

# Impact of the Business Environment on Output and Productivity in Africa

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Africa is the poorest part of the world and it has the worst environment for long term business success by most of the standards. Empirical works normally find a negative correlation between GDP per capita and measures for business environment. This paper develops a general equilibrium model to assess the quantitative effects of business environment, including entry barriers, access to finance, regulation, crime, corruption and infrastructure, on output and TFP for 30 Sub-Saharan African countries. We find that the quantitative effects of these dimensions of business environment are large. They together can explain about 80% of the variation in income per capita relative to the US for the thirty African countries we study. Improving these dimensions of the business environment will be key for the long term development of the continent.

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# 1 Introduction

Differences in aggregate total factor productivity (TFP) is seen as a big determinant of the large differences of income per worker across countries<sup>1</sup>. Recent work by Restuccia and Rogerson (2008) and Hsieh and Klenow (2009) show that resource misallocation across firms has important effects on aggregate TFP and income per worker. A country's policies and institutions determine the environment in which businesses operate, hence, the extent of resource misallocation. The business environment also determines the rate of firm creation, growth post entry and exit of failing firms. This continuous process of factor reallocation has been shown to be important for output and productivity growth<sup>2</sup>.

This paper quantitatively assesses the effect of the business environment on output and total factor productivity for 30 Sub-Saharan African countries. The focus on Africa is motivated by the fact that it is the poorest part of the world and it provides the worst environment for long term business success. In general, low income countries fair the worst in most rankings of business environment characteristics. Poor business environment results in high transactions costs in Africa affecting particularly manufacturing firms (Collier, 2000). Bigsten and Soderbom (2006) reviews the literature on the effects of the poor business environment for the manufacturing sector in Africa.

In This paper, we focus on six areas of the business environment: entry barriers, access to finance, regulatory environment, crime, corruption and access to infrastructure. The World Bank Enterprise surveys provided researchers valuable data to examine the effects of these factors on firms's development and growth. Most of the papers of this literature empirically examine the effects of one dimension of the business environment at a time, using variations across countries or across firms<sup>3</sup>.

Our framework is based on the general equilibrium model of Amaral and Quintin (2009) which examines the quantitative importance of financial frictions in development. In addition to this dimension, we introduce entry costs, which discourage firm creation and

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<sup>1</sup>See Hall and Jones (1999); Parente and Prescott (2000)

<sup>2</sup>see-Olley and Pakes (1996), Bartelsman et al. (2004), , Foster et al. (2006), Aghion and Howitt (2006)

<sup>3</sup>An exception is Aterido et al. (2009) which looks at the joint importance of a number of the dimensions mentioned above

the other dimensions that act like a tax on output. The surveys ask firms to indicate the percentage of sales lost during transportation, the percentage lost due to power outages, theft and robbery and percentage of sales spent on security. The questionnaire also try to determine the costs of regulation by asking firms to report the time spent by senior management dealing with requirement of government regulations. The implication of these aspects of the business environment is that firms can loose a large share of their output in countries with unfavorable environment. This has a direct effect on a country's income per capita and productivity.

We find that the quantitative effects of these characteristics of the business environment are large. A country with 10% financial intermediation relative to the US (which is about the average for Africa) has only 42% of the US output, a relative capital to output ratio of 16% and a relative average firm size of 32%. The characteristics acting like a tax only lower output and TFP significantly with no effects of capital and firm size. With a 30% tax rate, relative output declines to 61% and relative TFP to 70%. Entry costs plays a big role on output only for the financially low developed countries. An implication of high entry costs is large average size of firms and high efficiency for entrants.

Our model is able to explain about 80% of the variation of income per capita relative to the US for the 30 African countries we study. For the average African country, improving one or more dimensions of the business environment can have significant on the level of development. Improving financial development alone by one standard deviation leads to a 24% increase in relative output per capita. Cutting the tax rate by one standard deviation leads to 20% increase in relative income per capita while cutting the entry costs by half affects mainly the average size of firms. Having all three improvements at the same times will lead to 44% increase in relative income and to 11% increase in relative TFP. Such improvements can go a long way in helping Africa decrease poverty and reach its Millennium Development Goals

The rest of the paper is organized as follows. Section 2 reviews the literature on the effects of different dimensions of the business environment. Section 3 describes the model and section 4 calibrates the model to the US. In section 5 we use the calibrated model

to assess the quantitative importance of business environment on output and TFP for African countries and we highlight the conclusion and policy implications in section 6.

