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Informal Firms and Financial Inclusion

Status and Determinants

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Abstract

Many firms in the developing world—including a majority of micro, small, and medium enterprises—operate in the informal economy. The informal firms face a variety of constraints, making it harder for them to do business and grow. Lack of access to finance is often cited as the biggest operational constraint these firms face. This paper documents the use of finance and financing patterns of informal firms, highlights differences between use of finance by formal and informal firms, and identifies the most significant characteristics of informal firms that are associated with higher use of financial services. The analysis shows that use of loans and bank accounts for business by informal firms is very low and a vast majority finances their day-to-day operations and investments through sources other than financial institutions (internal funds, moneylenders, family, and friends). A majority of informal firm owners would like their firms to become formal but do not do so as it would require them to pay taxes. Registered firms are 54 percent more likely to have a bank account and 32 percent more likely to have loans. Results also show that firm size, the level of education of the owner, and whether the owner has a job in the formal sector are significantly associated with financial inclusion of informal firms.

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Informal Firms and Financial Inclusion: Status and Determinants

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1. Introduction

Like its formal counterpart, the informal economy is multi-faceted comprising different sectors or markets and engaging in diverse activities. It can include – but not necessarily be limited to - informal labor markets, informal financial sectors and informal corporate or business sectors. Because of its heterogeneous nature, researchers have found it difficult to come up with a precise single definition of informality. Researchers and policy makers usually tend to focus on a particular definition of informality based on a specific aspect of informality they are interested in analyzing. If for example informality is approached from the social protection point of view then researchers tend to focus on employment and see how some legal requirements (e.g. contributions to pension schemes or social security) are not met. If fiscal considerations of informality are the focus then a more useful definition will look at tax revenue losses associated with firms and individuals engaged in untaxed activities. If on the other hand, accurate estimation of gross domestic product (GDP) is the objective then a more comprehensive definition of informality will be needed.

The commonly used definitions of informality (or informal economy) in the literature include Schneider et al. (2010) that define informal economy as comprising of market-based legal production of goods and services deliberately concealed from public authorities to avoid paying taxes, social security contributions, and to meet legal obligations/requirements and market standards. Smith (1994) defines it as "market-based production of goods and services, whether legal or illegal, that escapes detection in the official estimates of GDP". Del'Anno and Schneider (2004) and Del'Anno (2003) define informality as those economic activities and the income derived from them that evade government regulation, taxation or observation. Loayza et al. (2009) rely on the definition put forward by de Soto (1989) whereby informal economy is defined as collection of firms, workers, and activities that operate outside legal and regulatory frameworks. One central feature of informal economy observed in these various definitions is that it is unregulated by the institutions of a society. Participants of informal sectors avoid the burden of taxes and regulations but at the same time, do not get a chance to fully utilize the protection and services that the law and the state provide.

Informal activities are a major part of the overall economy in developing countries and deserve attention for a number of reasons. The informal sectors in developing countries are estimated to be around 40-50 percent of official GDP (Schneider et al. 2010). This shows that economic agents working in the informal sector contribute extensively to the overall economic activity. Informal economies are

also significant in terms of the labor force they employ. They provide livelihood to large segments of the population and can absorb around 60 percent of the labor force engaged in non-agricultural activities in many developing countries (ILO 2012). Such high levels of informality can have an impact on growth and productivity of a country.[2] Informality can often generate inefficiencies in the production process since firms, in order to avoid detection limit their size to below optimal efficiency scale. They also tend to use less advanced production technologies (Dabla-Norris et al. 2007). The costs they avoid through non-compliance of regulations and tax evasion may help them stay in business despite their low productivity, potentially generating inefficient competition (Perry et al. 2007). Informal firms may also find it difficult to access finance through conventional sources, which can result in sub-optimal levels of investment in physical capital, research, technology and innovation and training programs for improving skills of their employees. Informal workers – which include people working in the informal sector and those employed by the formal sector but working informally, lack social protection, job security, on-job training and insurance. Informality can thus impact their income prospects and productivity. Large informal sectors can also have substantive fiscal implications regarding erosion of tax revenue. A high degree of informality means that for any given level of public expenditure, incomes and profits generated by the formal sector will be taxed at a higher rate (Spiro 2005). Also if public investments in infrastructure have a positive impact on growth then use of already congested public infrastructure for informal activities without contributions towards their replenishment can lower growth (Loayza et al. 2009). Large informal sectors also imply that certain transactions are omitted from official economic statistics rendering macroeconomic indicators vital for policy inaccurate and possibly leading to sub-optimal policy decisions.

On the other hand, informal economies can potentially play a positive role, especially in developing countries where they may be viewed as the nursery of future economic growth in the formal economy (IMF 2012). In economies and business environments mired by overly excessive barriers and poorly designed regulations, informality can provide an alternative to entrepreneurs and small firms. In such situations the absence of an informal sector can result in a far greater waste of resources (Loayza et al. 2009). If costs to start and run a business are binding, the informal sector can benefit firms – to the extent that they may grow to be successful formal sector firms – by helping them avoid excessive costs

[2] Empirically, it is not very clear whether informality lowers growth and productivity or whether it is a symptom of low growth and productivity.

of being formal (e.g. taxes, pension contributions, and minimum wages).[3] Another obstacle formal sector firms might face is the high level of corruption among law enforcement authorities, financial agencies, and regulators. This can increase the cost of creating a new business and staying in business in the formal sector and can make working in the informal sector an attractive alternative (Dutta et al. 2011). The informal sector can also provide buffers against economic uncertainty and underdevelopment in the formal sector as it can provide livelihood to a large number of people. Moreover the incomes generated in the informal sector, insofar they would not have been generated otherwise when spent in the formal sector can provide a boost to the formal economy (Frey and Schneider 2000).

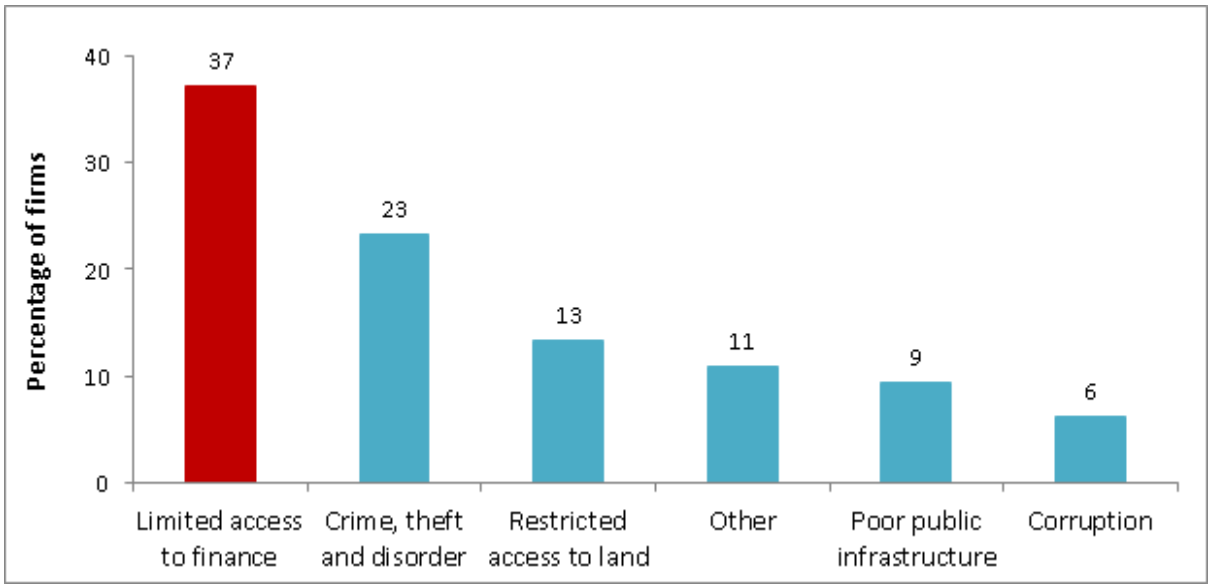
Whether one views the informal sector as a burden or takes it as a sector that contributes positively to the overall economy, there is no doubt that informality is a pervasive and substantive phenomenon in developing countries. It is thus important to explore different aspects of informal economies, especially the working of informal firms. According to the IFC (2012), around 80 percent of total micro, small and medium sized enterprises (MSMEs) are informal today. Firms in the informal sector face a number of challenges that can negatively impact their operations and growth. These challenges can be related to public infrastructure (power, land and water); they can represent weak institutions (property rights, legal protection, and corruption) or lack of access to benefits associated with participation in the formal sector (access to credit, new technologies, and greater visibility of business through publicity). According to data collected by the World Bank through Informal Enterprise Surveys, firms in the informal sector identify lack of access to finance as the biggest obstacle they face (Figure 1).

