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**Informality, productivity, and enforcement in West Africa: A firm level
analysis¹**

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Abstract:

The informal sector accounts for a very large share in African economies, both in terms of GDP and employment. However, most national surveys on the informal sector focus on labor market issues and informal employment rather than the structure of informal businesses. And sample designs are shaped by a narrow and in our view misleading definition of informality as small scale individual or household firms. In this study, we use firm-level data collected on 900 formal and informal businesses in the capital cities of Benin, Burkina Faso and Senegal. The information obtained from these surveys was complemented by more qualitative information gathered from semi- structured interviews of major stakeholders in the three cities as well as secondary data compiled from the national income accounts. Our study documents huge enforcement problems leading to the emergence of large informal actors coexisting with smaller informal businesses. In addition, we found an important difference in productivity level between formal and informal firms in favour the former. We also show, however, that the productivity gap is much smaller for large informal firms than for small informal firms, again suggesting that large informal firms have the requisites to formalize but choose not to do so.

¹ The results we present in this paper are from a broader study on informality, the business climate and economic growth in West Africa, funded by the Research Department of the World Bank. We are grateful to several anonymous Bank referees for helpful comments during the design of the project. We also thank very much experts from UEMOA, and the national governments for helpful assistance during the data collection phase. Dominique Haughton provided very helpful assistance during the sample design and data analysis phases. A substantial contribution from Steve Golub is also acknowledged. Of course, the usual disclaimer applies.

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I. Introduction

It is common knowledge that the informal sector plays a central role in African economies, accounting for a large share of GDP and an even greater share of employment. Some key sectors of these economies are totally or partially under the control of the informal sector, notably commerce, handicrafts, transportation, agriculture, and most of manufacturing. Despite its importance, systematic studies of the informal sector in Africa are lacking and some important dimensions are not well understood. In particular, much of the literature ignores the major role played by what we call the “large informal” sector: firms with sales that rival those of formal sector firms yet which operate in ways that are quite similar to small informal operators. Our study is distinctive in distinguishing between three categories of actors: formal firms, small informal firms, and large informal firms.

There have been few previous systematic data collection efforts that focus on informal firms in Africa and those that do exist are not very comparable across countries. This is in part because most national surveys on the informal sector focus on the labor market and informal employment rather than the structure of informal businesses. Furthermore, sample designs are shaped by a narrow and in our view misleading definition of informality as small scale individual or household firms as defined in UN SNA (SNA, 1993), ignoring the “large informal” sector.

In this study, we use firm-level data collected on 900 formal and informal businesses in the capital cities of Benin, Burkina Faso and Senegal. The information obtained from these surveys was complemented by more qualitative information gathered from semi-structured interviews of major stakeholders in the three cities as well as secondary data compiled from the national income accounts. The initial 900 interviews in the three cities were conducted in 2007. A second phase of more in-depth interviews with selected major stakeholders focusing on the large informal sector was carried out in 2009.

The predominance of the informal sector in Africa, and the existence of large informal firms in particular, highlight some major issues inhibiting African development. Despite its importance the informal sector only contributes 3 percent of tax collections. The large informal enterprises choose to remain in the ambit of the informal sector, even though they meet all the criteria for formal status. The existence of these firms is a clear manifestation of state failures in Africa: corruption, the governments’ weak enforcement capabilities, and adverse business environments, all of which increase the costs and reduce the benefits of operating formally. High taxes and onerous regulations on formal firms make formalization unappealing while corruption and lack of enforcement enable politically well-connected and influential actors to operate informally with impunity.

Our study also contributes to the literature on the relationship between informality and productivity. Previous studies of developing countries have found that informal businesses are less productive than formal ones (see for example Perry et al. 2009; Gelb et al. 2009); West Africa is no exception, as we extensively document in this paper. We show, however, that the productivity gap is much smaller for large informal firms than for small informal firms, again suggesting that large informal firms have the requisites to formalize but choose not to do so.

The remainder of the document is organized as follows: the second section reviews the significance of informality in West Africa. In a third section, our definition of informality as a

continuum against the more standard binary formal/informal opposition is spelled out. The fourth section documents the existence of large informal businesses in West Africa. The fifth section discusses the relationship between informality and the business environment. The sixth section reports findings on the relationship between informality and productivity. A short concluding section follows.

II. The informal sector in West African economies: scope and major characteristics

The informal sector, however defined, occupies an important position in African economies, as practically every study of the subject agrees. According to Schneider and Enste (2002), the informal sector represents 10 to 20 percent of GDP in developed countries and more than a third of GDP in developing countries. The ILO reports that the informal sector accounts for 48 percent of non-agricultural employment in northern Africa, 51 percent in Latin America, 65 percent in Asia, and 72 percent in Sub-Saharan Africa. Chen (2001) estimates that 93 percent of new jobs created in Africa during the 1990s were created by the informal sector. Xaba et al. (2002) find that, while formal sector employment and output are stagnant at best, informal sector employment and share in GDP are steadily increasing. Focusing on the rural economy, Otsuka and Yamano (2006) report a non farm informal income share of 13 percent in Ethiopia, 30 percent in Kenya and 38 percent in Uganda. Steel and Snodgrass (2008) report that the informal economy accounts for 50 to 80 percent of GDP in Africa and as much as 90 percent of employment. Estimates show that the informal sector accounts for three quarters of Ghana's total income; in rural areas, this proportion reaches 90 percent (Canagarah and Mazumdar 1999). In Burkina Faso, 80 percent of total employment is attributed to the informal sector (Calves and Schoumaker 2004).

Some of the largest and fastest growing sectors of West African economies are informal: transportation, hospitality, reproduction of musical CDs and tapes, carpentry, construction, real estate, and especially retail and wholesale trade (Adams 2008; Lund and Skinner 2004; Haan 2006). Verick (2006) finds that the retail sector is the largest locus of informal activities. Similarly, Charmes (1993) found that 80.7 percent of businesses in Benin's urban zones were street vendors. According to a 1988 USAID survey (USAID, 1988), 72 percent of informal activity in Senegal involves trade. The average size of informal business is 1.1 workers per firm, i.e., one employee per firm (ILO 1995). The results from the second phase of the 1.2.3 survey (DPS, 2004), show that size of informal activity has increased but remains a very low 1.5 employees per firm. The 1-2-3 survey also found that 46.5 percent of informal activity is in agriculture, while industry accounts for 30.6 percent, services for 21.3 percent, and 1.6 percent is attributed to fishing. These studies, however, defined informality as small firms, and therefore ignored the large informal operators.

III. Informality as a Continuum

There are a number of possible definitions of informality and various studies have adopted different concepts. Consequently, estimates of the informal sector's magnitude vary greatly depending on the chosen definition (Verick 2006). The most commonly-used criteria are: the size of the business; registration with the government; and maintenance of honest and complete accounts. Kanbur (2009) rightly argues that any researcher studying the informal sector should begin by defining informality. In this section we review the main criteria for

informality and show that each captures a part of the phenomenon. We then suggest that a composite definition is more appropriate.

