

An analysis of the economic impact of the business environment factors on firm growth in Sub-Saharan Africa

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Abstract

This paper evaluates the economic impact of the factors of the business environment on firm growth using firm-level data on 38 Sub-Saharan African countries for the period from 2006 to 2010. Five out of the eleven obstacles included in the analysis are found to have an adverse economic impact on firm growth, namely access to finance, access to land, labor regulations, business licensing regulations and procedure, and corruption. The main finding of the paper is that a one unit increase in the perceived business environment obstacles leads to a reduction in firm growth in the range from 4 percent to 15 percent. The economic impact of these constraint varies across regions and countries within Sub-Saharan Africa. The finance constraint induces the highest reduction in firm growth both at the regional and at the country level. The findings are robust to controlling for firm characteristics and for the general macroeconomic environment, and call for appropriate policies.

Key Words: business environment; firm growth; Sub-Saharan Africa.

JEL Codes: D21, G30, O12

1 Introduction

It's commonly accepted that firms, especially small and medium enterprises, are engine of growth. However, market imperfections and institutional weaknesses adversely impact their growth potentials. These factors translate into obstacles that characterize the environment in which firms operate and can be viewed as related to the infrastructures and institutions that support financial transactions, legal systems, property rights protections, etc. Obviously, the higher the obstacles faced by the firms the slower their growth especially if the firm is small (Beck et al., 2005).

There is an increasing interest in research providing the evidence of different aspects of the business environment on firm growth. For example, Beck et al. (2005) investigate the effect of the three perceived obstacles (financial, legal and corruption problems) on firms growth rates in 54 countries, using the WBES data (sample size: 4000 firms). More specifically, the paper investigates whether the financial, legal and corruption problems that are reported by firms actually affect their growth rates. The authors also investigate the extents to which the different obstacles firms are constrained by depend on the level of the development of financial and legal systems and find that firm size is an important factor in establishing this relationship. More specifically, small firms are the most adversely affected by all three obstacles.

Beck and Demirgüç-Kunt (2005) summarize recent empirical research on access to finance by small and medium-sized firms (SMEs) as well as the related policy implications. The findings in the recent empirical research point out that access to finance is an important growth constraint for SMEs, that financial and legal institutions play an important role in relaxing this constraint, and that innovative financial instruments can help facilitate SMEs access to finance even in the absence of well-developed institutions. One of the policy implications of this paper is that a competitive business environment, of which access to finance is an important component, facilitates entry, exit and growth

of firms and is therefore essential for development process.

Ayyagari et al. (2007) explore the relationship between SMEs, the informal economy and different dimension of the business environment and assess how much of the cross-country variations in the size of SMEs sector in manufacturing can be explained by cross-country variation in various business environment regulations, including the case of firm entry and exit, labor regulations, access to credit and contract enforcement. The paper presents evidence that some dimensions of the business environment, such as effectiveness of information sharing and the ease of entry, can explain cross-country variations in the importance of SMEs. The results show that large employment shares of SMEs in manufacturing is promoted by reduced cost of entry, protection of property rights and efficient credit information sharing. on the other hand, Ayyagari et al. (2006) investigate the impact of a wider set of potential obstacles and evaluate their relative importance as well as that of their interaction in constraining firm growth. The results show that the economic impact of finance obstacle is the highest followed by that of crime and the political instability. These obstacles emerge as the binding constraints with a direct impact on firm growth, suggesting these three obstacles as the only true obstacles in that they are the only obstacles that affect firm growth directing at the margin.

Given that Africa is projected to be part of the fastest growing economies in the near future and that optimism is growing about its role in the world economy recovery, it is also voiced that economic growth in the continent is dependent on political stability. But political stability is only one aspect of the environment in which firm operate. If we expect the private sector to fully give its potential for the projected economic performance, it is important that the business environment be set up for the purpose. The objective of this paper is to identify the obstacles of the business environment that are binding for the private sector performance, as examined through firm growth. This

is motivated by the need of appropriate and continent-specific policy actions in order to meet the growth expectation for the private sector.

The organization of the paper is as follows, apart this introduction. Section 2 presents the data and the variables used in the analysis; section 3 presents the empirical model and reports the regression results; section 4 presents a discussion of the findings with in light of the existing literature. The conclusion as well as the policy implications are presented in section 5.