A lot of recent research around informal firms has focused on understanding different aspects of the business environment that discourages these firms from formalizing. These can include rule of law, property rights, corruption and regulatory requirements for formalization. Previous research has shown that countries with more burdensome entry regulations have larger informal sectors (Djankov et al. 2002). However, many recent randomized experiments which made the formalization process easy, by providing firms with information on how to register and the potential benefits of registration and by lowering costs associated with registration found very few informal firms formalize as a result (de Mel et

[3] The impact of start-up costs on aggregate productivity is unclear, since high start-up costs will prevent the entry of inefficient firms in the first place (Bartelsman et al. 2004).

al. 2012 in Sri Lanka; Jaramillo, 2009 in Peru; de Andrade et al. 2012 in Brazil, De Giorgi and Rahman 2013 in Bangladesh). These experiments suggest that direct costs of registration might not be the binding constraints firms' face when attempting to formalize. The indirect costs associated with it might be more important, especially in environments where the majority of informal enterprises are small and have low productivity and where benefits of formalization are not very high. The relationship between formalization and firms' productivity is possibly driven by firms' underlying characteristics not by formality per se. It is thus important to look at informal firms more closely and assess which characteristics are positively correlated with their growth.

Figure 1: Biggest Obstacle Affecting Operations of Informal Firms (%)



Note: The bars represent the percentage of firms identifying a given option as a major obstacle to business. The option 'Other' includes problems associated with difficult business registration procedures, workforce, limited demand for product or services, and political instability.
Source: Informal Enterprise Surveys for 13 countries covering micro (0-5 employees) and small (6 to 20 employees) firms.

Most of the recent research on informal firms has been country case studies, focusing frequently on a couple of localities/districts or villages. Not too many cross-country studies on informal firms are available in the literature, especially on the topic of financial access and inclusion of these firms. This could partly be explained by unavailability of data that uniformly describe informality across countries. The present paper attempts to add to the literature on cross-country analysis and takes a

deeper look at issues around financial inclusion of informal firms.[4] In particular, the paper i) documents the use of finance by informal firms and their financing patterns, ii) compares the use of finance by firms both in the formal and informal sector and iii) identifies the most significant characteristics of informal firms that are associated with higher use of financial services.

The analysis in the paper does not provide any causal evidence and attempts to identify significant associations between financial inclusion of informal firms and different firm and country characteristics. Its goal is to add to and complement the literature already available on informal firms, and hopes that readers would interpret the results with the caveat in mind that they do not show causal relationships. Also, it is not claimed that informality is the only barrier firms' face in their use of finance. Previous literature has identified a number of other factors that affect firms' use of finance. For example, de Soto's (1989) work focuses on lack of property rights as the reason small firms cannot use their assets as collateral to obtain financing, while Field and Torero (2008) look at the impact of land titling on getting credit. However, as shown in Figure 1, informal firms claim lack of access to finance as the most important barrier they face in their operations and the paper aims to take a deeper look at the dimension of informality and its link to use of finance by firms. The objective of the paper is to provide estimates of actual use of finance by informal firms, while identifying key characteristics significantly associated with financial inclusion and to quantify the differences of use of finance between formal and informal firms.

The rest of the paper is structured as follows. Section 2 explains the methodology used for data collection and describes the dataset used for the analysis. Section 3 provides a snapshot of different characteristics of an average informal firm in the sample to identify any common traits observed among informal firms across different countries. Section 4 provides a comparative analysis of formal and informal firms. This is done in two parts. First, a simple bivariate analysis is done to document the differences in financial inclusion of formal and informal firms. Second, a multivariate regression analysis is done to see the robustness of the results obtained from the bivariate analysis after controlling for a number of firm and country level characteristics. Section 5 provides a regression analysis that explains informal firms' use of finance and their financing pattern while highlighting the significant factors that are important for financial inclusion of informal firms. Section 6 concludes.

[4] Financial inclusion is defined as the share of firms that use of financial services (The Global Financial Development Report 2014).

2. The Data Set

The paper focuses on one sector of the informal economy, the corporate or business sector and defines informal firms as those firms that are not registered with the registration office, municipality or tax authority. This definition is used by the Enterprise Survey unit of the World Bank and the motivation behind its simplicity is to facilitate the standardization of methodology for data collection and its comparability across countries.[5]

The data used in this paper are from World Bank Informal Enterprise Surveys.[6] These surveys collect data on non-registered business activities and are implemented in parallel to World Bank Enterprise Surveys, which interview formal, private, nonagricultural firms. The Informal Enterprise Surveys are conducted using a uniform sampling methodology in order to minimize measurement error and yield data that are comparable across the world's economies. In each country, the Informal Enterprise Surveys are conducted in two selected urban centers, which are intended to coincide with the locations for the implementation of the main Enterprise Surveys. The overall number of interviews is pre-determined, and the interviews are distributed between the two urban centers according to criteria such as the level of business activity and each urban center's population. These urban centers are geographically divided to get the sampling areas and Informal Enterprise Surveys are conducted within clearly identified sampling areas. The total number of sampling areas and the geographical areas they contain are chosen such that firms from different sectors have balanced representation.[7] Moreover the placement of sampling areas in each city is determined based on local knowledge regarding the concentration of informal business activity.

The format of both surveys is very similar with a number of overlapping questions. In terms of differences between the two surveys, the first major difference is that of country coverage. Informal Enterprise Surveys do not cover as many countries as covered by Enterprise Surveys. While Enterprise Surveys cover small, medium and large firms, the Informal Enterprise Surveys do not include any large-

[5] Defining informality in such a simple way can result in loss of important information about the firms we want to study and understand. For example, firms might be registered for imports and pay import taxes, but not be registered for sales or income taxes. Similarly there can be firms that are registered and pay fees to local market administrators but not be registered with other authorities. Nevertheless, the paper has to follow the definition used by the database utilized for the analysis and readers, while interpreting the results should keep in mind the caveat about this definition.

[6] The Informal Enterprise Surveys are a good source of data on informal firms and deserve credit for making such data readily available for a cross-section of countries. Still, additional efforts are needed to improve the quality and availability of data on informal enterprises. The National Statistics Departments of countries should increase their effort to collect data on the informal sector to gain a better understanding of different interventions that would be most appropriate for the sector.

[7] The sample by design has equal number of firms from services and manufacturing sectors.

sized firms and instead consist of micro, small and medium-sized enterprises. Unlike Enterprise Surveys that are designed to provide panel data sets, the Informal Enterprise Surveys are available for just one year for each country covered. Lastly, the Enterprise Surveys are designed such that they are representative of the formal private sector in each country, however Informal Enterprise Surveys may not necessarily be representative at the national level. Given that real size and structure of informal sectors in developing countries and emerging economies are not well known, it is extremely difficult to get a representative data sample. Despite this caveat, the Informal Enterprise Surveys present a good opportunity to study informal firms and to increase our knowledge and understanding of the barriers they face and the business environment they operate in.

Data for more than 2500 firms from 13 countries in Sub-Saharan Africa (SSA) and Latin America and Caribbean (LAC) regions is utilized for the analysis. Figure 2 depicts the sample distribution by countries and shows that LAC region represents 23 percent of the sample (3 countries) while SSA region represents 77 percent of the sample (remaining 10 countries).[8] Even though countries from SSA make up majority of the sample, the distribution of firm observations across the two regions is more even with 46 percent of firms from LAC and 54 percent from SSA region (Figure 3).

Figure 2: Sample Distribution, Regions (%)

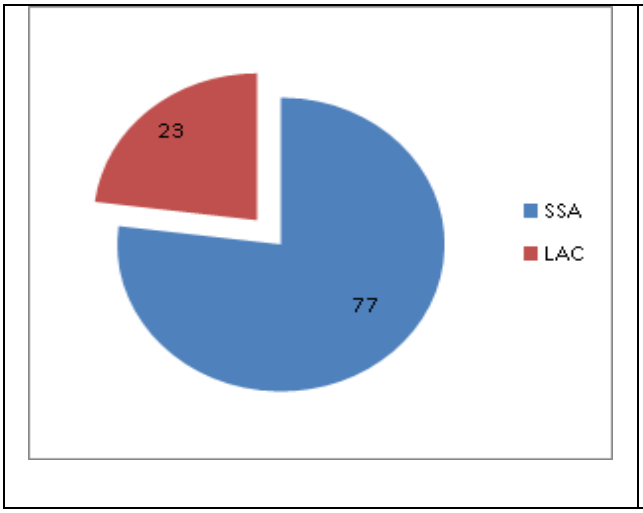
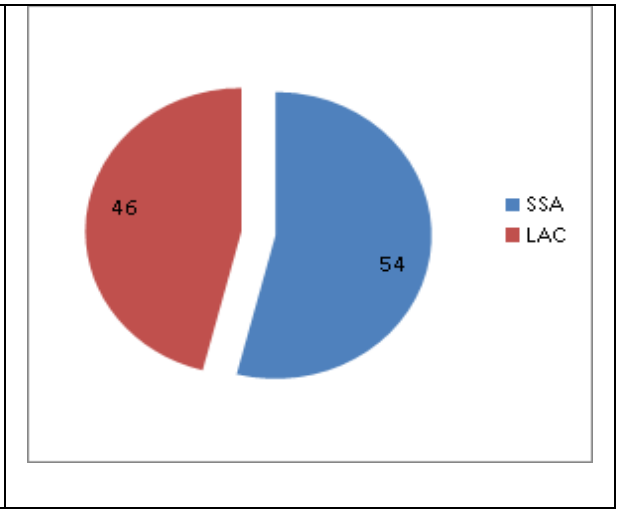


Figure 3: Sample Distribution, Firm Observations (%)



[8] Countries in the sample are Angola, Argentina, Botswana, Burkina Faso, Cameroon, Cape Verde, Democratic Republic of Congo, Guatemala, Madagascar, Mali, Mauritius, Peru and Rwanda.

