INFORMAL ENTERPRISES IN KENYA

workshops jua kali handicrafts autoparts furniture
furniture handicrafts jua kali workshops enterprises

WORLD BANK GROUP
Trade & Competitiveness

INFORMAL ENTERPRISES IN KENYA

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INTRODUCTION

Jua Kali means fierce sun in Swahili. It is also the name given to Kenya's informal sector, the thousands of workshops where people bang out pots, pans, autoparts, furniture, and handicrafts, literally under the hot sun, day in and day out. In low and middle-income countries, informal firms make up the majority of all enterprises. In Kenya, this is also true, with the Kenya National Bureau of Statistics estimating that, as of 2014, the informal sector represents 82.7 percent of employment.

While the domination of the informal sector is well known, its implications, costs, reforms, and impact are less well known, and questions abound. What are the main constraints facing informal firms? Why do firms choose to remain informal, and what are the benefits to formalization? How much does informality 'cost' in terms of lost revenue and lower productivity? As firms grow in size, do they stay informal? Do policies to boost formalization work and are they worth the cost to design and implement?

This note draws from an emerging literature on firm informality as well as data collected on micro enterprises and informal firms as part of the World Bank's Enterprise Survey initiative for Kenya. The purpose of the note is to assess the main constraints facing informal firms, identify patterns of productivity and firm dynamics, and better understand drivers for formalization. Section one provides an overview of key characteristics and main investment climate constraints facing informal firms. In section two, patterns of informal firm finance are explored, while in sections three and four, labor productivity and drivers of firm growth are analyzed. Section five examines incentives to remain informal and policies that can catalyze formalization. This is followed by a conclusion. Due to the sampling methodology used, all results pertain to the sample of surveyed firms; hence, due caution is necessary in extrapolating the results to the broader informal sector in Kenya.

Nevertheless, the assessment of the surveyed firms could provide important information on identifying policies as well as firm-level support that could boost productivity and catalyze formalization. This could have important implications for economic growth and job creation in Kenya.

SECTION ONE

BACKGROUND AND OVERVIEW

The informal sector across Africa is ubiquitous, with a significant number of people engaged in small and household enterprises outside formal wage employment. A World Bank review of household enterprises in Sub-Saharan Africa (Fox and Sohnesen 2012) confirms that the informal nonfarm sector is an important contributor to economic development in low-income Sub-Saharan Africa as a source of employment, earnings, and household livelihoods. Nearly 70 percent of employment outside farming is in the informal sector. Improving the productivity of informal enterprises is therefore essential for employment, income growth, and poverty reduction in the region.

Kenya's informal sector is large and dynamic - 95 percent of the country's businesses and entrepreneurs are found here. According to 2015 Economic Survey, the total number of persons enrolled in both formal and informal sectors increased from 13.5 million in 2013 to 14.3 million in 2014, and of the 799,700 new jobs, 700,000 were created by the informal sector. Men account for a majority of employment in the informal sector of Kenya and more than two-thirds of informal sector jobs are in trade, restaurants, and hotels. Employment in the informal sector is associated with significantly lower levels of poverty than those experienced in farming.

Data recently collected can fill some important gaps in information on the informal sector in Kenya and provide some insight into the characteristics of firms and their owners, their main investment climate challenges and obstacles to growth, and firm dynamics.[1] The World Bank's Informal Enterprise Surveys (IFS) collect data on non-registered business activities in every region of the world, and an informal enterprise survey was conducted in Kenya in April and May of 2013. The Kenya IFS used a standardized survey instrument designed to assess the business environment for non-registered businesses within a well-defined universe of activities, which have been identified using information from previous iterations of the studies. The IFS covered business environment topics including general business characteristics, infrastructure, crime, sales and supplies, finance, labor, registration, business environment, and assets. In Kenya, a total of 533 firms were interviewed. The urban centers identified were Nairobi (137 firms), Mombasa (110), Central (103), Nyanza (93), and Nakuru (90).

The IFS in Kenya allows for comparison across different dimensions, including sector of activity (manufacturing vs. services), firmsize (number of employees in a regular month), location (Nairobi, Mombasa, Central, Nyanza, and Nakuru), gender of the main decision maker/owner, whether the firm operates from inside or outside of household premises, and education level of the primary owner. A full set of summary statistics of all variables are provided

[1] See Annex 2 for a detailed description of the data and methodology.

in Annex 1.[2] As mentioned above, the lack of a proper sampling frame for the universe of informal firms in Kenya implies that the sample we use is not necessarily representative of the broader informal economy in Kenya or in the cities covered. Hence, all our results apply to the sample of surveyed firms and extrapolation to the broader informal economy requires due caution.

Excerpts from the summary data in Table 1 reveal that the average age of firms covered in the IFS survey was six years and almost half the businesses operated in the manufacturing sector. Only 1.3 percent of the sampled firms were registered when they started and over 40 percent of employees were family members of the owners. Firm premises were typically smaller than 50m^2 in size and largely located outside of the household premises. Of these, 45 percent of the premises were fixed, permanent structures and owners who did not own the premises rented these in almost 82 percent of the cases.

For the full sample, 27.1 percent of firms had expanded in the last three years (increase in employees, machinery, or space occupied) but higher growth was seen in companies where owners had a secondary education (32 percent of firms) vs. owners who had no primary education (16.6 percent of firms). Similarly, firms managed by males expanded in more cases than those managed by females (31.2 percent vs. 20.9 percent).

Table 1: General firm characteristics

Measure	Result	Measure	Result
Average age of the firm	6.5 years	Total area occupied by the business or activity	45m^2
% of firms that were registered at start up	1.3%	Firms located within household premises	13%
Firms that belong to the manufacturing sector	48%	For firms located inside household premises, % reporting main reason is that it costs less to run the business from home	60%
Firms with increase in employees, machinery or space occupied during the last 3 years	27%	For firms located outside of household premises, % of firms that have fixed premises and with permanent structure	45%
Business is located in an industrial zone or cluster	16%	Among businesses whose owners do not own the space occupied by the business, % who pay rent for the space occupied	82%
Business is located in the city center	7%	Number of family members of the owners working at the firm as a percentage of all workers during the last month	44%

As shown in Table 2, firms were typically owned by an individual who had an average of eight years of experience in the sector. The average age of the owner was 35 years of age and almost 40 percent of owners were female. In 94.3 percent of the cases, the main owner had started the business themselves (or with a partner), and in many instances (66.3 percent), these owners came from homes in

[2] For all variables covered by IFS, regression analysis was conducted by regressing each of the variables covered by IFS on various cuts (sector, firmsize, education level of primary owner, etc.) listed above. OLS regression is used where the dependent variable is a continuous variable and logit model is used for categorical (dummy) variables. All regression results use Huber-White robust standard errors. As we find below, significant regional differences are found in many IFS variables. This is not surprising since the informal sector often operates at the local rather than the national level. Hence, all our regression results are run with region fixed effects (dummy variables indicating the region to which a firm belongs).

Table 2: Firm ownership characteristics

Measure	Result	Measure	Result
Number of owners in the business	1.1	For firms with largest owner who has not spent his/her entire life in the city, % of firms where owner migrated from a smaller city	64.4%
Number of years of experience that the main decision maker has working in the sector	8.1	Number of people who live in the largest owner's household premises	3.8
Age of the largest owner	35.0	Firms with largest owner's parents having no education or primary education	66.3%
% of owners of the firm that are female	37.8%	Firms with largest owner employed in the same activity prior to current business	23.4%
Largest owner acquired ownership of the firm by starting the business alone or with partners	94.3%	Prior to starting this business, % of firms with the largest owner being unemployed	21.7%
Largest owner migrated to the city where the business is located from another city or from another country	78.8%	Number of businesses or activities started by the largest owner in the last three years	1.0

which parents had no education or a primary education. Almost 80 percent of the largest owners migrated to the city in which the business is located and, of these, the majority (64.4 percent) migrated from smaller cities. About a fifth of the owners of the surveyed businesses were unemployed prior to starting their respective businesses.

Table 3 provides further insight into the management of the day-to-day operations of the businesses surveyed. As shown, the average firm operates for approximately 65 hours per week and this remains constant across sector, region, type of ownership, and stage of maturity of the business. A large majority of the businesses (86.8 percent) use their own funds to finance the day-to-day operations, with only 8.7 percent using banks. However, 16 percent of firms managed by individuals with a vocational or university degree make use of bank financing for this purpose vs. only 3 percent of managers with no education or a primary education. On average, 34.4 percent of

Table 3: General management of the business

Measure	Result	Measure	Result
Firms where the largest owner is also the main decision maker	96.8%	% of firms that have a bank account to run the business	34.4%
Hours of normal operation of the firm per week	64.8	For firms that have a bank account to run the business, % of them that use separate bank account for their household	52.6%
% of firms who use electricity	51.8%	Total cost of workers for the last month	Ksh 12,679
% of firms that use water for business purposes	36.9%	% of firms who experienced losses due to crime during the last month	7.0%
% of firms that used own funds to finance their day-to-day operations	86.8%	Losses due to crime during the month as % of monthly sales among firms who had positive losses due to crime in the last month	46.7%
% of firms that used banks to finance their day-to-day operations	8.7%	Losses due to crime during the last month as a percentage of sales in a regular month including zero losses for firms that had no such losses	2.9%

firms use a bank account to manage their funds and the use of bank accounts is doubled when comparing level of education (vocational or university degree vs. no/primary education). Of those that make use of bank accounts, just over half the firms separate business and household bank accounts. Once again, level of education is a large driver of separation (70 percent vs. 25.7 percent with no/primary education).

Just over half the firms surveyed use electricity to operate their businesses (51.8 percent) and only 37 percent use water. The average cost of workers per month is Ksh 12,679, although there are substantial differences by sector (Ksh 16,448 in manufacturing vs. Ksh 9,056 in services), by level of education of owners (Ksh 16,178 with university degree vs. Ksh 8,937 with no/primary education), and by gender of manager (Ksh 15,613 for males vs. Ksh 8,022 for females). Seven percent of firms experienced losses due to crime in the month prior to being surveyed. Of those firms, the losses represented almost 47 percent of sales for the month. There were differences in this percentage by level of education (31.0 percent with secondary education vs. 72.5 percent with no/primary education), by number of employees (22.1 percent for multiple employee businesses vs. 60.7 percent for single employee), and by gender (29.1 percent for female managed businesses vs. 54.1 percent for male managed businesses).

Firms were provided with a list of eight obstacles in running their business and asked to choose the most important one. The obstacles include access to finance, access to land, corruption, power supply or electricity, crime, water supply, access to technology, and inadequately educated workers. Access to finance was the top obstacle, cited by 59 percent of firms surveyed. This was followed by electricity problems (10.3 percent), access to land (9.3 percent), and corruption (9.3 percent).

As seen in table 4, 63.8 percent of firms cite access to finance as a severe obstacle, and limited access to land is also a severe stumbling block for 41.3 percent of firms surveyed. Corruption appears to be widespread, with 33 percent of the sampled firms reporting it as a severe obstacle, 60 percent reporting harassment by government officials during the

Table 4: Key obstacles faced by informal firms

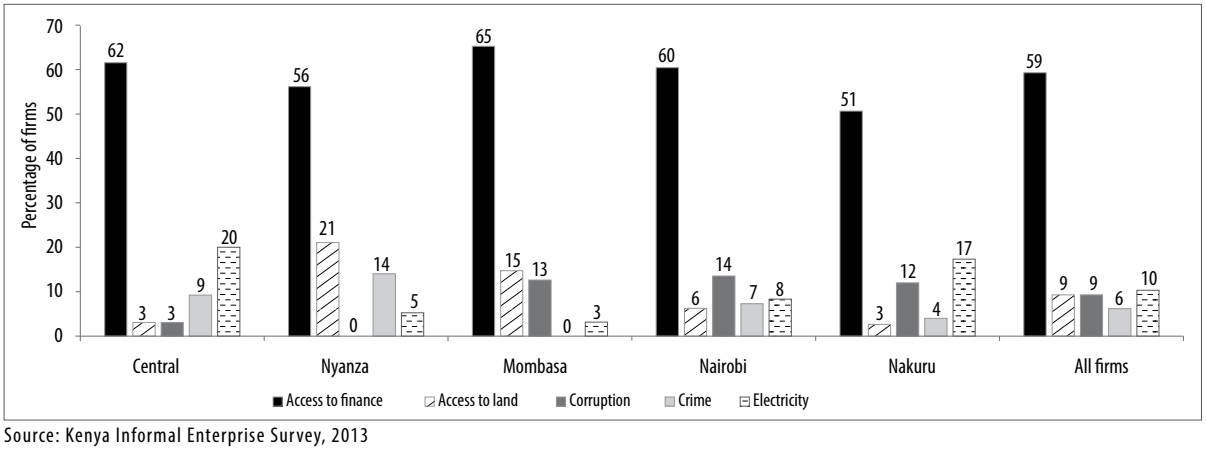
Measure	Result	Measure	Result
% of firms that consider limited access to finance as a severe obstacle to their current operations	63.8%	Limited access to land is a severe obstacle to firm's operations (% of firms)	41.3%
% of firm that rank limited access to finance as the most important obstacle within the set of eight obstacles	59.3%	% of firms reporting electricity problems as a severe obstacle to their current operations	38.5%
% of firms who report crime as a severe obstacle for their operations	28.0%	For firms that use electricity, % of firms that experienced power outages during the last month	83.6%
% of firms who report corruption as a severe obstacle for their operations	33.0%	% of firms reporting water problems as a severe obstacle to their current operations	22.9%
Business experienced harassment by government officials during the last month (% of firms)	60.0%	For firms that use water for business purposes, % of firms that experienced insufficient supply during the last month	43.0%
% of firms who believe that firms like themselves give informal payments or bribes or protection payments in order to stay in business	52.9%	% of firms that would like their business to be registered with the Registrar General	53.0%

last month, and 53 percent reporting that they believe bribes are required to stay in business. This figure is significantly higher among surveyed firms in the manufacturing sector vs. the services sector (80.0 percent vs. 31.6 percent). Access to services is also a challenge as almost 40 percent of firms surveyed face electricity problems (over 80 percent of firms using electricity experienced power outages in the prior month), and almost a quarter of firms face severe water problems (over 40 percent of those using water experienced insufficient supply in the prior month).