## 2 Literature Review

Both the theoretical and empirical literature has examined a number of the dimensions of the business environment listed above. Regarding entry barriers, a number of papers (e.g (Parente and Prescott, 1994; Herrendorf and Teixeira, 2009) show that entry barriers in the labor market (like labor unions) can prevent the adoption of new technology which will lead to low productivity. Fang (2009) develops a competition model high entry barriers in the product market lead to less competition and to the adoption of less productive technologies and the quantitative effect on TFP can be sizeable. Aghion et al. (2009) finds also entry barriers can affect incumbent technology choice in developed countries. A very important study that examine the regulation of entry is by Djankov et al. (2002). They find that the number of procedures, the time and and the cost of setting up a business varies a lot across countries and it is negatively correlated with income. There is also a negative correlation of entry barriers and TFP (Nicoletti and Scarpetta, 2003, 2006). Barseghyan (2008) finds that an increase in entry costs lower output through a decline in TFP. An increase of entry costs by 80% of income per capita lower TFP by 22% and output per capita by 29%<sup>4</sup>.

The effects of financial development on economic growth and development have been examined both by the theoretical and empirical literature. Levine (2005) provides a thorough review of this literature. Finance has many functions among which are pooling and allocation of savings, production of information and monitoring of projects, diversification of risks and the facilitation of exchange of goods and services. Each of these functions affects savings and investment, and the efficient allocation of resources, hence economic growth. Early theoretical contributions were by Goldsmith (1969); McKinnon (1973); Shaw (1973). These papers and new contributions show that poor financial development

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<sup>4</sup>Other studies that look at entry barriers are Klapper and Rajan (2006), Botero et al. (2004), Loayza et al. (2006). Aghion et al. (2007) Shows that credits constraints act as barriers to entry.

lead to low TFP and output<sup>5</sup>.

The empirical literature has shown that there is strong correlation between measures of financial development and economic growth (King and Levine, 1993a,b; Ndikumana, 2000) and this correlation is not due to simultaneity bias (Levine et al., 2000). Financial development affects economic growth through increases in TFP, savings rate and capital accumulation (Beck et al., 2000b). Another set of findings concerns industrial growth and financial development. Industries that require more external financing grow faster in more financially developed countries (Rajan and Zingales, 1998; Fisman and Love, 2007). Also, small firms are more severely affected by low financial development and industries dominated by small firms for technological reasons grow faster in countries with better financial development (Beck et al., 2008).

Regarding other dimensions of the business environment, many studies use the enterprise surveys to look at the correlation of those dimensions with some measures of firm growth or country's economic performance. Using subjective firm-level data, Beck et al. (2005) finds that financial and legal constraints have an impact of firm's sales growth and the impact is larger for smaller firms. They also provide evidence that corruption of bank officials constrains growth. Mauro (1996) conducts a cross country regressions and find that an improvement in the corruption by one standard deviation lead to four percentage points increase in the investment to GDP ratio and to half percentage point increase in GDP growth rate. While most of the effects of corruption on GDP growth is through the investment rate, there is also a direct link. He also finds a strong correlation between corruption and some components of government expenditure like educations and transfer payments but there is no link with overall expenditure.

Other transmission channels are: higher public investment, lower government revenues, lower expenditures on operations and maintenance, lower quality of public infrastructure and lower productivity for public government expenditure (Tanzi and Davoodi, 1997). The investment channel was also explored in the African context by Baliaoune-Lutz and Ndikumana (2008). They find that while corruption increases public investment it

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<sup>5</sup>Other works are by Greenwood and Jovanovic (1990); Bencivenga and Smith (1991), and Erosa and Hidalgo (2005).

does discourage private investment. This leads to a negative effect on income growth.

Poor infrastructure increases transaction costs and make African firms less competitive than their international counterparts. The costs of transports, logistics, telecommunication, water, electricity, security, bribes are high and firms suffer great losses due to transport, outages of power and water and crime (Eifert et al., 2005). Collier and Gunning (2000) argue that the poor infrastructure is a serious constraint to growth in Africa. A recent economic brief by the African Development Bank (Mafusire, 2010) argues that Africa has large deficit in infrastructure and its improvement can have large spillover effects for development and poverty reduction in the continent.