The size of activity criterion

Informal firms are often identified as having a small number of employees. The ILO's approach (ILO 2002), which defines an informal firm as an unregistered firm with no clear line separating business activities and household activities, has been widely used. A further qualifier is a lack of honest accounting statements. The only firms that fit these criteria are family enterprises, classified as household enterprises in the United Nations' system of accounts (SNA 1993). According to this definition, the informal sector encompasses small enterprises that employ fewer than ten employees and that are not registered with a given administration. There are several ambiguities associated with this definition: a) The ILO sets the recommended upper limit for number of employees at ten but individual countries have leeway to set a different upper limit in their statistical definition of informal firms. Certain countries choose an upper limit of 5 employees, whereas others chose either lower or higher limits; b) Countries are also able to choose whether to include agriculture in informal activities, along with unpaid domestic labour, individuals with a second job in the informal sector, rural areas, minimum age, etc. Consequently, data on the informal sector is collected in various ways and international comparisons are difficult.

Equally important, this definition excludes the large informal firms that are an important segment of the informal sector. While it is certainly true that the vast majority of informal firms in the countries that we are studying are small-scale or even miniscule enterprises, the large informal firms account for a substantial share of informal sector output.

The registration criterion

Another commonly used criterion for defining informality is registration with a government agency. A problem here is that there are multiple government agencies overseeing the private sector (central or local administration, tax authorities, or others), and firms may register with some but not others. Gelb et al. (2009) focused on registration with the tax authorities. On this basis they distinguish between three types of enterprises: formal micro-enterprises (5 or fewer employees), formal small enterprises (5 to 10 employees), and informal micro-enterprises (fewer than 5 employees). Note that this approach shows a further problem with the size criterion: small and micro-enterprises can be formal. Indeed, among the seven countries that the authors studied, the proportion of formal firms varied between a minimum of 28 percent in Namibia and in Kenya, and a maximum of 54 percent in Uganda. La Porta and Shleifer (2008) also make use of the registration criterion. According to them, a distinction should be made between two categories of informal firms: those that fail to register with the police, tax authorities, and other regulators, and those that are registered but understate revenues. They therefore observe that the registration criterion alone is not sufficient to qualify a firm as formal.

In our view, when studying francophone African countries, the registration definition generally better captures informality than does the firm size criterion. Nevertheless, the registration criterion poses serious operational problems when applied to West African countries, for the reason noted above: data compilation on informal firms in these countries is handled by agencies that often use different identifiers. Many firms are registered with some

agencies but not others. The street hawker who has no trading permit, but who is indexed in the records of municipal services, might be classified as formal! One could use registration with one particular government agency, e.g., the tax authorities, as the criterion for being formal. However, many clearly informal firms are registered with the fiscal authorities. Indeed, there are two types of fiscal regimes in WAEMU countries using the OHADA legal system⁴: regular business income tax and presumptive lump-sum tax. The first regime requires reliable financial statements that enable calculation of taxable income based on accurate reporting of profits or sales; the second regime is based on tax officials' estimates of the firm's revenue and expenditures based on partial information, and a lump-sum tax is levied. Thus, in WAEMU countries the important distinction is not whether or not firms are registered with the fiscal authorities but rather what type of tax they are subject to.

The existence of honest financial statements criterion

The lack of accurate and complete books is also a fundamental distinguishing feature of informality. Indeed, a characteristic of the informal sector is absence of transparency. The majority of informal firms in West Africa lack regular and up to date books which makes monitoring and taxation of these firms very difficult. In practice, however, this definition is not easy to implement. How does one decide which types of financial statements to use and whether or not they are accurate? Normally, the statements required by tax authorities and the statistical agency would be considered relevant. However, in UEMOA countries this definition is inadequate. In fact, the financial statements required even of formal firms differ, with large enterprises reporting to the Division des Grandes Entreprises (DGE) in the Treasury⁵. Firms filing with the DGE have to provide more detailed financial statements than do small enterprises. More importantly, many enterprises, especially the large informal operators, are highly skilled at producing false financial statements. These firms are aided by accounting firms that specialize in producing misleading accounting certificates. Many informal actors admitted anonymously to us that they retain several versions of their accounts: one for themselves, one for loan requests from a bank, one for tax authorities, etc. Each version is created with a specific use in mind, and these firms have no trouble getting them all certified by accounting firms complicit in this elaborate hoax. Accurate accounting is therefore very difficult to determine. However, for want of a better alternative, we include this criterion in our study as one component of a composite definition, classifying all firms that are either not taxed at all or taxed on a lump-sum basis as being informal, and firms that are taxed on a regular business income tax basis as being formal.

The mobility of workplace criterion

In West Africa many informal activities are highly mobile and without a fixed workplace. This applies not only to travelling salesmen and street hawkers, but also mechanics, carpenters, and small business owners. In general, these actors do not own or rent their workplaces. Instead, they occupy unused spaces and vacate when the space is needed by its owner. Given this situation, some researchers identify the informal sector with a lack of fixed workplace. While it is true that many informal firms are highly mobile, many more informal

⁴ Organisation pour l'harmonisation des droits des affaires en Afrique is a regional setting empowered to design rules and regulations applicable to businesses, which all UEMOA country members have adhered to.

⁵ Division des grandes entreprises. This is the tax division to which big firms, with a turnover exceeding a given threshold (about CFA 1 billion) have to file to.

firms do have a fixed workplace, so this criterion identifies only a limited part of the informal sector.

The access to bank credit criterion

Limited access to credit is also a characteristic of informality. Bank credit is largely an option only for the formal sector while most small enterprises are confined to informal loans from friends, family, or tontines, which all generally demand high interest rates (Johnson 2004; Akoten et al. 2006). La Porta and Schleifer (2008) argue that informal actors' limited access to credit can be explained by their relatively low level of education. The criterion of access to bank credit is very relevant to African countries. Banks demand a number of financial and administrative documents before even examining loan applications. It is practically impossible for informal actors to assemble the required documents. Nevertheless, this criterion too has its limitations because many formal firms are also credit-constrained in Africa. This is because lack of documentation is not the only constraint to obtaining credit. Collateral requirements are also a major impediment; even some large firms are discouraged from obtaining bank credit due to onerous collateral requirements as well as general reticence of banks to lend to all but the largest and best-known businesses. There are many formal enterprises, notably SMEs, which finance their investments with internal funds or through informal financing with high, even exorbitant, interest rates. The access to bank credit criterion, just like all preceding criteria, is relevant to informality but with limitations.

Our approach to defining informality

All the above criteria have some degree of validity suggesting that informality is better described as a continuum defined by a combination of the above criteria. As Steel and Snodgrass (2008) note, "...There is a continuum of different degrees of formality (in terms of different characteristics such as nature of registration, payment of taxes, management structure, contractual arrangements with employees, market orientation, etc.)" The multi-criteria approach was also used by Guha-Khasnobis and Kanbur (2006), who, when defining informal employment, gave prominence to the absence of social security coverage; rights to vacation; written contracts; low levels of revenue; lack of affiliation to a workers' organization; unstable work conditions; and the illegal or quasi-illegal nature of the firm's activity. Although our focus is on informal businesses and not informal employment, we retain many of the same criteria. Informality in the sub-region is a very complex reality that varies enormously among different economic actors. Very few firms fit all the criteria of formality. Therefore, we have distinguished between several levels of informality.