Access to finance continues to be the top obstacle even within sub-samples such as sector of activity, region, gender of manager, single vs. multiple employee firm, etc.

By region, at the high end, access to finance is the top obstacle for 65 percent of the firms surveyed in Mombasa region (Figure 1). This is significantly higher than in Nakuru (51 percent) at the low end. Nyanza and Mombasa stand out with a significantly higher proportion of firms that rank access to land as the top obstacle (21 percent and 14 percent, respectively) compared with each of the remaining regions. In contrast, no surveyed firm in Nyanza considers corruption as the top obstacle compared with 11 percent on average elsewhere, and no surveyed firm in Mombasa considers crime as the top obstacle compared with 8 percent of firms on average surveyed elsewhere. The Central and Nakuru regions stand out with a significantly larger proportion of firms surveyed reporting poor power supply as the most important obstacles (20 and 17 percent, respectively) than firms in any of the other regions (average for the remaining regions is 5.6 percent).

Figure 1: Access to finance is the top obstacle in all regions



Source: Kenya Informal Enterprise Survey, 2013

SECTION TWO

FINANCING INFORMALITY

Common in the literature on informality is the consistent pattern that access to finance (among other variables) is a key determinant of the rate of formality. Furthermore, the greatest perceived obstacle for both informal and formal firms is access to finance, although this could often be interpreted more fundamentally as an issue of limited human capital (LA Porta, Shliefer, 2014).

In Kenya, an overwhelming majority of informal firms surveyed use their own funds to finance working capital requirements; internal funds serve as a source of financing for working capital for 87 percent of firms surveyed. This is followed by money from friends and relatives (used by 35 percent of firms), credit and advances from suppliers and customers (19 percent), micro-finance institutions (16 percent), moneylenders (9 percent), and banks (9 percent).

There is also a fair amount of literature showing that financial constraints are particularly acute for relatively smaller firms. Data from the informality survey in Kenya are consistent in this respect. That is, the proportion of firms that consider access to finance their top obstacle is significantly higher as firmsize, measured by the number of employees, decreases. For example, 62 percent of the single employee firms rank access to finance as the top obstacle, compared with only 55 percent of multiple employee firms. However, there is no noticeable relationship between the proportion of firms that find access to finance as the top obstacle and firmsize measured by monthly sales of the firm.

The proportion of surveyed firms that use their own internal funds to finance operations does not vary much by firm-size, labor productivity, gender of the manager, education level of the manager, whether a firm operates from inside or outside of household premises, industrial sectors, or whether or not the firm expanded over the last three years. There are, however, some significant differences in other categories. Younger firms are significantly more likely to use their own funds than older firms. This result seems to be largely driven by firms that are 10 years or older (about 20 percent of the sample). For instance, 81 percent of the firms surveyed that are 10 years or older use their own funds to finance operations compared with 89 percent of the firms surveyed that are younger.

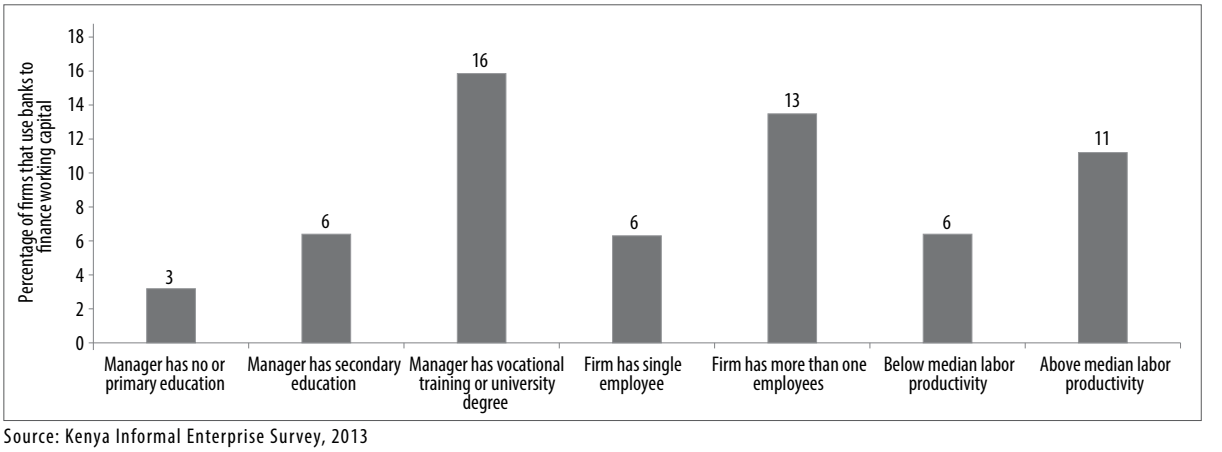
The sampled firms in the furniture industry are an anomaly as they are less likely to use their own funds (75 percent) than the sampled firms in the rest of manufacturing (92 percent) as well as services sector (85 percent). This may suggest that the furniture industry enjoys somewhat greater access to finance. Regional differences for the full sample are noticeable. Specifically, firms surveyed in the Central and Mombasa regions have a higher proportion of firms using their own funds (98 percent in Central region and 94 percent in Mombasa) than firms in Nyanza (77 percent), Nairobi (84 percent), and Nakuru (81 percent).

Although close to 20 percent of firms in the full sample use advances and credit from suppliers and customers, the percentage increases significantly with firmsize (sales, employment), labor productivity, firm's age, and the level of education of the manager. For example, 26 percent of the firms surveyed with above median level of labor productivity use advances/credit compared with 12 percent of the firms surveyed with below median labor productivity. Use of this source of finance also differs significantly between the sample of firms in the furniture industry (38 percent), rest of manufacturing (23 percent) and services (13 percent), and it is significantly higher for dynamic firms that increased workers, machines, or space used over the last three years vs. those that did not (33 and 14 percent, respectively). Last, there is not much regional variation with the exception that firms surveyed in Mombasa use advances/credit from suppliers/customers less compared with each of the other regions (8 percent vs. 22 percent).

While only 9 percent of firms in the sample use banks to finance working capital, the proportion of such firms increase significantly with firmsize (sales, employment), labor productivity, and education level of the manager (Figure 2). It is also higher for manufacturing vs. services sector firms (11 and 6 percent, respectively), for firms that expanded workers, machines, or space, used over the last three years vs. others (13 percent vs. 7 percent, respectively). As might be expected, surveyed firms that currently use bank finance are less likely to report that they would benefit from better access to finance as a result of registration. Among firms that use bank finance, 63 percent report better access to finance as a benefit from registering; the corresponding figure for firms that do not use bank finance is significantly higher at 78 percent.

The survey provides information on whether or not a firm applied for a loan during the last year, and if not, the main reason for not doing so. We define a firm to be financially constrained if it did not apply for a loan during the last year and the main reason for not doing so is either high interest rates, lack of required guarantees, complex application procedures, it did not think it would be approved, and the residual category of other reasons.

Figure 2: Use of Bank finance for working capital is more common among firms with more educated owners and among the more productive and large firms

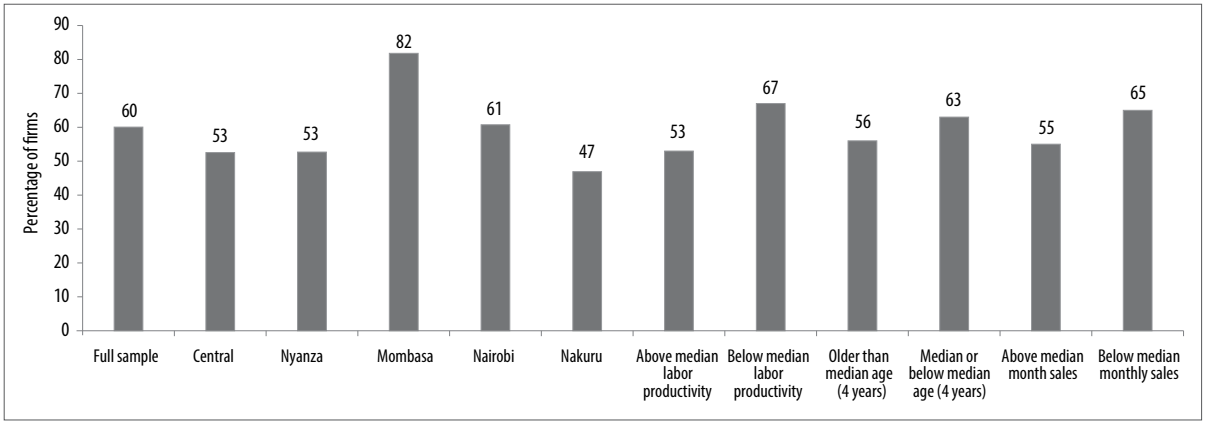


Source: Kenya Informal Enterprise Survey, 2013

According to this measure, about 60 percent of the sampled firms are financially constrained. This proportion does decline with increases in firmsize (sales), firm age, labor productivity, and firm growth.

Surveyed firms with higher labor productivity are less financially constrained (at 53 percent) compared with 67 percent of firms with lower labor productivity. Across regions, sampled firms that are financially constrained are more common in the Mombasa region. Figure 3 provides more detail with respect to regions, firm age, productivity, and sales. As might be expected, firms that consider access to finance as an obstacle are more likely to be financially constrained vs. those that are not (76 vs. 39 percent, respectively).

Figure 3: Larger and more productive firms are less likely to be financially constrained



Source: Kenya Informal Enterprise Survey, 2013

SECTION THREE

PRODUCTIVITY

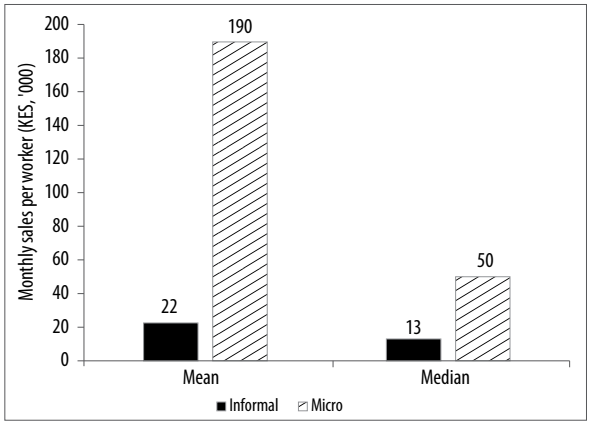
Given that a large proportion of workers in the informal sector belong to the low-income category, increasing labor productivity in the informal sector may be crucial for reducing poverty, increasing income equality, and improving the living conditions of relatively poorer sections of society.

In general, it is well understood that informal firms are much less productive than formal firms, with productivity calculated as value added per employee. La Porta and Shliefer (2014) present evidence that this is an accurate representation and not just under-reporting by informal firms. The low value-added per employee reflects the low quality of products produced by informal firms, which is also indicated by the concerns informal entrepreneurs report about competition from the formal sector. Low productivity is also reflected in the growth rates of informal firms (La Porta and Shiliefer, 2014).

