

LEVERAGING DIGITAL FINANCIAL SOLUTIONS

TO PROMOTE FORMAL BUSINESS PARTICIPATION

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COVER PHOTO

In Senegal, UN Capital Development Fund (UNCDF) promotes inclusive ecosystems to facilitate the expansion of digital financial services. Over 5.5 million registered mobile wallets give customers access to services like sending and receiving money, paying bills and school fees, or helping to process payments to solar energy providers and other merchants through their mobile phones. Photo credit: UNCDF.

FOREWORD

In recent years, we have seen the enormous potential of digital technology to catalyze financial inclusion. By giving unbanked people access to financial services via mobile phones or the internet, technology is creating a brighter future for millions around the world.

Digital financial services may also help break down one of the remaining impediments to full financial inclusion: the informal nature of many businesses worldwide. Although financial inclusion is particularly beneficial to entrepreneurs, the majority of micro-, small-, and medium-sized enterprises (MSMEs) do not participate in the formal financial system. Business-owners are often skeptical that the costs of formality, including paying taxes and abiding by regulations, are outweighed by the benefits.

The evidence shows, however, that formality can help firms enter new markets, join global value chains, reach foreign buyers, or access credit. For workers, being part of the formal economy offers legal protections and social benefits that are often otherwise lacking. In other words, formalization enables economic inclusion. And given that many MSMEs are owned by women, informality among small firms also represents a missed opportunity to close the gender gap in access to financial services.

The conviction that digital financial services can accelerate the transition from informal to formal economic activity is shared by the World Bank Group and the United Nations Secretary General's Special Advocate for Financial Inclusion, Her Majesty Queen Máxima. We have worked together to increase financial inclusion for more than a decade, advancing global goals such as Universal Financial Access 2020, working at the country-level on policy advice and collaborating on global advocacy with both Standard Setting Bodies and the G20's Global Partnership for Financial Inclusion (GPFI).

When the issue of informality and digital finance was raised as a focus for the GPFI during the Argentine Presidency we saw an opportunity to collaborate again, and this report is the result. It complements and extends the work of the GPFI in several key areas, notably providing the most up-to-date estimate of the extent of global informality. [And it shows, for example, that although East Africa still leads the world in mobile payments informal firms continue to rely upon informal channels for credit and savings, or lack access altogether.]

There are encouraging signs that digital technologies are lowering the barriers for entry into the formal economy, but more work is needed. Governments can help through tax inducements, subsidies for point-of-sale facilities, and a range of digital infrastructure from connectivity to digital ID systems and regulation to protect consumers.

Financial technologies have a transformative role to play across the development agenda, and the findings of this report already inform country advisory work by both the World Bank and the UNSGSA. Going forward, we will continue to work together to expand research on this topic, identify country pilots where we can rapidly test approaches that have already proven successful and disseminate our findings.

H.M. Queen Máxima of the Netherlands
UN Secretary-General's Special Advocate for Inclusive Finance for Development

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EXECUTIVE SUMMARY

- This paper explores economic informality and how it relates to digital financial inclusion. It focuses specifically on the potential role that digital financial services—including those accessed through mobile phones and the internet—can play in encouraging businesses to formalize their operations.
- Drawing on data from the World Bank Global Findex database and Gallup World Poll, the paper estimates the number of informal business owners around the world and reviews the way they make financial transactions. The data show wide variations in the extent of informality as well as the financial inclusion of informal business owners.
- Existing research and our own calculations show that the size of the informal economy shrinks as countries become wealthier. Policies and institutions also have an impact: We find that informal economic activities tend to decrease as law and order improves, and that there are more formal firms registered in countries seen to have fair tax regimes.
- The paper finds that digital financial services can make it easier for informal firms to register and operate as a formal business, while also creating synergies between individual reform efforts. For example, companies that use a digital payroll system can easily make pension contributions when online platforms are available. Digital financial transactions also make it easier for governments to enforce laws and regulations, including tax collection.
- Better access to formal financial services can also serve as an incentive for firms to formalize. Governments have used subsidies and other tax inducements to encourage both businesses and consumers to adopt digital financial services. One example is Uruguay, where the government has subsidized adoption of point-of-sale facilities for small businesses while reducing tax withholding requirements for firms and lowering value-added taxes for consumers. Another example is South Korea, which allows wage earners to claim tax deductions for purchases made using digital payments when they file their year-end income taxes. Early research suggests the reforms have helped increase the number of formal financial transactions. Informally operating firms might also be encouraged to register in order to receive these financial incentives and meet customer demands for electronic payment receipts.
- However, there are several important caveats. The relationship between digital financial inclusion and formalization is mostly anecdotal at this stage. Nor is it clear that formalizing small transactions is an effective way to increase tax collection. Uruguay's recent experience suggests that increasing use of digital payments by small retailers might not easily lead to higher tax revenues. If policymakers are looking for new sources of revenue, it might be more effective to focus on large firms and corporations, whose tax liabilities have generally fallen in recent decades. Much more research is needed on the topic.
- Curbing informality is not easy. Research shows that most approaches to boosting formalization—such as simplifying regulations, providing financial incentives, and increasing enforcement—have yielded modest impacts. Most informal firms remain relatively small and unproductive throughout their existence. Informal

firm owners generally believe that the costs of formalization (such as paying taxes) outweigh the benefits (such as gaining better access to financial services). Therefore, overly zealous enforcement might simply drive these firms out of business, leaving everyone worse off than before.

