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Rafael La Porta
Andrei Shleifer

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ABSTRACT

We establish five facts about the informal economy in developing countries. First, it is huge, reaching about half of the total in the poorest countries. Second, it has extremely low productivity compared to the formal economy: informal firms are typically small, inefficient, and run by poorly educated entrepreneurs. Third, although avoidance of taxes and regulations is an important reason for informality, the productivity of informal firms is too low for them to thrive in the formal sector. Lowering registration costs neither brings many informal firms into the formal sector, nor unleashes economic growth. Fourth, the informal economy is largely disconnected from the formal economy. Informal firms rarely transition to formality, and continue their existence, often for years or even decades, without much growth or improvement. Fifth, as countries grow and develop, the informal economy eventually shrinks, and the formal economy comes to dominate economic life. These five facts are most consistent with dual models of informality and economic development.

Rafael La Porta
Dartmouth College
Tuck School
210 Tuck Hall
Hanover, NH 03755
and NBER
rafael.laporta@dartmouth.edu

Andrei Shleifer
Department of Economics
Harvard University
Littauer Center M-9
Cambridge, MA 02138
and NBER
ashleifer@harvard.edu

An online appendix is available at:
http://www.nber.org/data-appendix/w20205

In developing countries, informal firms account for up to half of economic activity. They provide livelihood for billions of people. Yet their role in economic development remains controversial.

Some, like Hernando De Soto (1989, 2000), see informal firms as an untapped reservoir of entrepreneurial energy, held back by government regulations. In this view, unleashing this energy by reducing entry regulations or improving property rights would fuel growth and development. Others, like Levy (2008), take a more cynical view, stressing the advantages enjoyed by informal firms and workers from avoiding taxes and regulations. A report from the McKinsey Global Institute describes informal firms as parasites competing unfairly with law-abiding formal firms (Farrell 2004). In this view, informality should be suppressed, not unleashed. Still others follow the development tradition of Lewis (1954), Harris-Todaro (1970) and more recently Rauch (1991) and see informality as a byproduct of poverty. From this dual perspective, formal and informal firms are fundamentally different. Productive formal entrepreneurs pay taxes and bear the cost of government regulation to reach new customers, raise capital, and access public goods. These entrepreneurs are often educated, and find it more profitable to run bigger formal firms, rather than the smaller informal ones. In contrast, informal entrepreneurs are typically uneducated and unproductive, and they run small businesses producing low-quality products for low-income customers using little capital and adding little value. Informal firms do not threaten formal firms, and the increase in firm value that the informal entrepreneurs or managers could realize by operating formally is too small to offset the additional costs from taxes and regulations. In this dual view, development comes from formal firms, and their expansion as the economy modernizes eventually dooms the informal economy.

In this paper, we assess these perspectives. To begin, we establish five critical facts about the informal economy. First, it is huge, especially in developing countries. Second, it has extremely low productivity compared to the formal economy: informal firms are typically small, inefficient, and run by

poorly educated entrepreneurs. Third, although avoidance of taxes and regulations is an important reason for informality, the productivity of informal firms is too low for them to thrive in the formal sector. Lowering registration costs neither brings many informal firms into the formal sector, nor unleashes economic growth. Fourth, the informal economy is largely disconnected from the formal economy. Informal firms rarely transition to formality, and continue their existence, often for years or even decades, without much growth or improvement. Fifth, as countries grow and develop, the informal economy eventually shrinks, and the formal economy comes to dominate economic life.

We argue that the evidence is most consistent with dual models of informality. We first review these models, and stress the supply and demand factors that keep informal and formal economies separate. We then address the critical question of how the informal economy shrinks. In dual models, economic growth comes from the formal sector: that is, from firms run by educated entrepreneurs and exhibiting much higher levels of productivity. The expansion of the formal sector leads to the decline of the informal sector in relative and eventually absolute terms, although informal employment can remain high for a long time, especially when labor force growth is high. A few informal firms convert to formality, but more generally they disappear because they cannot compete with the much more productive formal firms. Our evidence is not particularly supportive of either De Soto's romantic view of informality as pent-up source of potential, nor of the McKinsey view that informality is a parasitic organizational form that hinders economic growth. The dual view of informality seems most consistent with the data.

Five Facts about Informality

The Informal Economy is Huge

Measuring the informal economy is inherently difficult. Much of informality is in farming, including both subsistence agriculture and informal sales of marketable crops. A large part, at least in terms of employment, also comes from self-employed sellers and peddlers living at near-subsistence levels (Banerjee and Duflo 2011). Yet even if we look at the more substantial businesses that employ workers, such as repair shops, furniture or metal-working factories, or transport firms, many forms of informality are apparent. At one extreme, some firms literally do not exist in the eyes of the authorities: they do not register or comply with regulations, they make sales and pay for inputs including labor in cash, they do not have bank accounts, they do not pay taxes. At another extreme, as occurred in transition economies (Johnson, Kauffman, and Shleifer 1997), registered firms hide some of their sales from authorities to reduce profit taxes, but still higher formal employees and comply with many regulations. And there is everything in between, such as firms that obtain operating permits but do not pay social security taxes.

With these ambiguities in mind, several methods have been used to assess the size of the informal economy: surveys of experts about their countries, such as those conducted by the Global Competitiveness Report; surveys of entrepreneurs about their own activities, like those conducted by the World Bank Enterprise Surveys; census counts of people reporting that they are self-employed, which is typically a good proxy for informality; and even measures inferred aggregate electricity consumption (on the plausible assumption that informal firms must also use electricity).

Table 1 presents various measures of the size of the informal sector, with 185 countries grouped by the quartile of per capita income. Fortunately, the very different measures of informality all paint a very consistent picture. Depending on the indicator, the informal sector accounts for 30-40 percent of total economic activity in the poorest countries, and a higher share of employment. This falls to something closer to 15 or 20 percent in the richest quartile countries. The last column of Table 1 offers

another perspective: the poorest countries average about 3 registered firms per 1,000 people; in the richest quartile countries, this number rises to 42 per 1,000 people. Especially in the poor countries, the informal sector in huge, accounting for a giant share of output and employment.