2 The data and the variables

The paper uses firm-level data from the World Bank enterprise surveys (WBES) on more than 9600 formally registered firms in SSA for the period from 2006 to 2010. The main objective of the WBES is to obtain a representative sample of the targeted economy's private sector, covering a broad range of information on the business environment in which firms operate. The standard Enterprise Survey topics include firm characteristics, gender participation, access to finance, annual sales, costs of inputs/labor, workforce composition, bribery, licensing, infrastructure, trade, crime, competition, capacity utilization, land and permits, taxation, informality, business-government relations, innovation and technology, and performance measures (www.enterprisesurveys.org). Qualifying firms for the survey are formally registered companies with five or more employees, both in the manufacturing and the services sectors. However, surveys of informal or unregistered enterprises, surveys of registered micro enterprises (that is firms with less than five employees) as well as financial crisis assessment surveys are provided for a limited number of countries.

We use the data on the constraints to firm performance. Firm managers were asked about the extent of different aspects of the business environment in constraining the cur-

rent operations of their establishments. The answers are coded from 0 to 4, with higher numbers indicating higher levels of obstacle to firm operations: 0 = non obstacle; 1 = minor obstacle; 2 = moderate obstacle; 3 = major obstacle; 4 = very severe obstacle. The following obstacles are included in the analysis: access to finance, including availability and cost (interest rates, fees and collateral requirements); customs and trade regulations; practices of competitors in the informal sector; street crime, theft and disorder; taxes and regulations (tax rates and tax administrations); business licensing and permits; political instability; corruption; judicial system; and labor regulations. The responses were recoded as follows: 1 = no obstacle; 2 = minor or moderate obstacle; 3 = major obstacle; 4 = very severe obstacle. It is important to mention that the recoding does not change the conclusions of the analysis.

The average level of each factor of the business environment is reported in Table 1 for each SSA country in the sample as well as each region within SSA. The reported highest average level of the constraints for the whole SSA sample is associated with access to finance (2.35), followed by anti-competitive behaviour in the informal sector, corruption, street crime and taxes and regulations. However, the ordering of the constraints varies across regions and countries within SSA. For example, while access to financing ranks first in Eastern Africa and Western Africa, it ranks third (2.02) in Southern Africa after street crime (2.24) and corruption (2.04); and fourth (2.57) in Central Africa after anti-competitive behavior (2.80), corruption (2.79) and taxes and regulations (2.58). The data at country level puts forth the importance of different orderings of the constraints. For example, land issues are perceived as being more constraining than access to financing in countries such as Angola and Cape Verde while the two constraints are equally ranked in Chad. Political instability and corruption are ranked as the more important constraints than access to finance in the Democratic Republic of Congo and in the Republic of Congo. Political instability and corruption

are also ranked ahead of finance issues in Angola and Chad.

Table 1 also reports the average firm growth rates, calculated as the growth rate of the firm's sales over the two last fiscal years. At the time of the survey, firms were asked to report the level of their sales one fiscal year before the interview and two fiscal years before the interview. The summary statistics in Table 1 show that firms in SSA grew on average by 41%, with important variation across regions within SSA: 35% in Eastern Africa, 39% in Central Africa, 40% in Western Africa and 45% in southern Africa. At the country level, the growth rate varies from negative in Cape Verde and Eritrea to as high rate as 133% in Angola.

The additional variables considered in this study are the firm size, GDP per capita and inflation rate . The three variables are used as control variables in the regression analysis. GDP per capita is obtained from Penn World Table (version 7.0) and the data on inflation rate were obtained from the World Development Indicators database. The two variables were averaged for each country over the two years previous to the the interview. Following the literature, firm size is approximated by the log of the firms sales. Table 2 reports the correlations between different pairs of variables. It follows that most of the constraints are negatively correlated with firm growth. The correlations are rather small in magnitude, all not exceeding 0.01 in absolute value. The correlations coefficients between different pairs of obstacles are also small, not exceeding 0.5 in most of the cases.

3 The empirical model and the regression Results

3.1 The Empirical model

It is assumed that a firm's performance is determined by firm characteristics and the business environment in which it operates. The empirical model below specifies firm

growth, λ , as a linear function of a vector of perceived business environment obstacles, firm characteristics as well as indicators of the general economic environment:

$$\lambda = \alpha + \beta\mathbf{O} + \sigma\mathbf{F} + \gamma\mathbf{X} + \epsilon \quad (1)$$

where λ is the firm growth; \mathbf{O} is the vector of the business obstacles; \mathbf{F} is a vector of firm characteristics; \mathbf{X} is the vector of control variables; β is the parameter vector associated with \mathbf{O} ; σ is the parameter vector associated with firm characteristics; γ is the parameter vector associated with \mathbf{X} and ϵ is the error term assumed to have zero mean and constant variance. GDP per capita and inflation rate are used to control for the general macroeconomic perspectives that are faced by firms and firm characteristics are controlled for through firm size.