### 3 The Model

The model is based on Amaral and Quintin (2009), which quantifies the effects of poor financial development on output and productivity. The framework is a discrete-time overlapping generations model. In each period, a mass one of two-period lived agents are born. Each agent is endowed with one unit of time each period. Each agent is born with a managerial ability  $z \in Z$ , which is constant over an agent's life. Managerial talent is public information and the distribution  $g(z)$  is the same across generations. The agent can only be a worker in the first period of his/her life, but has the option to be a manager in the second period.

A manager with ability  $z$  combines labor and capital into a single consumption good using a decreasing returns technology described as follows:

$$F(k, l) = zk^\theta l^\mu \tag{1}$$

where  $\theta + \mu < 1$ . To produce, the manager needs to pay an entry cost  $\phi$  measured in units of output.  $\phi$  measures the cost of setting up a business in a country. We assume that a portion  $\psi$  of the entry cost has to be paid from the entrepreneur's initial savings. We also assume that a fraction  $\tau$  of output is lost because of poor business environment. This is similar to a proportional tax on output where the proceeds are thrown away.  $\tau$

includes the lost of sales due to red-tape regulations, poor infrastructure and corruption.

We assume that capital needs to be paid before production takes place. A manager can finance capital either through personal savings  $s$  from the first period or through external borrowing at rate  $r$  where  $1 + r > 1 - \delta$ .<sup>6</sup>

The utility function of an agent is given by:

$$U(c_1, c_2) = \log(c_1) + \beta \log(c_2)$$

where  $\beta \in (0, 1)$  is the discount factor.

The solution of this problem has been discussed by Amaral and Quintin (2009). Here, we formulate the problem and discuss few predictions before turning to the quantitative solution. Let  $b$  be the amount borrowed by the manager and  $w$  be the wage rate. The profit for a manager with ability  $z$ , capital  $k = a + b - \psi$  and savings  $s$  is given:

$$\pi(k, z; w, r, \tau) = \max_l (1 - \tau)zk^\theta l^\mu - wl - k(1 + r)$$

The financial market is imperfect. The managers have the option to default. If a manager defaults, a fraction  $\eta$  of their assets are lost. Since there is no uncertainty in this model, the financial intermediary will impose a debt limit so that the managers find it rational not to default in the equilibrium. Therefore a financial contract for a manager of ability  $z$  with savings  $a \geq 0$  solves:

$$\begin{aligned} \max_{s \leq a, b \geq 0} \quad & \pi(s + b - \psi, z; w, r, \tau) \\ \text{s.t} \quad & \end{aligned}$$

$$\pi(a + b - \psi, z; w, r, \tau) - \phi + a(1 + r) \geq (1 - \eta) [\pi(a + b - \psi, z; w, r, \tau) - \phi + (a + b)(1 + r)]$$

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<sup>6</sup>Amaral and Quintin (2009) explored a version where the interest rate is endogenously determined and found that the patterns of output resembles to the benchmark formulation but the effect of financial is greater with the endogenous interest rate.

Simple manipulation of the above constraint gives:

$$b \leq \frac{\eta}{1 - \eta} \frac{\pi(k, z; w, r, \tau) + a(1 + r) - \phi}{1 + r}$$

This inequality defines a debt limit for a manager with ability  $z$  and savings  $a$ . It is easy to see that lower financial development (low  $\eta$ ), higher entry costs and higher taxes (poor business environment) all lead to lower borrowing limit, hence to lower capital and output.

The problem of young agents is as follows:

$$\begin{aligned} \max_{c_1, c_2, a_1} \quad & \log(c_1) + \beta \log(c_2) \\ \text{s.t:} \quad & \\ c_1 + a &= w \\ c_2 &= a(1 + r) + \max(w, V(a, z; w, r, \tau)) \end{aligned}$$

where  $V(a, z; w, r, \tau)$  is the net income of a manager with savings  $a$  and ability  $z$ .

The income in the second period takes into account that an agent has a choice of occupation. Given the properties of the manager's problem, the agent's problem implies that there is an ability threshold ( $\underline{z}(\eta, w, r, \tau)$ ) such that below which agents become workers and above which agents become managers.

## 4 Calibration

In this section we calibrate the model to the US economy. Given that our model is similar to the model of Amaral and Quintin (2009), we use their parameter values and refer the reader to their paper for details of the calibration procedure.