Informal Firms are Small, Unproductive, and Stagnant

For two decades, the World Bank Enterprise Surveys surveyed entrepreneurs and managers in both formal and informal firms, collecting data on their sales and inputs, employee and manager education, as well as a variety of assessments of the institutional environment. These data provide considerable evidence on the determinants of productivity of firms in developing countries, including their management. World Bank surveys deal with actual businesses such as furniture producers or shoe factories; they do not cover the proverbial sellers of flowers and vegetables, who are also informal but have even lower productivity.

La Porta and Shleifer (2008) conduct an extensive analysis of size and productivity of formal and informal firms using data from poor countries where World Bank surveyed both formal and informal businesses. Several findings stand out (see Online Appendix for a summary Table). First, informal firms – even the real businesses surveyed by the World Bank – are much smaller than formal firms. An average formal firm employs 126 people, while an average informal firm employs only 4. Informal firms are also much less productive, with productivity calculated as value added (sales net of expenditures on raw materials and energy) per employee. As Figure 1 shows, averaging across all the surveys, informal firms add only 20 percent the value per employee of formal firms. The ratio of value added by informal firms to that by formal firms ranges from 1 percent in Congo to 70 percent in Cape Verde. La Porta and Shleifer (2008) present some evidence indicating that these productivity differences reflect reality, not just underreporting of sales to interviewers by informal firms.

There are two other ways to see the extreme inefficiency of the informal sector. First, although productivity increases with size within the formal sector (see also Hsieh and Olken 2014), Figure 2 shows a sharp productivity difference between informal firms and formal firms of the same size. Inefficiency of the informal sector is not just the matter of small size. Second, La Porta and Shleifer (2008) also find that, averaging across countries, wages in informal firms are roughly one-half of those in small formal firms, and less than one-third of those in large formal firms, another indication of low productivity. Many informal entrepreneurs would gladly close their businesses to work as employees in the formal sector if offered the chance, even if wages in the formal sector are taxed while income in the informal sector is not. Few of them have this opportunity.

The low value added per employee in the informal sector reflects the extremely low quality of products produced by informal firms. Although quality is difficult to measure, our visits to furniture and metal-working factories in Kenya and Madagascar revealed extreme crudeness of the products being made, usually with fairly basic tools, even when the raw material (as in the case of furniture) was hardwood. Informal factories appear to sell extremely low quality goods for low prices to low income customers. Informal entrepreneurs in Africa fear formal competition; they repeatedly expressed their fear of competition from Chinese imports. They are far from threatening to formal firms.

La Porta and Shleifer (2008) explore the sources of productivity differences between formal and informal firms. One interesting finding is that differences in the human capital of workers are small, at least as measured by education. The data on formal and informal firms contains no direct measures of capital, although formal firms are much more likely to have their own electricity generators. One of the most striking differences between formal and informal firms is in the human capital of their managers. Figure 3 presents World Bank survey data on the fraction of informal and formal firms run by college-educated managers. Consistent with the dual view, only 7 percent of the managers of informal firms

have a college degree, while this number is 76 percent for the formal firms. In production function estimates, managerial human capital emerges as a quantitatively large and statistically significant determinant of productivity.

Gennaioli et al (2013) report closely related findings for formal firms around the world. They document enormous productivity gaps between firms run by educated versus uneducated managers and entrepreneurs. Production function estimates imply nearly 30 percent returns per extra year of education of managers, even though estimated returns to an additional year of worker education are in the standard range of 6-7 percent. The message that emerges consistently from this work is that informal firms are hugely unproductive, and a principal reason is the low level of human capital of the people who run them.

The low productivity of informal firms is reflected in their growth rates as well. La Porta and Shleifer (2008) report sharply lower employment growth rates for informal than for formal firms (5 percent vs. 10 percent per year). Indeed, an average informal firm in World Bank Enterprise Surveys had been around for nearly a decade; and has continued its existence with only modest growth even during a period of rapid growth of formal firms. In a similar vein, de Mel et al. (2008) find that roughly 70 percent of own-account workers in Sri Lanka have backgrounds, abilities, and attitudes more similar to those of wage workers than those of owners of firms and that they rarely expand by adding paid employees (see also Ardagna and Lusardi 2008). These findings line up with the evidence from the US economy: most US small businesses have little desire to grow big or to innovate in any observable way (Hurst and Pugsley 2011).

Regulation is Not What Keeps Informal Firms down

Why don't informal firms become formal? De Soto (1989) has famously argued that informal firms would like to become formal, but are held back by corruption and government regulation. World Bank Enterprise Surveys of informal entrepreneurs allow a direct assessment of this view. Table 2 compares perceived obstacles to doing business reported by informal and formal entrepreneurs. By far the greatest perceived obstacle by both types of firms is lack of access to finance, although informal firms perceive this as a much greater problem. The link between access to finance and registration may not be causal, however. For example, some of the informal firms we visited maintained several months of (extremely slow selling) inventory without realizing that it is a form of capital. Their owners simultaneously complained that they did not have financing to buy tools. Similarly, banks may only lend to skilled entrepreneurs or want to see some form of control system (like accounting books) that informal entrepreneurs often lack. In these ways, lack of human capital might be at the heart of the perceived inaccessibility of finance.

Next to perceived financing problems, government regulations are distant concerns. Fewer than 10 percent of either formal or informal firms worry about corruption, business licensing and permits, or the legal system. Lack of access to land is a bigger problem for informal firms, in part because a large fraction of them occupy their premises illegally and fear eviction. It is difficult to read this evidence as pointing to the institutional environment as the central obstacle to doing business for informal firms.

World Bank surveys for a more limited group of 10 countries, mainly in Africa, also offer more direct evidence on how respondents from the informal sector perceive the potential benefits from registering their firms.[1] Three-quarters of respondents from the informal sector in these surveys mention "better access to financing" as a gain, and one-quarter mention "better access to raw

[1] The 10 countries are Angola (2010), Burkina Faso (2009), Botswana (2010), Cameroon (2009), Congo, Dem. Rep. (2010), Capo Verde (2009), Mauritius (2009), Mali (2010), and Nepal (2010). For country-by-country survey responses, see the on-line appendix available with this article at http://e-jep.org.

materials." In contrast, "better access to markets" and "fewer bribes" are only mentioned by 14 percent of respondents, and potential gains like "better opportunities with formal firms," "more access to government programs," "better legal foundations on the property," and "better access to infrastructure" are only mentioned by fewer than 10 percent of respondents. This evidence does not mean that the institutional environment that informal firms face is good – on the contrary, such firms face terrible problems of corruption, police abuse, and crime. In some countries, informal entrepreneurs report that up to 3 percent of their sales are stolen. Rather, the evidence suggests that informal firms do not see that formality will address these problems: they will face corrupt and abusive policemen, inspectors, and other officials anyhow. In the meantime, informal firms report that "other firms like their" evade about 75 percent of taxes. Evading taxes is too attractive to be offset by the meager benefits of formality that the informal entrepreneurs would realize.