-- At the bottom of the ladder, there are those firms that are completely informal—firms that do not fulfill any of the criteria defining formality. These firms are completely unknown to fiscal authorities and all other administrations. They are small, do not have access to bank credit, are not subject to the regular business income tax, and are itinerant. These firms are at level 0 of informality.

-- The second level consists of those actors who fulfill at least one of the criteria defining formality. This level includes mainly those who are registered with an administration dealing with enterprises; who have more than 5 employees (or who have sales of over 50 million CFA francs); or, finally, who have gained access to bank credit within the previous 5 years. These actors are at level 1 of informality.

--At the third level, there are those actors that fulfill at least two of the five criteria defining formality; at the fourth level there are those that fulfill three of the five criteria, and so on.

--The last level consist of formal firms who fulfill all five criteria of formality. These firms are registered with at least one administration, employ more than five people or have sales of over 50 million CFA francs, are taxed through the regular business income tax, had access to bank credit within the past five months, and have a fixed domicile.

Figure 1 : The above categories provide six levels of informality in increasing order, with only a small proportion of firms that meet all of the criteria of the strict definition of formality.

Figure 2 Share of firms satisfying various criteria of informality

IV. Large informal businesses in West Africa

As mentioned earlier, a striking characteristic of West African informal sectors is the presence of large actors that fulfill all the criteria for formality, but choose to stay in the informal sector. The presence of this category of actors has been noted by other but rarely described and analyzed in depth. For example, Jacobs (World Bank 2004) proposes a transition program that allows firms near the margin to accede to the benefits of formality while taking on the obligations gradually over time, but, referring to a West Africa case, he warns:

It should be clarified that the transition program for informal enterprises is not meant to apply to those large-scale enterprises, particularly in the importing sector, that evade taxes. These enterprises have no need for any special benefits. They exist only with the tacit agreement of powerful supporters in the government, and their existence should be considered a costly form of corruption rather than a special case for a developing economy. To remedy this problem, the government needs to launch a program to enforce the tax and the other laws against these enterprises.

Large informal firms are defined as those firms that pay the presumptive lump-sum tax while having revenues above 20 million CFA francs per year (about \$40,000). Large informal firms are found in a variety of sectors in West Africa, including transport, industry, wholesale and retail sectors, music distribution, etc. Data was obtained from different sources for formal, large informal and small informal firms: for formal enterprises by consolidating files from statistical services and fiscal services; for large informal enterprises from the fiscal services file; for small informal enterprises from the 1.2.3 sample in each country, restricted to those enterprises whose revenues are below 20 million CFA francs per year.

The analysis of the results of our interviews reveals some similarities, but many important differences, between the large and small informal sectors. Many large informal firms do not see themselves as informal; they are even offended at the suggestion that they might be lumped into that category. In truth, they would not be classified as informal if the usual criteria are applied mechanically. They appear, superficially, to meet most of the criteria defining formality: they pay taxes; some even are taxed under the regular business tax regime; their tax filings are handled by the DGE (the division that handles filings for large formal firms mentioned above); have a high level of sales; have access to bank credit, etc. But a closer examination reveals that their practices are in fact informal. Even though these firms are large as measured by sales, their administrative structures are weak and resemble those of small informal firms. Formal firms of the same size have distinct departments and a coherent organizational structure, but informal firms do not. In fact, apart from the owner and a few

permanent employees (rarely more than five), the rest of the personnel are temporary. A single individual manages the firm with little assistance from others. Managerial style is similar to that of small informal firms. None of the usual departments in formal firms (sales, input sourcing, finance, human resources, etc) exist in large informal firms, despite their high levels of sales. Even the accounting function is outsourced to an independent firm, while all medium-size formal firms have in-house accounting departments. In addition, the accounting for these large informal firms is typically highly dishonest, massively underreporting sales and profits. The absence of honest accounting is one of the determining features of the informal sector, particularly for the large informal sector.

To provide some evidence on the magnitude of under-reporting of sales by the large informal sector we carried out a comparison for Senegal of firm-level imports, reported by customs, and sales as reported to the tax authorities for those same firms and recorded by the government statistical agency. We selected a number of firms that paid the lump-sum presumptive tax (in principle reserved for small informal firms). We considered only importing firms with an identification number that allows their declared sales to be traced to the fiscal agency. Given that most importing firms do not have an identification number (an identifier is surprisingly not a requirement for importing), we were able to match only 132 firms in the fiscal and customs statistics, a small proportion of the firms that pay the presumptive tax. Moreover, we were not able to identify the largest informal operators. Large informal firms often have many identification numbers and fragment their imports, making it difficult to determine their total imports. Indeed, of the 132 identification numbers whose imports and sales we were able to cross-check, it would not be surprising if a good number belonged to one individual.

Figure 3: proportion of firms under reporting sales to the tax authority by industry

Notwithstanding these limitations, our analysis starkly reveals the extent of under-reporting of sales, demonstrating that many firms that are subject to a lump sum tax because of their under-reporting of sales should actually be subject to regular business taxes. These false declarations are facilitated by the lack of cooperation and exchange of data between customs and the fiscal agency. The results show enormous gaps between imports and sales figures, with imports sometimes 10 times greater than sales. While some imports are for capital goods, the discrepancies are much too large to be explained this way, particularly given the largely commercial nature of the activities concerned. Among firms in our sample, over 41 percent report sales below imports. In certain sectors, like jewelry sales and mechanics, this proportion is greater than 50 percent. In the retail sector, 56 percent of firms in our sample have a greater value of imports than of sales! In fact, the discrepancies between imports and reported sales may be even larger than Figure 7 suggests, given that imports can also be understated by smuggling and underinvoicing.

The government officials we interviewed are well aware of this situation and acknowledged that fraud is common. Joint squads of customs and tax agents identify a significant number of fraudulent tax filings. When they identify tax evasion, they subject the firms to penalties and regular business taxes. Often, however, these firms then declare bankruptcy or simply disappear only to reappear under a different name and resume their practices.

The second phase of our survey, conducted in 2009, focused on large informal firms, largely confirms that firms disappear when they are at risk of being discovered, or were discovered, by the fiscal authorities. Many of the large informal firms identified in the first phase of the

survey in 2007 had disappeared by 2009. For example, in Ouagadougou, only 30 percent of large informal firms had survived, while for formal businesses the survival rate was 98 percent. This low survival rate of firms in the large informal sector is somewhat misleading, however, as firms often closed and reappeared in a different form.

Although actors in large informal sector have access to bank credit, many of them continue to make use of personal funds, or funds from their families or other personal relations. However, this use of personal savings is a matter of choice rather than a necessity—these firms have all the necessary documents required by banks for loans. Most of these documents are, of course, fraudulent; but this would not be an impediment to access bank credit. These firms generally eschew bank credit due to the onerous conditions of this credit and also because the resulting increased transparency of their business income could increase exposure to the tax authorities.