We define labor productivity as the (log of) ratio of sales to employment in a regular month. Regression analysis was performed to analyze the relationship between labor productivity and various firm-characteristics. Unless stated otherwise, all the results for labor productivity continue to hold even after accounting for differences in basic firm characteristics including firm-size (log of number of employees), age of the firm, sector of activity, regional location, and the number of years of experience of the main decision-maker.

Consistent with the broader literature, in Kenya, formal or registered micro firms show a much higher level of labor productivity than their informal firm counterparts surveyed, but the gap varies by region. The mean value of labor productivity for micro firms is about 8.4 times that of informal firms surveyed. The corresponding figure for median level of labor productivity is lower, but sill 3.8 times that of informal firms surveyed.

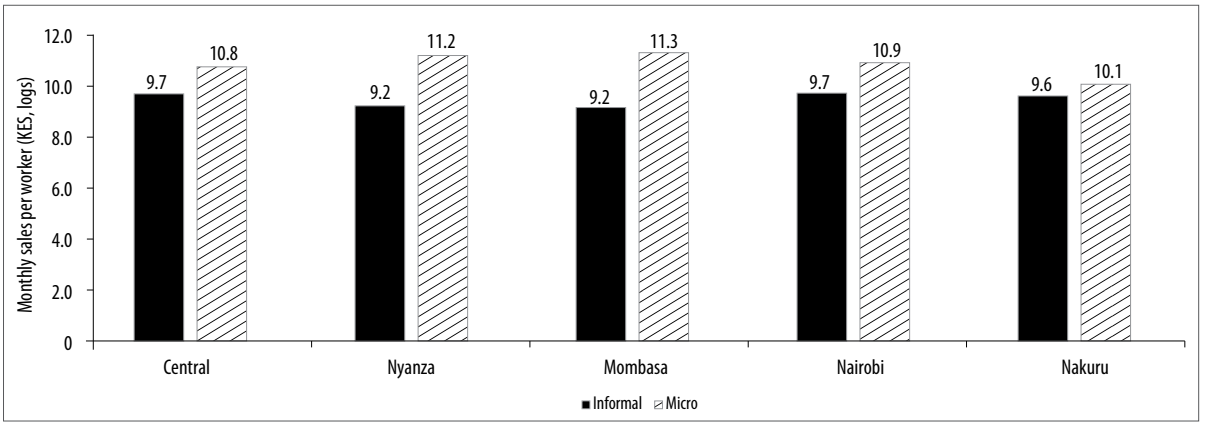
Figure 4: Informal enterprises are less productive than formal enterprises



Source: Kenya Informal Enterprise Survey, 2013
Note: All the micro firms belong to the formal or registered sector.

The productivity gap between formal micro firms and informal firms surveyed grows at higher levels of labor productivity. Focusing on the mean level of labor productivity, there is no significant difference in the gap between micro and informal firms surveyed with respect to firm's age, sector of activity (manufacturing vs. services), and firm-size (number of employees). However, the gap does vary significantly across regions (Figure 5).

Figure 5: Labor productivity is lower among informal firms compared with formal micro firms, but the gap varies by region



Source: Kenya Informal Enterprise Survey, 2013

Labor productivity is significantly higher for formal micro firms compared with the sampled informal firms in all the regions, but the gap is significantly smaller in Nakuru than in any of the other four regions.

While there is substantial work on determinants of labor productivity for firms in the formal or registered sector, there is little work in this area for informal sector firms. For instance, studies of formal sector firms show that labor productivity and other measures of firm-performance are much higher for older firms, firms that are larger, and firms managed by men rather than women. Regional or sub-national differences have also been found in a number of studies.

For the informal firms surveyed in Kenya, the mean value of labor productivity equals KES 22,481, and the median value is KES 13,000.[3] However, there are sharp differences in labor productivity along a number of dimensions. Across regions, labor productivity is significantly lower in Mombasa and Nyanza compared with the other three regions (panel A, Figure 6).[4] For instance, in Nairobi, labor productivity is almost twice the level in Mombasa. These results are robust to some basic controls such as firmsize (number of employees at the firm), firm's age, sector (manufacturing vs. services), gender of the manager, and the level of education of the manager.

There is a fair amount of research on the impact of firmsize on firm productivity. Large firms enjoy economies of scale while small firms tend to be more flexible and adapt more quickly to new market opportunities. While the majority of the evidence in this area suggests that large firms have higher productivity than small firms, the contrary evidence cannot be neglected. The issue of firmsize is of special interest to the informal sector. One view is that informal firms are inefficiently small and hence not capable of contributing to vibrant growth of the private sector.

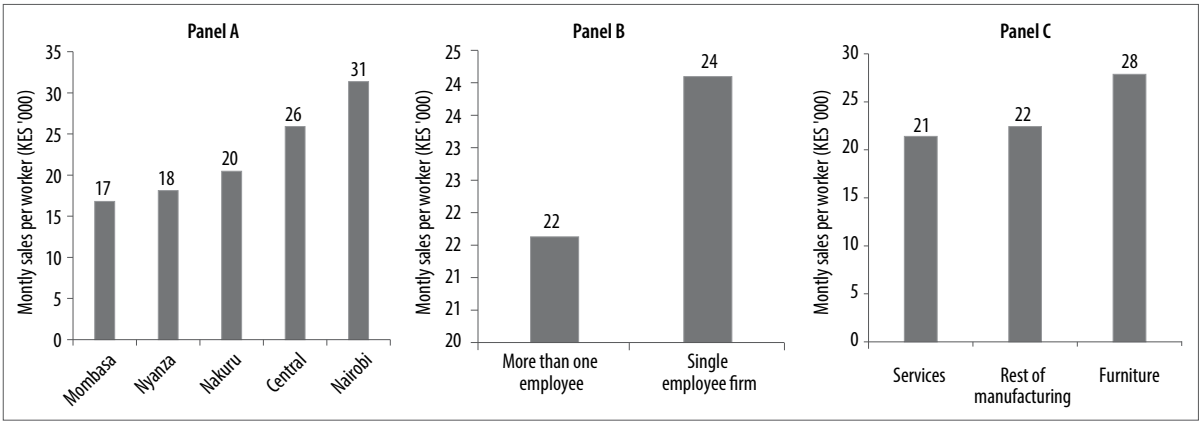
[3] Labor productivity is defined as value of sales per employee in a regular month over the last one year. While this is only one measure of firm performance, it provides useful information on how productive labor is on average.

[4] Unless stated otherwise, all the results discussed below are statistically significant at the 10 percent level or better and are robust to region fixed effects.

Can we expect firm productivity to improve as informal firms get bigger? There is very little by way of formal work on this issue, and the studies that do exist show mixed results. For example, Benjamin and Mbaye (2012) use survey data of 900 formal and informal firms that they collected in West Africa. They distinguish between the relatively large vs. small informal firms and find that the large informal firms have much higher productivity (labor and total productivity) than the small informal firms. The authors suggest that the large informal firms are at the fringes of the formal-informal divide and therefore much closer to the formal sector firms in terms of productivity and other characteristics than the small informal firms. A similar result is found by McKenzie and Sakho (2010) who find that owners of large firms that have managed to stay informal have higher entrepreneurial ability than owners of formal firms, potentially indicating higher productivity of large informal firms over small informal firms. However, Amin and Islam (2015) use data for over 500 informal or unregistered firms in seven countries in Africa and find different results. They find robust evidence that small informal firms have higher labor productivity than large informal firms where firmsize is measured by the number of employees at the firm. They conclude that even though poor performance of informal firms is typically attributed to their small size vis-à-vis registered or formal sector firms, incremental increases in the size of informal firms do not necessarily imply a narrowing of the formal-informal firm productivity gap.

While a proper analysis of the firm-size and productivity relationship for Kenya would require a rigorous empirical analysis beyond the scope of this note, preliminary results for Kenya show that increasing firmsize may not necessarily translate to higher labor productivity. That is, for the informal firms surveyed in Kenya, labor productivity is lower for the relatively larger firms and significantly so, once region specific and sector specific differences in labor productivity are taken into account. For example, labor productivity for firms with a single employee averages KES 24,096 while labor productivity for firms with more than one employee averages KES 21,628 (panel B, figure 6).

Figure 6: Variations in labor productivity of informal firms



Source: Kenya Informal Enterprise Survey, 2013

One explanation here could be that a larger firmsize raises evasion costs associated with being informal and this evasion expenditure affects firm performance. However, it is also possible that the most productive large firms formalize, biasing labor productivity among the remaining large informal firms towards a lower level.

Sector specific differences in labor productivity are also observed in the sample of informal firms. Labor productivity is much higher in the manufacturing sector compared with the services sector. Further, sampled firms in the furniture industry stand out with a labor productivity level that is significantly higher than for firms surveyed in the services sector and the rest of manufacturing (panel C, figure 6). For example, labor productivity for firms in the furniture industry is about 1.3 times the level in the rest of the sample. Differences in location of firms, firmsize, age of the firm, and the education level of the manager do not seem to the driving force behind these productivity differences.

Labor productivity for firms surveyed is higher among relatively older firms and firms with more educated managers.[5]

A fairly large literature exists on differences in firm productivity depending on the age of the firm. Natural selection, whereby the less efficient firms are weeded out, and learning-by-doing effects that favor longer tenures suggest that firm productivity should be higher among relatively older firms.[6] The importance of human capital and the level of education for overall economic development is now well established. Some work is also beginning to emerge explaining differences in labor productivity between formal and informal firms based on the level of education of firm managers.

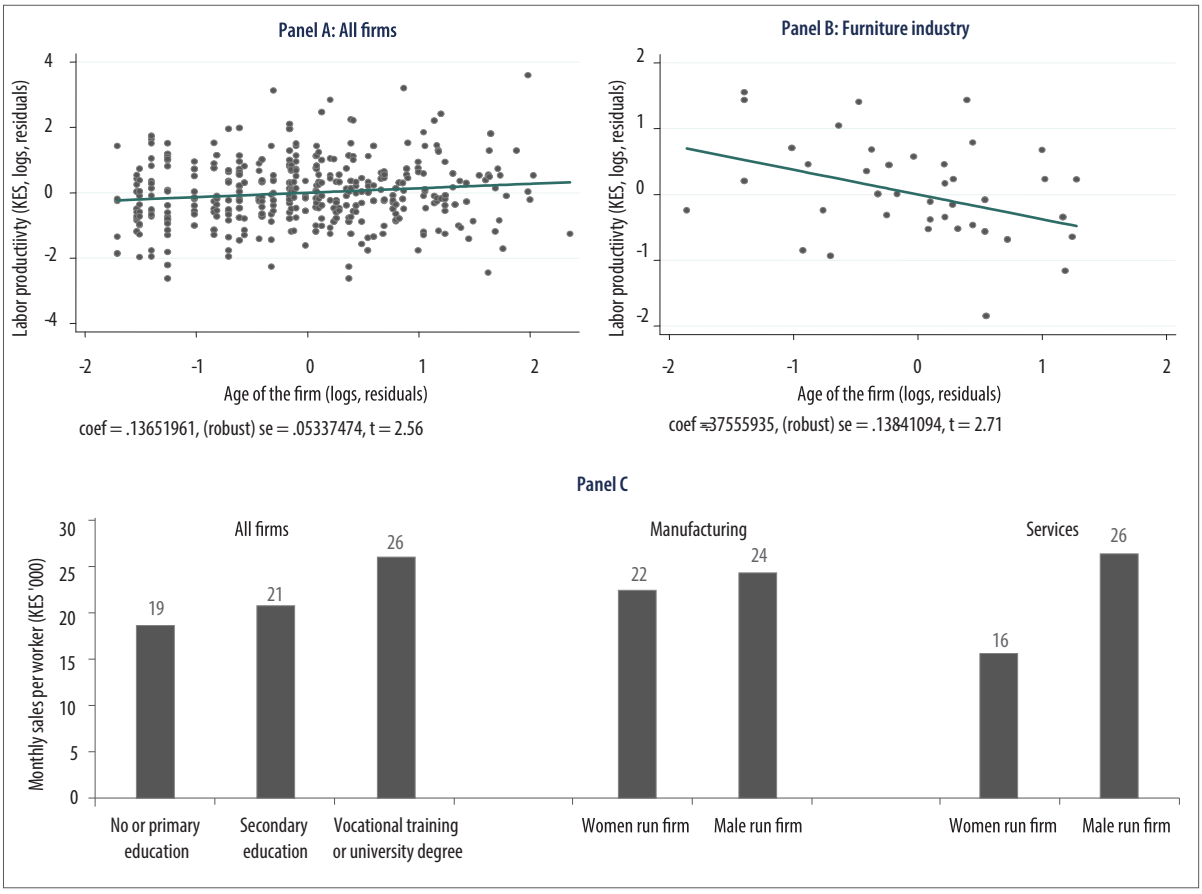
For the case of informal firms surveyed in Kenya, as predicted above, labor productivity increases with a firm's age (panel A, figure 7). For example, labor productivity for firms above the median age of four years averages KES 25,505 compared with a much lower KES 19,649 for the remaining firms. There is no difference in the age-to-labor productivity relationship between firms in the manufacturing and services sector, by firmsize (number of employees), and the gender of the manager. However, firms in the furniture sector again stand out with younger firms showing a much higher level of labor productivity than older firms (panel B, figure 7).