Informal Firms Rarely Become Formal

Informal firms almost never become formal. La Porta and Shleifer (2008) report that on average 91 percent of registered firms started out as registered. An average surveyed informal firm has been in business for nearly a decade, without attempting to become formal. Also consistent with this observation, only 2 percent of informal firms sell their output to large firms (vs. 14 percent of firms in the Enterprise Survey). Informal firms inhabit an economic space of their own, disconnected from the formal space.

In the last decade or so, processes for registering a business have been simplified in many countries around the world, and data on these changes has become available. This push began with De Soto's (1989) emphasis on the costs of registration, which in turn encouraged systematic data collection of entry costs around the world by Djankov et al. (2002). Their approach was in turn adopted by the

World Bank in its Doing Business report, which since 2003 published a variety of measures of business regulation, including the regulation of entry, and country rankings. The Doing Business website reports 378 policy actions aimed at lowering the cost of registration in 160 countries. These policy reforms have generated a wealth of data on the effect of registration costs on the decision to register and—to a lesser degree—on the impact of formality on productivity.

The most compelling evidence comes from two field experiments. The first was carried out in Belo Horizonte, a city in the Brazilian state of Minas Gerais, to test which government actions induce informal firms to register.[2] Firms were randomly assigned to a control group or one of four treatment groups: the first received information about how to formalize; the second received this information and free registration costs along with the use of an accountant for a year; the third group was assigned to receive an enforcement visit from a municipal inspector; while the fourth group was assigned to have a neighboring firm receive an enforcement visit to see if enforcement has spillovers. De Andrade et al. (2013) report that the likelihood of registering increases by 21 to 27 percentage points if the firm receives an actual inspection, but it is unaffected by the other three interventions. Apparently, most informal firms do not formalize unless forced to do so.

The second field experiment was carried out in Sri Lanka. De Mel et al. (2013) report that information about the registration process and even actual reimbursement of direct costs of registration had no effect on formality. In contrast, around one-fifth of eligible firms registered when offered payments equivalent to one-half to one month of the median firm's profits, and one-half of eligible firms registered when offered payments equivalent to two months of the median firm's profits. Firms were

[2] The background of the field experiment is of independent interest. The process of simplifying the process of business registration started in 1996 with the SIMPLES program, which consolidated multiple tax payments and contributions into single payment, lowering the tax burden on small firms. It was followed by the Minas Facil program in the state of Minas Gerais in 2005 to reduce number of procedures and time to start a business. Despite these efforts, survey data from 2009 reveal that 72 percent of firms in Minas Gerais remained informal.

tracked over the 15, 22, and 31 months after the intervention. Firms that formalized had higher profits, but this effect was largely due to a few firms that experienced substantial growth. Jaramillo (2009) reports similarly small effects of easier registration from an experiment in Lima, Peru, the city whose informal sector De Soto has celebrated.

The evidence from changes in registration costs is one lens on informality. Another lens is the evidence on the effects of micro-credit, which shows that such credit helps informal entrepreneurs a bit, but almost never jump-starts significant growth or transforms them into formal businesses (Karlan and Zinman 2011). Still another lens comes from the emerging image of slums as domains of permanent informality rather than hubs of transition between agriculture and the formal sector (Marx et al. 2013). These studies suggest that informal firms start out and live out their lives informal, they avoid taxes and regulations, they do not trade with the formal sector. It is difficult to lure them into becoming formal, even with subsidies. Far from being reservoirs of entrepreneurial energy, they are swamps of backwardness. They allow their owners and employees to survive, but not much more.

As Countries Develop, Informality Becomes Less Important

Important as the informal economy is in low-income countries, it becomes much less significant in high-income ones. Table 1 shows that the estimates of the size of the informal economy decline with per capita income. Figure 4 illustrates this point more clearly by showing a strong negative correlation between per capita income and the share of economic activity that is informal as measured by the share of self-employment in total employment. Very similar results obtain with the other indicators from Table 1. As an economy develops, informality shrinks.

The Dual View of Informality

We have focused on perhaps the most basic facts about the informal economy. It is extremely large in the poorest countries, but it eventually shrinks as countries develop. It exhibits very low productivity. Informal firms rarely transition to formality, even when encouraged or subsidized to do so; rather they carry on without much growth for long periods of time. They are run by uneducated entrepreneurs. Government policies are definitely a hindrance for informal firms, but they are a hindrance to formal firms as well. Bad government is not the main competitive problem of informal firms: their main problem is that they add so little value.

The evidence we have presented does not support De Soto's romantic view of informal firms as reservoirs of productive entrepreneurial energy; most of these firms are too inefficient to survive in the formal sector, and do not join it even when barriers to entry are eliminated. Nor is the evidence consistent with McKinsey Global Institute's fear of informal firms; they mostly do not appear to pose much of a competitive threat. The evidence appears most consistent with Lewis's dual view of informality, which sees the formal and informal economies as largely segregated, producing different products with different labor, capital and entrepreneurial inputs, and serving different customers.

What we call the dual view encompasses several ideas and formal theories. They all shed light on the separation of the formal and informal economies, and the slow movement of activity into the formal sector. To put the issue most directly, if regulation is not to blame, why don't we see more informal entrepreneurs restarting their businesses formally? For instance, why don't informal furniture producers buy capital and start modern factories? Why don't street peddlers open modern stores? Alternatively, if formal firms are so efficient, why don't they capture the whole market straight away, and drive out the informal firms? In all these cases, the transition to formality should be rapid.

Of course, the most obvious answer to all these questions is that formal firms have to pay taxes and comply with regulations, so they have a huge cost disadvantage relative to the informal firms. Joining the formal sector would raise the costs of informal firms significantly. The wedge between formal and informal labor costs is the major ingredient of all theories of dualism. But taxes and regulations are only part of the story. Other economics forces – on both the demand and the supply side – keep the two sectors separate.