- Using the financial system to compel formalization could have additional negative consequences. For example, if informal business owners think digitization will increase their tax burden, they might forgo the use of digital financial services, resulting in lower financial inclusion. Policymakers should see financial inclusion as a tool to facilitate development goals, not a bludgeon to force formalization.
- As the digital economy grows and countries seek to curb informality, policymakers should tailor their programs to the needs and realities of different groups of enterprises. For example, the benefits of formalization might be most appealing to larger firms that aim to increase foreign sales, purchase property, or get access to formal loans. Recent research suggests that even when firms do register, they might need additional information and training about how to reap the benefits of formalization.
- Formalization and digital financial inclusion depend on quality infrastructure. Moving away from cash to digital payments is only appealing if electronic transactions are cheap and widely available. Affordable digital connectivity is crucial for online and mobile transactions. Secure biometric identification can facilitate access to digital financial services. Vigorous and enforced consumer protections, interoperability, fair and proportional tax policy, and competition policy are key aspects of a vibrant digital financial infrastructure.



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1. Context: The global role of informality

Companies operating within the formal economy benefit from access to markets, legal protection of their property, binding contracts, and investments. In return, they provide employment through formal contracts, contribute to employee benefits, and commit to paying taxes and observing public regulations.

Alongside the formal economy, wealthy and poor countries alike have a parallel, informal economy in which many companies, entrepreneurs, and workers operate. Activities in the informal sector lack legal status, are not captured in official statistics, and fall outside the reach of public regulation. While this shadow economy can play an important role in providing jobs and filling demand for goods and services, it can also hamper the development of formal economic systems. Workers in the informal economy generally don't enjoy the same legal protections and social welfare benefits that formally employed workers do.

This paper explores the role that financial services – and especially digital financial services accessed through cards, mobile phones and the internet – can play in encouraging informal enterprises to join the formal economy. As the use of digital financial services grows, tools such as digital payroll and payment systems can make it easier for informal firms to register and operate as a formal business. Formalization, in turn, can potentially open new opportunities for firms to access financial services, such as bank loans, as well as government subsidies and incentive programs.

Although digital financial services and tools have the potential to facilitate formal business registration, more research is needed to understand the relationship between digital financial inclusion and business formalization decisions. Numerous other factors contribute to the existence of informal economic activities, including cultural practices and attitudes; tax morale, or the intrinsic motivation of individuals and firms to pay their taxes; institutional strength and enforcement capabilities of governments; and country-specific structural barriers. While research suggests that administrative burdens such as complex tax payment procedures are key drivers of informal economic activity, simply streamlining such processes (with or without digital technology) isn't enough to produce substantial shifts from informal to formal economic activity.

As the use of digital financial services grows, tools such as digital payroll and payment systems can make it easier for informal firms to register and operate as a formal business. Formalization, in turn, can potentially open new opportunities for firms to access financial services, such as bank loans, as well as government subsidies and incentive programs.

These findings suggest that small, informal firms might perceive that the benefits of operating in the formal economy—ranging from access to formal credit markets and the ability to compete for government contracts, to the opportunity to engage in international trade—outweigh the significant costs of compliance, including paying taxes and registration fees and complying with pension and social security laws. It may not be cost effective for the government to try and formalize some segments of the informal economy, such as small family businesses that provide subsistence level income for few individuals, and it is not clear whether such efforts would

Small, informal firms might perceive that the benefits of operating in the formal economy—ranging from access to formal credit markets and the ability to compete for government contracts, to the opportunity to engage in international trade—outweigh the significant costs of compliance, including paying taxes and registration fees and complying with pension and social security laws.

aid or hurt development and growth. The multifaceted nature of the decision to formalize or remain informal may explain why shadow economic activity is higher in low income economies, and why stand-alone or narrow reforms typically fail to significantly affect rates of formalization. In poorer economies—where there are relatively few jobs available—people often set up their own business or make a living by doing day labor. Because informal employment tends to be low-paying, many people who work in the shadow economy could not afford to pay taxes or social security on what they earn. And they might not want to pay taxes if they perceive the government as untrustworthy or corrupt. Increasing use of digital finance and other such tools may help create synergies between individual reform efforts, while facilitating government enforcement of laws and regulations. For example, it may be easier for businesses that use digital payroll systems to pay pension contributions via online platforms.

The data analysis, literature overview, and country case studies in this report seek to illustrate the potential for financial services, and especially digital financial services, to aid governments in reducing informal economic activity. The report also provides a look into best practices and recent reforms in this sector among developing countries.

1.1 Defining informality

In the broadest sense, economic informality—sometimes known as the "shadow economy" or the "hidden economy"—is defined by what it is not:

- The informal economy refers to "all economic activities by workers and economic units that are – in law or in practice – not covered or insufficiently covered by formal arrangements."ⁱ
- "Informal employment refers to jobs or activities in the production and sales of legal goods and services which are not regulated or protected by the state."ⁱⁱ
- "The shadow economy is defined as the ensemble of all market-based legal production activities that are deliberately concealed from public authorities" for one or more reasons.ⁱⁱⁱ

Formality has multiple dimensions and degrees, as defined by whether and how a business meets various legal obligations, as stipulated by public laws and regulations. The legal status of an enterprise begins but does not end with incorporation and registration. An enterprise must also obtain licenses or permits to operate, declare and pay taxes, compensate workers and pay taxes on labor, and comply with safety, health, environmental, and other regulations. Many registered firms exist in only partial compliance.^{iv}

1.2 Scale of the informal economy

The informal sector represents a significant source of jobs, employing 1.8 billion people world-wide.^v The shadow economy is largest in Latin America and the Caribbean, Sub-Saharan Africa, and Europe and Central Asia, where informal activity makes up roughly 40 percent of gross domestic product. South Asia is close behind at about 35 percent, followed by East Asia and the Pacific and the Middle East and North Africa, each of which have informal sectors accounting for approximately 32 percent of GDP.^{vi} In the average developing country, the informal sector accounts for about 70 percent of the labor force, and the informal economy is smallest in high-income OECD countries.^{vii}