The unit of analysis is the firm and the objective is to assess the economic impact of the perceived obstacles on firm growth, controlling for firm characteristics and the general macroeconomic environment. It follows then that the parameter vector of interest is β , and the interest is on identifying the binding constraints for firm growth. A constraint is a binding obstacle if its coefficient is significant in the regression model and its level is greater than 1. As shown in Table 1, all the constraints have values greater than 1 on average and thus are potential binding obstacles. Therefore only the regression analysis will determine which perceived factors of the business environment are really binding for firm growth as reported in section 3.2 below.

3.2 Regression Results

The model in equation (1) is first estimated by ordinary least squares, controlling for country dummies and using robust standard errors. We then run an instrumental variables regression to account for possible endogeneity between the ability of a firm to

access external finance and its growth level. This methodology is justified by the fact that firms may blame the business environment for not facilitating them to have access to the available sources of external finance while their poor performance is actually the factor that prevents them from qualifying for the available financing facilities.

Columns (1) - (11) in Table 3 report the regression of firm growth on each of the 11 factors of the business environment that firms reported as obstacles to their operations. Each regression controls for the firm size and country dummies with robust standard errors. With exception for customs and trade regulations, all the reported obstacles have a significant negative effect on firm growth. The coefficients associated with access to finance, access to land, labor regulations, street crime, business licensing regulations and competition from the informal sector are all negative and significant at the 1 percent level. Those associated with political instability and court systems are respectively significant at the 5 percent level and at the 10 percent level.

However, the estimated coefficients do not give the economic impact of different factors of the business environment on firm growth, although their sign gives the direction of the economic impact. The estimated economic impact at the average level of each obstacle is obtained by multiplying the associated coefficient by the average level of the constraint from Table 1. Since all the coefficients associated with different obstacles are negative, it follows that their economic impact is a decrease in firm growth. We shall, however, use positive numbers to quantify the economic impact of the obstacles on firm growth, with the interpretation that they are the percentage losses in firm growth rate. The ordering of the obstacles in terms of the reduction in growth that is incurred by firms is as follows: access to land (7.63%), corruption (6.42%), access to finance (5.64%), labor regulations (5.24%), business licensing regulations (5.10%), political instability (4.83%), competition from the informal sector (4.56%), street crime (4.00%), tax rates and regulations (3.12%), and court systems (2.72%).

Column (12) in Table 3 shows however that only five factors have a significant negative effect on firm growth. The coefficients of *Access to finance*, *Access to land* and *Corruption* are significant at the 1 percent level while those of *street crime* and *business licensing regulation* are significant at the 10 percent level. The obstacle with the highest economic impact, understood as a reduction in firm growth, is access to land (5.95%), followed by access to finance (4.00%) and corruption (3.21%), the impact of which is now halved. Although only marginally significant, *Business licensing regulations* and that of *Street crime* induce a reduction in firm growth of 2.63% and 2.94% respectively. A regression was run with only the significant factors in column (12). The coefficient of *taxes and regulations* was insignificant (p-value = 0.148) while that of *business licenings and permit regulations* was only marginally significant. A test for the joint significant of the two factors showed that the two obstacles do not jointly affect firm growth. The two factors were then dropped from the regression.

Table 4 reports only the regression results for the factors that have a significant effect on firm growth when the effect of other significant factors as well as that of firm size, GDP per capita and inflation are controlled for. In column (1) only the firm size is controlled for, in addition to the five business environment variables. Column (2) and (3) control for the log of GDP per capita and inflation, one at a time respectively and column (4) controls for both macroeconomic variables in addition to firm size. The coefficients of *Access to finance* and *Access to land* are negative and significant at the 1 percent level while the coefficient for *Street crime* and *Corruption* are negative and significant at the 5 percent level. The coefficient for *Customs & Trade regulations* has an unexpected sign. It is positive and significant at the 5 percent level. This suggests that the perceived obstacles related to customs and trade regulations increase firm growth. However, this variable turns out to be insignificant when we consider the endogeneity problem. It is important to note that the inclusion of the macroeconomic variables

(GDP per capita and inflation) does not induce important change in the magnitude and the significance of the coefficients of the perceived obstacles to firm operation. In addition little change is observed in the explanatory power of the model as the R^2 remains almost the same in columns (1) - (4).

In comparison to the results in Table 3, the results that are reported in Table 4 present little to no change in term of the magnitude and the level of significance of the estimated coefficients of the perceived business environment factors. This is important in the sense that only firm size was controlled for in Table 3 while Table 4 adds two more control variables, namely the log of GDP per capita and the inflation rate. In terms of the sensitivity of the estimates for the business environment factors, one can assert that firm size is the most important control variable for determining their economic impact on firm growth.