The first force goes back to the original theories of dualism, and focuses on demand as a constraint on transition to modern production technologies. Modernizing entrepreneurs need to generate sufficient sales to cover the fixed costs of investment. When the economy is poor, the demand for modern products may not suffice to cover these fixed costs. The problem is particularly severe in economies with significant levels of poverty and inequality, where the vast majority of the population buys almost no modern manufactured goods. In such economies, the informal sector delivers low quality goods cheaply to people who are themselves informal workers, and who cannot afford the output of the higher quality but more expensive formal sector. In contrast, the formal sector remains small and offers high quality goods to a minority of formal workers. These ideas about demand constraints gave rise to the so-called Big Push theory, in which the simultaneous modernization of multiple sectors of the economy generates sufficient demand for the products of the modern sector from its own employees to actually make the transition to formality profitable (see, e.g., Murphy, Shleifer, and Vishny 1989a, b). Formal workers making quality shoes in formal leather factories buy quality chairs made by formal workers employed by formal furniture makers, and vice versa.

The demand-based theories of dualism make an important prediction. Specifically, they suggest that population growth may slow down the decline of the informal sector. To the extent that the formal sector is capital intensive, and the informal sector is labor intensive, population growth, particularly if

concentrated among the poor, would keep up both the demand for informal goods, and the supply of informal workers. Even if labor flows toward the formal sector, with high population growth it would not flow fast enough to kill informality. We return to this prediction in the empirical analysis below.

In our recent work we have emphasized another input that might slow down the transition to formality, namely entrepreneurial and management skills. As we have already discussed, the evidence in World Bank surveys, as well as in other data, shows that managerial inputs are extremely important for productivity, and that the managers of informal firms are considerably less educated than the managers of formal firms (La Porta and Shleifer 2008, Gennaioli et al. 2013). The evidence demolishes the idea that managers of informal firms can just start larger formal firms and operate them well enough to survive in the formal sector: they would not know how. Shortage of educated entrepreneurs might be the most important constraint on transition to formality, much more important than lack of demand.

Although the dual view does not see government policies as fundamental to shaping the size of the informal sector, they may well play a contributing role to separating the formal and informal economies. As argued by Johnson, Kauffman, and Shleifer (1997), tax avoidance by informal firms undermines government tax collection, and therefore the provision of public goods, which makes joining the formal sector to access the public goods less attractive. Levy's (2008) concern with the fiscal costs of informality and distortions arising from differential tax treatment of formal and informal sectors also point to the high costs of formality relative to benefits, which keep the informal sector large.

The dual view explains how the informal economy shrinks as the formal economy grows. Indeed, the decline of informality is the product of replacement of inefficient informal firms by efficient formal ones in the process of economic development. The available evidence both from the cross-section and from country examples strongly supports this perspective on the decline of informality, and indeed suggests that both demand and supply factors play a role in this process.

Figure 5 presents graphically the results of the following regression run at annual frequency (with country fixed effects "δ") for a panel of 68 countries during the period 1990-2012:

$$\Delta(\text{self employment}) = \alpha + \beta.\ln\left(GDP\ pc_t/GDP\ pc_{t-1}\right) + \gamma.\ln\left(labor\ force_t/labor\ force_{t-1}\right) + \delta_i + \varepsilon$$

That is, we regress the change in the percent of labor force in self-employment, a reliable and widely available measure of informality, on change in log GDP per capita and change in log labor force. We run this regression in first differences to alleviate the concern that the strong negative correlation between self-employment and GDP per capita illustrated by Figure 4 is driven by omitted variables.

The left panel of Figure 5 shows that faster economic growth is associated with a more rapid decline in self-employment. Doubling GDP per capita is associated with a reduction in self-employment of 4.95 percentage points (the mean of self-employment is 26 percent and its standard deviation is 16 percent). This estimate says that a low-income country that starts with 50 percent self-employment, and then grows consistently at 7 percent per year so that per capita income doubles every 10 years, will see its self-employment fall to the high-income countries' level of 20 percent after 60 years – a remarkably slow transition to formality. The right panel of figure 5 shows that faster labor force growth is associated with a slower decline in self-employment, consistent with theoretical prediction. Doubling labor force growth is associated with a reduction in self-employment of 7.38 percentage points. This means that self-employment in the low income country of the previous example would converge to the high-income countries' level in 105 years if its labor force grows consistently at a 2% rate while GDP per capita grows at 7%. In sum, the transition to formality is driven by economic growth, but is very slow, and even slower when labor force growth is fast.

A comparison of three rapidly growing countries, Korea, Chile, and Peru, illustrates the significance of labor force growth. For Korea, per capita income rose 2.5-fold between 1990 and 2012.

During this period, the share of labor force classified as employees rose from 60 to 72 percent, and the share of self-employed fell from 40 to 28 percent. Korea's labor force during this period grew by only 34 percent in total, so the growth of formal employment share comes largely from an increase in formal employees and an actual decline in the number of self-employed. During the same period, GDP per capita rose 2.3-fold in Chile, but its labor force grew almost 70 percent from 5.0 million to 8.5 million. We do not see the same kind of reallocation of labor between formal and informal sectors. Indeed, the formal share of employment in Chile has increased only slightly even though, during this period, formal employment increased from fewer than 4 million to nearly 6 million persons.

These conflicting forces are illustrated most dramatically by the case of Peru, the birthplace of De Soto's (1998) enthusiasm for the potential of the informal sector. During the period 1990-2012 the Peruvian economy has grown nearly as fast as Korea's (2.1-fold) thanks to aggressive liberalization policies and the defeat of Maoist guerillas. Yet the Peruvian labor force grew almost as fast as its per capita income, and much of the labor absorption was done by the informal sector. As a consequence, despite the tremendous economic growth, over this period the share of formal employment in Peru has declined, and that of informal employment has increased, even though the level of total formal employment rose from 5 to 8 million people. Figure 6 uses Peruvian household survey data to graph annual GDP per capita, annual income of formal employees, and annual income of the self-employed. For the period of 1990-2010 Figure 6 shows rapid economic growth during this period, but also rapid increases in formal sector wages. In a striking contrast, incomes of the self-employed did not rise over this period. Economic growth was driven by the formal sector; the informal sector stagnated.