The fragility of large informal firms' distinguishes them from their formal counterparts. Although proof is difficult, it is well known that these firms are engaged in fraudulent activities. Also, their longevity is strongly linked to that of their owners; most firms disintegrate after the death of the proprietor. Often, those who inherit the firm cannot come to an agreement on how to operate the firm and it collapses. In other cases, a dramatic scandal leads to the imprisonment of the owner of the firm. This has occurred in Senegal for several large informal actors, including Cheikh Tall Dioum, Adel Korban, Khadim Bousso, Moustapha Tall, (See Benjamin and Mbaye, 2010 for more details). In other cases, conflicts with customs or with suppliers or creditors lead to the demise of the firm. Large informal firms are like a giant with a clay foot. On the one hand, these firms operate on a large scale comparable to that of firms in the formal sector. On the other hand, a simple disagreement with a customs official can put an end to activities. These firms endanger themselves by operating in the same manner as small informal firms, yet they have much greater visibility. There is a constant battle between these firms and the fiscal authorities. Often these firms benefit from political or religious connections, but this support itself can also be fragile and is not unlimited. As soon as firms lose their political or marabout support, or are entangled in incriminating public scandals, or cannot resolve a disagreement with customs, imprisonment or the disappearance of the firm usually follows. Customs is particularly powerful in West African countries, providing a major part of government revenues and also a locus of corruption; when a conflict with customs officials arises, even well-connected informal actors may have no choice but to compromise or go to jail.

V. The Informal Sector and the Institutional Environment

As noted earlier, firms opt for informal sector status in response to the perceived benefits and costs of formalization. In Africa, it is quite clear the spread of the informal sector is fostered by state failures, such as: the length and complexity of the registration procedures, the failures of the judicial system, the weaknesses of structures responsible for collecting and delivering support services to small businesses (including those of the informal sector), and the ability of large influential players to circumvent the rules, often with the state's compliance, etc. These state failures interact with cultural traditions in West Africa to create an environment conducive to informalization. For example, in Senegal, much of the informal sector is connected to powerful Islamic religious groups, notably the Mourides. In this section, we review some of these barriers to formality.

a. The business climate

The quality of public services (infrastructure, judiciary) affects the choices of firms insofar as one of the benefits of formal sector status is greater access to these services; if these services are of poor quality what is the point of being formal? Likewise if formal sector status requires compliance with onerous regulations and high taxes, informal sector status is more appealing. Most studies on obstacles to investment confirm that countries in the sub-region experience a more adverse business environment than do other developing countries (see rankings from the World Economic Forum's *World Competitiveness Report* and the World Bank's *Doing Business Indicators*). Countries in West Africa are generally ranked well below those of the other developing countries. Steel and Snodgrass (2008) conclude that in the African context, getting registered and becoming formal are not advantageous for informal firms.

Our findings largely confirm the results of these surveys, but with certain nuanced differences. Few enterprises saw registration as an obstacle. Of all the enterprises included in the second phase of our study, which focused on formal and large informal firms, only 12 percent had encountered obstacles in registering. Enterprises did, however, cite many other inadequacies in public services.

The state's failings in establishing credible policies to promote private-sector development become obvious when heads of enterprises are asked about their taxation. Two thirds believe that the state does not make good use of tax revenue, and this proportion rises to 88 percent among medium-sized firms (enterprises with sales of between 50 and 100 million FCFA). Furthermore, 69 percent of respondents believe that the state uses public funds unethically. This proportion rises to almost 100 percent among medium size firms. Most firms also claim that the state imposes excessive tax burdens on firms, leading to tax evasion. Many also agree that they are exposed to even greater hassles if they formalize their firms. Among all respondents in Senegal, 52 percent found that paying taxes exposes a firm to greater tax hassles; 59 percent of large enterprises share this view.

A Senegalese tax agent explained the problem to us this way: "Informal actors are expensive in terms of the research that we need to carry out to tax them." Indeed, the fiscal administrations of the three countries seem to be of the opinion that the cost of obtaining information on informal firms outweighs the benefit of the increased revenues that would result. Consequently they focus their efforts on the firms they can easily identify, and from which they can collect the full amount of taxes due; in other words, formal actors. It is obvious that this strategy, while understandable given the limited resources of the fiscal authorities, creates important distortions. Most new business with the capacity to be formal choose to seek refuge in the informal sector. In addition, existing formal firms are tempted to migrate towards the informal sector to escape from fiscal hassles.

Most respondents have a negative view of the level of taxes and of the management of tax collections. The majority thought that fiscal pressure was very high (60 percent of all firms and 67 percent of large informal firms). In addition, 46 percent of respondents reported long queues that made tax payment more difficult; 20 percent find it hard to declare taxes and 42 percent found the management of the collection service to be poor.

The state's shortcomings in the application of laws and regulations also become evident when respondents are asked about regulations relating to the informal sector. In Senegal, for

example, 68 percent of interviewees find that the state does not adequately enforce regulations concerning workers' social security; the same proportion found inadequate verification of honesty in revenue declarations and accounting. This high perception of lack of government enforcement capabilities is one of the most important determinants of informality.

b. Corruption and difficulties in regulating large, influential actors

Corruption and failure to enforce rules and regulations are also major determinants of informality. The corruption that exists in all rungs of society contributes to the flourishing of large informal actors. Often, they are well connected politically, which offers them some impunity. Court decisions are frequently challenged, and the press often reports corruption scandals in the courts. Large informal actors are supported by a chain of collusion that involves customs, the administration, and the courts. A customs authority from one of the countries we visited confided to us that, "When we arrest a person for fraud, we quickly offer him a deal and do our best to ensure that the case does not get to the tribunal or to the police; once there, one is never sure what the outcome will be."

Some large informal firms also rely on Islamic brotherhoods for support. Cross-border trade between Senegal and The Gambia offers a good illustration. This trade has long been dominated by well-identified social and religious groups, such as: the 'baol baol'—traders from the Mouride brotherhood—, Guineans, and Mauritians. Gambian importers of food products (tomatoes, rice, tea, etc.) are linked to intermediate wholesalers who dominate the distribution chain. The chain operates out of the Gambian urban centers of Banjul, Bakau, Serekunda and Bassé, distributing imported products to shopkeepers installed along the Senegalese border, where Senegalese smugglers go to stock up. Gambian importers also sell directly to Senegalese traders, who come to Banjul or to Bassé with 35 ton trucks. Border crossings of the goods can occur in two ways: either the truck is unloaded in a border warehouse to allow small quantities of goods to be smuggled into Senegal, or the truck is allowed to enter Senegal with the collusion of Senegalese customs agents. The Mouride brotherhood plays an important role in this process. Mouridisme is based on clientelistic relations that connect these business networks. The Mouride disciple proves his allegiance and submission to his marabout (religious leader) by serving him in several ways, including cultivating his land and offerings in kind and in cash. In return, the marabout offers protection by intervening on behalf of disciples with the authorities, and through provision of an informal social safety net and financial network. This allows Mouride traders from the Senegalese cities of Prokhane and Kaolack to openly engage in smuggling products from The Gambia. Before the privatization of peanut parastatal SONACOS and the dissolution of its affiliate SONAGRAINES, registered traders who gathered peanuts for SONACOS would use the advances intended for peanut cultivation to instead finance sugar, rice, and tomato concentrate imports from The Gambia. Collusion between the Senegalese state and heads of the Mourides has been well documented (see Golub and Mbaye, 2009). Notables in the Mouride brotherhood receive special favors from the state. In 1986, after the partial deregulation of rice imports, with 25 percent of the market allocated to private enterprises; one of the largest transporters benefiting from the clientelistic allocation of market shares was none other than the personal secretary to the Caliph of the Mourides.