The results presented so far are based on the assumption that all the perceived obstacles of the business environment are exogenous to firm growth. The next section assumes that one of these factors, namely access to finance, is endogenous to firm growth. It is also assumed that if any effect adverse effect of the business environment does exists, it should not overwhelmingly come from a single factor.

3.3 Endogeneity of the finance constraints

It is important to mention that as far as firm performance and the obstacles to firm operations are concerned, firms may blame the factors of the business environment in which they operate instead of looking at their situation as a result of their own poor performance. For example, a firm's performance can be too poor to qualify for an external finance mechanism, such as a loan from financial institutions. We shall consider the reverse causal effect from firm growth to access to finance, assuming that the other constraints as relatively exogenous. We then run a instrumental variables regression

in which we use country average levels of the finance constraint as the instrumental variable.

The regression results are presented in Table 5. Column (1) reports the regression result with only for access finance, controlling for firm size, GDP per capita and inflation. Columns (2) to (7) introduce the other constraints, one at a time, together with the finance constraints: access to land, labor regulation, business licensing regulations, corruption, tax administration and regulations and street crime. The obstacles that are not included in this table were not significant, in the same way as in Table 3. All the coefficients of the business environment variables in these regressions are negative and significant, except for the coefficient that is associated with tax administration and regulations, the sign of which is unexpected. It is important to note that the coefficient associated with access to finance is now bigger in absolute value than in previous regressions, meaning that considering access to finance as an exogenous factor to firm growth leads to underestimating its effect. Column (8) controls for all the 7 constraints. The coefficients for access to finance and street crime are not significant, although negative. However, the coefficient of *Access to finance* becomes significant when *Corruption* is dropped from the regression (Column 9). This means that the economic impact of corruption on firm growth needs to be interpreted when the ceteris paribus argument does not hold for access to finance and vice versa.

The economic impact of different constraints of the business environment is reported in Table 6. Access to finance comes first as the most important constraint to firm operation in Sub-Saharan Africa, with an economic impact of 15 percent reduction in firm growth, followed by labor regulations (7 percent), business licensing (6 percent), access to land (6 percent) and corruption (4 percent). It follows that a one unit increase in one of the obstacles of the business environment leads to a reduction in firm growth of about 4 percent to 15 percent. The importance of the economic impact of these

constraints does not vary very much across regions within SSA. It is important to note that labor regulations turn out to be a significant factor when access to finance is included as an endogenous variable.

Turning to the effect of the macroeconomic variables, the estimation results in Tables 4 and 5 show that GDP per capita has a positive and significant effect on firm growth while inflation is detrimental to firm growth. The coefficients of both macroeconomic variables are significant at the 1 percent level. This translates the fact that macroeconomic instability is detrimental to firm operation while good macroeconomic perspective encourages firm growth.

4 Discussion of the results

The results of this paper are comparable to Ayyagari et al. (2006) as far as access to finance is concerned. In fact the finance constraint emerges as the most important obstacle to firm performance in SSA. However, in contrast to this paper, crime and political instability do not have a significant impact on firm growth when the other obstacles of the business environment are controlled for. In fact, crime only marginally affects firm growth when access to finance is controlled for but not when the other obstacles are added to the regression as this can be seen in columns (7) - (9) of Table 5. It is important to mention that the finding by Ayyagari et al. (2006) that crime and political instability are detrimental to firm growth is mainly motivated by the fact that African and transition economies were included in the sample as, arguably, they must be the most problematic. However, if we exclusively consider African economies in this study, we find no evidence of the effect of these two factors of the business environment on firm growth. Nevertheless we shall mention that the dataset used in this paper is different from the one used in that paper and corresponds to a

different time period as well.

The finding about the finance constraint also confirms the fact that 22 percent to 24 percent firms in Sub-Saharan Africa are fully credit constrained as per the definition in Kuntchev et al. (2012), meaning that these firms have no external credit of any form and are actively looking for credit. On the other hand, the importance of the finance constraint on firm growth may not be the same accross the sectors in which firms operate. Although this fact is not tested in this paper we shall mention that in their study of the impact of credit constraint on firm performance in the manufacturing sector, Akoten et al. (2006) find that access to credit is not a critical determinant of firm performance. However, the authors do not dismiss the possibility that better access to finance may improve firm performance.

Although the effect political instability is not found to be significant in determining firm growht, whe do not dismiss the possibility that firm performance be adversely affect by this aspect of the business environment in some of African countries such as the conflict-torn Democratic Republic of the Congo. A more focused analysis would propably reveal the importance of this factor on firm growth.