The education level of manager is highly correlated with the level of labor productivity of the surveyed firm (panel C, figure 7). For example, labor productivity for firms with managers that have no education or only primary education is only 72 percent of that of firms with managers that have vocational training or a university degree. Education matters for labor productivity for the sampled firms in both the manufacturing and services sector.

[5] The positive relationship between labor productivity and a firm's age becomes statistically weak and insignificant at the 10 percent level when we control for the number of years of experience of the main decision maker in the industry.

[6] Interestingly, for formal firms in the manufacturing sector in Kenya, this does not hold true. In some subsectors—and for the manufacturing sector as a whole—low-productivity firms employ more workers than high-productivity firms. This result contrasts with results for the European Union, where low-productivity firms are always smaller than the median-productivity firm and high productive firms are 5–12 times larger than the median-productivity firm (see Kenya Economic Update, December 2014, Issue 11).

Figure 7: Education level of the manager is positively correlated with labor productivity of the informal firms



Source: Kenya Informal Enterprise Survey, 2013
Note: Panel A and B contain partial scatter plots obtained after controlling for regional fixed effects

There is also evidence that gender disparity is less among informal firms surveyed than among the formal sector firms. That is, while labor productivity is significantly lower for firms with a female manager among informal and formal micro firms surveyed, this gender-based gap is significantly smaller for the informal firms surveyed compared with firms in the formal sector. Average labor productivity for the surveyed informal firms managed by men is higher by KES 6,881 (KES 25,290 vs. KES 18,409). The corresponding gap for the formal micro firms is much larger at KES 125,456 (KES 219,675 vs. KES 94,219), which in relative terms is roughly three times as large. This result for the gender-based gap in labor productivity for informal vs. formal micro firms surveyed also holds when we look at median values instead of the mean values (as above) of labor productivity. That is, for the sample of informal firms, the median labor productivity for female vs. male managed firms is KES 12,250 vs. KES 13,167, respectively. For the formal micro firms, median labor productivity for female managed firms equals KES 31,250 compared with KES 61,111 for male managed firms.

This note also provides some analysis to explore whether improvements in the business environment translate into higher levels of productivity, replicating a similar analysis by Gelb et al (2009). They speculate that when the business environment improves, gaps in productivity between formal and informal

firms will emerge. In Kenya, evidence suggests that between 2007 and 2013 the business environment changed significantly, and over the same period productivity gaps between formal and informal firms surveyed emerged. In other words, the investment climate has changed in such a way that while there was very little distinction between the productivity of formal and the sample of informal firms in 2007, formal firms' productivity became substantially higher than informal firms by 2013. (See Annex 3 for the methodological approach and empirical findings).

SECTION FOUR

FIRM DYNAMICS

Firm dynamics, measured by an increase in employees, machines, and space used by the firm, suggests that firms in the furniture industry, older firms, firms with more educated managers, and those located in the Central and Nairobi regions are more dynamic.

In a survey question, firms were asked if over the last three years they had expanded the number of employees, machines, or space used. In another question, firms were asked about the current number of workers at the firm and when the firm started operations. Firms that answered in the affirmative to the first question are defined as dynamic firms. A second definition of dynamism is if the number of employees at the firm increased since it began operations. The two measures overlap but not entirely with correlation coefficient of 0.37. The results discussed below hold for both measures in the qualitative sense and so we focus only on the first measure. It should be noted that information on exiting firms or firms that close down is not available in the survey. Since exiting firms have different dynamics than the surviving firms, our results below for firm dynamics are potentially biased as far as the whole sample is concerned.

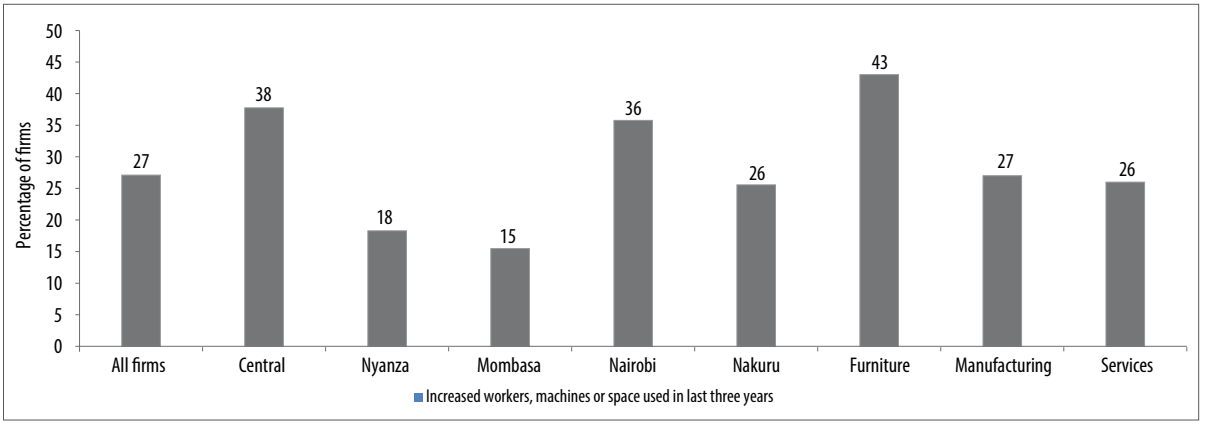
About 27 percent of the informal firms surveyed increased employees, machines, or space used (henceforth, expanded or expansion) over the last three years. There is substantial literature that suggests that younger firms are more dynamic than older firms. We find no evidence of this in our sample. In fact, the probability of expansion is significantly positively associated with a firm's age. Among firms that are older than the median age (four years in our sample), about 32 percent expanded compared with a much lower 22 percent of younger firms. As we might expect, education level of the manager is significantly positively correlated with the probability of firm expansion. Seventeen percent of firms surveyed with managers that have no education or primary education expanded over the last three years. The corresponding figure for the remaining firms that have managers with secondary education, vocational training, or university degrees is significantly higher at 31 percent.

Again, in terms of expansion, manufacturing firms outperform services firms with 31 percent of the former vs. a significantly lower 24 percent of the latter in our sample experiencing expansion. It should be noted that this difference between manufacturing and services firms is entirely driven by the furniture industry. Approximately 43 percent of firms in the furniture industry surveyed experienced expansion, compared with a significantly lower 27 percent of firms in the rest of manufacturing and 24 percent of firms in the services sector. The difference between firms in the services sector and the rest of manufacturing discussed here is not significant.

We also looked at the regional level and found firms surveyed in the Central and Nairobi regions to be significantly more dynamic than in Nyanza and Mombasa in terms of the percentage of firms that expanded (Figure 8). We examined a number of business climate

measures but found no consistent pattern of any relationship with the likelihood of firm expansion in our sample. For example, the percentage of firms that expanded is only poorly correlated with whether or not the firm faced power outages or water shortages. Expansion is also poorly correlated with measures of crime and security, and with various firm perceptions about factors such as land and access to finance being an obstacle for their business. One exception we find relates to bribe payments. The percentage of firms that expanded is significantly lower among firms that report making informal payments or bribes to remain unregistered (18 percent) compared with the rest of the firms (31 percent). This finding regarding informal payments does not hold for our second definition of a dynamic firm based on employment growth since the firm started operating and may signal a weaker relationship between bribery and workforce.

Figure 8: Percentage of firms that increased number of employees, machines, or space used over the last three years varies across regions



Source: Kenya Informal Enterprise Survey, 2013

SECTION FIVE

REMAINING INFORMAL

Formalization, or bringing the informal firms within the fold of the formal sector, is suggested as a possible solution to low income levels and lack of dynamism in the informal sector. Moving to the formal sector is expected to improve access to physical infrastructure, finance, and public services; the move also benefits the government through better compliance with the laws and more tax revenue. However, the move to the formal sector has been notoriously difficult to achieve and slow in most countries. Hence, an important question here is whether informal firms want to register, and what sorts of informal firms are more likely to do so.

The informality survey in Kenya asked firm owners if they would like their firms to be registered. Close to 53 percent of the firm owners surveyed responded 'Yes' to the question. The desire to register is more common in our sample among firms that are larger and more dynamic, firms in the furniture industry, firms located in Nyanza region, and firms that face water, electricity, crime, access to land, access to finance, and corruption constraints.

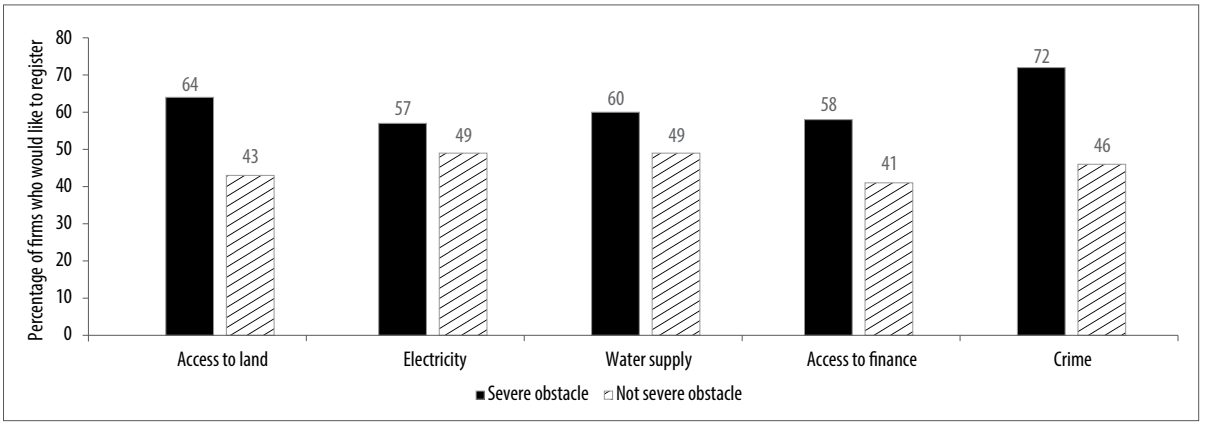
Comparing the behavior of firms that remain informal with formal firms that began in the informal economy suggests that there may be little crossover between the groups. La Porta and Schleifer's recent paper confirms that very few firms crossover from the informal to formal sector;[7] 21 percent of micro formal firms, 11 percent of small formal firms, 5 percent of medium formal firms, and only 2 percent of large formal firms were not registered at start-up. The median length of operations without registration for these previously informal firms is one or two years for all size categories. It seems that the opportunity for becoming formal may be associated with what takes place in the earliest year or two of a startup.

In our sample of informal firms, larger firms (in terms of sales, employment) are significantly more likely to report willingness to register than smaller firms. Sixty percent of firms with more than one employee report wanting to register compared with just 49 percent of firms with a single employee. Second, manufacturing firms report wanting to register significantly more than services firms, but again, this difference is entirely due to the furniture sector. That is, 70 percent of the surveyed firms in the furniture industry report wanting to register, and this is significantly higher than the 53 percent in the remaining manufacturing sector and 49 percent in the services sector.

Third, regional differences are noticeable with the proportion of sampled firms wanting to register being significantly higher in the Nyanza region (80 percent) than in any of the other regions. Firms in the Central region report a desire to register only 33 percent of the time, and this is significantly lower than the corresponding figures for Nyanza, Nairobi and Nakuru regions.

[7] Rafael La Porta, and Andrei Shleifer, (2014), "Informality and Development," Journal of Economic Perspectives, 28(3): 109-126.