Figure 4: Sample Distribution, Income Groups (%)

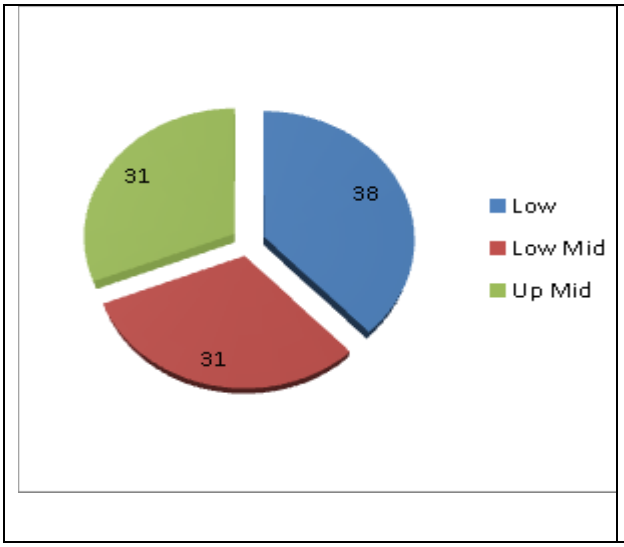
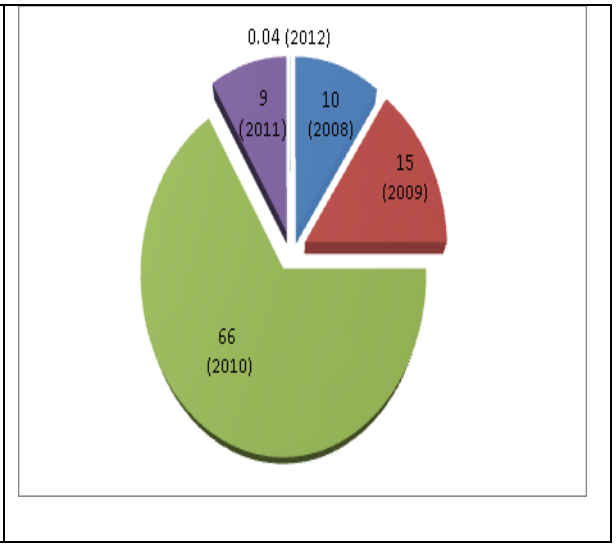


Figure 5: Sample Distribution, Years (%)



As shown in Figure 4, countries in the sample vary in terms of their levels of income. Low income countries represent 38 percent while lower middle and upper middle income groups each represent 31 percent of the sample. The surveys were conducted in different years for different countries (Figure 5), and majority of the data pertains to year 2010.

Figure 6: Sample Distribution, Firm Size (%)

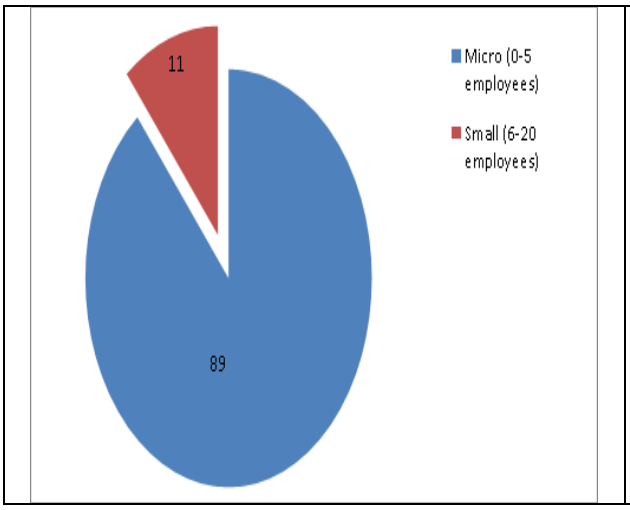
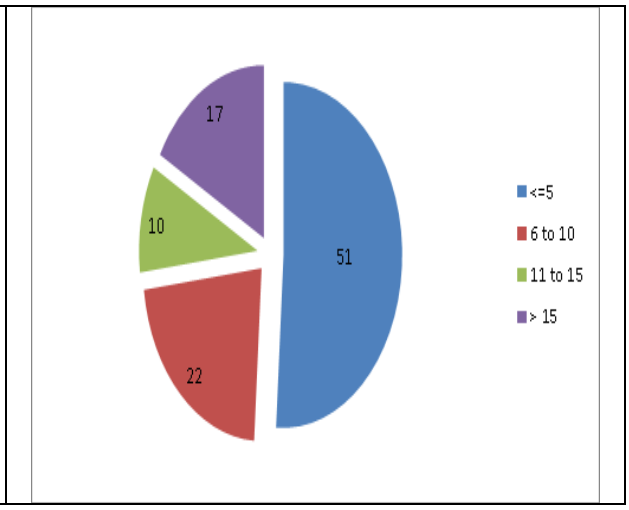


Figure 7: Sample Distribution, Firm Age (%)

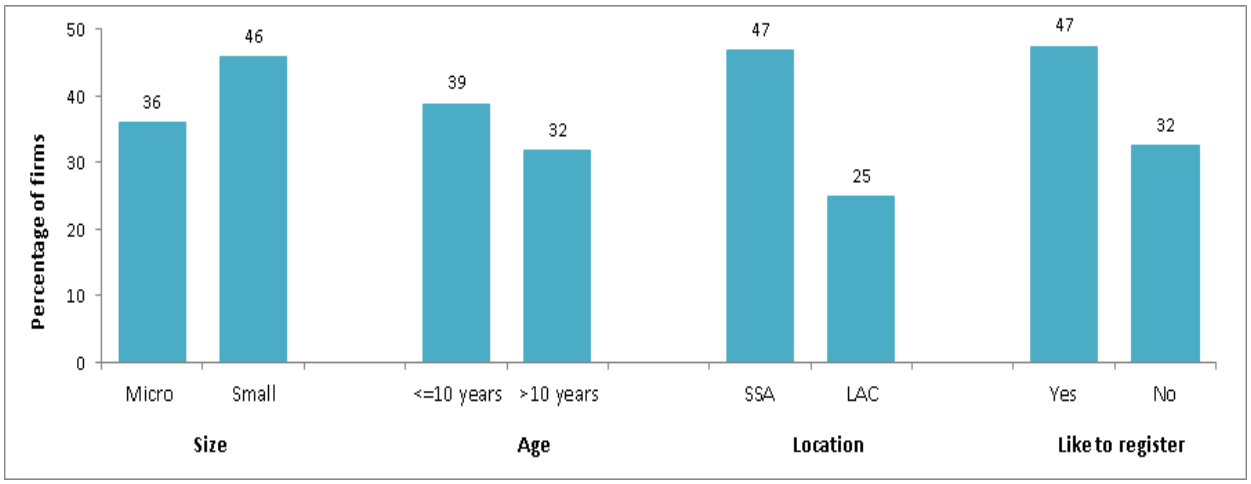


Micro-sized firms, defined as those with 5 employees or less account for 89 percent of the firms in the sample (Figure 6). With approximately 300 small-sized firms, they constitute the remaining 11% of the sample. Looking at firm distribution by age, Figure 7 shows that at 51 percent, majority of the firms in the sample are less than or equal to 5 years of age.

3. Features of Informal Firms

Before presenting the analysis that looks at some of the main characteristics of informal sector firms, the section examines how different firm characteristics are associated with their perception of access to finance as the main obstacle they face. Figure 8 shows how firms with different sizes, age, location and desire to register rank lack of access as a major problem.

Figure 8: Lack of Access to Finance as an Obstacle Affecting Operations of Informal Firms (%)



Note: The bars represent percentage of firms in the sample that identify lack of access to finance as a major obstacle.
Source: Informal Enterprise Surveys for 13 countries covering micro (0-5 employees) and small (6 to 20 employees) firms. The bars represent the percentage of firms identifying lack of access to finance as a major obstacle to business.

The figure shows that as firms grow in size, the number of firms citing access to finance as a major constraint increases from 36 percent to 46 percent. On the other hand as firms grow older, this percentage falls. More specifically, around 39 percent of firms that are 10 years old or less cite lack of access to finance as an obstacle compared to 32 percent of firms that are more than 10 years of age. Next, the figure shows how firms in different regions vary in their perception of access of finance as a

major constraint.[9] A greater percentage of firms in the SSA region (47 percent) identify access to finance as a major obstacle. For LAC region, this number is around 25 percent. Lastly, firms are categorized according to their desire to get registered. The figure shows that in comparison to firms with no desire to register (32 percent), a higher proportion of firms cite lack of access as a constraint among the group that wants to register (47 percent).

The section now presents an analysis that looks at some of the features of informal firms across countries. Even though the sample at hand is not entirely representative of the informal sectors in the respective economies, we think it is important to have an overall look at some of the basic characteristics of informal firms to get a better sense of how they look like.