5 Conclusion and policy implications

The aim of this paper is to evaluate the economic impact of the factors perceived by firms as obstacles to their operation. The economic impact is estimated as the percentage of firm growth that is lost as the result of the business environment factors. An instrumental variable estimation was implemented, assuming that firms' performance may well predict their ability to access external finance while this may not be necessarily the case for the other obstacles. Five out of the eleven obstacles included in the analysis are found to have an adverse economic impact on firm growth, namely access

to finance, access to land, labor regulations, business licensing regulations and procedure and corruption. The main finding of the paper is that a one unit increase in the perceived obstacles of the business environment leads to a 4 percent to 15 percent reduction in firm growth. The economic impact of these constraint varies among regions and countries within Sub-Saharan Africa. The financing constraint induces the highest reduction in firm growth both at the regional and at the country level. At the country level, the reduction varies from 8 percent in Eritrea to as high as 20 percent in Burkina Faso and Guinea Bissau. The severity of the other obstacles varies from one country to another.

The above findings call for specific actions in Sub-Saharan Africa in order to promote firm growth in particular and economic growth in general. While a specific ordering of policy actions to undertake may depend from one country to another, improving the overall business environment is probably the most effective way of relaxing the growth constraints faced by firms, especially by small and medium firms, in SSA and facilitate their contribution to economic growth (Beck and Demirgüç-Kunt, 2005). This is important given the interrelation and the complex links among the different factors of the business environment (Ayyagari et al., 2006). This involves not only creating an environment that allows firms to have access to finance but also implementing important reforms in many aspects of the business environment such as land reforms, labor regulations reforms as well as business licensing procedures and regulations in order to improve the ease of doing business in African countries. The importance of such reforms is to substantially boost the growth potentiality in Africa, as the continent is projected to have favorable growth perspectives in the aftermath of the recent global financial crisis.

To reach the full potential of the projected economic performance, policy makers in the region need to focus on specific aspects of the playing ground for both categories

of firms in different sectors of the economy with a particular emphasis on the complex linkages among the factors of the business environment. While access to finance, corruption, land and labor regulation issues are identified as the binding constraints to firm performance in the region, it is important to identify and act on other factors of the business environment that may have an indirect effect on firm growth through the identified binding constraints.

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Table 1: Average values of the constraints

Country/Region	Sales growth	Access to finance	Customs & trade	Informal Competition	Access to land	Street crime
Angola	1.33	2.54	2.45	2.36	2.64	2.20
Benin	0.28	2.68	2.33	2.99	2.06	2.48
Botswana	0.34	2.08	1.80	2.06	2.47	2.08
Burkina Faso	0.14	3.07	2.51	2.64	2.56	2.36
Burundi	0.28	2.69	1.79	2.28	1.81	1.77
Cameroon	0.23	2.66	2.21	3.04	2.11	2.42
Cape Verde	-0.04	2.12	2.14	2.36	2.29	2.46
Chad	0.34	2.60	2.68	3.14	2.60	2.59
Congo, Dem. Rep. of	0.81	2.77	2.50	2.64	2.36	2.86
Congo, Republic of	0.54	2.63	2.56	2.64	1.89	2.36
Eritrea	-0.03	1.34	1.08	1.14	1.44	1.01
Gabon	0.40	2.08	2.30	2.31	2.01	2.35
Gambia	0.41	2.22	1.57	1.79	1.90	1.65
Ghana	0.49	2.86	1.46	1.85	1.87	1.54
Guinea	0.46	2.80	1.49	1.92	1.57	2.20
Guinea Bissau	0.37	3.12	1.87	2.06	1.68	2.18
Ivory Coast	0.30	2.98	1.87	2.29	2.23	2.67
Kenya	0.37	2.33	2.20	2.59	1.49	2.54
Lesotho	0.45	1.92	1.86	1.77	1.88	2.07
Liberia	1.02	2.31	1.82	1.96	1.78	2.13
Madagascar	0.22	2.29	1.88	2.20	1.83	2.68
Malawi	0.51	2.33	1.90	2.15	1.86	2.06
Mali	0.92	2.49	1.60	2.74	1.93	1.87
Mauritania	0.19	2.54	1.83	2.16	1.95	1.47
Mauritius	0.38	2.32	1.74	2.35	2.14	2.39
Mozambique	0.41	2.50	1.60	2.70	1.61	2.28
Namibia	0.28	1.75	1.48	1.57	1.44	2.10
Niger	0.17	2.39	2.01	2.76	1.88	2.38
Nigeria	0.45		1.49	1.95	2.05	2.04
Rwanda	0.36	2.07	1.58	1.61	1.72	1.40
Senegal	0.22	2.53	1.45	2.37	1.73	1.51
Sierra Leone	0.48	2.33	2.03	1.87	2.12	1.88
South Africa	0.34	1.43	1.19	1.48	1.29	2.36
Swaziland	0.40	2.09	1.74	2.43	1.58	2.38
Tanzania	0.50	2.22	1.69	2.09	1.74	1.91
Togo	0.28	2.50	1.95	2.59	1.61	1.99
Uganda	0.31	2.61	1.49	2.28	1.70	1.69
Zambia	0.44	1.92	1.50	1.97	1.48	1.74
Central Africa	0.39	2.57	2.37	2.80	2.23	2.54
Eastern Africa	0.35	2.35	1.76	2.22	1.64	1.94
Southern Africa	0.45	2.02	1.62	2.04	1.73	2.24
Western Africa	0.40	2.72	1.66	2.13	1.99	1.99
Sub-Saharan Africa	0.41	2.35	1.73	2.17	1.86	2.10