A period in the model is 20 years. Hence, the model corresponds to 40 years work life of an individual. The yearly interest rate is set to 4% implying  $r = 1.04^{20} - 1$  and  $\beta = \left(\frac{1}{1.04}\right)^{20}$ . The yearly depreciation rate is set to 10% implying  $\delta = 0.88$ . According to the literature, the return to scale of the production function,  $\alpha + \mu$ , is around 0.85 and

we set the capital share to be  $1/3$  of the return to scale and labor share to be  $2/3$  of the return to scale.

Managerial talent is assumed to follow a log-normal distribution with the parameters of the distribution calibrated to match two features of firm size distribution for the US: The percentage of establishment with 9 employees or less and the average size of manufacturing establishments.

The remaining parameter is the measure of financial development or financial intermediation  $\eta$ . The target statistic is the ratio of intermediated capital to GDP. Intermediated capital is equal to the sum of credit from private credit by banks and other financial institutions, outstanding debt securities issued by private institutions and stock market capitalization. The statistics are from Beck et al. (2000a). We use the average statistics from 1980 to 1995. For the US the calibrated  $\eta$  is 0.582. Table 1 summarizes the parameter values. In the calibration, we assume that the US economy has zero entry costs. This assumption is justified by the fact that entry costs for the US are 0.7% of income per capita in the Doing Business Survey Database. Using such value will change nothing to the quantitative results of the model.

## **5 Quantitative Implications for African Countries**

### **5.1 Business Environment for Sub-Saharan Africa**

Before we turn to the quantitative implications of the model, here we discuss the business environment data for 30 Sub-Saharan countries. There are three sources for the data: the World Bank Enterprise Surveys (ES), the World Bank Doing Business Database for entry costs, and Beck et al. (2000a) for the financial data information. The ES database contains firm level data for more than 10000 firms across 125 countries. Part of the survey, there is a core questionnaire common across countries. We focus on objective measure of the business environment. For each dimension, our measure is the average of all firms in a given country.

The dimensions of the business environment we focus are: regulation, crime, access

to infrastructure, corruption, access to finance and entry costs. We measure the impact of regulation on firms by the time managers spend dealing with government regulation. We measure crime by the percentage of sales lost due to theft, robbery, vandalism and arson, the percentage of sales paid for security, and the percentage of products shipped to domestic markets lost due to theft. The infrastructure development is measured by the percentage of sales lost due to power outages and the percentage of shipment lost during transit. Corruption is measured by informal payments as a percentage of sales. For entry costs, we use official costs to register a new business<sup>7</sup>. As stated in the calibration section, the data for financial intermediation is from Beck et al. (2000a) which is regularly updated by the World Bank. We used the 2010 updated version. Again financial intermediation is measured as the sum of private credit to GDP ratio, debt securities to GDP ratio and stock market capitalization to GDP ratio<sup>8</sup>.

The first four dimensions of the business environment act like a tax on output. They have a direct impact on output. The “tax”  $\tau$  is the total of these four dimensions. The other two dimensions affect output indirectly through capital and total factor productivity.

Table 2 shows the statistics for the 30 countries. We see that in most countries, managers spend a big part of their time dealing with government regulations. The average is 6.4% with a large variation across countries. Managers in Côte d’Ivoire spend the least time on regulation (1.81% of their time) while in Madagascar they spent up to 17.12% of their time. There is no strong correlation between regulation time and income per capita. Crime is the least costly to firms among the areas considered here. The average security costs and percentage of sales lost due to various crimes is 3.70% with a minimum of 1.16% in Benin and maximum of 9.89% in Côte d’Ivoire. The biggest component of costs related to crime in Côte d’Ivoire is theft of products shipped to domestic markets. The most costly dimension of the business environment is poor infrastructure development. Firms lose on average 6.60% of their sales on power outages and transit failures. The minimum losses are in Ethiopia and the maximum in Guinea, where power outages occur

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<sup>7</sup>This cost does not include informal payments and time costs.

<sup>8</sup>This last variable is not available for most African countries.

daily and often cause fires. Poor infrastructure is negatively correlated with relative income per capita, the correlation coefficient is  $-0.30$ . Corruption is also costly to firms in Africa. On average, they spend almost 6% of annual sales on informal payment. It looks like that firms in richer countries make more informal payments. This may be because richer countries try to enforce regulation more and business owners try to avoid the regulations by making informal payments. However, few countries have missing data for this dimension, so this finding may be the result of missing data. The sum of these four dimensions are quite high. Businesses lose on average a fifth of their sales. This may have a big impact on aggregate income and total factor productivity. The variation across countries is quite high too, the standard deviation is 8.6 percentage points.