Table 1 provides a summary of features of informal firms in the sample and the first panel looks at some of the more general firm characteristics. As already highlighted in the previous section, majority of informal firms are micro-sized (89 percent), employing not more than 5 people. Also, most of them are 10 years of age or younger (74 percent of the sample). In terms of level of education around 6 percent of firm owners have no education, implying that most of the owners have some level of education or vocational training. Around 8 percent of firm owners have a job with an established formal sector business.[10]

The next panel highlights the level of use of finance by informal firms. Around 23 percent of firms identify having a bank account to run their business, while only 11 percent claim having a loan.[11] Not surprisingly, majority of informal firms use internal funds, families or moneylenders (MLs) for financing purposes. This amounts to 80 percent working capital financing and 84 percent investment financing from these sources.

[9] Despite some similarities, the LAC and SSA environments for informal sectors are significantly different. Factors that can improve business conditions and inclusion for informal firms will be substantially different in the two regions. Same can be said about each specific country in the sample. However the objective of the paper is to provide readers with an overall picture of financial inclusion of informal firms and has attempted to take into account regional and country level differences in the analysis presented later.

[10] Unfortunately the surveys do not provide any information regarding the status of their job with formal sector business. We do not know if they work informally with the formal business or whether they work as formal employees.

[11] Even though the paper equates financial inclusion with the use of bank accounts and loans, these two financial products are can be quite different as far as financial inclusion is concerned. For example, countries might require firms to open bank account as part of 'starting a business' (see footnote 13 for country examples), so having a bank account may not necessarily translate into financial inclusion per se.

Table 1: Features of Informal Firms

General Charateristics	Firms (%)
Size - *Micro (0-5 employees)*	89
Age - *10 years or less*	74
Level of education of largest owner - *No Education*	6
Largest owner has a job in a formal business	8
Use of Finance	
Use of accounts	23
Use of loans	11
Working capital finance - *Internal funds, family and money lenders*	80
Investment finance - *Internal funds, family and money lenders*	84
Business Registration	
Registered at startup	4
Like to register	59
Main reason for not registering - *Taxes*	26
Most important benefit from registering - *Access to finance*	52

Source: Informal Enterprise Surveys for 13 countries covering micro (0-5 employees) and small (6 to 20 employees) firms.

The last panel of the table highlights what informal firms think about formalization of their business. Around 4 percent of firms in the sample started their business as registered firms while a majority at 59 percent states that they would like to register. The main reason identified by highest number of firms (26 percent) for not registering is tax payments. Majority of firms at 52 percent think that the biggest benefit they can get by registering is better access to finance.[12]

In short, on average informal firms are micro-sized, are less than 11 years of age and majority of firm owners have some form of educational or vocational training. Very few firm owners have jobs in the formal business, implying that their informal business is their main source of income. Firms report very low use of loans and bank accounts and a significant majority of firms in the sample finance their day-to-day operations and longer term financing through sources other than financial institutions (internal funds, moneylenders, family and friends). Very few firms started out as registered firms while a majority would like to register but do not do so as it will require them to pay taxes and they state that

[12] Despite the fact that informal firms think that registering will increase their access to finance, there is some evidence from impact evaluation studies that suggests otherwise. For example in Sri Lanka, de Mel et al. (2012) find firms which formalize are not any more likely to get a business bank account or a business loan. In Bolivia, McKenzie and Sakho (2010) find no impact on the likelihood of a bank loan after tax registration. However in comparing results obtained from case studies with those obtained from a cross-section of countries, one should keep in mind that results from impact evaluation studies are country specific and reasons explaining these results might also be country specific. For example, for the Bolivian case study, the authors note that banks, while deciding to grant credit, do not care whether firms are registered for tax purposes and show more concern for whether firms have a municipal license.

relatively easier access to finance would be the most important benefit they could obtain from registering.

Next, the section presents analysis that studies how the main characteristics of informal firms vary by their size, their regional location and their willingness to register. Table 2 shows that on average both micro and small firms are 10 years or less. The proportion of firm owners with some form of education is also very similar across micro and small firms. These firms do differ in terms of percentage of owners with a job in the formal sector. The table shows that in comparison to micro firms, owners of small firms are twice as likely to have formal sector jobs. Firms also show variation in their use of finance, with small firms reporting significantly higher use of accounts and relatively low use of internal funds, families or MLs for financing their operations. The only exception is use of loans, which does not vary by firm size. Firms also vary in terms of business registration. A relatively higher proportion of small firms start their business as registered enterprises, would like to register but do not do so due to lack of information on registration requirements and procedures, and identify easier access to finance as the most important benefit they can obtain from getting registered. Micro firms also identify access to finance as the main benefit of registration. However, unlike small firms that do not register due to lack of information, micro firms prefer not to register due to tax payments.

Table 2: Features of Informal Firms – By Size

General Charateristics	Micro Firms (%)	Small Firms (%)
Age - *10 years or less*	74	75
Level of education of largest owner - *No Education*	6	7
Largest owner has a job in a formal business	7	14
Use of Finance		
Use of accounts	19	53
Use of loans	11	11
Working capital finance - *Internal funds, family and money lenders*	81	70
Investment finance - *Internal funds, family and money lenders*	86	76
Business Registration		
Registered at startup	3	6
Like to register	54	72
Main reason for not registering	26 (Taxes)	29 (Information)
Most important benefit from registering - *Access to finance*	50	58

Source: Informal Enterprise Surveys for 13 countries covering micro (0-5 employees) and small (6 to 20 employees) firms.

Table 3 depicts the variation across firms based on their regional location and shows that in comparison to SSA a higher proportion of firms in the LAC region are micro sized. The number of firms that are less than 11 years of age is not very different across regions, though LAC region has a slightly lower percentage of young firms. Similarly, the proportion of firm owners that have no education does not vary too much across regions, though LAC has a slightly lower percentage of firm owners with no education or training of any sort. Interestingly, in comparison to LAC region, firm owners in SSA are three times as likely to have a job in the formal sector. Use of accounts is higher for firms in SSA region while firms in LAC region report higher use of loans.[13] LAC region also shows higher use of internal funds, families or MLs for their operations. An almost similar proportion of firms in both regions start out as registered enterprises. The remaining aspects of business registration cannot be compared across regions due to non-availability of data for LAC region.

Table 3: Salient Features of Informal Firms – By Region

General Charateristics	LAC Firms (%)	SSA Firms (%)
Size - *Micro (0-5 employees)*	98	81
Age - *10 years or less*	72	76
Level of education of largest owner - *No Education*	5	8
Largest owner has a job in a formal business	4	12
Use of Finance		
Use of accounts	6	38
Use of loans	14	8
Working capital finance - *Internal funds, family and money lenders*	87	75
Investment finance - *Internal funds, family and money lenders*	88	82
Business Registration		
Registered at startup	4	3
Like to register		59
Main reason for not registering - *Taxes*		26
Most important benefit from registering - *Access to finance*		52

Source: Informal Enterprise Surveys for 13 countries covering micro (0-5 employees) and small (6 to 20 employees) firms. Empty cells in the last panel of the table are due to non-availability of information.

[13] Among countries included in the sample, Angola, Argentina, Burkina Faso, Cameroon, Cape Verde, Guatemala and Madagascar require a bank account to be opened prior to registration for the paid-in minimum capital requirement (see Doing Business Data at http://www.doingbusiness.org). This might explain the higher ratio of account use seen in SSA.

Table 4, which is the last table in this section, divides firms into two groups based on their willingness to register or become formal.[14] Comparison between the two groups shows that there are relatively fewer micro sized firms in the group that wants to register. Firms across the two groups do not vary too much in terms of their age. Even though the group that has a desire to become formal shows a slightly higher proportion of owners with no education, it also has more firm owners with a job in the formal sector. The group also shows higher use of accounts and lower reliance on internal funds, family or MLs for financing their day-to-day operations. The use of loans and internal funds, family or MLs as a source of financing investments is pretty similar across the two groups. A lower proportion of firms with a desire to formalize start out as registered firms, they identify difficulty of obtaining information related to registration as the main reason for not registering and majority is of the view that easier access to finance is the biggest benefit they can get from formalizing. Firms in the other group that do not want to register also report access to finance as the major benefit of registration, however these firms do not want to register as their owners think that registration would not benefit their business.

Table 4: Features of Informal Firms – By Willingness to Register

General Charateristics	Want to register (%)	Do not want to register (%)
Size - *Micro (0-5 employees)*	69	83
Age - *10 years or less*	78	76
Level of education of largest owner - *No Education*	11	8
Largest owner has a job in a formal business	18	10
Use of Finance		
Use of accounts	47	24
Use of loans	7	6
Working capital finance - *Internal funds, family and money lenders*	71	76
Investment finance - *Internal funds, family and money lenders*	85	85
Business Registration		
Registered at startup	1	6
Main reason for not registering	32 (Information)	42 (No benefit)
Most important benefit from registering - *Access to finance*	58	49

Source: Informal Enterprise Surveys for 13 countries covering micro (0-5 employees) and small (6 to 20 employees) firms.

[14] Results on comparison of firms by age (firms <= 10 years vs. firms > 10 years) are not presented as firms show very similar kind of patterns across different age groups.