Table 1 (Continued)

Country/Region	Taxes & regulations	licensing	Political Instability	corruption	Judicial Systems	Labor regulations
Angola	2.18	2.45	1.95	3.06	2.01	2.26
Benin	2.70	1.78	2.34	2.80	2.06	1.67
Botswana	1.90	2.17	1.50	2.06	1.60	1.82
Burkina Faso	2.89	2.12	2.26	3.09	2.20	2.09
Burundi	2.12	1.62	2.60	1.79	1.50	1.36
Cameroon	2.75	2.15	2.24	2.94	2.31	1.98
Cape Verde	2.35	1.77	1.53	1.83	1.74	1.81
Chad	2.49	2.28	3.03	2.90	2.40	2.16
Congo, Dem. Rep. of	2.59	2.24	3.04	3.07	2.35	2.09
Congo, Republic of	2.53	2.24	3.26	3.21	2.19	2.19
Eritrea	1.37	1.32	1.19	1.01	1.01	1.04
Gabon	2.29	2.07	1.40	2.16	1.73	1.86
Gambia	1.90	1.64	1.33	1.46	1.26	1.30
Ghana	1.98	1.43	1.14	1.50	1.19	1.20
Guinea	2.20	1.88	2.01	2.49	1.25	1.33
Guinea Bissau	2.35	1.73	3.21	2.49	1.81	1.31
Ivory Coast	2.23	1.82	3.59	3.04	2.10	1.48
Kenya	2.53	2.18	1.79	2.55	2.07	1.72
Lesotho	2.14	1.78	2.35	2.37	1.75	1.65
Liberia	2.06	2.01	1.73	2.13	1.83	1.64
Madagascar	2.34	1.62	2.75	2.51	1.98	1.51
Malawi	2.00	1.59	1.56	1.97	1.60	1.74
Mali	1.99	1.62	1.68	2.11	1.74	1.42
Mauritania	2.15	1.44	1.54	1.83	1.48	1.39
Mauritius	1.94	1.85	2.06	2.45	1.61	1.50
Mozambique	2.07	1.78	1.38	2.04	1.40	1.48
Namibia	1.74	1.28	1.23	1.79	1.35	1.62
Niger	2.44	1.39	3.24	3.09	1.91	1.47
Nigeria	1.96	1.71	1.77	2.04	0.00	1.47
Rwanda	2.18	1.43	1.24	1.38	1.30	1.22
Senegal	1.96	1.76	1.29	1.68	1.21	1.35
Sierra Leone	2.15	1.89	1.88	2.27	1.90	1.79
South Africa	1.23	1.20	1.22	1.69	1.14	1.47
Swaziland	1.93	1.89	1.51	2.11	1.57	1.67
Tanzania	2.08	1.80	1.37	1.89	1.44	1.46
Togo	2.16	1.67	2.84	2.99	2.30	1.33
Uganda	2.37	1.79	1.43	1.87	1.28	1.23
Zambia	1.79	1.36	1.16	1.55	1.19	1.27
Central Africa	2.58	2.15	2.44	2.79	2.22	2.01
Eastern Africa	2.26	1.84	1.63	1.98	1.56	1.43
Southern Africa	1.81	1.63	1.58	2.04	1.45	1.58
Western Africa	2.11	1.72	1.92	2.17	1.62	1.46
Sub-Saharan Africa	2.08	1.75	1.79	2.14	1.60	1.54