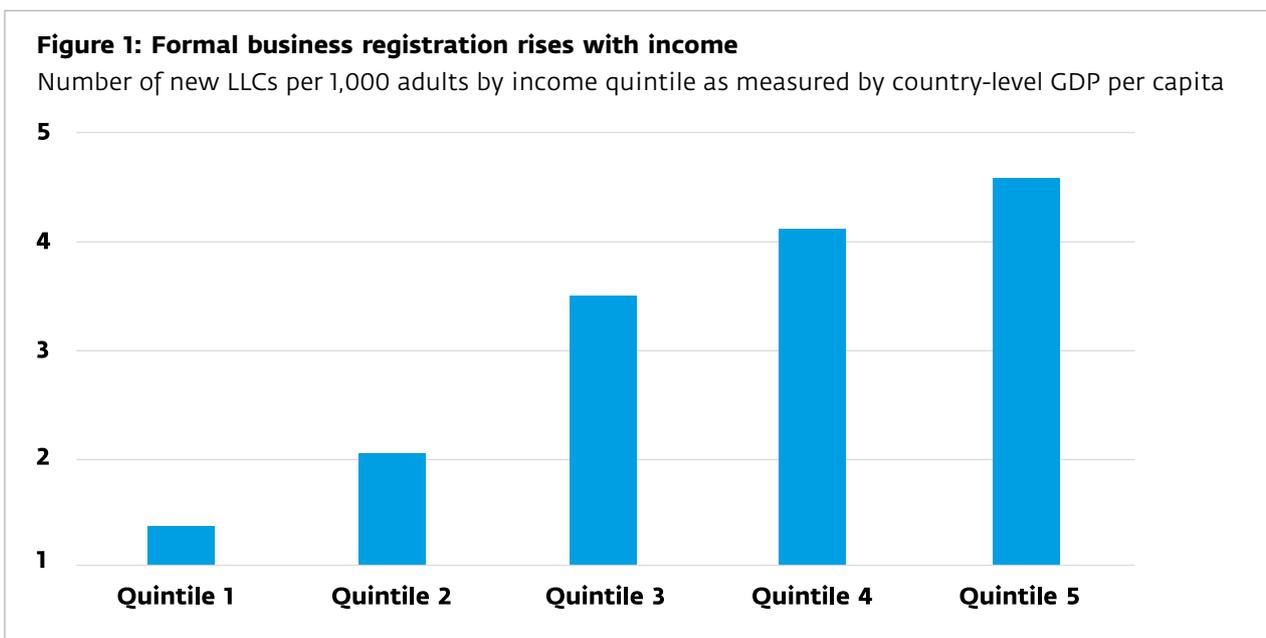
The IFC estimates that 74 percent of all micro, small, and medium sized enterprises globally are informal.

The IFC estimates that 74 percent of all micro, small, and medium sized enterprises globally are informal.^{viii} "The degree of formality increases with firm size, suggesting that as firms grow, their demand for the services associated with formal institutions increases, as does the probability of detection by authorities."^{ix}

1.2.1 Measuring the number of formal businesses

Another way to measure the extent of entrepreneurship is to look at data on formal firms. A rough estimate of formal business penetration is provided by World Bank Doing Business data on the number of new limited liability companies (LLCs) per 1,000 adults. Figure 1 divides countries into five quintiles based on country-level GDP per capita. The first quintile represents the poorest 20 percent of countries worldwide, while the fifth quintile represents the richest 20 percent. The figure shows that the number of formal businesses rises with income. In the poorest fifth of countries, there is less than one new LLC per 1000 adults. That number is nearly five times as large in the richest two quintiles.^x

The number of formal businesses rises with income.



Source: World Bank Doing Business database (2014-2016) and World Development Indicators (2017).

1.2.2 Measuring the share of adults operating an informal business

Data on formal business ownership provides a helpful but incomplete gauge of entrepreneurship. Some people might not consider their economic activity as tantamount to owning a business. Another way

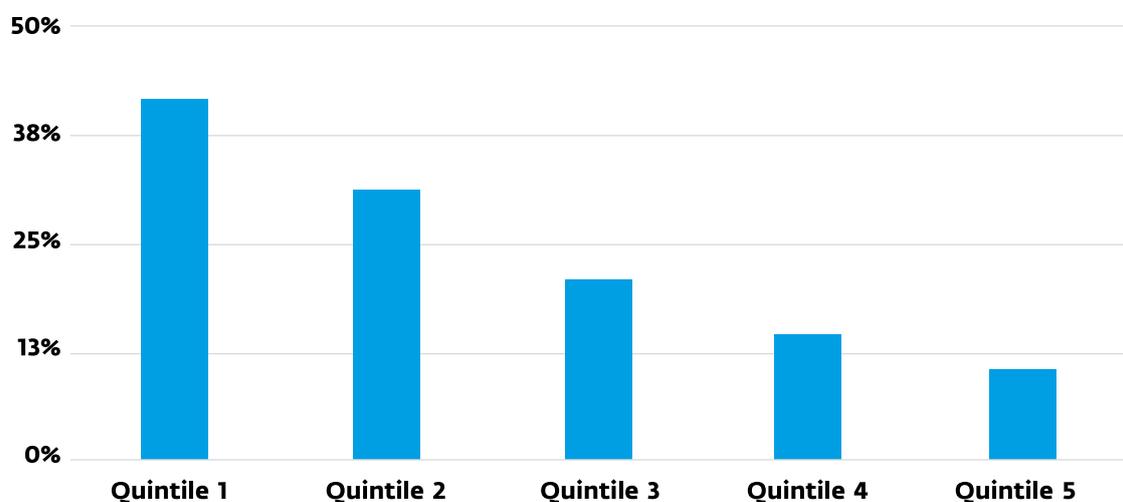
Informality shrinks as economic development increases.

to look at entrepreneurship is through self-employment data, which might capture people who engage in seasonal or occasional informal business practices, such as farmers who sell crops at a stand during a good harvest season.