4. Use of Finance: Formal vs. Informal Firms

This section first presents some basic bivariate analysis to document the differences in use of finance, financing patterns and reasons for not applying for loans between formal and informal firms. The section then presents multivariate regression analysis that builds upon and strengthens the conclusions obtained from the bivariate analysis. This analysis verifies whether differences in the use of finance by firms based on their registration status hold once various firm level and country level characteristics are controlled for.[15] Data pertaining to formal firms is obtained from the Enterprise Surveys. To make the comparison between formal and informal firms more aligned and meaningful, only small-sized firms from the 13 countries in the original sample are used from the Enterprise Surveys. This results in a sample of approximately 1500 formal firms. Similarly the sample on informal firms is also restricted to small-sized firms only. Also for each country in the sample, it is made sure that the year in which surveys for both formal and informal firms were conducted is similar.

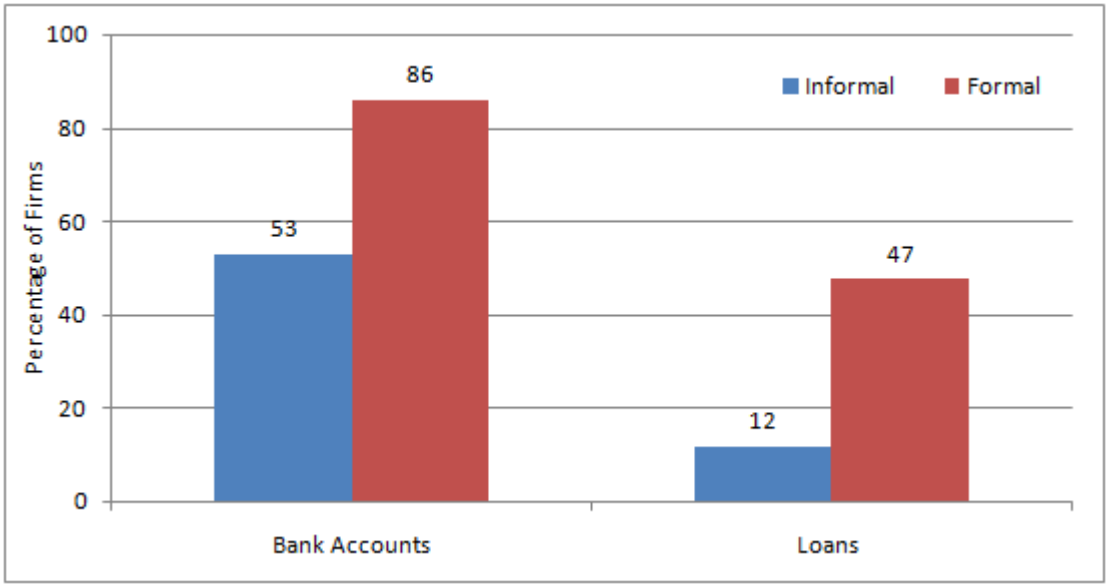
4.1 Bivariate Analysis

Looking at the use of bank accounts by firms, Figure 9 shows that on average 53 percent of informal firms have bank accounts to run their business compared with 86 percent of firms in the formal sector. These percentages highlight a significant difference in the use of bank accounts between registered and non-registered firms. Figure 9 shows a similar picture for use of loans by firms in the formal and informal sector.[16] Only 12 percent of firms in the informal sector have loans compared to 47 percent formal sector firms.

[15] The analysis in this section shows a positive correlation between formalization and financial inclusion and besides confirming our a priori knowledge, the results obtained quantify for the first the differences between the use of finance among formal and informal firms for a cross-sectional sample of countries.

[16] For formal sector, loans include loan and/or an overdraft facility from a financial institution. Loans for informal firms refer to loan from any of the following source: Bank, moneylenders, MFIs and trade credit.

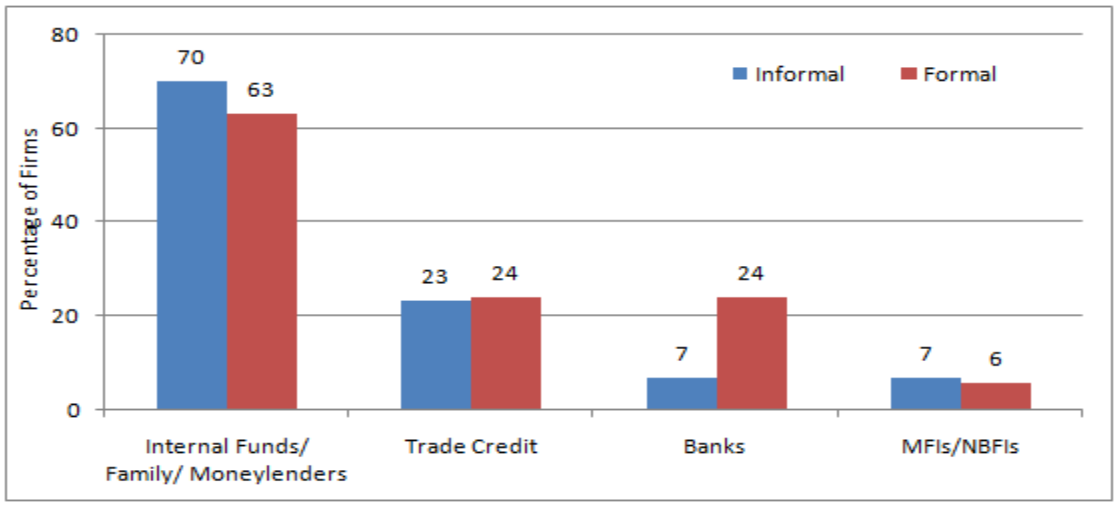
Figure 9: Firms with Bank Accounts and Loans



Note: The bars represent percentage of firms in the sample that claim to have a bank account and a loan.
Source: Author's calculations based on data from Enterprise Surveys and Informal Enterprise Surveys.

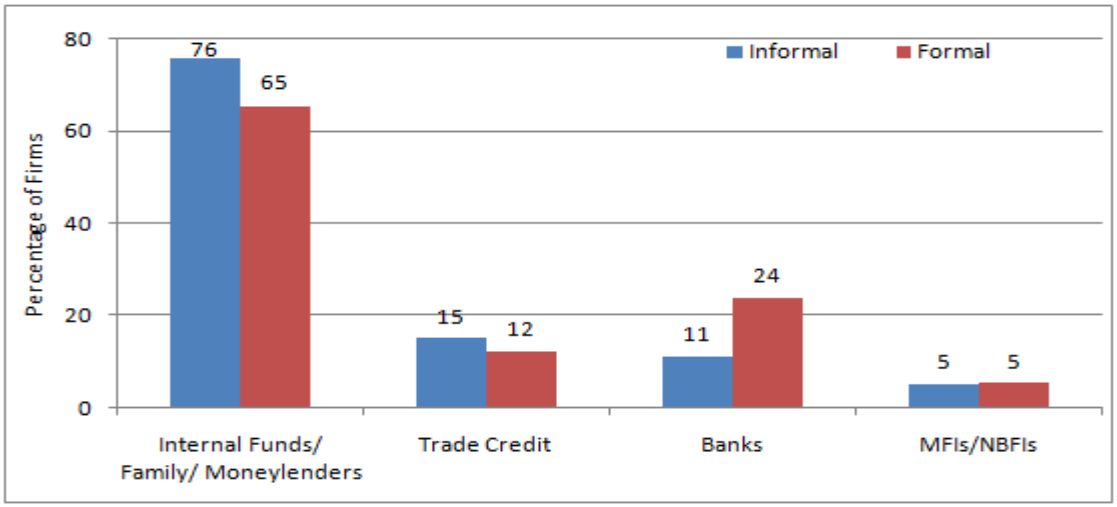
Looking at various sources firms use for financing their day-to-day operations, Figure 10 shows that majority of firms - 70 percent informal and 63 percent formal, rely on their retained earnings, their families and friends or on moneylenders for financing. Trade credit is the second most frequently used source with 23 percent of informal and 24 percent of formal firms relying on it. Bank financing is the next option firms opt for, however only 7 percent of informal firms use this option. This is not surprising given that informal firms lack the required documentation to qualify for a bank loan. In the formal sector 24 percent of firms rely on banks to finance their working capital. Lastly, 7 percent of informal firms use microfinance institutions (MFIs) and 6 percent of formal firms use non-bank financial institutions (NBFIs) for their day-to-day financing. Figure 11, which highlights sources of financing for investments, reveals a very similar picture. Around 76 percent of informal firms and 65 percent of formal firms identify using their retained earnings, their families and friends or moneylenders for financing investments. The next option used by informal firms is trade credit (15% of firms) and by formal firms is banks (24% of firms). MFIs by informal firms (5% of firms) and NBFIs by formal firms (5% of firms) are the least used means of financing investments.

Figure 10: Source of Financing Working Capital (%)



Note: The bars represent percentage of firms in the sample that identify using a given source for financing their working capital.
Source: Author's calculations based on data from Enterprise Surveys and Informal Enterprise Surveys.