What about the supply side? Does scarcity of human capital indeed slow down transition to a formal economy? Table 3 presents some evidence on this hypothesis. It uses sub-national data for 1,090 regions in 71 countries to examine firm formation and employment composition within countries

as a function of each region's level of education. Table 3 shows that, within countries, the more educated regions have more formal establishments per capita, more formal employees both relative to population and relative to the number of establishments (that is, larger firms), and more formal employees employed in large firms relative to population. Looking across regions within a country (so at least national institutions are held constant), transition to a formal economy appears to be driven by human capital, consistent with the supply-side theories of dualism we discussed.

The bottom line of this evidence seems straightforward. Economic growth comes from the formal sector which absorbs labor in part from the informal sector, but mostly from the new generations of workers. As economies grow, productivity and income in the informal sector stagnate. Labor force growth slows down the absorption of labor in the formal sector, but eventually this process does take place. The supply of human capital, in contrast, speeds up the creation of formal firms. Some survey evidence on Peruvian slums collected and provided to us by Nathan Nadramija shows that it is mostly the children of the informal sector workers, rather than these workers themselves, who become educated and join the modern economy. As they do, the share of informal economy declines because the unproductive informal firms cannot survive in the modern economy.

Conclusion

The evidence we have presented is broadly consistent with the dual view of informality: informal firms stay permanently informal, they hire informal workers for cash, buy their inputs for cash, and sell their products for cash, they are extremely unproductive, and they are unlikely to benefit much from becoming formal. This approach generates the strong prediction that the cure for informality is economic growth. The evidence strongly supports this prediction: informality declines, although slowly, with development.

This approach suggests that structural policies designed to promote formality should be introduced with caution. Their wisdom depends, in part on whether they encourage formalization, or discourage informal activity. Thus simplification of registration advocated by De Soto (1989) is probably a good idea, even though the evidence suggests that it is unlikely to have large benefits. On the other hand, we are skeptical of all policies that might tax or regulate informal firms. Rather than encourage informal firms to become formal, such policies may have the effect of driving them out of business, leading to poverty and destitution of informal workers and entrepreneurs. The recognition of the fundamental fact that informal firms are extremely inefficient recommends extreme caution with policies that impose on them any kind of additional costs.

There is accumulating evidence that growth that kills the informal sector is driven by the formation and expansion of formal firms managed by educated entrepreneurs. Uneducated entrepreneurs – in both informal and formal sectors – generally run small and inefficient firms; educated entrepreneurs and managers run larger and more efficient firms. This is the dark side of dualism: informal economies are so large in poor countries because their entrepreneurs are so unproductive.

The evidence suggests that an important bottleneck to economic growth is not the supply of better educated workers; indeed, at least on many observable characteristics the workers are rather similar in informal and formal firms. Rather, the bottleneck is the supply of educated entrepreneurs – people who can run productive businesses. These entrepreneurs create and expand modern businesses with which informal firms, despite all their benefits of avoiding taxes and regulations, simply cannot compete. This is how the informal economy dies out in the process of development. From this perspective, the policy message for how to grow the formal economy and shrink the informal one is to increase —whether through immigration or education and training— the supply of educated entrepreneurs.

References

Ardagna, Silvia, and Annamaria Lusardi. 2008. "Explaining International Differences in Entrepreneurship: The Role of Individual Characteristics and Regulatory Constraints." In *International Differences in Entrepreneurship*, ed. Josh Lerner and Antoinette Schoar. Chicago: University of Chicago Press**.**

Banerjee, Abhijit and Esther Duflo. 2011. *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty.* New York, Perseus Books, Public Affairs.

de Andrade, Gustavo Henrique, Miriam Bruhn, and David McKenzie. 2013. "A helping hand or the long arm of the law? Experimental evidence on what governments can do to formalize firms." World Bank Policy Research Working Paper 6435.

de Mel, Suresh, David McKenzie, Christopher Woodruff. 2008. "Who are the microenterprise owners? Evidence from Sri Lanka on Tokman v. de Soto." The World Bank, Policy Research Working Paper Series: 4635.

de Mel, Suresh, David McKenzie, and Christopher Woodruff. 2013. "The Demand for, and Consequences of Formalization among Informal Firms in Sri Lanka." *American Economic Journal: Applied Economics* 5(2): 122-150.

De Soto, Hernando. 1989. *The Other Path: The Invisible Revolution in the Third World*. New York: Harper and Row.

De Soto, Hernando. 2000. *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York: Basic Books.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer. 2002. "The Regulation of Entry." *Quarterly Journal of Economics* 117, no. 1: 1–37.

Farrell, Diana. 2004. "The Hidden Dangers of the Informal Economy." *McKinsey Quarterly* 3: 27-37.

Gennaioli, Nicola, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer. 2013. "Human Capital and Regional Development." *Quarterly Journal of Economics* 128:1: 105-164.

Harris, J. and Michael Todaro. 1970. "Migration, Unemployment, and Development: A Two Sector Analysis." *American Economic Review* 40: 126-142.

Hsieh, Chang-Tai and Benjamin Olken. 2014. "The Missing "Missing Middle."" *Journal of Economic Perspectives*, this issue.

Hurst, Erik, and Benjamin Pugsley. 2011. "What Do Small Businesses Do?" *Brookings Papers on Economic Activity* Fall: 73-118.

Jaramillo, Miguel**.** 2009. "Is There Demand for Formality among Informal Firms? Evidence from Microfirms in Downtown Lima." German Development Institute Discussion Paper 12/2009.

Johnson, Simon, Kaufmann, Daniel and Shleifer, Andrei. 1997. "The Unofficial Economy in Transition,"

Brookings Papers on Economic Activity, Fall 1997, Washington, D.C.

Karlan, Dean, and Jonathan Zinman. 2011. "Microcredit in Theory and Practice: Using Randomized Credit Scoring for Impact Evaluation." *Science* 332 (6035): 1278-1284.

La Porta, Rafael, and Andrei Shleifer. 2008. "The Unofficial Economy and Economic Development." *Brookings Papers on Economic Activity* Fall: 275-352.

Levy, Santiago. 2008. *Good Intentions, Bad Outcomes: Social Policy, Informality, and Economic Growth In Mexico*. Brookings Institution.