VI. Productivity Differences Between Formal and Informal Firms

A large literature shows that there is a strong negative correlation between informality and productivity of firms in developing countries. Steel and Snodgrass (2008) find that the productivity differential between the two categories of firms is due mainly to unequal access to public services. Gelb et al (2009) compare the productivity of formal firms and informal firms using surveys on the investment climate for a number of countries of southern and eastern Africa. Their results confirm that formal sector firms are on average more productive than informal ones but the gap between formal and informal firms is much less for east African countries than for southern African countries. They attribute this to the difference in the quality of the quality of the business environment and the enforcement of rules. The relative weakness of the state in East Africa undermines the performance of formal firms, thereby lowering the gap between formal and formal firm productivity. La Porta and Schleifer (2006) also find that the productivity level of informal sector firms is much less important than that of formal sector firms. Their preferred explanation is differential access to inputs (including human capital) and the difference in production scale. All these studies, however, do not consider large informal firms.

To compare productivity levels between the formal and informal sectors, we compute two alternative measures of productivity with our survey data: labor productivity and total factor productivity (Harrigan 1996, Mbaye 2003, Mbaye and Golub 2003). Labor productivity (LP) is measured using the following ratio:

$$1.1. LP_i = \frac{Q_i}{L_i}, \text{ where } Q \text{ is value added and } L \text{ is the number of employees for firm } i$$

In order to measure total factor productivity (TFP), we use the Cobb-Douglas production function: $Q_i = AL_i^\alpha K_i^\beta$, where K is capital stock and α and β are the respective shares of labor and capital in total factor income.

$$1.2. TFP_i = \frac{Q_i}{L_i^\alpha K_i^\beta} = A$$

Under the usual assumption of constant returns to scale we have $\alpha + \beta = 1$. TFP can be estimated using a log-linear version of the Cobb-Douglas production function:

$$1.3. \text{Log}Q = A + \alpha\text{Log}L + \beta\text{Log}K + \varepsilon$$

Total factor productivity is computed as the constant term in Equation 1.3. Equation 1.3 was run separately for each of the three subgroups in our sample (formal, large informal, and small informal sectors). This provides measures of average TFP for the various firms in the three categories, assuming that the production functions for the individual firms are of the Cobb-Douglas type with constant returns to scale. Alternatively, equation 1.2 can be used to evaluate TFP at the firm level, without requiring the assumption of common production functions.

LP and TFP are related as follows:

$$1.4. LP = \frac{AL^\alpha K^\beta}{L} = A \left(\frac{K}{L} \right)^\beta$$

$$1.5 \quad \ln\left(\frac{LP_t}{LP_{t-1}}\right) = \ln\left(\frac{TFP_t}{TFP_{t-1}}\right) + \beta \ln\left(\frac{K_t/L_t}{K_{t-1}/L_{t-1}}\right)$$

Recall that β represents the capital share of income.

Equation 1.4 indicates that labor productivity is a function of TFP and capital intensity, while 1.5 shows the same relationship in rates in change. A rise in capital intensity will lead to a rise in LP, holding A constant. These equations suggest that productivity differentials between sectors could be due either to efficiency/technological differences (A) or differences in capital-labor ratios. Differences in capital-labor ratios could in turn reflect differential access to financing between formal and informal firms, or between large and small firms. Our results indicate that productivity differences between formal and informal firms reflect differences in both efficiency and capital intensity.

Equations 1.1 through 1.5 are estimated using data collected from 900 firms in three West African capital cities (300 in each city): Cotonou, Dakar, and Ouagadougou.⁶ We compute productivity both by degrees of informality and for the three groups of firms: formal enterprises, and large and small informal enterprises (as defined in section IV, page 7 above).

Our results confirm a significant productivity gap between the formal and informal sectors of the three cities, but the gap is much smaller for the large informal sector. Labor productivity is higher on average in formal firms than it is in the large informal firms, which in turn have higher labor productivity than small informal firms. Figure 4 displays boxplots showing the distribution of productivity levels by degrees of informality. Productivity gaps are found to be more pronounced in Ouagadougou. This particularly large discrepancy in Ougadougou is likely to be related to firms' perception of the business environment, which is considerably better in Burkina Faso. Whether one considers access to basic social services, the amount of time necessary to obtain access to these services, or average duration of service disruptions, the results of our survey indicate that the situation on Ouagadougou is far more favorable than those of the other cities. This lends credence to the hypothesis proposed by Gelb et al. (2009) that the two most important determinants of the productivity differential between the formal and informal sectors are the quality of the business environment, and the ability of the state to establish and enforce laws and regulations.

Formal firms account for the bulk of firms with the highest labor productivity levels, whereas informal firms constitute a large majority of firms with low productivity. For example, in the case of Senegal, among the companies with a productivity level between 100 million and 300 million CFA francs per worker, 77 percent are in the formal sector, with 23 percent and 0 percent in the large and small informal sectors respectively. Conversely, among the firms with productivity levels below 5 million CFA francs, only 13 percent are in the formal sector, while 7 percent are in the large informal and the remaining 80 percent are in the

⁶ Because most of our regressions are logistic, no simple formula is available to determine which error might occur on coefficients in the model, but a rough approximation can be obtained as proportional to $1/\sqrt{n}$ -- (the proportionality constant will depend on a number of factors), assuming that the sample is a simple random sample of the population (in reality, because we are using stratified sampling, errors will be somewhat less). This means that we can see how much improvement can be obtained by increasing the sample size to 400, 500, etc in the table below. Improvements to the precision of estimates increase quite slowly with sample size. This consideration plus the fact that a sample size of 300 is practically feasible led us to this choice of sample size.

small informal. If we consider a productivity level threshold of 50 million CFA francs, only 8 percent of all the firms surveyed in Senegal achieve a level of productivity above this benchmark, while this is the case for 23 percent, 20 percent, and 0 percent for the formal, large informal, and small informal sectors, respectively.

We were also interested in the magnitude of productivity gaps between the three subgroups of our sample (formal, large and small informal). As it turns out, productivity differential is actually relatively small between the formal and large informal sectors, whereas the gaps between either of those subgroups and the small informal are quite pronounced. For example, in Senegal, 22 percent of the firms in the formal sector and 21 percent of firms in the large informal sector achieve productivity levels superior to 50 million CFA francs, but no firms in the small informal sector do so. However, if one looks at higher productivity levels, the differences between the formal and large informal sectors are clearer. For example, in Senegal, 17 percent of formal sector firms have productivity levels which exceed 100 million CFA francs, as compared to only 10 percent of firms in the large informal sector.

