can be turned around. If the self-selection process for firms is incomplete (as suggested by the above), the constraints identified by those present will likely be seen as *even more serious* by those firms that have not chosen to enter. Alleviating Uganda's power constraint could thus bring in a multiple of new business as well as improving conditions for established firms. If in deserts even camels would like to have more water (as we suspect they generally would), this suggests that a host of other animals will come in if the water constraint is alleviated.

V Conclusion

Just as household perceptions of well-being may not correlate perfectly with objective measures of income or consumption, so firms' perceptions of critical investment climate constraints may not always correspond fully to "objective" reality. Nevertheless, this analysis of the patterns of firm's responses across African countries suggests that they do not complain indiscriminately but exercise judgment and choice in indicating a number of constraints as serious. Response patterns correlate reasonably well with several other country-level indicators related to the investment climate. Responses at the firm level also reflect the experience of firms, for example, of the problems posed by erratic power supply, or the costs of bribes or security. Firms can sometimes mitigate investment climate problems. For example, faced with unreliable grid power, they can purchase generators. But mitigation is costly and does not mean that they cease to recognize the severity of the problem.

Firms in most African countries tend to see many areas of the investment climate as serious constraints to business. Some constraints seem to be independent of scale, but larger firms complain more frequently about many constraints. These may discourage firm's growth and their progression towards greater visibility, more sophisticated technology and wider market reach in terms of both inputs and sales. Finance and access to land are particular areas of concern to smaller firms, while firms across the board are concerned about infrastructure and corruption. Notwithstanding these differences, firm-effects appear to be less powerful than country-effects in shaping the pattern of responses. Almost all firms in South Africa are better off than almost any firm in low-income Africa, for almost all of the constraints examined in this paper. The only exceptions are labor regulations and the availability of skilled labor, which appear to become more binding constraints as economies become more sophisticated and the capacity of the government to enforce regulations increases.

What do these results tell us about "binding constraints" to business? Contrary to the suggestion of Hausmann and Rodrik that a single or few binding constraints can be

identified for any given country, we find that firms tend more to identify groups of constraints as posing serious problems. At least in Africa, there may be systematic relationships between countries' level of development or income and the types of constraints most often seen as binding.

At the lowest level, the most serious constraints as seen by the firms tend to be those closely related to the ability to plan work and produce at all—macroeconomic stability, electric power, and finance. Concerns in these areas decline as income rises, to be replaced by a second set of constraints. These new constraints relate to the quality of governance and the capability of the state to provide important services. Concerns include corruption, the level of taxation and quality of tax administration, and security. These in turn ease as countries move to middle-income status and governments develop greater capacity and regulatory competence. But this opens the way to a third set of obstacles—business will not be the only political constituency. Organized labor may be powerful in some countries. In others, business might feel constrained by environmental regulations. Moreover, in these countries the state has a stronger capacity to implement regulation, so that policies in these areas may have more impact on business than they would in many low-income countries.

Individually binding constraints are therefore more likely at the two ends of the income spectrum. At the low end, easing some specific infrastructural constraint—such as electric power in East Africa—may have a huge payoff in business opportunities. At the higher end, surveys may distinguish a few policy areas of particular concern to business. Things are more difficult in the middle of the spectrum, where weak governance and low state capacity cause firms to experience a wide range of business climate impediments.

But even in cases where particular constraints emerge as serious, there is no magic bullet. Efforts to improve the business climate need to be implemented across a broad front, with physical investments in infrastructure complemented by regulatory reforms and also by the careful monitoring of service delivery to increase pressure for actual changes on the ground. Firms' views can help to prioritize reforms across broad areas. Finer

prioritization requires analysis of the specific concerns in each priority area, including through *Doing Business*–type indicators. In this way, perceptions data can kick off the business-government consultative process; while further quantitative assessments can deepen this dialogue and lead to specific reforms.