Figure 9: Willingness to register is higher among firms that consider the various obstacles as severe for their business operations



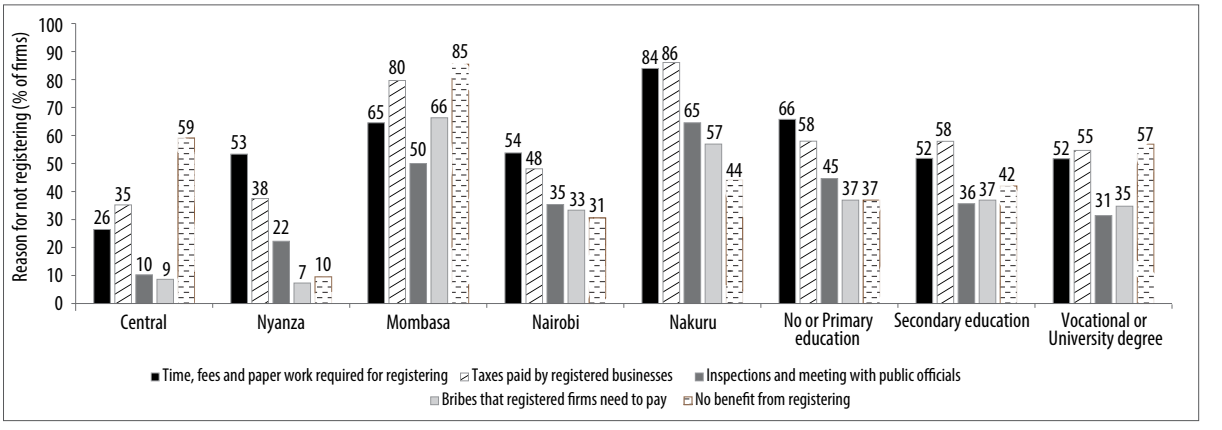
Source: Kenya Informal Enterprise Survey, 2013

Fourth, if informal firms expect formalization to ease the difficulties they face in obtaining finance, accessing electricity, water, and other public services, and dealing with corruption and harassment from public officials, the willingness to register may be higher among firms that consider these problems to be more constraining relative to other firms. The survey for Kenya does not reject such a possibility. That is, firms that consider these obstacles to be severe are significantly more likely to show willingness to register than firms that do not find these obstacles to be severe. Figure 8 provides more detail on this issue.

The costs associated with registering and taxes that registered businesses have to pay are the most common reasons for surveyed firms not registering, but there are sharp differences by region, firm productivity, and education level of the manager. In the survey, firms were asked if the following were reasons why they had not registered: cost of registering (time, fees and paper work required), taxes that registered business have to pay, inspections and meeting with government officials post registration, bribes registered businesses need to pay, and no benefit from registering.

Figure 9 shows how surveyed firms view these costs. In the full sample, taxes following registration are cited as a reason for not registering for 57 percent of the firms, followed by the cost of registering (56 percent), no benefit from registering (47 percent), inspections and meetings required

Figure 10: Reasons for not registering vary across regions and by education level of the manager



Source: Kenya Informal Enterprise Survey, 2013

(37 percent), and bribes paid (36 percent). Considered individually, these reasons for not registering show significant variation across different firm types. For example, older firms are significantly more likely to report bribe payments and no need to register as reasons for not registering compared to younger firms. The cost of registering disincentivizes a higher proportion of relatively larger firms (sales and employment wise), and controlling for region specific effects, more dynamic firms are more likely to report taxes that registered businesses have to pay as a reason for not registering. Interestingly, 21 percent of firms reported having to pay a bribe in order to remain unregistered and continue operations.

The most glaring differences in reasons given for not registering by the surveyed firms are seen across regions, labor productivity, and the education level of the manager. Higher labor productivity is associated with a higher proportion of firms reporting each of the above as reasons, with the exception of paying taxes, for not registering. Figure 9 shows the distribution by region and the education level of the manager. Many of the differences shown in these figures are significant. For example, no benefit from registering is a reason for only 9.5 percent of the firms in Nyanza region, and significantly lower than what we find in each of the other regions.

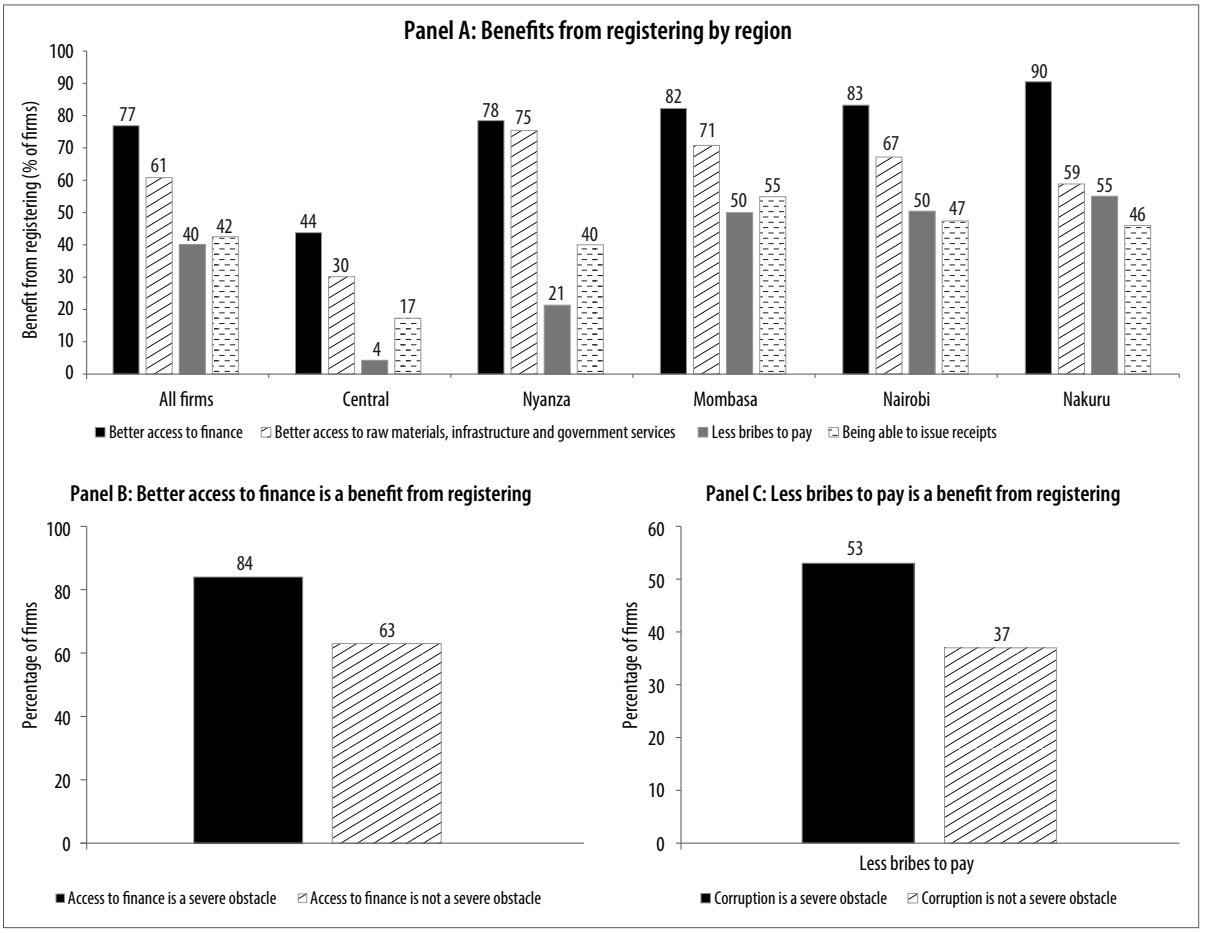
The findings in the previous paragraph shed light on the possible course of policy measures to facilitate registration. That is, to the extent that firm's perceptions regarding the various obstacles discussed above are due to lack of proper information, policies aimed at providing better information to the firms would be useful; and where the perceptions mirror objective reality, policies aimed at reducing registration costs, taxes, corruption and improving benefits from registering would help further the cause of formalization.

In the survey, firms were asked if registering would bring the following potential benefits: better access to finance; better access to raw materials, infrastructure, and government services; less bribes to pay; and being able to issue receipts to customers. About 77 percent of firms surveyed consider better access to finance as a benefit, followed by better access to raw materials, infrastructure and government services (61 percent), issue of receipts (42 percent) and less bribes to pay (40 percent). Regional differences abound. For example, less bribes to pay is sees as a potential benefit for over half of firms in Mombasa, Nairobi, and Nakuru regions. This is significantly higher than what we find in Nyanza (21 percent) and the Central region (4 percent).

Panel A of figure 10 contains the full distribution of regional differences. Controlling for region specific differences (region fixed effects), firms that are larger in terms of monthly sales and firms that have higher labor productivity are significantly more likely to report each of the above factors as potential benefits of registering. For example, being able to issue receipts is a potential benefit of registering for 41 percent of the firms that exhibit lower labor productivity compared with much higher 48 percent of firms with higher labor productivity.

The benefits to registering also seem to be reported more frequently among firms that feel constrained in their current operations. Firms that report access to finance as a severe obstacle for their business are more likely to consider better access to finance following registration to be a potential benefit (panel B, figure 10). The same holds for firms that report corruption as a severe obstacle and perceive

Figure 11: Perceived benefits ofregistration vary by region and firms'perceived severity of the obstacles



Source: Kenya Informal Enterprise Survey, 2013

less bribes to pay as a potential benefit of registration (panel C, figure 10), and among firms that report access to land as a severe obstacle and better access to raw materials, physical infrastructure, and government services as a potential benefit of registration. Interestingly, we do not find any significant correlation between the potential benefit of better access to raw materials, infrastructure, and government services and whether or not electricity and water supply are severe obstacles for firms' current operations.

The discussion above as to whether or not firms would like to be registered, as well as the obstacles to registering are based on firm's perceptions. One problem with such perceptions is that they may not always reflect the underlying objective reality of the costs and benefits of registering. For instance, lack of proper information may bias a firm's perceptions. Fortunately, in the case of Kenya, the World Bank's Sub-National Doing Business project provides information on select business environment measures for Mombasa, Nairobi, and Nakuru regions. The Sub-National Doing Business measures cover areas including starting a business, registering property, enforcing a contract, and dealing with a construction permit. We find some evidence that, at least to some extent, firms' perceptions reflect objective reality. That is, the proportion of firms surveyed that would

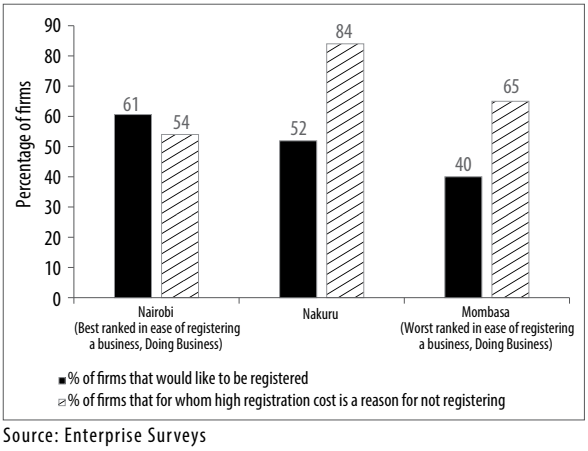
like to be registered is significantly higher in regions where registering a business is less cumbersome to the firms (overall composite measure of registering based on the number of procedures, time and cost of registering, and the minimum paid up capital required). Figure 11 provides the details.

We also find that more cumbersome business registration processes are associated with proportionately more firms on average that report a high cost of registering as a reason for not registering, although this result does not hold for Nakuru and Mombasa (Figure 11). Looking separately at the time and the monetary cost of registering as measured by Sub-National Doing Business project, the proportion of surveyed firms that report high costs (time, fees, etc.) as reasons why they are not registered is significantly higher in regions with high time cost (as measured by Doing Business), but there is no such relationship for the Sub-National Doing Business' monetary cost of registering. For example, according to Sub-National Doing Business, it takes 32 days to register a business in Nairobi, followed by 37 days in Mombasa, and 38 days in Nakuru. The percentage of firms surveyed that cite a high cost of registering as to why they are not registered is 54 percent, 65 percent, and 84 percent in these three regions, respectively.

In terms of the reported benefits from registering, a better contract enforcement system, as measured by Sub-National Doing Business (composite measure of procedures, time and cost of enforcing contract), is also associated with a proportionately larger number of the sampled firms that report being able to issue receipts to customers and suppliers as a benefit of registration. However, this result does not hold for Nairobi and Nakuru; the result is also statistically insignificant in the full sample. Figure 12 provides the details.