Official entry costs can be quite high across countries. The average for our 30 countries is 89.3%. The costs vary from 8.6% of income per capita in Botswana to 391% in the Democratic Republic of Congo. The poorest countries have the highest entry costs in this group and in general around the world. The correlation coefficient between relative income per capita is  $-0.4$ . Access to finance is a huge issue for African firms. Beck et al. (2009) points to the shallowness of the financial system in Africa despite the recent progress. The average financial intermediation of capital is slightly below 10% of the US level if we include South Africa, otherwise it is about 7%. There is strong positive association between financial intermediation and the level of income per capita (0.45). South Africa is by far the most financially developed African country. Other countries with high levels of capital intermediation include Mauritius, Kenya and Côte d'Ivoire. The variation across countries excluding South Africa is 5 percentage points.

## **5.2 Impact of the Business Environment**

In this section, we feed the statistics of the business environment discussed above to the calibrated model to assess their impact for each of the 30 African countries. Before discussing those results, we first conduct few experiments to highlight the general effects of the tax channel, the financial development and entry costs using the benchmark economy (see table 3). In the first experiment, we look at the effects of tax rates ranging from

10 to 40%, which correspond roughly to the range for African countries<sup>9</sup>. When the tax rate increase to 10%, output and TFP decline respectively to 86% and 90% of the benchmark. Output is more than halved with 40% tax rate while TFP decline to 60% of the benchmark. These values show that the impact of these dimensions of the business environment are large and they affect both output and productivity. However, they do not affect capital to output ratio and the average size of firms.

In the second experiment, we vary financial intermediation relative to the benchmark economy. The effects on output are sizable. When relative financial intermediation is at 20% output declines to 49% of the benchmark. The transmission channels are lower TFP and lower capital to output ratio with a much bigger effect for the latter. We also see that there is a substantial decline in firm size. When there is almost no financial intermediation (1% of the benchmark), output and TFP decline respectively to 29% and 81% of the benchmark with capital to output ratio at 11% and firm size at 26%.

The third experiment looks at the effects of entry costs. In this exercise and following exercises involving entry costs, we assume that the portion financed through savings is either 10% or 5%<sup>10</sup>. We justify this assumption by the lack of data on self-financing for start-ups and the fact that with high entry costs and high portion of self-financing, there would be very few agents with enough savings to start a business<sup>11</sup>. We see that with this assumption, entry costs don't have a big impact on output and TFP for financially developed countries. However, we will see that this is not the case for countries with low financial development. A consequence of high entry costs is only more productive firms enter and the average firm size increases. Average firm size quadruple when entry costs is equal to income per capita.

In the last panel of table 3, we look at the effects of the business environment for the average African country<sup>12</sup>. With a tax rate of 23% and relative financial development at 9.5% of the US and average entry costs of 62% of income per capita, output for the

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<sup>9</sup>Recall that the tax rate for the benchmark economy is set to zero.

<sup>10</sup>5% is for countries with the highest entry costs and low financial development.

<sup>11</sup>We will explore this issue in an extension of the model that involve an informal sector.

<sup>12</sup>We exclude South Africa for the financial development dimension. Also the highest entry costs is 100% of income in all experiments

average African country is 25% of the benchmark economy. While TFP (75% of the benchmark) contributes to lower output, it is not the main factor. Capital to output ratio plays a bigger role, it is at 13% of the benchmark. We see also see that the average firm size is substantially lower (31%). Decreasing the tax rate by one standard deviation to 15% increase relative output to 30% and TFP to 77% with no change in capital to output ratio and average firm size. The effect of an improvement of financial development by one standard deviation has almost the same effects as the improvement in taxes. But such improvement increases the capital to output ratio and the average size of firms. Cutting entry costs alone by half has very little effects. However, if we make all three improvements at the same time, output for Africa will increase to 36% of the US, productivity to 83% and capital output ratio to 15%. This is a 34 percentage points increase in income per capita and 11% increase in TFP. Such increases can have big effects on poverty reduction and economic development.

Table 4 reports relative output and TFP for each of the 30 countries. While the model is too stylized to match the data on relative income per capita for each country, it is able to explain a large variation of income across countries. Following Amaral and Quintin (2009), let  $v = 1 - \frac{\sum(\hat{y}-y)}{\sum 1-y}$ , where  $\hat{y}$  is relative income per capita in the model and  $y$  the corresponding value from the data, as a measure of the dispersion of output captured by the model. With this measure, the model explains 78% of dispersion of income per capita if we don't include entry costs and 79% if they are included. With only financial development in their model, Amaral and Quintin (2009) was able to explain a third of the income variation in their sample of countries which did not include very poor countries. Adding the other dimensions of the business environment increases the explanatory power of the model. We can also see the effects on output in figures 1 and 2. The first figure shows that low financial development and high taxes lead to low relative income. The second figure shows that adding entry costs lead to even lower relative output.