Figure 5 : Firm distribution according to informality and level of productivity in Dakar, Ouaga and Cotonou

These productivity differences are robust to alternative indicators or correlates of informality. For example, firms which offer their employees social security coverage (i.e., mainly formal firms) have markedly higher productivity than those which do not offer such coverage. Thus, among firms with productivity levels below 5 million CFA francs, 76 percent offer no social insurance coverage for employees. Conversely, among firms that achieve a productivity level superior to CFA 300 millions, 75 percent have a social security coverage, while the remainder certainly belonging to the large informal⁷ does not have it. Access to bank credit is correlated with productivity although less so than other factors: among firms with productivity levels below 5 million CFA francs, 84 percent had not received bank credit within the past 5 years, while for firms with high productivity (between 100 and 300 million CFA francs) the rate drops to a still rather-high 62 percent (Figure 5). A firm's failure to keep systematic and accurate accounts is strongly associated with productivity levels: 46 percent of companies with low productivity levels (less than 5 million CFA francs) do not keep regularly updated accounts, as compared to 92 percent firms with higher productivity levels (100 million – 300 million CFA francs). The story is similar when we consider formal registration: 100 percent of firms with productivity levels exceeding 50 million CFA francs were registered, as opposed to 86 percent of firms with productivity levels below 50 million CFA francs (Figure 3).

To test the impact of informal status on productivity more fully, a simple OLS regression is used. The dependant variable is the log of labor productivity, which is regressed on a variety of sets of explanatory variables such as informality, the characteristics of corporate managers, the sectors in which the firms operate, as well as their perceptions of the business environment and the labor market. Using the stepwise backward procedure, we proceeded to eliminate certain variables in order to retain only the most significant. The results obtained with our baseline regression are presented in Table 1. Our results indicate that all variables are significant with the expected sign. Informality is here considered as a categorical variable

⁷ By definition, no small informal firm can achieve a level of turnover, and thus a level of productivity above this threshold.

which takes on the values 1, 2, and 3, respectively for the large informal, the formal, and the small informal sectors. The formal is considered here to be the reference variable and is dropped. The *form3* variable which represents the small informal has a negative coefficient which is significant at the 1 percent level, while the *form2* variable for the large informal sector has a positive coefficient significant at the 1 percent level. Other factors involved in determining labor productivity are capital intensity (positive and significant at 1 percent) and the firm's industry affiliation.

There are three potential problems, which could bias the results of our regressions:

- a) a careful examination of our data indicates that most variables are not normally distributed and many have highly skewed distributions;
- b) a non-linear specifications might yield superior results;
- c) while our descriptive statistics, along with the results obtained from our basic regression, indicate a negative correlation between informality and productivity, this does not indicate the direction of causation; bidirectional causality between these two variables could induce endogeneity bias.

To address questions a) and b), we used the CART method (Classification and Regression Trees), a non-parametric relational analysis method. Informal versus formal sector status emerges as the variable which best splits labor productivity observations into two distinct groups. This result is valid for all three cities (Cotonou, Dakar, and Ouagadougou), and unambiguously indicates the decisive connection between informality and firm productivity. Moreover, the CART analysis allocates the large informal and formal sectors together into one homogenous group, while the small informal is placed into a separate group. The gap in the average log productivity between the grouped formal and large informal sectors relative to the small informal is 2.09, 1.93, and 2.89 for Dakar, Cotonou, and Ouagadougou respectively.

In addition to informal sector classification, other factors also affect labor productivity according to the CART analysis, namely industry in which the firm operates, firm size, and capital intensity. These findings are quite consistent with the findings from our regressions and the descriptive statistics. However, there seemed to be strong correlations between certain explanatory variables, particularly industry and size. We therefore interacted these two variables in a second model, the results of which are presented in Table 2. This new specification improved the results while confirming the main findings. Capital intensity is still significant at 1 percent, with the expected positive sign. The coefficient on *form3*, which represents the small informal sector, remains significant at 1 percent with negative sign. Industry classification is also significant, most notably affiliation with trade and service sectors. The R-squared statistic also improved. In order to address whether or not the existence of a bidirectional relationship could cause residuals to be correlated with explanatory variables, most econometrics textbooks recommend the use of estimation with instrumental variables. However, we refrained from searching for appropriate instruments in view of recent research which casts doubt on the validity of instrumental variable procedures and their alleged superiority over OLS methods (Murray 2005, Larcker and Rusticus, 2005).

Conclusion

In this paper we have reported on research on the informal sector in West Africa, using survey data from Benin, Burkina Faso and Senegal. The sampling strategy we have used in this study differs significantly from those used in most other studies which are often based on a narrow definition of informality focusing on size as the major distinctive feature of informality. We

have instead relied on an approach to informality which combines a spectrum of criteria identifying informal firms. These survey data are used along with other qualitative data gathered from semi-structured interviews and secondary data from the national income accounts. One major novelty of our study is the inclusion of large informal firms which coexists with the more well-known small informal firms. Large informal operators often operate thanks to political connections and rely on bribery, corruption, and fraud in an environment where the business climate is adverse and state enforcement of regulations is very weak.

A particular focus of this study is the relationship between informality and productivity. Our results confirm the heterogeneity of the informal sector. Specifically, they confirm the importance of distinguishing between the large and the small informal firms in describing behavior and identifying obstacles in the investment climate. The productivity gap between formal and informal firms is found to be important for small informal businesses but much less so for large informal ones.

Policy recommendations differ for dealing with large and small informal enterprises. The informal sector is a symptom of institutional deficiencies, and the prevalence of large informal firms, in particular, reflects government failure to enforce regulations, as well as the burdensome nature of regulations and taxation that inhibit compliance. For these large informal firms for which formalization is feasible, regulations and taxation should be more systematically applied and enforced. For smaller informal firms, improvements in support services and easing of burdensome regulations are in order. Governments should systematically test regulations to make sure that social benefits outweigh enforcement and compliance costs.