Figure 11: Source of Financing Investments (%)



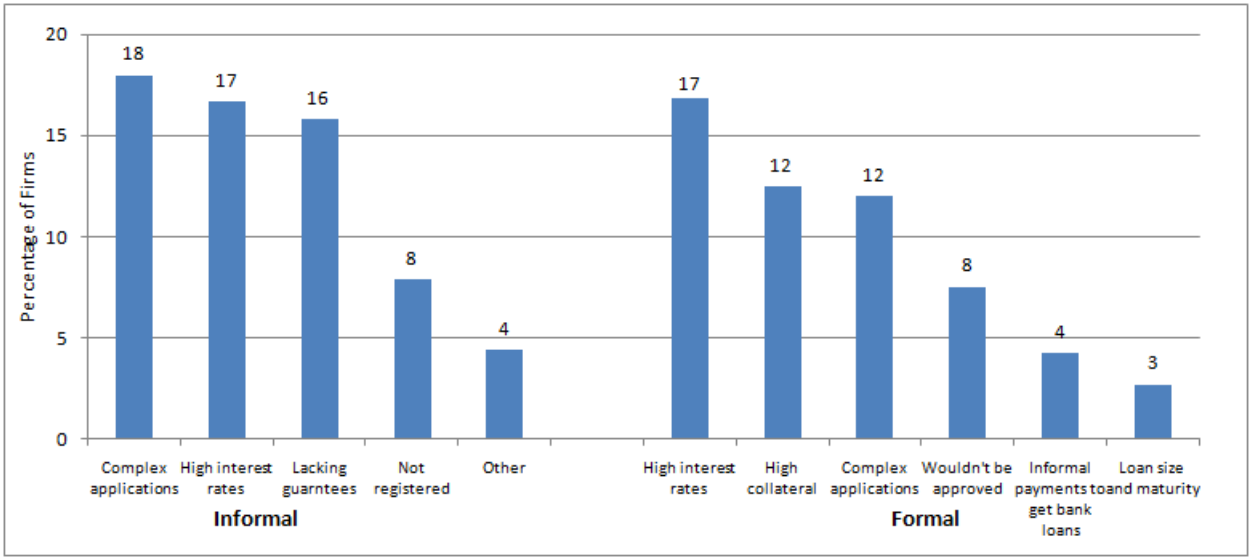
Note: The bars represent the percentage of firms in the sample that identify using a given source for financing their investment.
Source: Author's calculations based on data from Enterprise Surveys and Informal Enterprise Surveys.

Figures 10 and 11 show trade credit to be an important source of financing for informal firms and whether it is working capital or investment financing, informal firms use this option as frequently as firms in the formal sector. On the other hand, banks are not as common a source of financing among informal firms and among all the given sources of financing, bank financing shows the highest difference

between formal and informal firms. Comparing bank and MFI financing among informal firms, the figures show that both of these sources are equally important for working capital financing for informal firms, while for investment financing banks are more widely used.

The top three reasons firms do not apply for loans include, complex application procedures, unfavorable/too high interest rates and high guarantees/collateral requirements (Figure 12). In the informal sector, around 18 percent of firms report difficult application procedures, 17 percent indicate high interest rates and 16 percent indicate lack of guarantees as the reason for not applying for a loan. Complexity of the application being more of a concern than the price and collateral requirement for informal firms can be due to the fact that these firms tend to lack documentation and other required legal papers needed for a loan application. For formal firms' high interest rates is the most important reason for not applying for a loan (17 percent of firms). High collateral requirements (12.5 percent) and complex applications (12 percent) are also highlighted as significant impediments to applying for loan.

Figure 12: Reasons for not applying for a Loan (%)



Note: The bars show the percentage of firms identifying a given reason for not applying for a loan.
Source: Author's calculations based on data from Enterprise Surveys and Informal Enterprise Surveys.

4.2 Multivariate Analysis

For the multivariate analysis I use the following specification:

$$FI_{ic} = a_c + b_1 Registered_{ic} + b_2 F_{ic} + b_3 X_{ic} + e_{ic}$$

where *FI* is an indicator of financial inclusion for firm *i* in country *c*. *FI* indicators are binary variables and are proxied by i) firms with bank accounts (equals 1 if firm has an account and 0 otherwise), firms with loans (equals 1 if firm has a loan and 0 otherwise) and iii) different sources firms use for financing working capital (equals 1 if firm uses a given source and 0 otherwise). *Registered*, is a dummy variable which equals 1 if firm *i* in country *c* is registered and 0 otherwise. Firm and country level control variables are represented by *F* and *X*. Besides registered dummy variable, other firm level controls include: *age*, which is the logarithm of firm age; *female owner*, equals 1 if firm's largest owner is a female and 0 otherwise and *manufacturing*, equals 1 if firm works in the manufacturing sector and 0 if it is part of the services sector. Country level variables include private credit to GDP and financial freedom as proxies of financial sector development and contract viability, law and order, and property rights to proxy for quality of legal framework.[17] The regressions also control for a regional dummy, LAC which equals 1 if firm is located in LAC region and 0 if it is in the SSA region. Country fixed effects are captured by a_c. Table A1 in the appendix presents detailed definition and sources of variables used in the analysis.

Regression results are reported in Table 5. The way results are presented is that in each column the coefficients of firm level variables and regional dummy variable correspond to a regression which controls for country dummies and no country level variable. The results reported for each country level variable (private credit to GDP, financial freedom, contract viability, law and order, and property rights) represent a separate regression that controls for a specific country level variable and no country dummies. Since all the dependent variables are binary in nature, a probit model is estimated and marginal effects are reported.

Results in Table 5 confirm the results of the bivariate analysis and show that registered firms have higher financial inclusion, both in terms of bank accounts and loans. In particular, first two columns of Table 2 show that registered firms are 54 percent more likely to have bank accounts and 32 percent more likely to have loans.[18] These results hold even after controlling for firm level characteristics like gender of the owner, age and activity of firms and country level factors like the level of financial

[17] Country level variables controlling for institutional quality and financial freedom, which are based on assessments of "industry experts" may not necessarily include viewpoint of the informal sector.

[18] To check the robustness of results for accounts as a dependent variable, separate regressions were estimated for a sample excluding countries that have paid-in minimum capital requirement (see footnote 13). The results obtained are very similar to those shown in Table 2 and hence are not reported. They are available from the author upon request.

development and quality of legal framework. Last three columns of Table 2 show how formal and informal firms differ in terms of their working capital financing. Results show that in comparison to informal firms, on average registered firms rely less on internal funds, families and friends and on moneylenders for financing their working capital. Use of banks for financing is positively and significantly higher for registered firms. However use of trade credit is lower for registered firms in comparison to firms in the informal sector. In particular, results reported show that registered firms are 13 percent less likely to use internal funds, families and friends and moneylenders for financing, 15 percent more likely to have bank financing and 9 percent less likely to use trade credit as a source of financing.

Table 5: Formal vs. Informal Firms: Use of Finance and Financing Patterns

Bank Account equals 1 if firm has an account with a bank and 0 otherwise. Loan equals 1 if firm has a loan and 0 otherwise. The outcome variables under sources of financing equal 1 if firm uses them as a source of financing and 0 otherwise. Sample consists of small-sized firms from 13 countries. Probit model is used for estimation.

			Sources of Financing Working Capital		
	Bank Account	**Loan**	**Internal/Family/MLs**	**Banks**	**Trade Credit**
Registered	**0.54*****	**0.32*****	**-0.13*****	**0.15*****	**-0.09***
	(10.71)	(5.64)	(-2.98)	(3.67)	(-1.73)
Female Owner/Decision Maker	**0.01**	**0.04**	**0.02**	**0.02**	**-0.01**
	(0.75)	(1.56)	(0.80)	(0.87)	(-0.55)
Manufacturing	**-0.0001**	**-0.06****	**-0.08*****	**-0.005**	**0.04***
	(-0.04)	(-2.20)	(-2.63)	(-0.23)	(1.72)
Ln Age	**-0.02****	**0.02**	**0.002**	**0.01**	**0.03***
	(-1.97)	(1.13)	(0.10)	(0.48)	(1.86)
LAC Region	**-0.51*****	**0.26*****	**-0.10*****	**0.05**	**0.22****
	(-5.73)	(2.67)	(-2.75)	(0.72)	(2.21)
Private Credit to GDP	**-0.0009**	**0.003*****	**-0.00002**	**0.002*****	**-0.003*****
	(-1.21)	(3.32)	(-0.03)	(2.99)	(-3.48)
Financial Freedom	**-0.001**	**0.004*****	**-0.003*****	**0.005*****	**-0.0006**
	(-1.60)	(4.31)	(-2.84)	(6.11)	(-0.67)
Contract Viability/Expropriation	**-0.14*****	**-0.03**	**-0.01**	**0.02**	**-0.04***
	(-7.39)	(-1.41)	(-0.23)	(1.33)	(-1.91)
Law and Order	**0.13*****	**0.11*****	**-0.06*****	**0.13*****	**0.0007**
	(8.30)	(5.15)	(-3.19)	(7.79)	(0.04)
Property Rights	**-0.001**	**0.004*****	**-0.001**	**0.004*****	**-0.002***
	(-1.55)	(3.28)	(-0.83)	(4.33)	(-1.73)
Observations	1926	1922	1714	1895	1894
Pseudo R2	0.21	0.19	0.08	0.10	0.12

Notes: Marginal effects from Probit regressions. Robust z-statistics in parentheses. Statistical significance levels: *** p<0.01, ** p<0.05, * p<0.10. Data sources and definitions can be found in the appendix, Table A1.