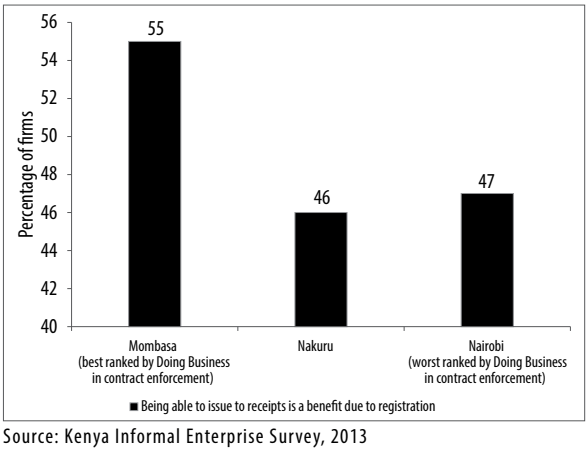
A more cumbersome business registration system, as measured by Sub-National Doing Business, is associated with lower labor productivity and a smaller firmsize of informal firms surveyed. While business registration is not the only element of the business environment that may be important to informal sector firms, it is perhaps the most important proxy measure of broader institutional environment faced by them. As above, we use the composite Sub-National Doing Business

Figure 12: Ease of registering a business is associated with greater willingness among informal firms to register



Source: Enterprise Surveys

Figure 13: Better contract enforcement in Mombasa is associated with more firms reporting being able to issue receipts to customers and suppliers as a benefit of registration

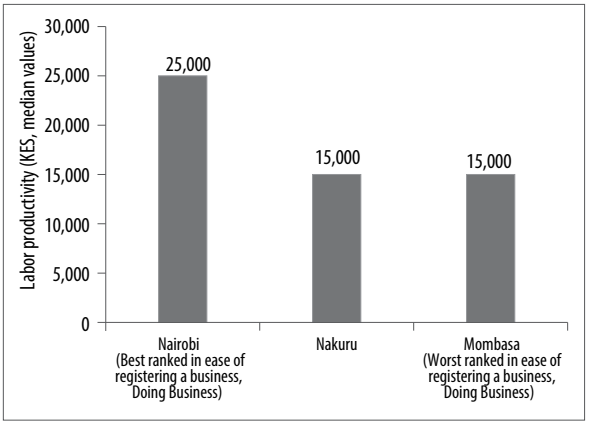


Source: Kenya Informal Enterprise Survey, 2013

ranking for starting a business in terms of the number of procedures required to register, the time it takes to complete the procedures, the cost of complying with the registration procedures, and the minimum paid up capital required. For this composite measure and for the firms surveyed, Nairobi is the best ranked region followed by Nakuru and then Mombasa. We looked at both firmsize (employment, sales) and labor productivity to see how firm performance compares across regions depending on the ease of registering businesses.

Overall, in our sample of informal firms, firmsize and labor productivity are both significantly positively correlated with greater ease of registering a business, although the result does not hold for all bilateral regional comparisons. For example, the mean number of employees at the firm equals 3.4 employees in Nairobi, the best ranked region; this is not too different from the mean of 3.9 employees in the next best region of Nakuru. However, firms in Mombasa, the worst ranked region, hire only 2.5 employees, significantly less than what we find in Nairobi as well as in Nakuru. Figure 16 provides the details for labor productivity.

Figure 14: On average, labor productivity increases with greater ease of registering a business



Source: Kenya Informal Enterprise Survey, 2013

SECTION SIX

SUMMARY AND POLICY ADVICE

This note provided an overview of the landscape of informal firms surveyed by the World Bank's Enterprise Surveys in Kenya, with a particular focus on their operating characteristics, key constraints, access to finance, labor productivity, and constraints and incentives for registration. Very interesting patterns emerged from the data and analysis, some of which could inform policy and investment choices of both public and private sector players.

Firstly, in our sample, attributes of the principal owner are important. For example, a key finding of the analysis is the role played by the education of the owner in almost all elements of firm performance. More educated owners have more dynamic and productive firms, are less financially constrained, more likely to use banks and formal sources of finance for their businesses, and even less likely to experience theft and other security-related losses. The gender of the owner also matters. That is, in our sample, female owned firms are less productive, less dynamic, and pay their workers less compared to male owned firms.

Secondly, access to finance is consistently identified as the largest obstacle for informal firms surveyed in Kenya, with over 60 percent ranking it as the number one obstacle. Other key constraints include electricity, access to land, and corruption. Bank credit as a source of working capital is low, with only 9 percent of informal firms using banks to finance their operations, compared to firms using credit from suppliers (19 percent) and microfinance (16 percent). However, the overwhelming majority of informal enterprises surveyed draw on finance through internal sources (87 percent) and family/friends (35 percent). Smaller firms (as measured by the number of employees) in the survey are more likely to consider access to finance as a key constraint, while using supplier credit or relying on banks is associated with larger, more dynamic firms with higher labor productivity, and better educated owners.

Regional differences are pronounced. Mombasa consistently stands out as the most challenging region for surveyed firms to access finance, whereas Nakuru is on the opposite end of the spectrum for financial access. Labor productivity is significantly lower for firms surveyed in Mombasa and Nyanza, the gap between productivity in the formal and informal sector is the highest, and firms from these two regions are the least likely to expand and grow. Mombasa and Nyanza have the lowest percent of firms that want to register. On the positive side, there is no firm in Nyanza that perceives corruption an obstacle, while crime and electricity are not major constraints in Mombasa, compared to other regions. Nairobi and Central regions consistently stand out with the sampled firms having highest labor productivity and most dynamic firms, and Nairobi is ranked top in ease of doing business; however, it is also where corruption as a constraint stands out relative to other regions.

Furniture also stands out in many respects amongst all sectors. In terms of finance, surveyed firms in the furniture sector are less likely to use their own funds, and much more likely to use supplier credit and bank finance. Surveyed firms in the furniture sector have,on average, the highest labor productivity, the most dynamic firms, and are more likely to hire more employees. Firms in this sector are also more inclined to register their businesses.

The majority of firms surveyed prefer to remain informal because of taxes and the cost of registration, especially younger firms and those that are more dynamic. Conversely, the main reason informal enterprises are interested in formalizing is greater perceived access to finance. The proportion of firms that want to register in our sample is significantly higher in regions where registering a business is less cumbersome, and the converse holds true— firms are more likely to not want to register in regions with more cumbersome registration processes. In terms of impact, a more cumbersome registration process is linked to lower labor productivity.

A key issue for policy makers is then whether there is a public rationale for attempting to formalize small-scale firms. McKenzie and Bruhn (2013) make the case that there are several compelling reasons to try and bring larger and more profitable informal firms into the formal system, including increasing revenue mobilization and widening the tax base, and leveling the playing field between large informal firms and efficient formal firms which will foster growth and productivity. Sharma (2009) highlights potential gains in labor productivity after business regulation reforms, especially when combined with reductions in labor taxes. From an informal firm's perspective, there are also compelling reasons for both becoming formal and remaining informal. Firms perceive formalization can lead to better access to credit and protection of property rights, while taxes, corruption, and bureaucracy are disincentives to formalize.

The question then becomes about identifying the most effective means to foster business registration in Kenya. While there is evidence that simplifying the process and lowering the costs to start a business are important predictors of firm registrations, overall, efforts at formalization through streamlining business registration processes are mixed (see Kaplan, Peiro and Siera (2007); Straub (2005); McKenzie and Sakho (2007) to name a few.

Klapper and Love (2010) find that small reforms (less than a 40 percent reduction in procedures or 60 percent reduction in costs) do not have a significant effect on new registrations, and that there are important synergies in multiple reforms of two or more business environment indicators.

Kaplan et al (2007) suggest that in cases where the impact of reforms are modest or temporary, it is because of the burden of complementary procedures and overall institutional quality. More inclusive programs could have a much bigger impact on start-ups. It should also be noted that burdensome registration regulations may not be the only important barrier to firm creation or formalization. Instead, the cost of paying taxes may still outweigh the benefits of registering, especially when credit is scarce.

Given the experience globally, and the context in Kenya, this note suggests some policy recommendations for consideration. Firstly, attempts at business registration and broader business environment reforms, especially at the county level, appear to be having an impact on informal firms' incentives to register, and are linked to increases in labor productivity. Therefore, these reforms should be accelerated and broadened regionally. Secondly, there is a compelling case to be made for the impact of business environment reforms when they are broader, deeper, and include stronger institutional capacity and stronger enforcement. Therefore, a reform agenda should entail substantial changes to the modus operandi, and include support to build the capacity of enforcing institutions.

While bringing some of the larger, more productive firms in to the formal sector can benefit Kenya's growth and employment trajectory, the reality is that there will remain a large cadre of informal firms for whom the costs of registration outweigh the benefits. These small enterprises nonetheless provide income and employment to the vast majority of the unemployed, and many of them may eventually grow into more dynamic enterprises. Therefore they also merit support. Increasing the skills of the main owner appears to be the most effective means to increasing productivity and growth, while lowering barriers to financial access could further support microenterprises to increase survival rates and maximize their opportunity to grow and expand.

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Annex 1: Summary statistics and regressions

TABLE 5: Summary Statistics for the Full Sample of Firms in Kenya, Informal Survey (2013)

Variable	Observations	Mean	Std. deviation	Min.	Max.	95% confidence interval	
% of firms that belong to the manufacturing sector	533	48	50	0	100	44	53
(Log of) Number of workers at the firm during a normal month	526	0.3	0.5	0.0	4	0.3	0.4
(log of) Total sales (LCUs) of the firm during a normal month	483	10	1	7	14	10	10
(Log of) Sales per worker during a normal month	483	9	1	7	13	9	10
% of firms located within household premises	533	13	34	0	100	10	16
% of firms that have more than one business activity	427	18	38	0	100	14	21
% of owners of the firm that are female	530	38	47	0	100	34	42
% of firms that have at least one female owner	530	40	49	0	100	36	45
Largest owner acquired ownership of the firm by starting the business alone or with partners (% of firms)	529	94	23	0	100	92	96
% of firms with a female main decision maker	530	38	49	0	100	34	42
% of firms that have a married largest owner	528	76	43	0	100	73	80
Number of years the largest owner has lived in the city where the business is located	505	18	13	1	56	17	20
Largest owner migrated to the city where the business is located from another city in the country or from another country (% of firms)	505	79	41	0	100	75	82
Largest owner currently has a job in the formal sector or has been looking for one over the past two years (% of firms)	524	15	35	0	100	11	18
For firms that use electricity, number of power outages faced during the last month including no power outages	233	7	15	0	144	5	9
For firms that use electricity, % of electricity from generators including zero for firms that do not own/ share/use a generator	245	0.2	2	0	25	0.0	0.4
For firms that use water for business purposes, number of incidents of water insufficiency during the last month including zero for firms with no such incidents	112	2	3	0	15	1	2
Amount paid for security as a percentage of total sales in a regular month including zero amount for firms that did not pay for security	509	1	5	0	67	1	2
Losses due to crime during the last month as a percentage of sales in a regular month including zero losses for firms that had no such losses	528	3	19	0	333	1	5
Number of crime incidents experienced by the firm in the last month including zero incidents for firms with no such incidents	530	0.1	1	0	6	0.1	0.2
% of firms for whom own funds are the most commonly used source of finance for their day-to-day operations	481	77	42	0	100	74	81

Variable	Observations	Mean	Std. deviation	Min.	Max.	95% confidence interval	
For firms that bought any machinery, vehicles or other means of transport, equipment, land or buildings during the last three months, % reporting own funds as the most important source of finance for the purchase	99	76	43	0	100	67	84
Number of family members of the owners working at the firm as a percentage of all workers during the last month	523	44	47	0	100	40	48
% of firms that have a physical location	533	78	41	0	100	75	82
Number of owners in the business	531	1	0	1	3	1.1	1.1
% of firms that have a female largest owner	530	39	49	0	100	35	43
Number of businesses or activities started by the largest owner in the last three years	523	1	1	0	10	0.9	1.0
For the sample of firms whose largest owner started a business during the last three years, number of businesses still owned or managed by the largest owner	414	1	0	0	5	1.0	1.1
% of firms that had an increase in the number of employees, machinery used or the space occupied during the last three years	528	27	44	0	100	23	31
% of firms where the largest owner is also the main decision maker	532	97	18	0	100	95	98
% of firms with a female main decision maker	530	38	49	0	100	34	42
Number of years of experience that the main decision maker has working in the sector	523	8	7	0	50	7	9
Age of the firm	522	6	6	0	43	6	7
Number of employees at the firm when the firm started operations	520	1	1	1	8	1.3	1.5
% of firms that were registered at start up	528	1	11	0	100	0.3	2.3
Age of the largest owner	520	35	9	18	85	34	36
% of firms that have a married largest owner	528	76	43	0	100	73	80
For the sample of firms with a largest owner who has not spent his/her entire life in the city, % of firms where the largest owner migrated from a smaller city	416	64	48	0	100	60	69
For the sample of firms with a largest owner who has not spent his/her entire life in the city, % of firms where the largest owner migrated from a bigger or same size city in the same country	416	26	44	0	100	22	30
For the sample of firms with a largest owner who has not spent his/her entire life in the city, % of firms where the largest owner migrated from a different country	416	10	30	0	100	7	13
Number of people who live in the largest owner's household premises	522	4	2	0	35	3.6	4.0
Number of people less than six years old who live in the largest owner's household premises	524	1	1	0	8	0.7	0.8
Number of people in largest owner's household premises who have employment under a contract	526	0.3	1	0	2	0.2	0.3
% of firms with largest owner having no education or primary education (completed or not)	516	30	46	0	100	26	34