To offer a rough approximation of informal business ownership, we used Gallup World Poll survey data to construct a variable showing the share of adults who report being self-employed, or report owning a business with two or fewer employees. We assume such businesses include only the founder and a family member and are overwhelmingly informal. Our variable shows that informal business penetration is higher in poorer countries than richer countries. In the poorest 20 percent of countries globally, roughly 4 in 10 adults have an informal business, compared with only 1 in 10 adults in the richest 20 percent of countries. This suggests that informality shrinks as economic development increases.

Figure 2: Informality widespread in poorer countries

Adults who report being self-employed or report owning a business with two or fewer employees by income quintile as measured by country-level GDP per capita (% age 15+)

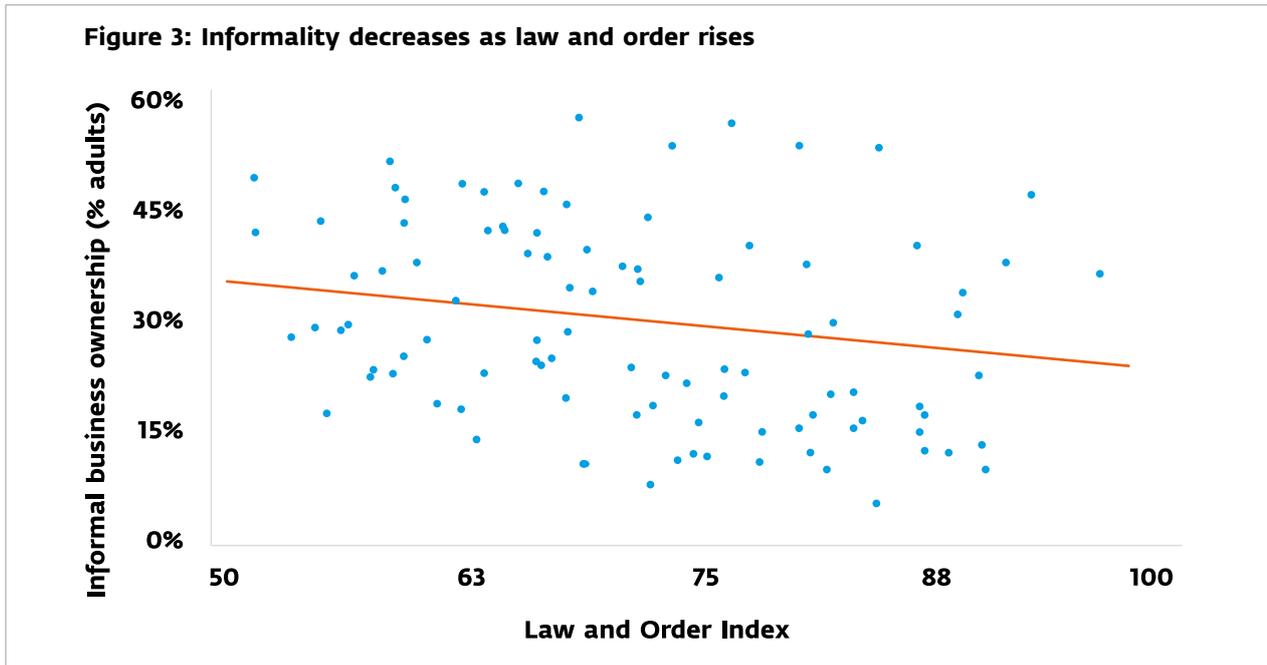


Source: Gallup World Poll (2015-2017) and World Development Indicators (2017).

A simple calculation based on Gallup World Poll and World Bank data suggests that in developing countries, income (as measured by country-level GDP per capita) explains about 40 percent of the cross-country variation in informal business ownership. Yet income is not

As law and order improves, the share of informal business owners in developing countries decreases.

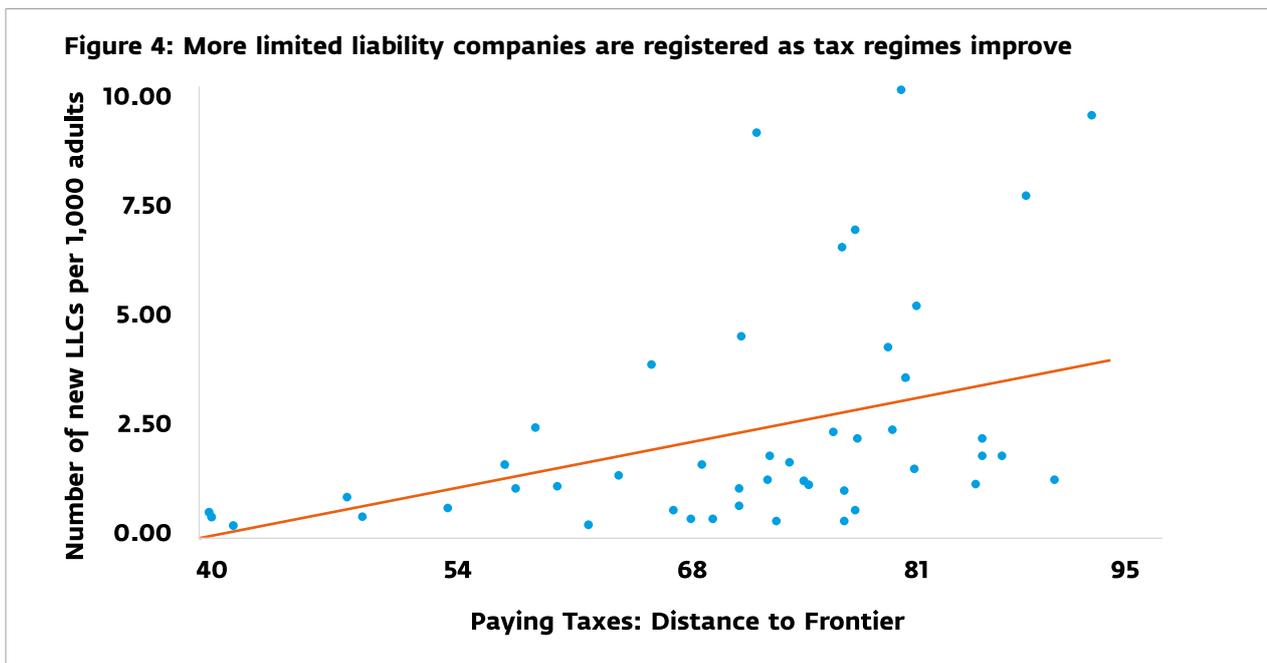
the only factor shaping informality. A country's overall institutional environment is also significant. The Gallup World Poll survey compiles an index on law and order. To make the index, surveyors ask respondents whether they have been victimized by burglary or assault in the past year; whether they feel safe; and if they have confidence in the local police forces. The data show that as law and order improves, the share of informal business owners in developing countries decreases (Figure 3). This effect is statistically significant after controlling for national income.