Lewis, W. Arthur. 1954. "Economic Development with Unlimited Supplies of Labor." *Manchester School* 22:139-191.

Marx, Benjamin, Thomas Stoker, and Tavneet Suri. 2013. "The Economics of Slums in the Developing World." *Journal of Economic Perspectives* 27(4): 187-210.

Murphy, Kevin, Andrei Shleifer, and Robert Vishny. 1989a. "Industrialization and the Big Push." *Journal of Political Economy* 97(5): 1003-1026.

Murphy, Kevin, Andrei Shleifer, and Robert Vishny. 1989b. "Income Distribution, Market Size, and Industrialization." *Quarterly Journal of Economics* 105 (3): 537-564.

Rauch, James. 1991. "Modeling the Informal Sector Formally." *Journal of Development Economics* 35(1): 33-47.

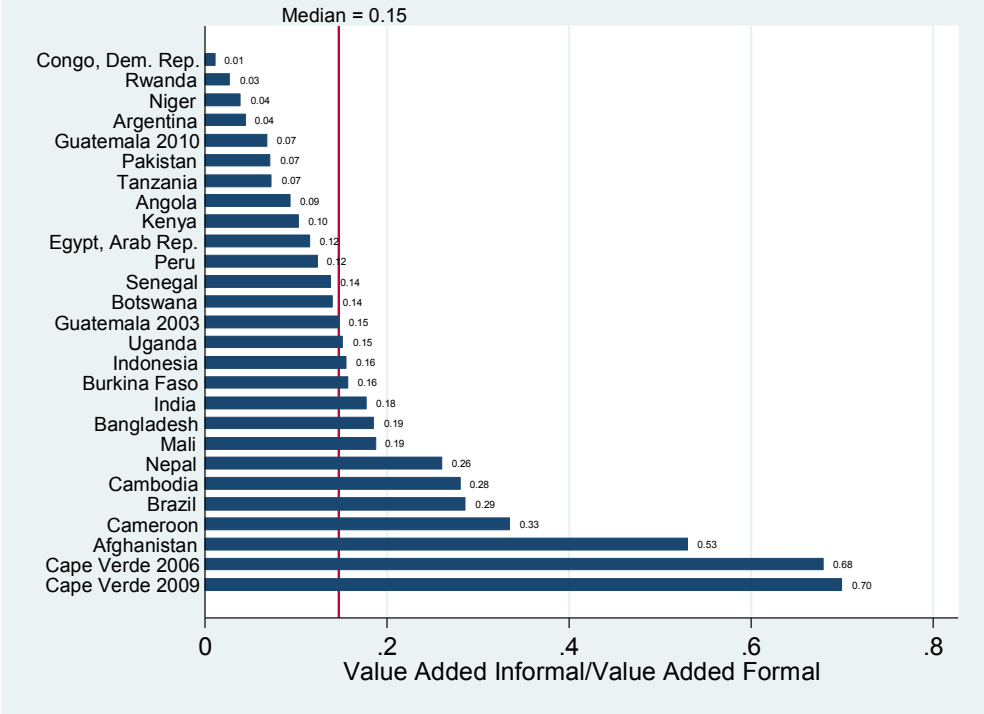


Figure 1. Ratio of the average value added by informal firms to value added by formal firms.

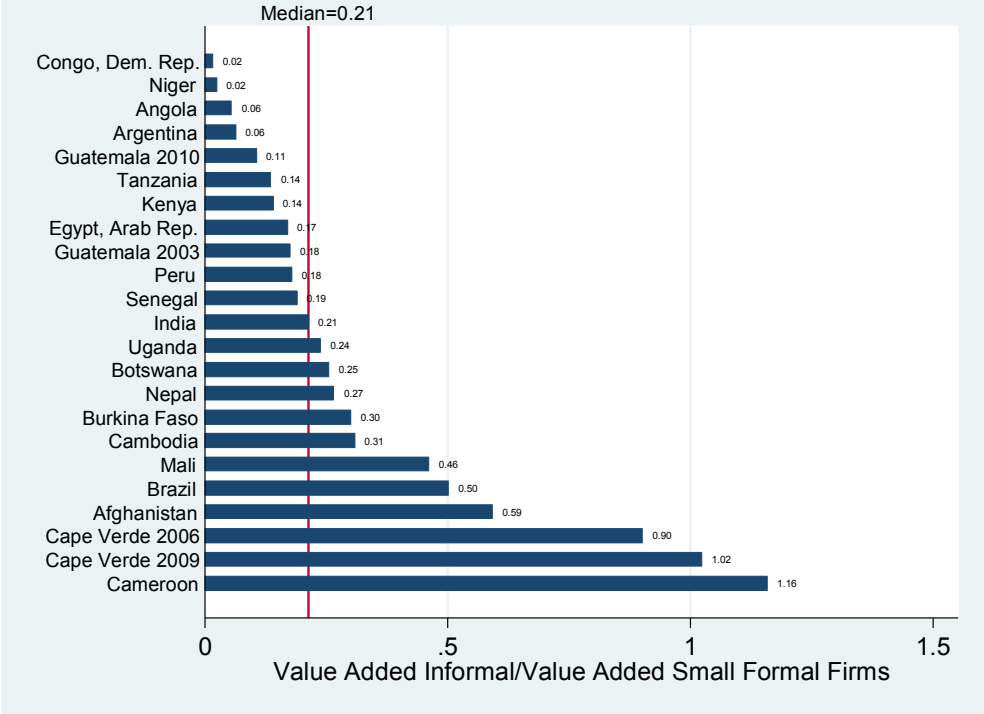


Figure 2. Ratio of the average value added by informal firms to value added by small formal firms.