Variable	Observations	Mean	Std. deviation	Min.	Max.	95% confidence interval	
% of firms with largest owner having secondary education (completed or not)	516	34	47	0	100	30	38
% of firms with largest owner having vocational training or university training (completed or not)	516	36	48	0	100	32	40
% of firms with ether of largest owner's parents having no education or primary education (completed or not)	454	66	47	0	100	62	71
% of firms with ether of largest owner's parents having secondary education (completed or not)	454	16	37	0	100	13	19
% of firms with ether of largest owner's parents having vocational training or university training (completed or not)	454	18	38	0	100	14	21
% of firms with largest owner's parents owning a business in the past or currently	499	42	49	0	100	38	46
Prior to starting this business, % of firms with largest owner employed in the same activity as the current business	521	23	42	0	100	20	27
Prior to starting this business, % of firms with largest owner employed in a different activity than the current business	521	22	41	0	100	18	25
Prior to starting this business, % of firms with largest owner self- employed in a different activity than the current business	521	15	35	0	100	12	18
Prior to starting this business, % of firms with largest owner self- employed in a same type of activity as the current business	521	14	35	0	100	11	17
Prior to starting this business, % of firms with the largest owner being unemployed	521	22	41	0	100	18	25
Prior to starting this business, % of firms with the largest owner's employment status was different from above	521	4	21	0	100	3	6
For firms with largest owner not being unemployed and not being in the same activity as the current business prior to starting this business, % who changed activity because the change offered a more attractive business activity	205	53	50	0	100	46	60
For firms with largest owner not being unemployed and not being in the same activity as the current business prior to starting this business, % who changed activity because change offered better hours or better location	205	13	33	0	100	8	17
For firms with largest owner not being unemployed and not being in the same activity as the current business prior to starting this business, % who changed activity because the owner could not open a business in the same activity or desired location or for other (than above) reasons	205	34	48	0	100	28	41
% of firms with largest owner currently having a job in a formal (registered) business	523	4	20	0	100	2	6
% of firms whose largest owner tried to get a job in the formal sector during the past two years	503	11	31	0	100	8	14
Among firms whose largest owner tried to get a job in the formal sector during the past two years, % of largest owners who got the job	55	13	34	0	100	4	22
% of firms whose largest owner has insurance	513	10	30	0	100	8	13

Variable	Observations	Mean	Std. deviation	Min.	Max.	95% confidence interval	
For firms located inside household premises, % reporting the main reason to be located inside is that it costs less to run the business from home	70	60	49	0	100	48	72
For firms located inside household premises, % reporting the main reason to be located inside is that it is easier to manage family responsibility along with work	70	29	46	0	100	18	39
For firms located inside household premises, % reporting the main reason to be located inside to be other than above or that there is no benefit from locating inside	70	11	32	0	100	4	19
For firms located outside of household premises, % of firms that have fixed premises and with permanent structure	462	45	50	0	100	41	50
For firms located outside of household premises, % of firms that have fixed premises and with temporary structure	462	42	49	0	100	37	46
For firms located outside of household premises, % of firms that have no fixed premises	462	13	34	0	100	10	16
Total area occupied by the business or activity (square meters)	449	45	183	2	3025	28	62
Owner or owners own the location or space occupied by the business (% of firms)	472	13	34	0	100	10	16
Among businesses whose owners do not own the space occupied by the business, % who pay rent for the space occupied	409	82	39	0	100	78	86
For firms whose owners own the space occupied by the business, % of firms whose owners have a title for the space occupied at the land registry	313	18	38	0	100	14	22
Firm changed its main business location over the last 12 months due to lack of formal title for its land (% of firms)	461	5	21	0	100	3	7
Business is located in an industrial zone or cluster (% of firms)	471	16	37	0	100	13	19
Business is located in the city center (% of firms)	473	7	26	0	100	5	9
Limited access to land is a severe obstacle to firm's operations (% of firms)	467	41	49	0	100	37	46
% of firms who use electricity	473	52	50	0	100	47	56
For firms that use electricity, % that are connected to the electricity grid	245	76	43	0	100	70	81
For firms that use electricity, % of firms that experienced power outages during the last month	244	84	37	0	100	79	88
For firms that use electricity and report having power outages in the last month, number of power outages faced by the business in the last month	193	8	16	1	144	6	10
For firms that use electricity and report having power outages in the last month, average duration (hours) of power outages in the last month	197	7	25	1	336	4	11
% of firms that own or share a generator	245	2	15	0	100	0.5	4
For firms that own or share a generator, % of electricity that comes from generators	6	8	9	2	25	-1.4	17
% of firms that use water for business purposes	472	37	48	0	100	32	41

Variable	Observations	Mean	Std. deviation	Min.	Max.	95% confidence interval	
For firms that use water for business purposes, % who obtain water form public sources	175	54	50	0	100	47	62
For firms that use water for business purposes, % who obtain water from private sources	175	35	48	0	100	28	42
For firms that use water for business purposes, % who obtain water from both public and private sources	175	11	31	0	100	6	16
For firms that use water for business purposes, % of firms that experienced insufficient water supply during the last month	114	43	50	0	100	34	52
For firms that use water for business purposes and those who report insufficient water supply during the last month, number of incidents of water insufficiency in the last month	47	4	3	1	15	3	5
Average duration of insufficient water supply during the last among firms who use water for business purposes and experienced insufficient water supply incidents during the month	45	15	32	1	160	6	25
% of firms reporting electricity problems as a severe obstacle to their current operations	468	38	49	0	100	34	43
% of firms reporting water problems as a severe obstacle to their current operations	468	23	42	0	100	19	27
% of firms who paid for security during the last month	533	19	39	0	100	15	22
For firms who paid for security during the last month, total spending on security during the last month as a percentage of monthly sales	76	8	12	0	67	5	10
% of firms who experienced losses due to crime during the last month	532	7	25	0	100	5	9
Losses due to crime during the month as a percentage of monthly sales among firms who had positive losses due to crime in the last month	33	47	60	5	333	25	68
Number of incidents of crime in the last month among firms who experienced losses due to crime in the last month	35	2	1	1	6	1	2
% of firms who believe that firms like themselves give informal payments or bribes or protection payments in order to stay in business	34	53	51	0	100	35	71
Business experienced harassment by government officials during the last month (% of firms)	35	60	50	0	100	43	77
% of firms who report crime as a severe obstacle for their operations	528	28	45	0	100	24	32
% of firms who report corruption as a severe obstacle for their operations	531	33	47	0	100	29	37
% of firms who produce or sell under contract for another business or person	533	9	29	0	100	7	12
Number of years the firm has worked with its primary supplier of its main input or sales item	48	3	2	1	10	2	4
Hours of normal operation of the firm per week	532	65	20	3	126	63	67
% of firms that presently use cell phones for their operations	533	76	43	0	100	72	80
% of firms that presently use internet for their operations	533	3	16	0	100	1	4

Variable	Observations	Mean	Std. deviation	Min.	Max.	95% confidence interval	
% of firms that presently use machinery, vehicles or other means of transport or equipment	533	47	50	0	100	42	51
For firms that presently use machinery, vehicles, other means of transport or equipment, % of firms reporting these as less than 3 years old	237	46	50	0	100	40	53
For firms that presently use machinery, vehicles, other means of transport or equipment, % of firms reporting these as 3 to 5 years old	237	26	44	0	100	20	31
For firms that presently use machinery, vehicles, other means of transport or equipment, % of firms reporting these as 5 to 10 years old	237	20	40	0	100	15	25
For firms that presently use machinery, vehicles, other means of transport or equipment, % of firms reporting these as more than 10 years old	237	8	27	0	100	5	11
For firms that presently use machinery, vehicles, other means of transport or equipment, % of firms reporting difficulty with finding spare parts in the last year	243	35	48	0	100	29	41
For firms that presently use machinery, vehicles, other means of transport or equipment, % of firms reporting difficulty with repairing in the last year	242	42	49	0	100	35	48
For firms that presently use machinery, vehicles, other means of transport or equipment, % of firms reporting difficulty with maintenance in the last year	242	32	47	0	100	26	38
Business accounts kept separately from household expenses (% of firms)	522	33	47	0	100	29	37
% of firms that used own funds to finance their day-to-day operations	524	87	34	0	100	84	90
% of firms that used credit from suppliers or advances from customers to finance their day-to-day operations	526	19	40	0	100	16	23
% of firms that used money lenders to finance their day-to-day operations	517	9	28	0	100	6	11
% of firms that used microfinance institutions to finance their day-to-day operations	518	16	36	0	100	12	19
% of firms that used banks to finance their day-to-day operations	520	9	28	0	100	6	11
% of firms that used friends or relatives to finance their day-to-day operations	517	35	48	0	100	31	39
% of firms that used other (than above) sources to finance their day-to-day operations	515	5	21	0	100	3	6
% of firms that in the last three years bought any machinery, vehicles or other means of transport, equipment, land or buildings	528	20	40	0	100	17	24
For firms that spent on machinery, vehicles, equipment, land or buildings in the last three years, amount spent in the last 3 years on purchase of new or used machinery (LCUs)	97	24147	31043	0	170000	17891	30404
For firms that spent on machinery, vehicles, equipment, land or buildings in the last three years, amount spent in the last 3 years on purchase of new or used equipment's and tools (LCUs)	91	10688	14940	0	79000	7576	13799

Variable	Observations	Mean	Std. deviation	Min.	Max.	95% confidence interval	
For firms that spent on machinery, vehicles, equipment, land or buildings in the last three years, amount spent in the last 3 years on purchase of new or used vehicles and other means of transport (LCUs)	83	19049	74962	0	500000	2681	35418
For firms that spent on machinery, vehicles, equipment, land or buildings in the last three years, amount spent in the last 3 years on the purchase of land (LCUs)	90	0.1	1	0	9	-0.1	0.3
For firms that spent on machinery, vehicles, equipment, land or buildings in the last three years, amount spent in the last 3 years on the purchase or construction of buildings (LCUs)	93	1376	8777	0	60000	-431	3184
For firms that spent on machinery, vehicles, equipment, land or buildings in the last three years, % of them who financed the purchase through own funds	104	88	33	0	100	81	94
For firms that spent on machinery, vehicles, equipment, land or buildings in the last three years, % of them who financed the purchase through credit from suppliers or advances from customers	105	10	29	0	100	4	15
For firms that spent on machinery, vehicles, equipment, land or buildings in the last three years, % of them who financed the purchase through moneylenders	104	8	27	0	100	2	13
For firms that spent on machinery, vehicles, equipment, land or buildings in the last three years, % of them who financed the purchase through microfinance institutions	102	12	32	0	100	5	18
For firms that spent on machinery, vehicles, equipment, land or buildings in the last three years, % of them who financed the purchase through banks	103	14	34	0	100	7	20
For firms that spent on machinery, vehicles, equipment, land or buildings in the last three years, % of them who financed the purchase through friends/ relatives	104	23	42	0	100	15	31
For firms that spent on machinery, vehicles, equipment, land or buildings in the last three years, % of them who financed the purchase through other than above sources	103	4	19	0	100	0.1	8
% of firms that have a bank account to run the business	520	34	48	0	100	30	39
For firms that have a bank account to run the business, % of them that use separate bank account for their household	175	53	50	0	100	45	60
% of firms that have a loan against the firm or against the largest owner for business purposes	523	9	28	0	100	6	11
% of firms that applied for a loan during the last year	518	10	31	0	100	8	13
For firms that did not apply for a loan during the last year, % of firms reporting the main reason for not applying is no need for a loan	479	33	47	0	100	29	37
For firms that did not apply for a loan during the last year, % of firms reporting the main reason for not applying is complex application procedures	479	14	35	0	100	11	17
For firms that did not apply for a loan during the last year, % of firms reporting the main reason for not applying is high interest rates	479	25	43	0	100	21	29