Source: Gallup World Poll (2017) and Doing Business database (2018).

Another factor that influences business owners' decisions on whether to formalize their operations is taxation. The World Bank's Doing Business database measures the amount of taxes business owners have to pay. The database also looks at the overall ease of paying taxes – as determined by the number of tax payments per year, and the time it takes to prepare, file, and pay taxes. One might expect people to create more formal businesses in countries where the tax regime is seen as fair and convenient. Our calculations suggest that this is indeed the case. In developing countries, the number of new limited liability companies increases as the overall quality of the tax regime improves (Figure 4). The relationship is statistically significant after controlling for national income.

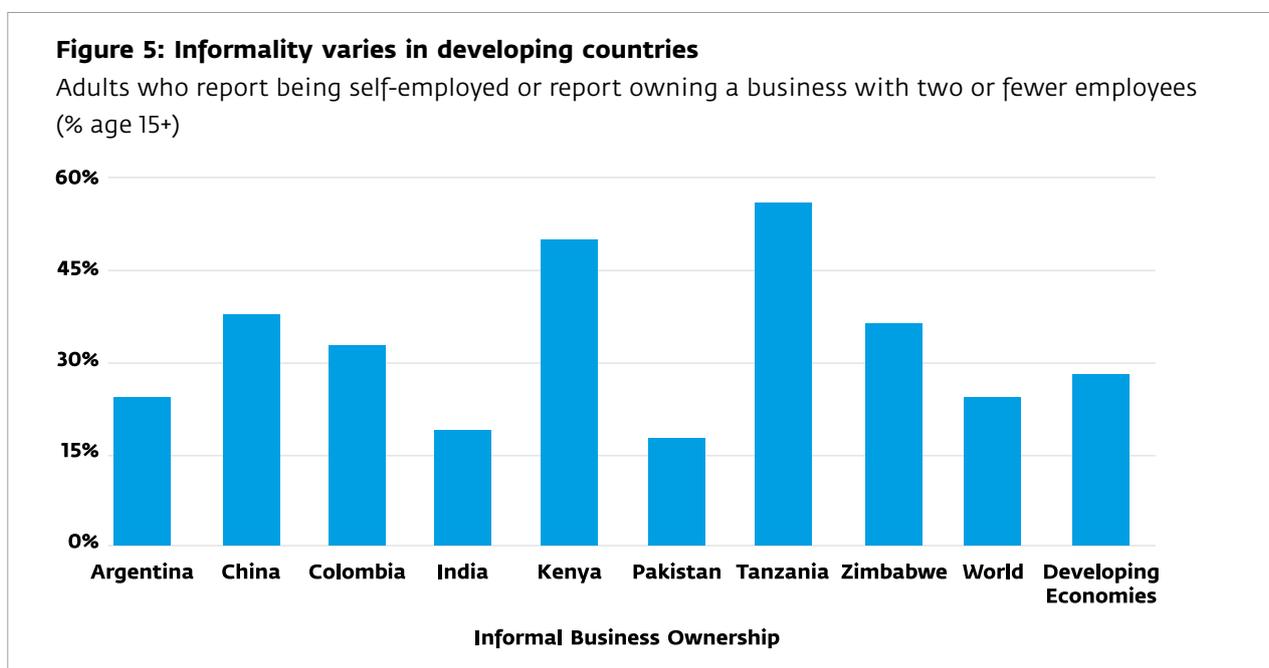
In developing countries, the number of new limited liability companies increases as the overall quality of the tax regime improves.



Source: Gallup World Poll (2017) and Doing Business database (2018).

1.2.3 Informality varies by gender and income

This report focuses on eight representative countries—Argentina, China, Colombia, India, Kenya, Pakistan, Tanzania and Zimbabwe^{vi} – that vary by region, income level, size of informal economic activity, and adoption of digital financial services. Here, we see differences across rates of business ownership, self-employment and levels of financial inclusion. In Kenya and Tanzania, nearly half of adults have an informal business, as do roughly a third of adults in China and Colombia (Figure 5). The numbers are considerably lower in India and Pakistan, which have more economically inactive people and more subsistence farmers than China. Globally and in developing countries, roughly a quarter of adults have an informal business.