## 6 Conclusion and Policy Implications

This paper shows how various dimensions of the business environment affect income per capita in thirty African countries. We find that the poor business environment discussed in various papers in the literature are quite damaging for African development. Businesses lose large shares of their sales due to government regulation, poor infrastructure, corruption and crimes. These dimensions act like a tax on sales. The implications of the losses are lower aggregate output and total factor productivity for the countries. Low financial development measured as intermediated capital relative to output contributes greatly to the poor performance of Africa. It leads to low aggregate capital, hence a predominance of small firms and low total factor productivity. We also find that high entry costs allow the entry of only the most productive firms, increases average firm size, lower productivity and output.

Improving the various dimensions of the business environment have sizable effects on the long term development of the continent. A one standard deviation improvement for the tax and financial development and a cut in half of entry costs leads to 34 percentage points increase in income per capita and to 11 percentage points increase in total factor productivity for the average country. Such improvement can go a long way in helping Africa achieve its Millennium Development Goals.

While some improvements of the business environment are costly and will take long time to achieve, others can be achieved with little costs if there is strong political will. Take for example the time managers spend dealing with government regulation. This can be decreased by simplifying the regulatory environment. Governments can simplify their tax codes and make it easy to pay taxes, reform labor laws and decrease the number of licenses and various inspections. Recall that the more regulation and bureaucracy a government puts in place, the more opportunities for bureaucrats to be involved in corruption. It also gives incentive to firms to make informal payments in order to avoid complying with the regulations. Also reforming the justice and law enforcement systems to make them more efficient in punishing corrupt officials and criminals can decrease the costs of corruption and crimes. Also law changes can decrease the number of procedures

and costs associated with starting a business.

While improving the state of infrastructure has great potential for African long term development, it requires large investments. Building more roads, rail and generating more electrical power require large sums of money. Countries need to explore new financing mechanisms, like public private partnerships, instituting toll roads, mineral deposits versus infrastructure and so on. The improvements will take a long time to achieve but they have to be in the continent long term development strategy.

Improving access to credit for businesses is another difficult but necessary ingredient for Africa's long term development. This can be achieved by changes in the banking and financial regulations to encourage more savings, to make the resolution of disputes between lenders and borrowers more efficient, to provide more information on small businesses by instituting for example credit registries. Also, for finance to play an important role in African economies, costs and interest rates spreads have to decrease substantially. Governments have an important role to play to make this sector more efficient and able to play its key role in the development process. Beck et al. (2009) points to some necessary institutional and policy changes for the sector.

In summary this paper points to key institutional and policy changes to make the business environment in Africa more conducive of long run business success and development of the continent. Those changes will help the continent achieve the Millennium Development Goal of halving poverty by half by 2015.

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## Appendix: Tables and Figures

Table 1: Parameter Values

$\beta$	$\alpha$	$\mu$	r	$\delta$	$\eta_{US}$	$g_{mean}$	$g_{std}$
0.4565	0.2833	0.5667	0.1911	0.88	0.582	-0.45	1.05