Variable	Observations	Mean	Std. deviation	Min.	Max.	95% confidence interval	
For firms that did not apply for a loan during the last year, % of firms reporting the main reason for not applying is lack of required guarantees	479	10	30	0	100	7	13
For firms that did not apply for a loan during the last year, % of firms reporting the main reason for not applying is that the firm thought the loan would not be approved	479	2	15	0	100	1	4
For firms that did not apply for a loan during the last year, % of firms reporting the main reason for not applying is other than above	479	16	37	0	100	13	19
% of firms that consider limited access to finance as a severe obstacle to their current operations	470	64	48	0	100	59	68
% of firms that are financially constrained where a firm is defined as financially constrained if it did not apply for a loan during the last year for reasons other than "no need for a loan"	518	60	49	0	100	56	64
Number of family members of the owner(s) who were working in the business in the last month	527	1	1	0	3	0.5	0.6
Average monthly salary for an average worker at the firm (LCUs)	461	5405	3340	1	25000	5099	5710
Average monthly salary for a female full-time worker at the firm (LCUs)	235	4850	2794	1	17000	4491	5209
Number of men working at the firm who have social security coverage	526	0.1	0.4	0	4	0.1	0.1
Number of women working at the firm who have social security coverage	529	0.1	0.3	0	4	0.1	0.1
% of firms that would like their business to be registered with the Registrar General	500	53	50	0	100	49	57
% of firms for whom time, fees, and paper work required for registering is a reason for not registering	500	56	50	0	100	52	61
% of firms for whom taxes that registered businesses have to pay is a reason for not registering	494	57	50	0	100	53	61
% of firms for whom inspections and meetings with government officials that follow registration is a reason for not registering	486	37	48	0	100	32	41
% of firms for whom bribes that registered businesses need to pay is a reason for not registering	481	36	48	0	100	32	40
% of firms for whom no benefit from registering is a reason for not registering	493	46	50	0	100	42	51
% of firms that report having to pay gifts, informal payments or bribes to remain unregistered	507	19	39	0	100	15	22
% of firms for whom better access to financing is a benefit from registering	467	77	42	0	100	73	81
% of firms for whom better access to raw materials, infrastructure services and government services is a benefit from registering	459	61	49	0	100	56	65
% of firms for whom less bribes to pay is a benefit from registering	449	40	49	0	100	36	45
% of firms for whom being able to issue receipts to attract customers is a benefit from registering	473	42	49	0	100	38	47
Amount of time (days) the firm thinks it will take to register the business	307	18	51	1	365	12	24

Variable	Observations	Mean	Std. deviation	Min.	Max.	95% confidence interval	
Maximum amount of time (days) the firm thinks it will take to register the business	303	26	66	1	450	19	33
Minimum amount of time (days) the firm thinks it will take to register the business	309	9	33	1	365	5	13
% of firm that rank limited access to finance as the most important obstacle within the set of eight obstacles	388	59	49	0	100	54	64
% of firm that rank limited access to land as the most important obstacle within the set of eight obstacles	388	9	29	0	100	6	12
% of firm that rank corruption as the most important obstacle within the set of eight obstacles	388	9	29	0	100	6	12
% of firm that rank crime as the most important obstacle within the set of eight obstacles	388	6	24	0	100	4	9
% of firm that rank problems with electricity supply as the most important obstacle within the set of eight obstacles	388	10	30	0	100	7	13
% of firm that rank problems with water supply as the most important obstacle within the set of eight obstacles	388	3	17	0	100	1	5
% of firm that rank limited access to technology as the most important obstacle within the set of eight obstacles	388	1	9	0	100	-0.1	2
% of firm that rank inadequately educated workforce as the most important obstacle within the set of eight obstacles	388	2	13	0	100	0.5	3
Total cost of workers for the last month (LCUs)	451	12679	33268	0	600000	9600	15757
Total cost of electricity for the last month (LCUs)	421	796	1813	0	15000	622	970
Total cost of transportation in the last month (LCUs)	455	1064	2665	0	39000	819	1310
Total cost of raw materials for the last month (LCUs; only for manufacturing firms)	241	17101	26003	0	250000	13802	20401
% of firms that use machinery (excluding tools, equipment and computers) in their current operations	533	44	50	0	100	40	49
For firms that use currently use machinery, cost of purchasing machinery and equipment (LCUs) used by the firm in its current condition (excluding tools, equipment and computers)	194	89163	182336	200	1000000	63344	114983
% of firms that use own vehicles or other means of transport in their current operations	532	19	39	0	100	15	22
For firms that currently use own vehicles or other means of transport, cost of purchasing them in their current condition (LCUs)	56	158760	228775	100	1000000	97494	220026
Cost of purchasing all the tools, equipment and computers (excluding machinery and vehicles) in their current condition (LCUs)	343	48486	188031	100	2000000	28516	68455

Annex 2: Kenya – survey of informal firms (2013)

Description of the Informality Survey

The World Bank's Informal Enterprise Surveys (IFS) collect data on non-registered business activities in every region of the world. The IFS are implemented in parallel to the World Bank's Enterprise Surveys (ES), which interview formal, private, non-agricultural firms in countries around the world (www.enterprisesurveys.org). The IFS use a standardized survey instrument designed to assess the business environment for non-registered businesses within a well-defined universe of activities, which have been identified using information from previous iterations of the studies. The IFS cover business environment topics including: general business characteristics, infrastructure, crime, sales & supplies, finance, labor, registration, business environment, and assets. The objective of the IFS can be summarized as follows:

- To provide information about the state of the private sector for informal businesses in client countries;
- To generate information about the reasons of said informality;
- To collect useful data for the research agenda on informality; and
- To provide information on the level of activity in the informal sector of selected urban centers in each country

The IFS are conducted using a uniform sampling methodology in order to minimize measurement error and yield data that are comparable across the world's economies. The primary sampling units of the IFS are non-registered business entities.For consistency, "registration" is defined according to the established convention for the Enterprise Surveys in each country. In these surveys, the requirements for registration are defined on a country-by-country basis consulting information collected by Doing Business and information from the in-country contractors. For the case of Kenya, informal firms were defined as those not registered with the Kenya Revenue Authority (KRA). The survey was conducted between April,18th and May, 11th2013.

In each country, the IFS are conducted in selected urban centers, which are intended to coincide with the locations for the implementation of the main Enterprise Surveys. Each urban center is divided into an appropriate number of zones. The zones are identified using regional considerations and the concentration of informal business activity through consulting local knowledge. The overall number of interviews is pre-determined, and these interviews are distributed between the selected urban centers, according to criteria such as the level of business activity and each urban center's population, etc.In Kenya, a total of 533 firms were interviewed. The urban centers identified were Nairobi (137 firms), Mombasa (110), Central (103), Nyanza (93), and Nakuru (90). These urban centers were divided into 122 zones and at least four interviews were completed for each zone. In order to provide information on diverse aspects of the informal economy, the sample is designed to have equal proportions of services and manufacturing (50:50). These business activity sectors are defined by responses provided by each informal business to a question on the business's main activity included in the screener portion of the questionnaire.

Due to lack of proper sampling frame and the limited geographical coverage, the informality survey for Kenya (and other countries) is not necessarily representative of the informal sector in the country or even the informal sector in the urban centers covered. Hence, all the results presented below using IFS for Kenya should be treated with due caution as pertaining to the sample of firms surveyed and not necessarily the informal sector more broadly. Nevertheless, Enterprise Surveys take appropriate measures to keep the IFS as truly random so that the results based on these data are not systematically biased in one direction or the other. In the case of Kenya, the following steps were taken to ensure randomness of the selection process:

- Each interviewer receives one or more maps of the geographic sectors he/she has to cover with the indication of the starting points and the direction to follow.
- The interviewers were instructed to follow the direction of the street.
- Four interviews (two services and two manufacturing firms) were completed from each starting point. The instruction was that interviews be conducted in every address (or stall) passed until 4 completed interviews have been achieved.
- GPS coordinates of the interviewed business were recorded.

Annex 3: Business environment and productivity

To answer this question, we replicated some of the analysis that was produced by Gelb et al in 2009[9] which examines firm productivity by contrasting informal firms with their formal micro-enterprise and SME counterparts. They speculate that growth and productivity within the informal market is dependent on the quality of the business environment. Their hypothesis is that when the business environment is poor, informal and formal firms will be less distinguishable, and conversely, in a higher quality business environment, differences in growth and productivity between formal and informal firms will emerge. Their hypothesis rests on a differential treatment of firms in a higher quality business environment through "sticks" in the form of tougher enforcement limiting informal activity and/or through "carrots" in the form of improved business service access for formal firms.

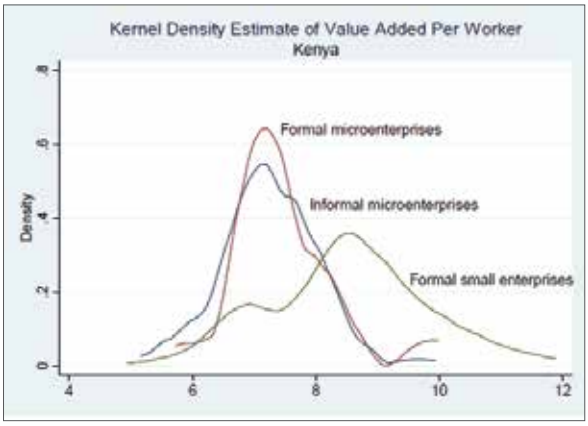
In particular, they find (using this same Enterprise Survey data from the World Bank but from 2007-2009) that informal firms from four countries in East Africa (Kenya, Tanzania, Uganda, and Rwanda)) exhibit productivity profiles that are indistinguishable from their formal counterparts while informal firms in southern Africa (Botswana, Namibia, and South Africa) are considerably poorer performers than their formal sector counterparts. This uni-modal vs bi-modal finding for the probability density of productivity in each country drives their entire result. The Gelb *et al* 2009 paper shows Kenya Informal firms in 2007 to be indistinguishable from their formal counterparts (Figure 3b). Using the new data, we find that the informal firms are now distinguishable from their formal counterparts (Figure 3c). This suggests that the quality of the business environment—at least as differentially experienced by formal and informal firms—in Kenya may have changed since the last survey.

TABLE 6: Summary of Kenya's Progress on Doing Business Indicators

Measure	Result	DB 2007	DB 2014	Difference
Starting a Business	Procedures (number)	13	10	-3
	Time (days)	54	32	-22
	Cost (% of income per capita)	46.3	38.2	-8.1
Dealing with Construction Permits	Procedures (number)	6	8	+2
	Time (days)	158	125	-33
	Cost (% of income per capita)	1	3.4	+2.4
Paying Taxes	Payments (number per year)	42	41	-1
	Time (hours per year)	432	307.5	-125
	Total tax rate (% profit)	49.8	38.1	-11.7

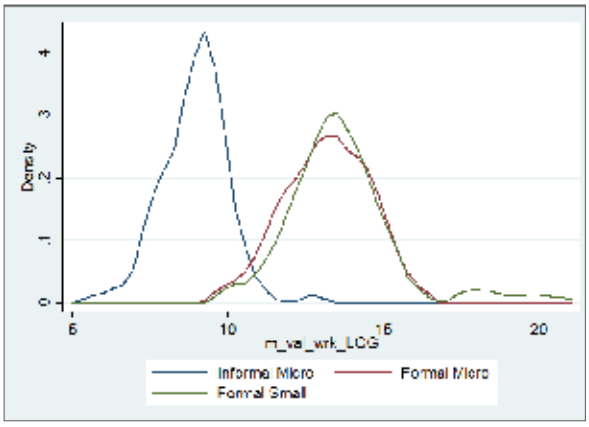
[9] Gelb, Alan and Mengistae, Taye and Ramachandran, Vijaya and Shah, Manju Kedia, To Formalize or Not to Formalize? Comparisons of Microenterprise Data from Southern and East Africa (July 20, 2009 Available at SSRN: http://ssrn.com/abstract=1473273 or http://dx.doi.org/10.2139/ssrn.1473273

Figure 3b: In 2007, informal firms in Kenya exhibited productivity profiles that are indistinguishable from their formal counterparts



Source:

Figure 3b: In 2013, informal firms in Kenya exhibited productivity profiles that are quite different from their formal counterparts. This differential effect has been associated with stronger business environments in other research.



Source:

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