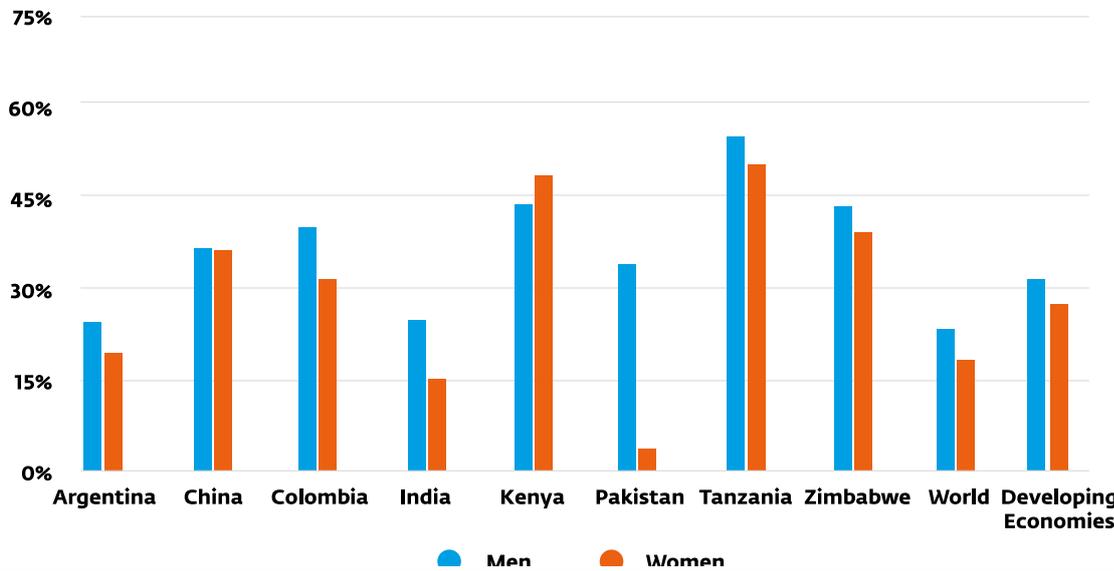
*Source: Gallup World Poll.
Note: Data are based on a three-year average of values from 2015-2017.*

In developing countries, 31 percent of men and 25 percent of women have an informal business. Gender differences vary among our representative countries. In China, roughly 1 in 3 adults run an informal business, with no differences between men and women (Figure 6). But in Pakistan, men are 10 times as likely as women to have an informal business.

In developing countries, 31 percent of men and 25 percent of women have an informal business.

Figure 6: Gender differences in informal employment

Adults who report being self-employed or report owning a business with two or fewer employees (% age 15+)



Source: Gallup World Poll.

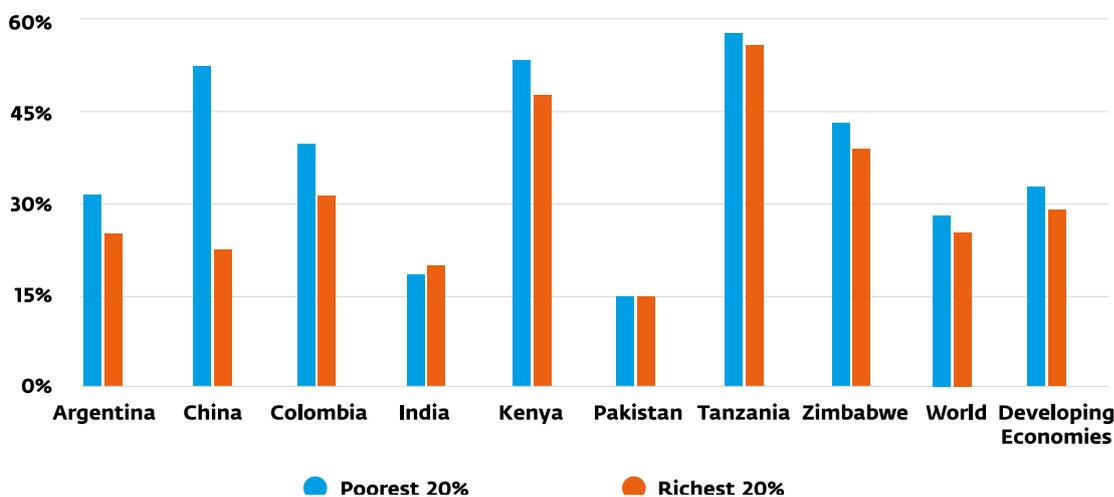
Note: Data are based on a three-year average of values from 2015-2017.

Poorer adults tend to be over-represented in the informal economy. In Argentina, Kenya, and Zimbabwe, poorer adults are nearly 10 percentage points more likely than richer adults to have an informal business (Figure 7). The income disparity is even greater in China, reflecting a gap between urban and rural areas.

Poorer adults tend to be over-represented in the informal economy.

Figure 7: Poorer adults are more likely to have an informal business

Adults who report being self-employed or report owning a business with two or fewer employees (% age 15+)



Source: Gallup World Poll.

Note: Data are based on a three-year average of values from 2015-2017.

1.3 Why informality can be a problem

Economic informality raises concerns across a spectrum of economic and social issues:

- Informal businesses generally have lower productivity than formal businesses, which can be a drag on firms and the economy. If informal firms in India were as productive as formal firms, output per worker would be five times greater, leading to higher income and lower poverty.^{xii} (This is not to say that formalizing these firms would make them more productive. It is simply an illustration of the productivity gap between formal and informal firms.)
- Poorer and disadvantaged populations operate in the informal sector, which raises the question of economic inclusion. Informal firms are restricted from tapping into formal financing and markets. Workers in the informal sector generally lack social protections, such as insurance and pension benefits.
- Public revenues are reduced by hidden economic activity, resulting in diminished provision of public goods.
- Business conducted outside the regulated economy raises safety, health, and environmental risks for workers and communities.
- Owners of formal businesses, which generally pay taxes, may feel that informal businesses have an unfair competitive advantage because the latter don't pay taxes.