Table 2: Business Environment Statistics for Africa

Country	regulation	Crime	Infra- struc- ture	Corrup- tion	Total tax	Entry costs	Finance rel. to US (%)
AGO	7.14	2.84	5.03	6.92	21.93	151.1	0.54
BEN	6.46	1.16	6.45	0.00	14.07	155.5	4.46
BWA	4.96	3.46	2.58	8.35	19.35	2.1	5.22
BFA	9.53	1.46	3.86	0.00	14.85	50.3	6.04
BDI	5.70	2.53	10.94	7.83	27.00	151.6	4.83
CMR	12.80	2.97	5.59	0.00	21.36	121.1	9.29
CPV	12.17	2.46	4.31	0.00	18.94	17	8.09
ZAR	6.31	2.89	5.55	6.08	20.83	391	0.55
COG	5.92	7.73	15.70	19.21	48.56	86.5	7.12
CIV	1.81	9.89	6.53	11.32	29.55	133.3	16.60
ETH	3.77	3.27	1.53	0.00	8.57	18.9	6.34
GAB	3.02	3.00	1.80	9.64	17.46	17.8	6.42
GMB	7.31	6.93	12.92	9.50	36.66	215.1	6.58
GHA	4.03	2.84	7.13	3.36	17.36	26.4	6.34
GIN	2.65	3.01	15.27	6.63	27.56	139.2	1.39
GNB	2.87	2.62	5.25	7.54	18.28	323	1.39
KEN	5.12	6.06	7.81	4.61	23.60	36.5	16.93
LSO	5.73	7.42	5.95	6.77	25.87	27	6.72
LBR	8.51	7.06	3.67	7.18	26.42	52.9	3.34
MDG	17.12	3.98	8.88	0.00	29.98	7.1	6.84
MLI	2.39	1.30	2.71	5.74	12.14	89.2	4.93
MRT	5.84	1.50	2.91	8.17	18.42	34.7	13.65
MUS	9.36	4.56	3.54	7.13	24.59	4.1	21.00
NER	11.45	1.23	4.50	0.00	17.18	118.7	5.98
NGA	6.06	5.91	12.16	5.27	29.40	76.7	7.78
RWA	5.92	3.30	9.93	6.31	25.46	50	3.24
SEN	2.90	1.71	6.38	6.82	17.81	63.7	12.82
ZAF	5.95	2.59	1.60	9.84	19.98	5.9	87.10
UGA	5.21	2.58	11.65	7.28	26.72	84.4	0.98
ZMB	4.55	2.47	4.87	6.52	18.41	28.4	2.52
Mean	6.42	3.69	6.57	5.93	22.61	89.31	9.50
Std. dev	3.47	2.24	3.96	4.27	7.78	92.15	15.48

Table 3: Benchmark Experiments

	Relative GDP	Relative TFP	K/Y	Size
Taxes				
10%	0.86	0.90	1.00	1.00
20%	0.73	0.80	1.00	1.00
30%	0.61	0.70	1.00	1.00
40%	0.49	0.60	1.00	1.00
Finance Relative to the benchmark				
20%	0.54	0.98	0.24	0.41
10%	0.42	0.93	0.16	0.32
5%	0.35	0.89	0.12	0.32
1%	0.29	0.81	0.11	0.26
Entry Costs (% of output)				
10%	1.00	1.00	0.99	1.00
50%	0.99	0.99	0.97	1.45
100%	0.94	0.96	0.98	3.92
Averages for Africa				
Average tax, finance and entry Costs	0.25	0.75	0.09	0.72
Decrease tax by 1 std. dev.	0.30	0.77	0.13	0.32
Improve finance by 1 std. dev.	0.31	0.74	0.16	0.41
Cut entry costs by half	0.26	0.73	0.10	0.54
Improving all three	0.36	0.83	0.15	0.54

Table 4: Effects of the Business Environment on Output and TFP

Country	Without Entry Costs		With Entry Costs	
	Relative GDP	Relative TFP	Relative GDP	Relative TFP
AGO	0.20	0.62	0.17	0.67
BEN	0.28	0.76	0.27	0.82
BWA	0.30	0.75	0.30	0.75
BFA	0.28	0.76	0.27	0.80
BDI	0.22	0.65	0.21	0.72
CMR	0.30	0.73	0.29	0.78
CPV	0.30	0.75	0.30	0.76
ZAR	0.20	0.64	0.18	0.69
COG	0.15	0.69	0.14	0.49
CIV	0.31	0.46	0.30	0.70
ETH	0.33	0.68	0.33	0.85
GAB	0.29	0.83	0.29	0.77
GMB	0.19	0.75	0.19	0.61
GHA	0.29	0.60	0.29	0.79
GIN	0.19	0.77	0.18	0.64
GNB	0.23	0.59	0.21	0.73
KEN	0.35	0.67	0.34	0.75
LSO	0.25	0.74	0.24	0.71
LBR	0.21	0.67	0.20	0.68
MDG	0.23	0.63	0.23	0.63
MLI	0.29	0.64	0.28	0.84
MRT	0.36	0.78	0.35	0.81
MUS	0.36	0.79	0.36	0.74
NER	0.27	0.74	0.26	0.79
NGA	0.25	0.74	0.24	0.70
RWA	0.22	0.66	0.20	0.69
SEN	0.34	0.63	0.33	0.82
ZAF	0.70	0.79	0.69	0.80
UGA	0.19	0.80	0.18	0.64
ZMB	0.23	0.59	0.23	0.69
Average	0.28	0.67	0.27	0.73