Among country level variables, development of financial sector, proxied by private credit to GDP shows a positive correlation with firms having loans and using banks as a source of financing while it is negatively associated with the use of trade credit. Financial freedom is positively associated with firms

having bank accounts and loans. It is also positively associated with the use of banks for financing working capital, while it shows a negative association with the use of internal funds, families or moneylenders. Among variables used to proxy for strength of the legal framework, law and order shows the most robust results. It is on average positively correlated with the use of bank accounts, loans and bank financing for working capital. It is negatively associated with the use of internal funds/families/moneylenders for working capital financing.

5. Use of Finance by Informal Firms

This section presents a multivariate regression analysis to study the use of finance by informal firms. The sample used includes micro and small-sized firms. The regression analysis controls for different firm level and country level variables, most of which were used in the analysis presented in the previous section. Also, the specification used in the previous section is utilized again for the analysis of informal firms. However, the dummy variable capturing the registration status of firms is excluded. This gives us the following specification:

$$FI_{ic} = \alpha_c + \beta_1 F_{ic} + \beta_2 X_{ic} + \varepsilon_{ic}$$

where *FI* represents indicators of financial inclusion for firm *i* in country *c*. These indicators are proxied by i) firms with bank accounts, ii) firms with loans and iii) different sources firms use for financing working capital. The dependent variables are binary in nature and follow the definition provided in the previous section. Firm and country level control variables are represented by *F* and *X*. Firm level controls include: *age*, which equals to the logarithm of firm age; *female owner*, equals 1 if firm's largest owner is a female and 0 otherwise and *manufacturing*, equals 1 if firm works in the manufacturing sector and 0 if it belongs to the services sector. Three additional firm level variables are introduced which include *micro*, *owner's education* and *owner's job in formal sector*. Micro captures the size of a firm and equals 1 if firm is micro-sized and 0 if it is small-sized. Owner's education equals 1 if owner of a firm has secondary school, university training or vocational training and 0 otherwise (= no education or primary education). Owner's job equal 1 if firm's owner has a job with an established formal sector business and 0 otherwise. Country level variables used are the same that were used in the previous section and include proxies of financial sector development and quality of legal framework. Regressions also control for a regional dummy, LAC which equals 1 if firm is located in LAC region and 0 if it is in the

SSA region. Country fixed effects are captured by a_c. More details about variable definitions and sources can be found in Table A1 in the appendix.

Table 6: Use of Bank Accounts by Informal Firms

Bank Account equals 1 if firm has an account with a bank and 0 otherwise.
Probit model is used for estimation. Sample consists of micro and small-sized firms from 13 countries.

	Use of Bank Accounts					
	(1)	(2)	(3)	(4)	(5)	(6)
Micro	-0.16***	-0.17***	-0.18***	-0.16***	-0.16***	-0.19***
	(-5.54)	(-5.90)	(-6.56)	(-5.73)	(-5.55)	(-6.60)
Owner's Education	0.10***	0.08***	0.08***	0.07***	0.07***	0.08***
	(-4.59)	(-4.31)	(-4.29)	(-3.75)	(-3.92)	(-4.38)
Owner's Job in Formal Sector	0.06*	0.08**	0.09***	0.13***	0.12***	0.09**
	(-1.76)	(-2.34)	(-2.58)	(-3.58)	(-3.34)	(-2.55)
Lng Age	0.003	0.002	0.003	0.01	0.003	0.003
	(-0.35)	(-0.21)	(-0.31)	(-0.60)	(-0.28)	(-0.36)
Female Owner/Decision Maker	-0.01	-0.01	-0.01	-0.005	-0.0003	-0.01
	(-0.35)	(-0.81)	(-0.37)	(-0.25)	(-0.02)	(-0.34)
Manufacturing	-0.01	0.004	-0.01	-0.004	0.003	-0.01
	(-0.52)	(-0.20)	(-0.48)	(-0.21)	-0.16	(-0.38)
LAC Region	-0.16***	-0.27***	-0.28***	-0.26***	-0.26***	-0.27***
	(-3.51)	(-12.75)	(-14.28)	(-11.69)	(-11.76)	(-13.29)
Private Credit to GDP		0.00***				
		(-3.41)				
Financial Freedom			0.003***			
			(-4.46)			
Contract Viability/Expropriation				0.05***		
				(-3.83)		
Law and Order					0.02*	
					(-1.87)	
Property Rights						0.002***
						(-3.15)
Observations	2027	1816	2027	1701	1701	2027
Pseudo R2	0.21	0.21	0.19	0.22	0.21	0.19

Notes: Marginal effects from Probit regressions. Robust z-statistics in parentheses. Statistical significance levels: *** p<0.01, ** p<0.05, * p<0.10. Data sources and definitions can be found in the appendix, Table A1.

Table 6 reports regression results for use of bank accounts by firms in the informal sector. Column 1 shows results when country dummies are used as controls and no country level variables are included. For all remaining regressions which separately control for country's level of financial sector development and quality of legal framework, country dummies are not included. All regressions are estimated using probit model and marginal effects are reported. Results show that use of bank accounts is negatively associated with micro-sized firms. Owner's level of education and whether he/she has a job in the formal sector are positively and significantly correlated with firms having a bank account for their business. Level of financial sector development and quality of legal framework also increase the likelihood of firms using bank accounts for their business.

Table 7 shows regression results for use of loans by informal firms. Column 1 shows results when country dummies are used as controls while results shown in the remaining columns exclude country dummies and separately control for country's level of financial sector development and quality of legal framework. Firm size does not seem to be an important factor as far as the use of loans is concerned. Owner's level of education, level of financial sector development and quality of legal framework increase the probability of informal firms having loans.

Table 7: Use of Loans by Informal Firms

Loan equals 1 if a firm has a loan and 0 otherwise.
Probit model is used for estimation. Sample consists of micro and small-sized firms from 13 countries.

	Use of Loans					
	(1)	(2)	(3)	(4)	(5)	(6)
Micro	-0.03	-0.06**	-0.03	-0.02	-0.02	-0.03
	(-1.09)	(-2.24)	(-1.29)	(-0.87)	(-0.69)	(-1.27)
Owner's Education	0.06***	0.02	0.06***	0.06***	0.05***	0.06***
	(-3.99)	(-1.26)	(-3.91)	(-3.53)	(-2.83)	(-4.27)
Owner's Job in Formal Sector	0.01	0.04	0.01	0.02	0.02	0.01
	(-0.28)	(-1.29)	(-0.50)	(-0.69)	(-0.65)	(-0.40)
Ln Age	0.01	0.01	0.01*	0.01*	0.01	0.01**
	(-1.54)	(-1.46)	(-1.89)	(-1.84)	(-1.44)	(-2.00)
Female Owner/Decision Maker	0.03*	0.03**	0.03**	0.03**	0.03**	0.03**
	(-1.93)	(-2.06)	(-2.12)	(-2.07)	(-2.08)	(-2.16)
Manufacture	-0.007	-0.01	0.01	-0.002	0.003	0.01
	-0.06	(-0.53)	-0.42	(-0.14)	-0.23	-0.44
LAC Region	0.08***	0.08	0.06***	0.08***	0.07***	0.08***
	(-4.53)	(-1.53)	(-4.22)	(-4.33)	(-3.74)	(-4.92)
Private Credit to GDP		0.001*				
		(-1.87)				
Financial Freedom			0.002***			
			(-4.99)			
Contract Viability/Expropriation				0.04***		
				(-3.32)		
Law and Order					0.03***	
					(-3.21)	
Property Rights						0.001***
						(-3.12)
Observations	2029	1819	2029	1704	1704	2029
Pseudo R2	0.09	0.04	0.06	0.04	0.05	0.04

Notes: Marginal effects from Probit regressions. Robust z-statistics in parentheses. Statistical significance levels: *** p<0.01, ** p<0.05, * p<0.10. Data sources and definitions can be found in the appendix, Table A1.

Table 8 shows regression results for various sources of financing used by informal firms for working capital. The way regression results are presented is that in each column the coefficients of firm level variables (micro, education, job at formal sector, age, gender of owner and activity of a firm) and regional dummy variable correspond to a regression which controls for country dummies and no

country level variable. The results reported for each country level variable (private credit to GDP, financial freedom, contract viability, law and order, and property rights) represent a separate regression that controls for a specific country level variable and no country dummies.

Table 8: Financing of Working Capital by Informal Firms

The outcome variables equal 1 if firms use them as a source of financing and 0 otherwise.
Probit model is used for estimation. Sample consists of micro and small-sized firms from 13 countries.