Informal businesses generally have lower productivity than formal businesses, which can be a drag on firms and the economy.

1.4 From a policy standpoint, is it advisable to force formalization?

It's understandable that governments would seek to bring informal enterprises into the formal economy. Increasing the size of the formal economy could generate more tax revenues, strengthen protections for workers and the environment, and improve economic inclusion. For firms, a secure, formal legal status might improve competitiveness and profitability. Small and medium-sized manufacturers in Vietnam enjoyed higher profits, investments, and improved working conditions for workers after they formally registered their businesses.^{xiii} Another potential, but not automatic, benefit includes better access to financial services, such as loans, which can help firms to grow. However, researchers found businesses in Malawi that received assistance to register their operations only experienced improved access to financial services when the assistance was combined with bank information sessions. In those cases, firm sales rose by 20 percent and profits by 15 percent.^{xiv}

1.4.1 Attempts at formalizing firms haven't been very successful

Researchers have done studies to see if addressing the perceived causes of informality leads to higher registration. The results are mixed, but generally show that informal firms are reluctant to formalize. Some interventions—such as incentive payments and tighter enforcement of laws—have had some success, while others—such as policy reforms and educational programs—have yielded more modest impacts.

Researchers have done studies to see if addressing the perceived causes of informality leads to higher registration. The results are mixed, but generally show that informal firms are reluctant to formalize.

- In Sri Lanka, researchers gave firm owners information about how to register and be reimbursed for the cost of doing so—but there was no impact on formalization. Registration only increased when the information was paired with incentive payments. Payments equivalent to between a half month and one month of profits increased registration by around 20 percent, while payments equal to two months of profit boosted formalization by about 50 percent.^{xv}
- Researchers in Brazil offered firms information about formalizing and provided free accounting services for one year while subjecting them to government inspections. The study took place years after the government had simplified the process for registering, and reduced the cost of registering a business. Only the inspections increased registration rates (by 21 percentage points to 27 percentage points), suggesting that informal firms only formalize their operations when they are forced to do so.^{xvi} Another recent paper on Brazil argues that increasing enforcement reduces informality—but also weakens overall welfare in the economy.^{xvii}
- In Benin, statistically significant effects were reported for interventions focused on providing in-person informational visits and advisors to help with paperwork; offering business training and help opening a business bank account; and a complete package that included all these benefits plus tax mediation services. The complete package increased registration by 16.3 percentage points.^{xviii}
- In Bangladesh, researchers provided informal small and medium enterprises with detailed, easy to understand information about how to register. The researchers also explained potential legal and economic benefits of formalizing, such as improved access to bank loans; stronger ownership rights and social status; and limited liabilities. The intervention coincided with regulatory reforms that dramatically reduced the time, complexity, and hidden costs of registering. But the intervention had no impact on formalization.^{xix}
- Policy reforms such as reducing registration times, simplifying registration procedures, and lowering costs have generally had modest impacts, if any (see section 3 of this paper for detailed country examples.)^{xx}

Although informality can have negative economic consequences, these findings raise questions about whether governments should make business formalization an explicit policy goal. In the studies cited above, the registration of informal companies has generally had limited impact on the companies' growth and profitability. Formalization campaigns sometimes carry prohibitive costs for governments. In Benin, for example, formalization cost between US\$1,200–\$2,200 per firm, and registration had no significant impact on sales, profits, or credit access, or on the living standards of firm owners. Even if post-formalization tax compliance were 100 percent, the authors estimate that it would take a decade or more worth of tax revenues to recoup those costs. While bringing small enterprises into the tax net might appeal to policymakers, it is important to remember that taxing informal firms can also have adverse consequences. Recent research suggests that increased tax enforcement in Brazil leads to large productivity gains but hurts informal firms' owners and workers.^{xxi} Enforcement strategies targeted at large firms and wealthy individuals might produce higher returns given estimated evasion and avoidance rates,^{xxii} while improving equity and with limited production distortions.^{xxiii}

1.4.2 Firms are reluctant to formalize because the costs might outweigh the benefits

One reason why efforts to persuade firms to formalize their operations haven't been very successful is that firm owners seem to think the costs of registering—including having to pay taxes—outweigh the benefits. Many firm owners also appear doubtful that formalization will address their problems, the most common of which, according to survey evidence, is lack of financing. Since informal firms tend to be less efficient and competitive, it is not clear that they could survive or thrive in the formal economy.

One reason why efforts to persuade firms to formalize their operations haven't been very successful is that firm owners seem to think the costs of registering—including having to pay taxes—outweigh the benefits.

Most informal firms tend to stay informal throughout their existence, and rarely grow or improve over time. Pushing them to register might put excessive pressure on them and ultimately drive them out of business. And even though the underground economy can generate problems for governments, it isn't clear that curbing informal economic activity is important for macroeconomic progress. The informal economy tends to shrink slowly over time, suggesting that formalization might be something that happens in tandem with development, instead of serving as a precondition for development.^{xxiv}

1.5 Digital financial services might enable formal business registration – but more research is needed

Widespread access to mobile phones and the internet is making the use of digital financial services more accessible than ever, even for small, informal businesses. The adoption of digital financial tools, in turn, can make it easier for such firms to register and operate in the formal economy. Digital sales are easier to track than cash sales. Digital payments make it easier for businesses to pay taxes. And electronic payroll technology can support formalization of labor arrangements between employers and employees. In the case of India, formalization efforts start with a firm establishing its digital identity with the government and simultaneously adopting digital payment tools to increase efficiency and transparency in both its public and private sector transactions. (See next section for more details.)