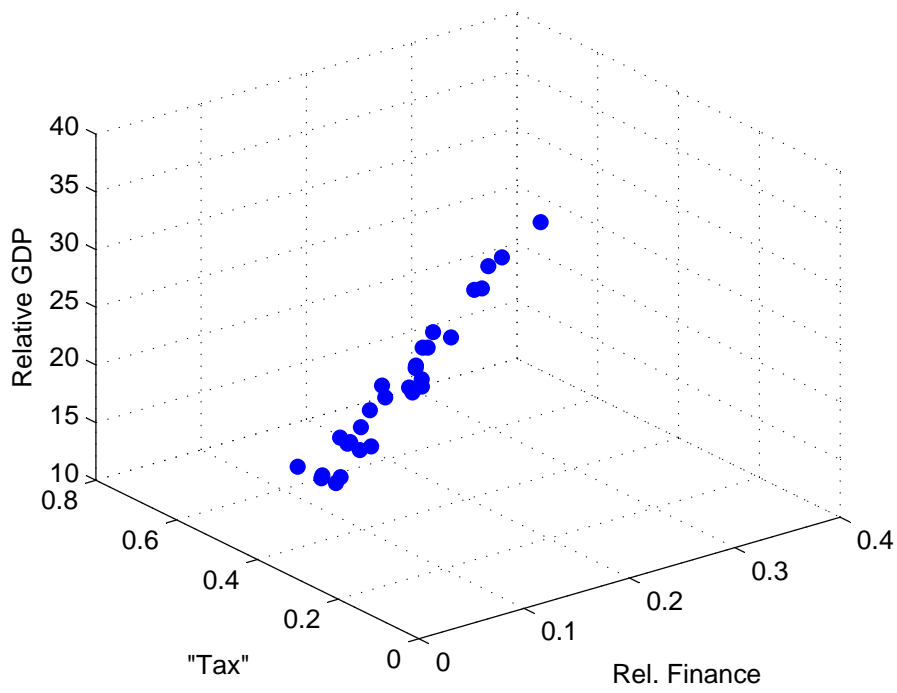


Figure 1: "Taxes", Financial Intermediation and Output

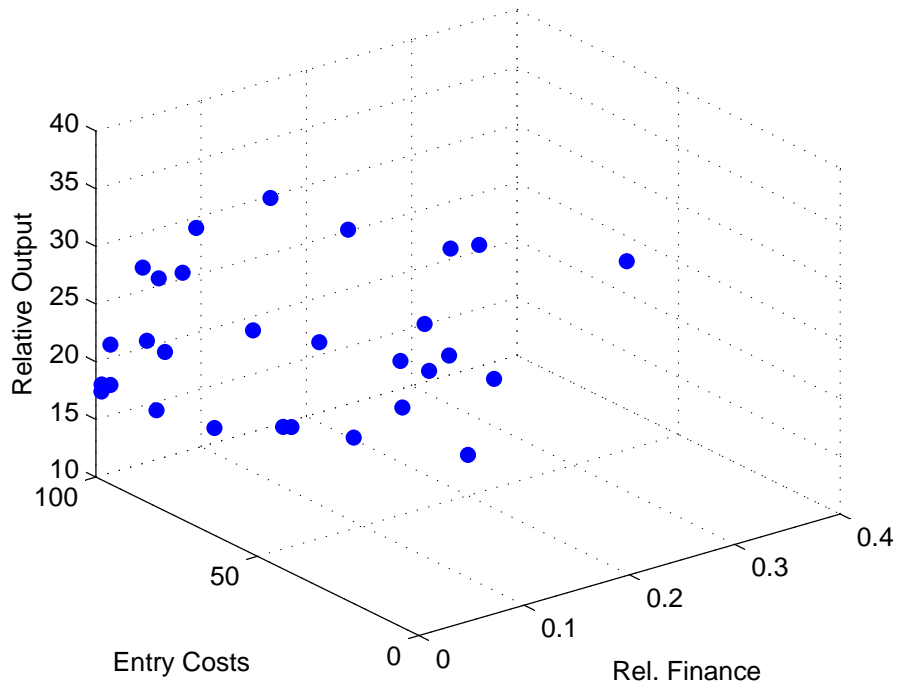


Figure 2: Entry Costs, Financial Intermediation and Output