	Internal/Family/MLs	Banks	Trade Credit	MFIs
	(1)	(2)	(3)	(4)
Micro	**0.01**	**-0.07*** **	**-0.03**	**-0.04*** **
	(-0.32)	(-3.24)	(-1.27)	(-2.68)
Owner's Education	**-0.06*** **	**0.01**	**0.03***	**0.01**
	(-2.66)	(-1.08)	(-1.65)	(-1.33)
Owner's Job in Formal Sector	**-0.07***	**0.04** **	**0.04**	**0.01**
	(-1.93)	(-2.08)	(-1.06)	(-0.70)
Lng Age	**-0.02** **	**0.002**	**0.01**	**0.01** **
	(-2.32)	(-0.56)	(-1.44)	(-2.06)
Female Owner/Decision Maker	**0.05** **	**-0.001**	**-0.02**	**0.01**
	(-2.34)	(-0.13)	(-1.49)	(-0.91)
Manufacturing	**-0.04***	**-0.002**	**0.02**	**0.01**
	(-1.81)	(-0.29)	(-1.43)	(-0.78)
LAC Region	**0.12*** **	**0.05** **	**-0.02**	**0.0003**
	(-5.58)	(-2.06)	(-0.36)	(-0.01)
Private Credit to GDP	**-0.002*** **	**0.002*** **	**0.001** **	**0.0002**
	(-2.78)	(-5.18	-2.06)	(-0.53)
Financial Freedom	**-0.004*** **	**0.002*** **	**0.003*** **	**0.001*** **
	(-5.52)	(-4.86)	(-5.26)	(-4.35)
Contract Viability/Expropriation	**-0.05*** **	**0.02*** **	**0.04*** **	**0.03*** **
	(-3.33)	(-2.89)	(-3.16)	(-4.30)
Law and Order	**-0.05*** **	**0.02*** **	**0.03*** **	**0.02*** **
	(-4.60)	(-2.64)	(-3.36)	(-2.83)
Property Rights	**-0.002** **	**0.001*** **	**0.001*** **	**0.0004***
	(-2.52)	(-4.54)	(-2.79)	(-1.75)
Observations	1877	1926	2020	1806
Pseudo R2	0.08	0.08	0.09	0.09

Notes: Marginal effects from Probit regressions. Robust z-statistics in parentheses. Statistical significance levels: *** p<0.01, ** p<0.05, * p<0.10. Data sources and definitions can be found in the appendix, Table A1.

Column 1 of Table 8 reports results pertaining to use of internal funds, families and moneylenders as a source of working capital financing. Estimates show owners with more education and a job in the formal sector are less likely to rely on these sources. With more developed financial and legal systems, reliance on these sources also decreases. Next, column 2 shows results for bank financing. Likelihood of a firm using bank financing decreases if it is micro-sized, while owner's job in the formal sector and country's level of financial and legal sector are positively associated with using banks for financing. Correlation between trade credit financing and firm level characteristics are not very strong; however, it is positively associated with owner's level of education and financial and legal sector development of a country. MFI financing is also positively associated with level of owner's education and financial and legal sector development of a country. MFI financing is negatively associated with firm size.

6. Conclusion

The objective of the paper was first, to document salient features of informal firms, their use of finance and their financing patterns. Second, to compare and quantify the differences that exist in the use of finance by firms in the formal and informal sector, and lastly to identify the most significant characteristics of informal firms that are associated with higher financial inclusion. The paper utilizes data on informal firms collected by World Bank's Enterprise Surveys.

The analysis shows that firms in the informal sector are on average micro-sized and relatively younger, less than 11 years of age. Most of the owners of informal firms have some form of educational or vocational training and a very small proportion have jobs in an established formal business. Use of loans and bank accounts for business by informal firms is very low and a significant majority of firms finance their day-to-day operations and investments through sources other than financial institutions (internal funds, moneylenders, family and friends). Most of the firms would like to register but tend not to opt for it due to tax reasons and state that relatively easier access to finance would be the most important benefit they could obtain from registering.

A comparative analysis between formal and informal small-sized firms shows, not surprisingly, a higher use of bank accounts and loans by registered firms. Firms in the formal sector are 54 percent more likely to have a bank account and 32 percent more likely to have a loan. On average, registered firms rely less on internal funds, families and friends and on moneylenders for financing their working

capital and their use of bank financing is higher in comparison to informal firms. These results hold even after controlling for various firm level and country level characteristics.

The paper also shows that firm size, the level of education of the owner and whether the owner has a job in the formal sector are significantly associated with financial inclusion of informal firms. Micro firms vis-à-vis small firms have lower use of bank accounts, rely less on banks and more on microfinance institutions for working capital financing. Size is not significantly associated with the use of loans. Owner's level of education and whether he/she has a job in the formal sector are positively associated with the use of bank accounts and negatively associated with the use of internal funds and financing from family and moneylender for working capital. Higher education levels of owners are also positively associated with the use of loans by informal firms.

The results presented in this paper highlight correlations that hold on average, however, informal sector firms are very diverse. Some firms might be part of the informal sector due to necessity while others operate in this sector because of an opportunistic entrepreneurial activity (see for example Brhun, 2013). Therefore the way firms operate and how willing would their owners be to become integrated into the formal economic and financial system in the future would differ a lot. Also, the factors that firms consider important in their decision to formalize may vary as well. Recent research has highlighted that registration costs and knowledge of registration procedures are not particularly important for firms while deciding whether to formalize (de Andrade, Bruhn and McKenzie 2013 and De Giorgi and Rahman 2013). It might be true that variable costs associated with becoming formal like tax payments (as pointed out in the present analysis) are considered more important by informal firms. Unless firms that are interested in entering the formal sector grow and become profitable enough to cover such costs it would be very difficult for them to formalize. Enhancing financial inclusion of informal firms interested in registering can potentially help them grow and pave their path toward formalization.

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Appendix
Table A1: Definition and sources of variables used in regression analysis

Variable	Definition	Source
Loan	At this time, does this business have a loan? Variable equals 1 if firm has a loan, 0 otherwise	World Bank Enterprise/Informal Surveys
Account	Do you have a bank account to run this business? Variable equals 1 if firm has an account, 0 otherwise	World Bank Enterprise/Informal Surveys
Banks	Dummy variable equal to 1 if firm financed day–to-day operations using banks, 0 otherwise	World Bank Enterprise/Informal Surveys
Trade Credit	Dummy variable equal to 1 if firm financed day–to-day operations using credit from suppliers or advances from customers, 0 otherwise	World Bank Enterprise/Informal Surveys
MFIs	Dummy variable equal to 1 if firm financed day–to-day operations using microfinance institution, 0 otherwise	World Bank Enterprise/Informal Surveys
Internal/Family/MLs	Dummy variable equal to 1 if firm financed day–to-day operations using internal funds, moneylender or friends and relatives, 0 otherwise	World Bank Enterprise/Informal Surveys
Registered	Dummy variable equal to 1 if firm is registered, 0 otherwise	World Bank Enterprise/Informal Surveys
Micro	Dummy variable equal to 1 if firm is micro-sized (0-5 employees), 0 otherwise	World Bank Enterprise/Informal Surveys
Ln Age	Logarithm of age of firm	World Bank Enterprise/Informal Surveys
Owner's Education	Dummy variable equal to 1 if owner of firm has secondary school (complete or not), university training (complete or not) or vocational training and 0 otherwise (= no education or primary school)	World Bank Enterprise/Informal Surveys
Owner's Job in Formal Sector	Dummy variable equal to 1 if the largest owner of firm has a job in a formal registered business and 0 otherwise	World Bank Enterprise/Informal Surveys
Female Owner/Decision Maker	Dummy variable equal to 1 if the largest owner or the main decision maker of a firm is female and 0 otherwise	World Bank Enterprise/Informal Surveys
Manufacturing	Dummy variable equal to 1 if firm's business focus in on manufacturing, 0 otherwise (services)	World Bank Enterprise/Informal Surveys
LAC Region	Dummy variable equal to 1 if firm is located in Latin American and Caribbean region, 0 otherwise (located in	World Bank Enterprise/Informal Surveys
Private Credit to GDP	Deposit money banks and other financial institutions claims on the private sector as a percentage of GDP	Raw data are from the electronic version of the IMF's International Financial Statistics. Claims on Private Sector by deposit money banks and other financial institutions (IFS lines 22d and 42d); GDP in local currency (IFS line 99B..ZF)
Contract Viability/ Risk of Expropriation	The risk of unilateral contract modification or cancellation and, at worst, outright expropriation of foreign owned assets. The risk rating assigned varies from a maximum score of 4 points and a minimum score of 0 points. A score of 4 points equates to very low risk and a score of 0 points to very high risk.	International Country Risk Guide

Law and Order	Law and Order are assessed separately, with each sub-component comprising zero to three points. The Law sub-component is an assessment of the strength and impartiality of the legal system, while the Order sub-component is an assessment of popular observance of the law. Thus, a country can enjoy a high rating – 3 – in terms of its judicial system, but a low rating – 1 – if it suffers from a very high crime rate of if the law is routinely ignored without effective sanction (for example, widespread illegal strikes).The index varies from 0 to 6 and higher values represent better law and order situation.	International Country Risk Guide
Property Rights	Assessment of the ability of individuals to accumulate private property, secured by clear laws that are fully enforced by the state. It measures the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. It also assesses the likelihood that private property could be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts. An overall score on a scale of 0 to 100 is given to an economy, with 100 representing the ideal score.	Heritage Foundation
Financial Freedom	Measure of banking efficiency as well as a measure of independence from government control and interference in the financial sector. State ownership of banks and other financial institutions such as insurers and capital markets reduces competition and generally lowers the level of available services. An overall score on a scale of 0 to 100 is given to an economy, with 100 representing more freedom. The index scores an economy's financial freedom by looking into the following five broad areas: • The extent of government regulation of financial services, • The degree of state intervention in banks and other financial firms through direct and indirect ownership, • The extent of financial and capital market development, • Government influence on the allocation of credit, and • Openness to foreign competition.	Heritage Foundation