Table 2: Correlation matrix

	Firm growth	GDP/cap	Firm size	finance	Customs & trade	informal comp.	access to land	street crime	tax & regul.	Business licensing	Political instab.	Corruption	Judicial system
log GDP/Cap	0.01												
Firm size	-0.18	-0.25											
finance	-0.03	-0.22	-0.01										
Customs & trade	-0.07	-0.10	0.21	0.14									
Informal Comp	-0.02	-0.15	0.04	0.25	0.25								
Land access	-0.08	-0.03	0.04	0.26	0.23	0.18							
Street crime	-0.06	0.09	0.02	0.05	0.25	0.24	0.17						
Tax & regulations	-0.02	-0.28	0.17	0.28	0.41	0.31	0.26	0.19					
Business licensing	-0.09	-0.06	0.01	0.27	0.31	0.24	0.24	0.21	0.35				
Political instab.	-0.04	-0.27	0.13	0.22	0.29	0.22	0.18	0.30	0.30	0.24			
Corruption	-0.07	-0.05	0.11	0.19	0.37	0.29	0.21	0.43	0.34	0.32	0.45		
Judicial system	-0.05	-0.11	0.16	0.16	0.43	0.25	0.22	0.32	0.38	0.32	0.41	0.47	
Labor regulation	-0.09	0.05	0.09	0.12	0.37	0.20	0.25	0.28	0.28	0.31	0.25	0.32	0.41

Table 3: Regressions for individual obstacles

Obstacles	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
finance	-0.024*** (0.000)											-0.017*** (0.004)
Land		-0.041*** (0.000)										-0.032*** (0.000)
Corruption			-0.030*** (0.000)									-0.015** (0.048)
Labor reg.				-0.034*** (0.000)								-0.011 (0.374)
Crime					-0.019*** (0.002)							-0.014* (0.059)
Taxes & reg						-0.015** (0.045)						0.014* (0.078)
Customs							-0.005 (0.433)					0.014* (0.080)
Pol. instab.								-0.027*** (0.001)				-0.002 (0.814)
Licensing									-0.029*** (0.000)			-0.015* (0.071)
Judicial										-0.017* (0.077)		0.015 (0.164)
Competition											-0.021*** (0.000)	-0.008 (0.177)
Firm size	-0.081*** (0.000)	-0.072*** (0.000)	-0.067*** (0.000)	-0.069*** (0.000)	-0.070*** (0.000)	-0.071*** (0.000)	-0.069*** (0.000)	-0.067*** (0.000)	-0.070*** (0.000)	-0.075*** (0.000)	-0.071*** (0.000)	-0.076*** (0.000)
Constant	0.348*** (0.000)	0.186** (0.036)	0.198** (0.023)	0.127 (0.138)	0.109 (0.209)	0.132 (0.130)	0.157* (0.067)	0.179** (0.042)	0.155* (0.085)	0.323*** (0.000)	0.136 (0.120)	0.581*** (0.000)
Firms	10,119	11,729	11,657	11,766	11,791	11,700	11,624	11,628	11,670	9,853	11,735	9,403
R-squared	0.188	0.187	0.162	0.180	0.182	0.177	0.167	0.154	0.175	0.165	0.182	0.162

Robust p-val in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4: Regressions with country dummies

VARIABLES	(1)	(2)	(3)	(4)
Access to finance	-0.017*** (0.003)	-0.017*** (0.003)	-0.016*** (0.006)	-0.016*** (0.006)
Access to land	-0.035*** (0.000)	-0.033*** (0.000)	-0.035*** (0.000)	-0.035*** (0.000)
Street crime	-0.015** (0.042)	-0.014* (0.050)	-0.015** (0.040)	-0.015** (0.040)
Corruption	-0.018** (0.011)	-0.015** (0.042)	-0.018** (0.011)	-0.018** (0.011)
Customs & Trade regulations	0.016** (0.033)	0.017** (0.033)	0.016** (0.039)	0.016** (.039)
Firms size	-0.077*** (0.000)	-0.077*** (0.000)	-0.076*** (0.000)	-0.076*** (0.000)
GDP per capita		0.093*** (0.000)		0.086*** (0.000)
Inflation			-0.0734*** (0.000)	-0.081*** (0.000)
Constant	0.534*** (0.000)	-0.250 (0.482)	1.496*** (0.000)	2.327*** (0.000)
Number of firms	9722	9722	9629	9629
R-squared	0.171	0.171	0.170	0.170

Robust p-val in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Instrumental variables Regressions