Figure 1: Informality as a continuum : the six different levels of formality

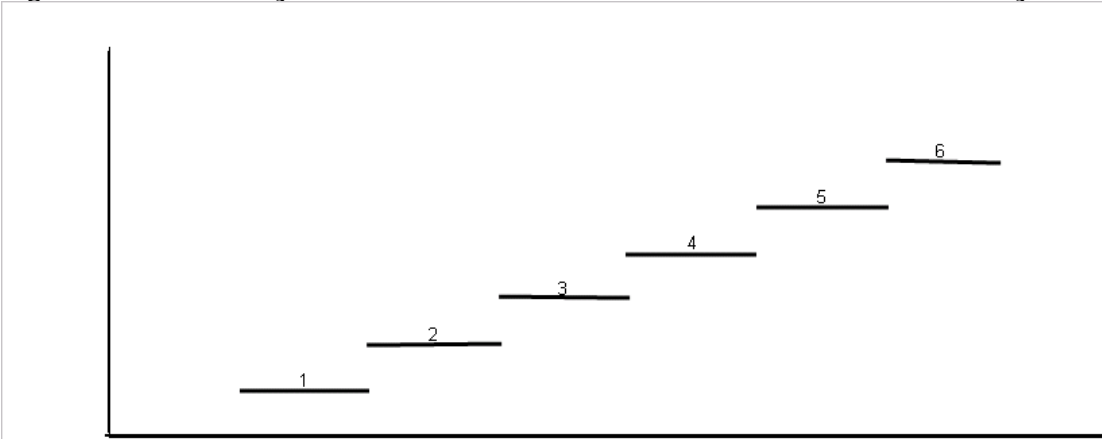


Figure 2 : Share of firms failing to meet various criteria of formality

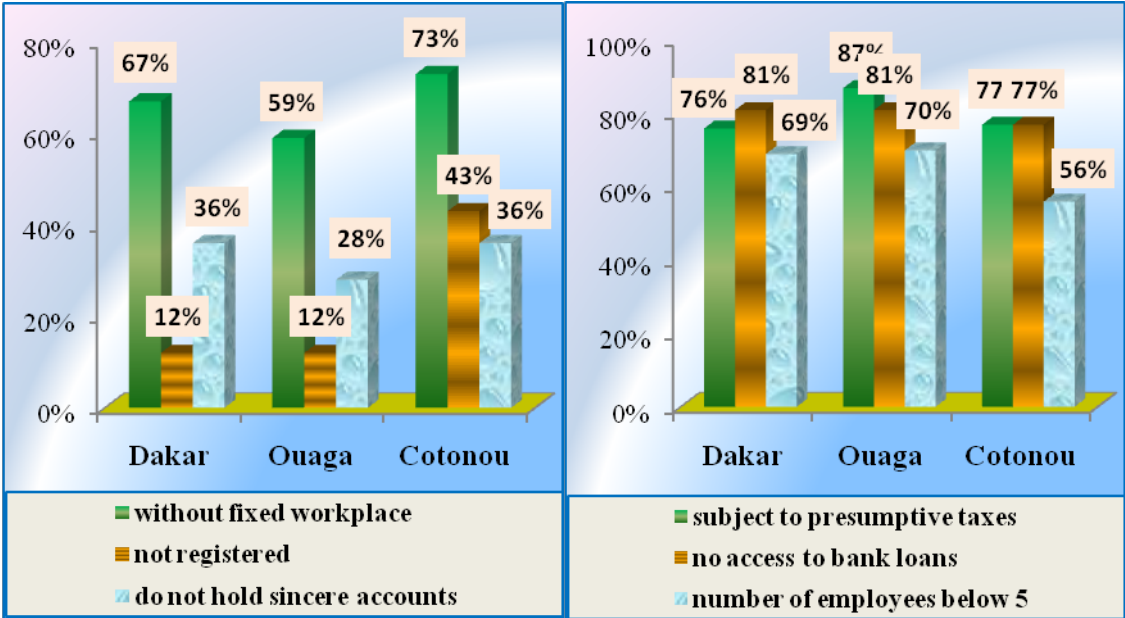


Figure 3: Proportion of firms under-reporting sales to the tax authority by industry: imports > total turnover

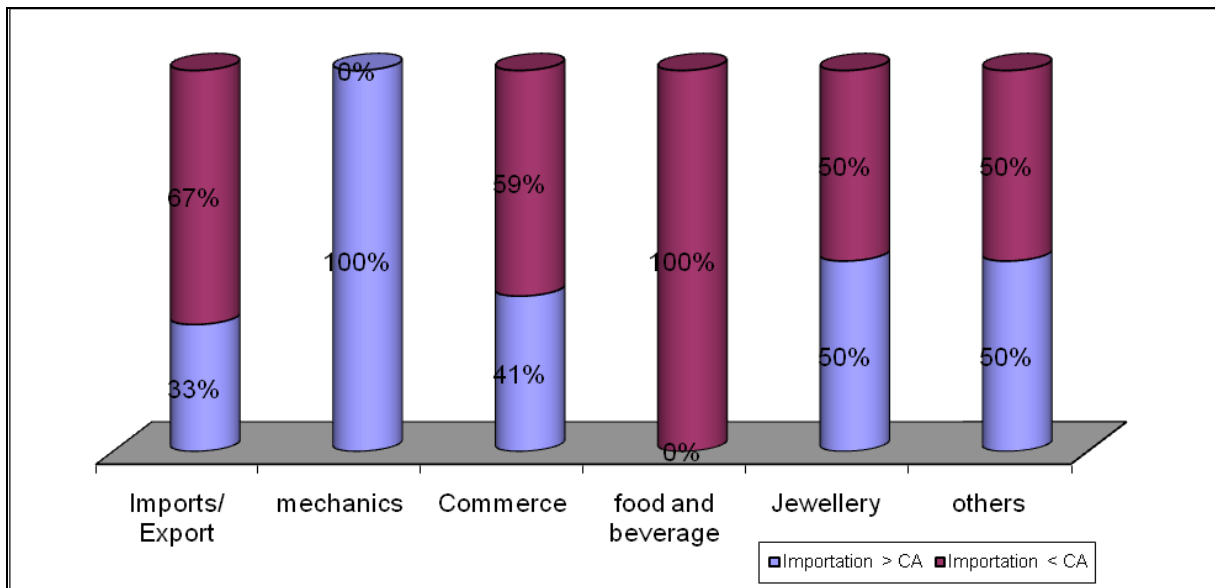
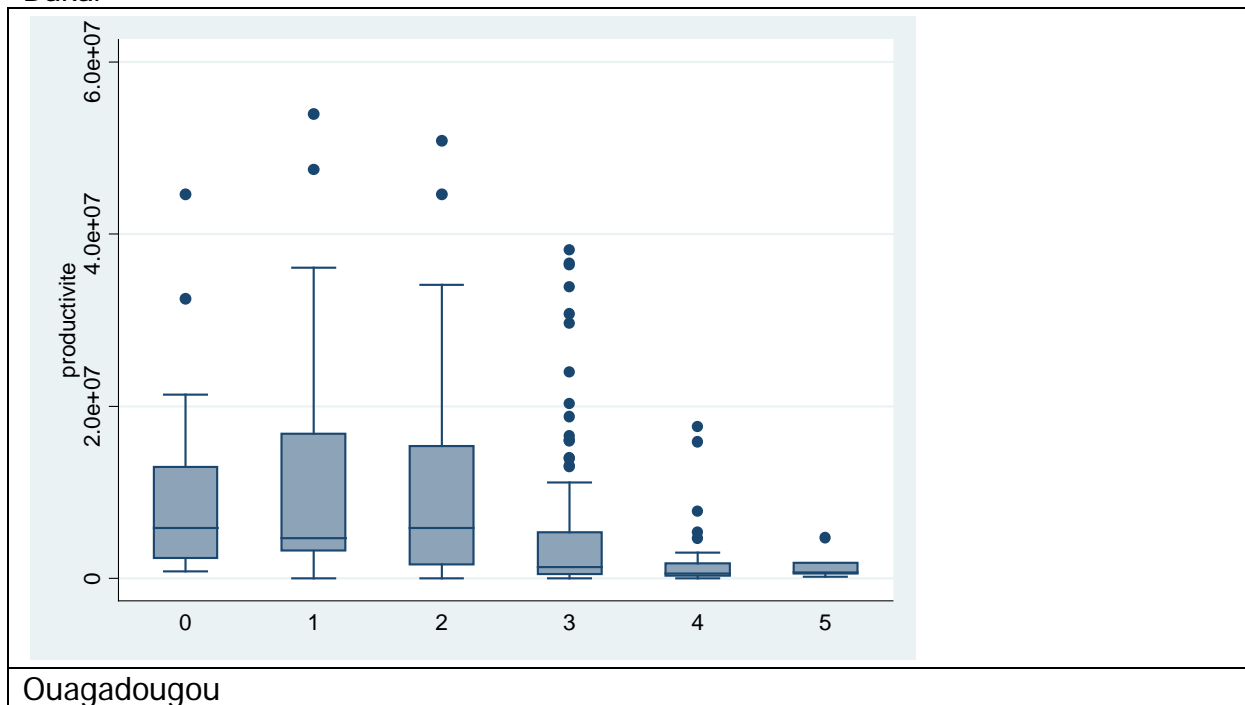