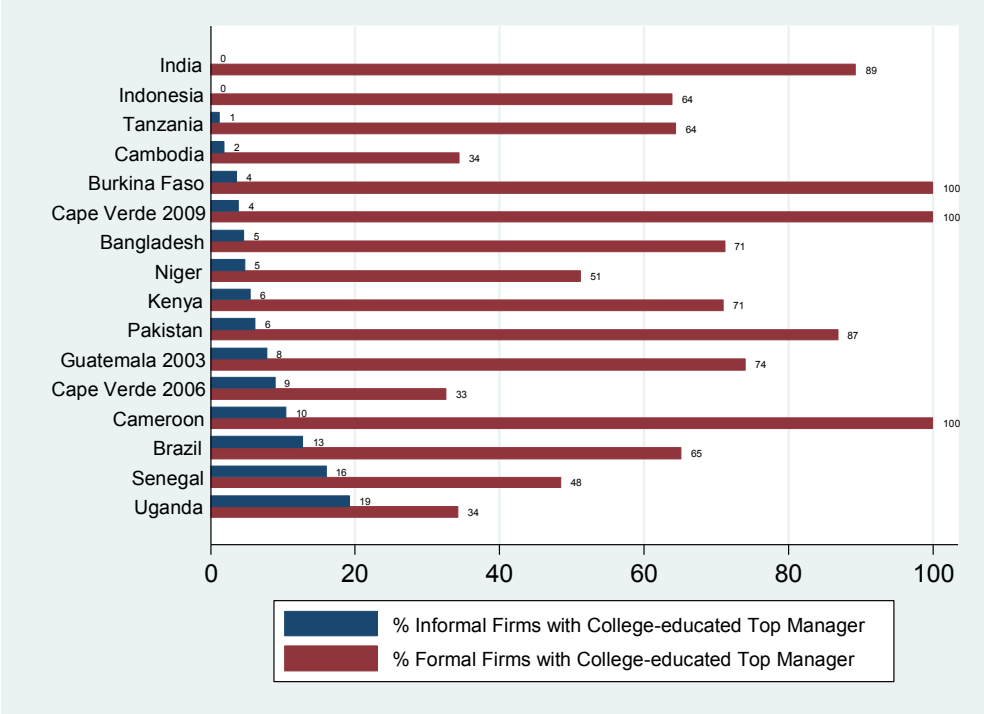


Figure 3. Average percent of firms run by a college-educated top manager in the informal and formal sectors.

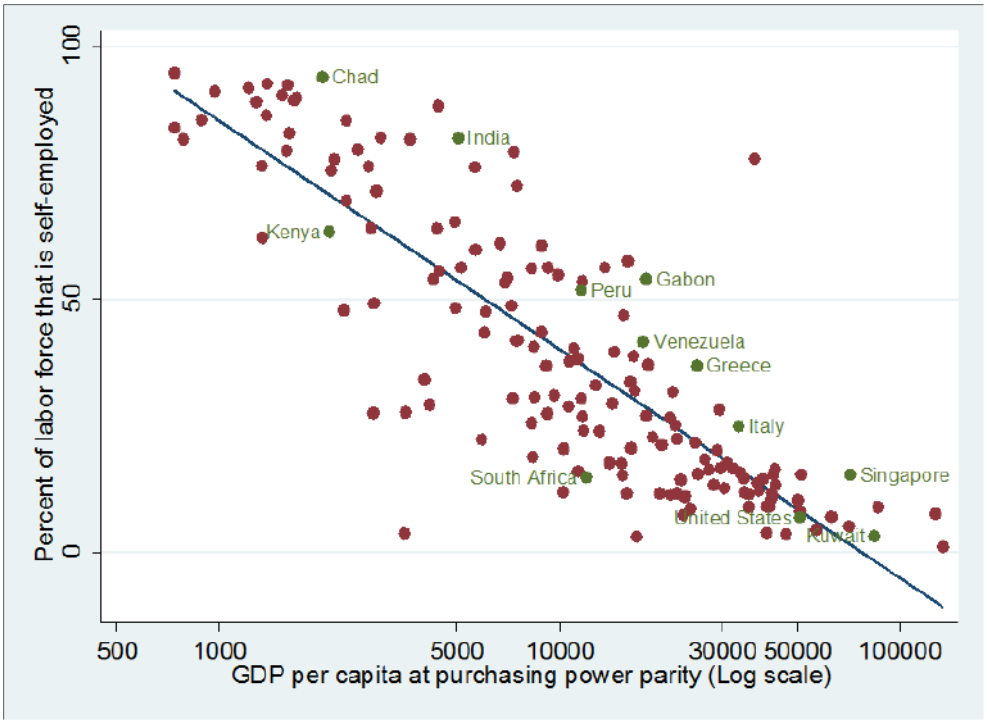


Figure 4. Self-employment and GDP per capita.

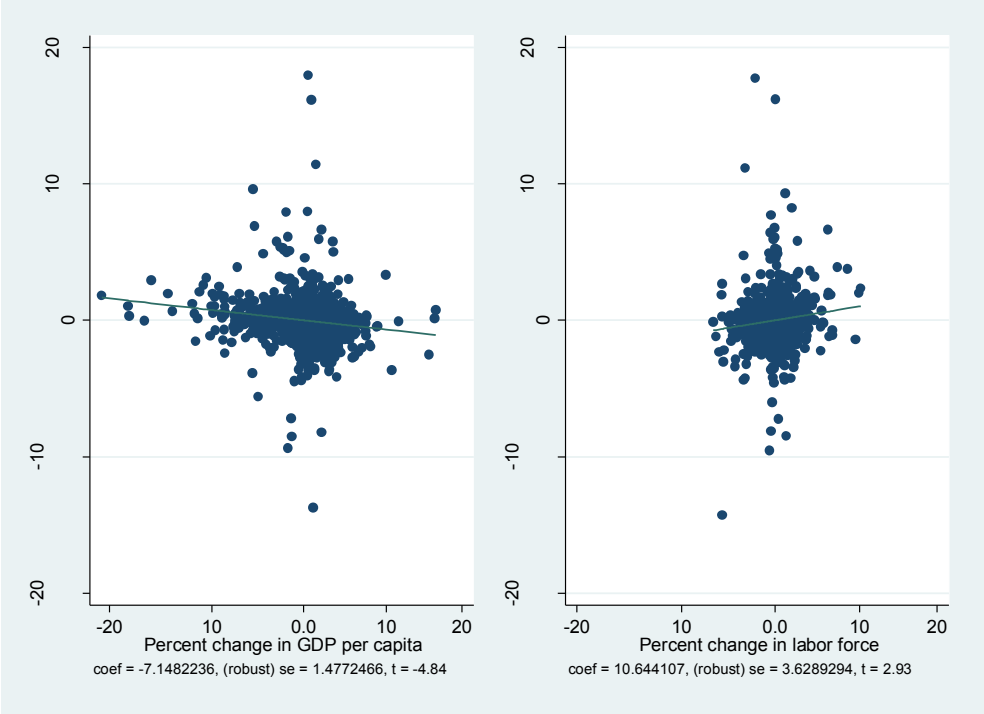


Figure 5. Partial correlation graph of change in self-employment, growth in GDP per capita, and growth in the labor force. The regression includes country fixed effects, i.e. we regress:

$$\Delta(\text{self employment}) = \alpha + \beta.\ln\left(GDP\ pc_t/GDP\ pc_{t-1}\right) + \gamma.\ln\left(labor\ force_t/labor\ force_{t-1}\right) + \delta_i + \varepsilon$$

where δ_i are country fixed effects.