References

- Alwin, Duane F., and Jon A. Krosnick. 1985. "The Measurement of Values in Surveys: A Comparison of Ratings and Rankings." *Public Opinion Quarterly* 49, no. 4 (Winter): 535–52.
- Ayyagari, Meghana, Asli Demirguc-Kunt, and Vojislav Maksimovic. 2006. *How Important Are Financing Constraints? The Role of Finance in the Business Environment*. World Bank Policy Research Working Paper 3820. Washington: World Bank.
- Bertrand, Marianne, and Sendhil Mullainathan. 2001. *Do People Mean What They Say? Implications for Subjective Survey Data*. MIT Working Paper 01-04, January.
- Biggs, Tyler, and Manju Kedia Shah. 2006. *African Small and Medium Enterprises, Networks, and Manufacturing Performance*. World Bank Policy Research Working Paper 3855. Washington: World Bank.
- Bourguignon, François. 2006. "Economic Growth: Heterogeneity and Firm-Level Disaggregation." Unpublished note, World Bank, Washington.
- Carlin, Wendy, Mark Schaffer and Paul Seabright. 2006. "Where Are the Real Bottlenecks? A Lagrangian Approach to Identifying Constraints on Growth from Subjective Survey Data," CEPR Discussion Paper Series No. 5719.
- Country Credit Ratings. 2006. *Institutional Investor*, March.
- Clarke, George et al. 2007. *South Africa: An Assessment of the Investment Climate* (Washington DC: The World Bank).
- Eifert, Benn, Alan Gelb and Vijaya Ramachandran. 2005. "Business Environment and Comparative Advantage in Africa: Evidence from the Investment Climate Data," Center for Global Development Working Paper 56.
- Emery, James in Van de Walle, Ball, and Ramachandran, eds. 2004. *Beyond Structural Adjustment: the Institutional Context of African Development*, Palgrave Macmillan.
- Fries, Steven, Tatiana Lysenko and Saso Polanec. 2003. "The 2002 Business Environment and Enterprise Performance Survey: Results from a Survey of 6100 Firms," Working Paper no 84, November.
- Hausmann, Ricardo, Dani Rodrik and Andres Velsasco. 2005. "Growth Diagnostics," Manuscript, March 2005.

- Hausmann, Ricardo and Andres Velasco. 2005. "Slow Growth in Latin America: Common Outcomes, Common Causes," Manuscript, October 2005.
- Hellman, Joel, Geraint Jones, Daniel Kaufmann, and Mark Schankerman. 2000. "Measuring Governance and State Capture: the role of bureaucrats and firms in shaping the business environment," Working Paper #51, June.
- Honorati, Maddalena and Taye Mengistae. 2007. "Corruption, Business Environment and Small Business Fixed Investment in India," Manuscript, April.
- Iarossi, Giuseppe, 2006. *The Power of Survey Design*. The World Bank.
- Kaufmann, Daniel, Aart Kraay and Massimo Mastruzzi. 2005. "Governance Matters IV: Governance Indicators for 1996-2004," World Bank Policy Research Working Paper 3630, June.
- Krosnick, Jon A. and Duane F. Alwin. 1987. "An Evaluation of a Cognitive Theory of Response-Order Effects in Survey Measurement," *Public Opinion Quarterly*, Vol. 51, No. 2 (Summer), pp. 201-219.
- McCarty, John A. and L.J. Shrum. 2000. "The Measurement of Personal Values in Survey Research: A Test of Alternative Rating Procedures," *Public Opinion Quarterly*, 64:271-298.
- Power Planning Associates. 2007. Report on *Bujagali II* for the International Finance Corporation.
- Ramachandran, Vijaya and Manju Kedia Shah. 2007. "Why Are There So Few Black-Owned Businesses in Africa," Center for Global Development Working Paper #104, January.
- Raturi, Mayank and Anand V. Swamy. 1999. "Explaining Ethnic Differentials in Credit Market Outcomes in Zimbabwe," *Economic Development and Cultural Change*, Vol. 47, No. 3 (April), pp. 585-604.
- Teal, Francis. 1998. "The Ghanaian Manufacturing Sector 1991-1995: Firm Growth, Productivity and Convergence," Working Paper 98-17, CSAE, Oxford University.
- World Bank. 2004-2007. *Doing Business*, Annual publication.