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Access to finance	-0.089*** (0.000)	-0.069*** (0.001)	-0.081*** (0.000)	-0.066*** (0.002)	-0.040** (0.029)	-0.090*** (0.000)	-0.089*** (0.000)	-0.027 (0.241)	-0.064*** (0.007)
Access to land		-0.035*** (0.000)						-0.038*** (0.000)	-0.026*** (0.004)
Labor regulations			-0.051*** (0.000)					-0.033*** (0.007)	-0.044*** (0.000)
Business licensing reg.				-0.041*** (0.000)				-0.036*** (0.000)	-0.036*** (0.000)
Corruption					-0.034*** (0.000)			-0.017** (0.020)	
Tax and regulations						0.017* (0.092)		0.042*** (0.000)	0.042*** (0.000)
Street crime							-0.011* (0.100)	-0.009 (0.238)	-0.006 (0.424)
Firm size	-0.048*** (0.000)	-0.047*** (0.000)	-0.046*** (0.000)	-0.047*** (0.000)	-0.042*** (0.000)	-0.048*** (0.000)	-0.047*** (0.000)	-0.042*** (0.000)	-0.045*** (0.000)
log(GDP/Capita)	0.079*** (0.000)	0.076*** (0.000)	0.074*** (0.000)	0.073*** (0.000)	0.054*** (0.000)	0.074*** (0.000)	0.078*** (0.000)	0.041*** (0.001)	0.060*** (0.000)
Inflation	-0.025*** (0.000)	-0.025*** (0.000)	-0.025*** (0.000)	-0.024*** (0.000)	-0.022*** (0.000)	-0.024*** (0.000)	-0.025*** (0.000)	-0.020*** (0.000)	-0.023*** (0.000)
Constant	1.577*** (0.000)	1.548*** (0.000)	1.559*** (0.000)	1.523*** (0.000)	1.225*** (0.000)	1.501*** (0.000)	1.582*** (0.000)	1.163*** (0.000)	1.419*** (0.000)
Number of firms	10,017	9,937	9,970	9,876	9,859	9,904	9,999	9,603	9,698
R-squared	0.046	0.054	0.051	0.055	0.053	0.045	0.046	0.062	0.059

Robust pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6: Economic impact of the constraints (percentage growth losses)

Country	Access to financing	Access to land	Labor regulations	Corruption	Business licensing
Angola	16.3	6.86	9.95	5.20	8.83
Benin	17.2	5.37	7.35	4.76	6.41
Botswana	13.3	6.42	8.00	3.51	7.80
Burkina Faso	19.6	6.65	9.19	5.25	7.62
Burundi	17.2	4.70	6.00	3.03	5.84
Cameroon	17.0	5.49	8.70	5.00	7.75
Cape Verde	13.5	5.95	7.96	3.12	6.38
Chad	16.6	6.75	9.48	4.92	8.22
Congo, Dem. Rep. of	17.7	6.14	9.19	5.21	8.06
Congo, Republic of	16.8	4.92	9.62	5.46	8.08
Eritrea	8.60	3.73	4.57	1.72	4.77
Gabon	13.3	5.23	8.18	3.68	7.45
Gambia	14.2	4.94	5.72	2.48	5.91
Ghana	18.3	4.87	5.28	2.56	5.15
Guinea	17.9	4.07	5.85	4.24	6.76
Guinea Bissau	19.9	4.36	5.75	4.24	6.24
Ivory Coast	19.1	5.81	6.50	5.17	6.55
Kenya	14.9	3.86	7.56	4.33	7.83
Lesotho	12.3	4.89	7.26	4.03	6.41
Liberia	14.8	4.64	7.22	3.61	7.23
Madagascar	14.7	4.75	6.62	4.26	5.85
Malawi	14.9	4.84	7.66	3.35	5.73
Mali	15.9	5.03	6.24	3.58	5.82
Mauritania	16.3	5.07	6.10	3.12	5.17
Mauritius	14.8	5.55	6.59	4.16	6.66
Mozambique	16.0	4.19	6.50	3.47	6.40
Namibia	11.2	3.74	7.13	3.04	4.60
Niger	15.3	4.90	6.49	5.25	5.02
Nigeria		5.33	6.46	3.47	6.17
Rwanda	13.2	4.47	5.38	2.34	5.14
Senegal	16.2	4.50	5.92	2.85	6.32
Sierra Leone	14.9	5.52	7.89	3.86	6.8
South Africa	9.16	3.36	6.45	2.87	4.31
Swaziland	13.4	4.12	7.35	3.59	6.82
Tanzania	14.2	4.53	6.44	3.20	6.49
Togo	16.0	4.19	5.87	5.08	6.00
Uganda	16.7	4.42	5.43	3.18	6.45
Zambia	12.3	3.86	5.59	2.63	4.90
Central Africa	16.4	5.80	8.85	4.75	7.75
Eastern Africa	15.0	4.28	6.27	3.36	6.61
Southern Africa	12.9	4.49	6.94	3.47	5.86
Western Africa	17.4	5.16	6.43	3.68	6.18
Sub-Saharan Africa	15.1	4.84	6.78	3.64	6.29