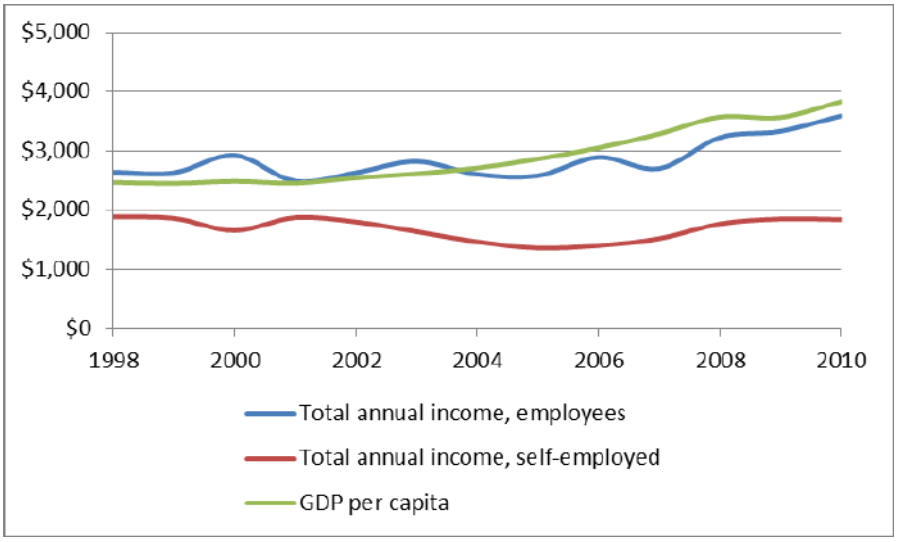


Figure 6. Income of employees, self-employed, and GDP per capita in Peru.

Table 1. Size of the Informal Economy by Alternative Measures

Percent except where stated otherwise

Income quartile	GDP/Population	Measure of Informality				Registered firms / population (000s)
		% GDP Informal (World Economic Forum)	% Tax Evasion (Enterprise survey)	% Self-employment	% GDP Informal (electricity consumption)	
Bottom	429	35.4	29.0	46.4	38.9	3.2
Second	1,362	33.7	23.3	35.7	42.7	8.2
Third	4,002	27.6	19.7	23.1	31.3	28.7
Top	20,348	17.3	8.2	13.3	17.6	41.8
Sample mean	10,015	27.6	22.5	26.5	29.0	24.7
Difference 1st vs. 4th quartile	-19,919[a]	-18.1[a]	-20.8[a]	-33.1[a]	-21.4[a]	38.7[a]
Observations	185	125	95	133	57	83

Note: [a] significant at the 1% level, [b] significant at the 5% level, and [c] significant at the 10% level.

Source: La Porta and Shleifer (2008).

Table 2. Obstacles to Doing Business

	Informal Survey	Enterprise Survey				Enterprise vs Informal
		Small	Medium	Big	All	
Obstacles (% of firms identifying an obstacle as the most important)						
Access to Financing	43.8%	20.6%	17.8%	13.6%	18.5%	-25.3% [a]
Political instability	11.4%	9.5%	9.1%	11.7%	9.7%	-1.7%
Access to Land	11.2%	5.6%	4.2%	4.1%	5.0%	-6.3% [b]
Corruption	7.4%	7.3%	8.2%	6.0%	7.4%	0.0%
Electricity	7.3%	10.0%	9.8%	7.4%	9.8%	2.5%
Business licensing and permits	6.3%	2.3%	2.7%	1.7%	2.4%	-3.9% [b]
Crime	3.4%	5.2%	5.0%	7.2%	5.4%	2.0%
Legal System	3.3%	0.5%	0.5%	1.9%	0.8%	-2.5% [a]
Customs and Trade Regulations	2.1%	3.2%	4.4%	5.0%	3.8%	1.8%
Uneducated Workforce	1.8%	4.6%	6.0%	10.4%	6.0%	4.2% [c]
Labor Regulations	1.8%	2.6%	3.1%	4.8%	3.3%	1.4%
Tax Administration	0.1%	4.3%	6.7%	6.4%	5.3%	5.2% [b]
Practices of competitors in the informal economy	0.1%	14.4%	13.4%	9.9%	12.9%	12.9% [a]
Tax Rates	0.0%	7.7%	6.2%	6.3%	6.8%	6.8% [a]
Transportation	0.0%	2.2%	2.9%	3.7%	2.8%	2.8% [a]

Table 3: Regional Human Capital, the size of establishments, and participation in the economy

The table reports fixed effect regressions for for the following three dependent variables: (1) logarithm of the number of employees per establishment; (3) logarithm of the number of employees per capita; and (4) logarithm of the number of employees working in firms that employ at least 100 employees as a percent of total employment. All regressions include the number of years of education.

	Dependent Variable:			
	Ln(Establishments/Population)	Ln(Employees/Establishments)	Ln(Employees/Population)	Ln(Employees Big Firms/Employees)
Years of Education in the Region	0.2936[a]	0.1205[a]	0.3372[a]	0.2215[a]
	(0.0311)	(0.0220)	(0.0263)	(0.0349)
Constant	-5.8407[a]	0.8918[a]	-4.3678[a]	-3.4071[a]
	(0.2554)	(0.2064)	(0.2052)	(0.4041)
Observations	970	1,035	1,016	510
Adjusted R^2	92%	82%	93%	95%
Country Fixed Effects	Yes	Yes	Yes	Yes

Note: [a] significant at the 1% level, [b] significant at the 5% level, and [c] significant at the 10% level.