Figure 4 : Correlation between productivity and informality in Dakar and Ouagadougou



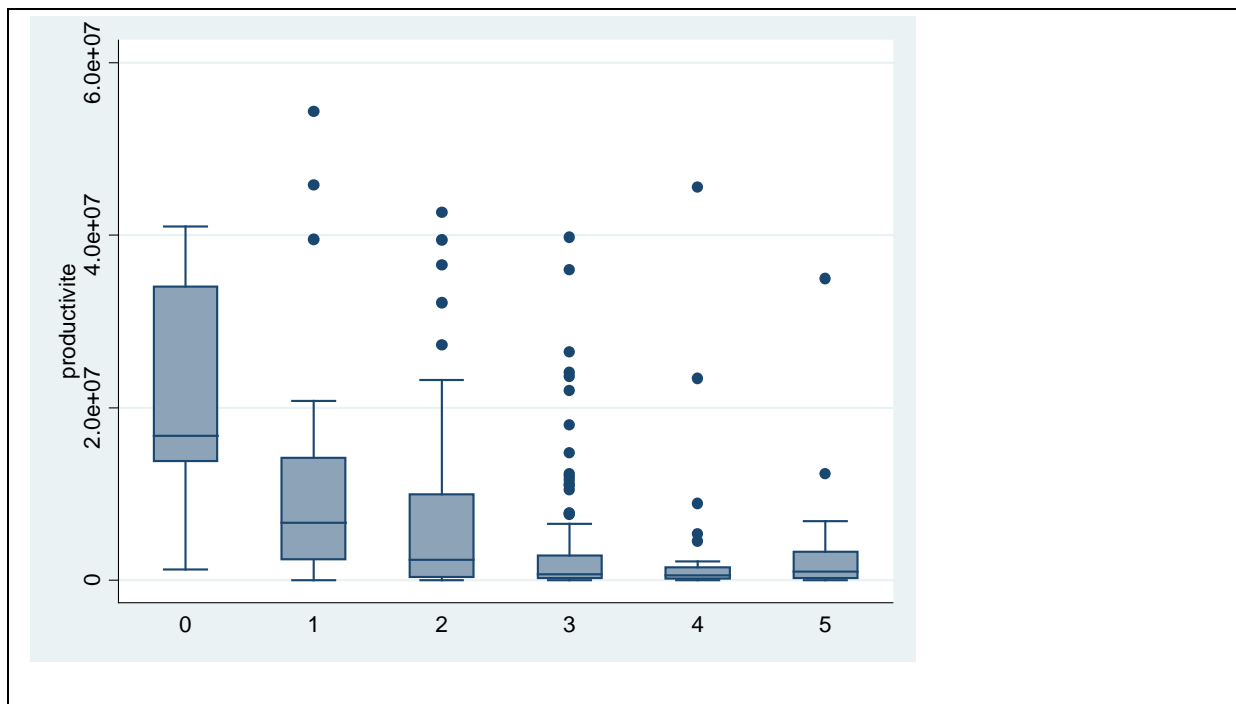


Figure 5: Firm distribution according to informality and level of productivity in Dakar, Ouagadougou and Cotonou

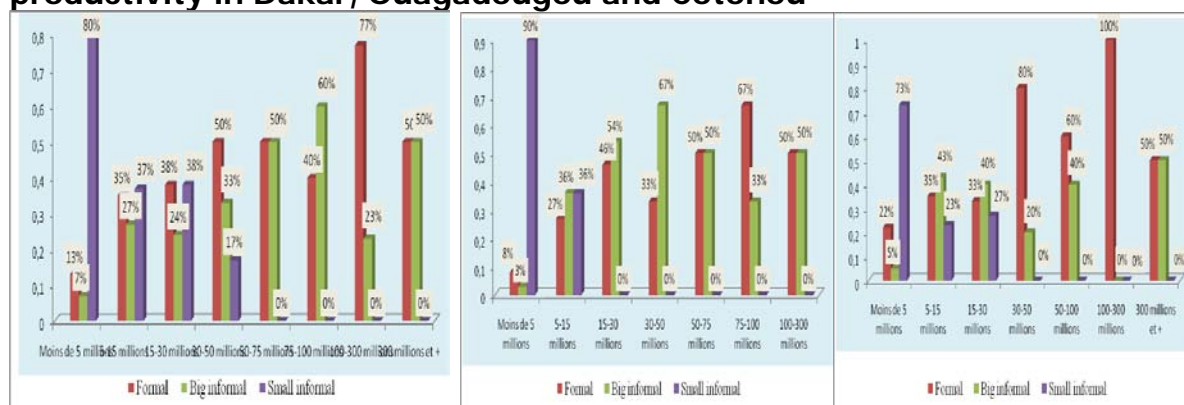


Table 1 : Estimation of productivity equation (lprod)

Lprod	Coef.	Std.Err.	t	P> t	[95% Conf.Interval]	
Capital labor ratio	0,096	0,027	3,550	0,000	0,043	0,149
services	0,463	0,218	2,130	0,034	0,035	0,891
trade	0,836	0,220	3,790	0,000	0,402	1,270
buildings	0,709	0,425	1,670	0,097	-0,128	1,546
Legal structure	0,606	0,340	1,780	0,076	-0,064	1,275
Small informal	-1,401	0,239	-5,860	0,000	-1,872	-0,930
Big informal	0,658	0,295	2,230	0,027	0,077	1,239
_cons	13,054	0,521	25,050	0,000	12,028	14,080

Number of obs = 286 ; F(7, 278) = 22,05 ; Prob > F = 0 ; R-squared = 0,36

Table 2 : Estimation of productivity equation making sector and formality status variables interact

Lprod	Coef.	Std.Err	T	P> t 	[95% Conf.Interval]	
Capital labor ratio	0,100	0,027	3,720	0,000	0,047	0,153
Small informal*financial services	2,362	1,401	1,690	0,093	-0,395	5,119
buildings	0,706	0,423	1,670	0,096	-0,126	1,538
Big informal*commerce	-1,298	0,594	-2,190	0,030	-2,468	-0,129
Small informal	-1,090	0,278	-3,920	0,000	-1,638	-0,543
Small informal*commerce	-1,056	0,471	-2,240	0,026	-1,984	-0,129
Big informal services	1,086	0,364	2,990	0,003	0,371	1,802
Legal structure	0,499	0,216	2,310	0,022	0,073	0,925
commerce	0,761	0,342	2,220	0,027	0,087	1,434
_cons	1,788	0,440	4,070	0,000	0,922	2,654
	12,694	0,530	23,930	0,000	11,650	13,738

Number of obs = 286 ; F(10, 275) = 16,67 ; Prob > F = 0; R-squared = 0,38

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