At the same time, the use of digital payment systems can help informal firms begin to establish a credit history, potentially opening the door to formal financing. Data generated from digital transactions and payments increasingly are being used to calculate credit scores, sometimes in combination with other sources of non-traditional data such as information gleaned from social media. Such data enable potential borrowers (whether individuals or firms) to begin to develop "reputation collateral," and even credit or risk scores, based on financial behaviors, such as timely payment of utility bills or consistent receipt of remittances or income, before they have received any loans from formal financial institutions.

Digital forms of identification can also help people qualify for financial services. Customer due diligence and know your customer (KYC) regulations typically require banks to collect government documentation such as a birth certificate or other national identification documents. For very small transaction amounts, there can be tiered or proportionate KYC where no documentation is needed, to help facilitate access to finance for marginalized populations.

While digital tools might make it easier for informal firms to join the formal economy, firm owners are likely to consider other factors involved in formalization, including the need to pay taxes and follow laws and regulations. Further research is needed to better understand how financial inclusion, especially via digital finance, can contribute to or accelerate steps toward formalization in other areas beyond registration, including tax payments and compliance with labor, health, safety, and environmental laws and regulations. More research is also needed on the impact that greater formalization of a country's underground economy would have on economic growth, poverty reduction, and wellbeing, as well as the role and limitations of government policies in driving this trend.

2. Can digital financial services encourage formalization?

This section reviews research on how formal financial products have helped firms expand their businesses. Drawing on Global Findex data, it measures the number of informal firm owners who make digital payments, use savings products, and borrow money. The section also measures informal firm owners' access to mobile phones and the internet – digital technologies that can facilitate both access to financial services and compliance with formal business requirements. It is our hope that policymakers can use this data to inform programs aimed at increasing formalization by leveraging digital financial services.

2.1 How informal firms use financial services and digital technology

Below, we present findings from several studies which highlight the ways formal financial services can benefit entrepreneurs. We do not suggest that formal business registration would automatically allow firms to get these benefits. Nor do we argue that formalization is a precondition for receiving these benefits, or that financial services always have positive results. Rather, we simply seek to demonstrate to policymakers that facilitating access to affordable, fair, and transparent financial services can be good for development – regardless of any connection to informality.

2.1.1 Digital payments

Financial services have several benefits for entrepreneurs whether they work in the formal or informal economy. Digital payments can raise profits by lowering the costs of transacting with customers, suppliers, and government officials. In Bangladesh, researchers studied the impact of digitizing wage payments at two garment factories in the capital Dhaka. They found that the factories cut wage-distribution costs in half by switching from cash to direct deposit. Electronic payments removed the need to bring in cash-filled trucks and eliminated the attendant costs of hiring guards and halting production in order to manually distribute wages to workers.^{xxv} Similarly, a study in Afghanistan found that the use of digital payrolls resulted in cost savings by increasing the security of transactions.^{xxvi}

Digital payments can raise profits by lowering the costs of transacting with customers, suppliers, and government officials.

Researchers have also found that the digitized payroll system benefited workers. At the two Bangladesh factories, salaried workers were randomly assigned to receive their monthly wages electronically or to continue to receive them in cash. The workers were observed for two years. Workers who received payments directly into a bank account were significantly more likely to have non-zero account balances and to shift funds that were previously stored informally into accounts at formal financial institutions. Furthermore, workers who were provided with mobile money or bank accounts were less likely to have insufficient resources and were better able to respond to income shocks.

2.1.2 Mobile money

A recent study from Kenya argues that entrepreneurs benefit from mobile money's higher efficiency and security relative to cash. Noting that crime is a major problem for entrepreneurs in Kenya, the authors argue that mobile money significantly reduces theft. At the same time, mobile speeds up transactions between business owners and their suppliers. As a result, mobile money reduces output losses and increases creditworthiness, contributing to higher business growth and productivity. The authors estimate that mobile money can explain 10 percent of Kenya's per-capita income growth from 2007-2013, "thus pointing to quantitatively significant macroeconomic effects of mobile money technology through entrepreneurial finance."^{xxvii}

Entrepreneurs benefit from mobile money's higher efficiency and security relative to cash.

Other researchers studied mobile money's effects on poverty and gender in Kenya. The results suggest that the spread of mobile money helped spur business creation, with 185,000 women leaving agricultural employment for jobs in business or retail. The authors are unable to definitively explain the underlying impetus for the occupational change. But they speculate that it could have been a result of greater access to remittances, increased agency, or the alleviation of financial constraints due to increased use of mobile money. The authors contrast their findings with recent studies showing limited impacts of microcredit on women entrepreneurs. "For women, the route out of poverty might not be more capital, but rather financial inclusion at a more basic level, which enhances their ability to manage those financial resources that are already accessible," they write. The paper also found that mobile money helped reduce poverty while increasing consumption and savings.^{xxviii}

2.1.3 Microcredit

Lack of financing is a well-known problem for small entrepreneurs – particularly in emerging countries. Recent studies suggest that microcredit can yield positive, if modest, business impacts. A review of seven randomized evaluations found that in five countries, credit access increased business activity, including business ownership, revenues, investments, and higher inventory and assets. However, profits increased significantly only in Morocco and India – and the gains mostly went to businesses that were already large and profitable.^{xxix} But microfinance studies have generally found weak impacts on welfare and gender outcomes.

Lack of financing is a well-known problem for small entrepreneurs – particularly in emerging countries. Recent studies suggest that microcredit can yield positive, if modest, business impacts.

2.1.4 Savings

Global Findex data suggests that adults are more likely to save than borrow for business – and some studies have suggested that small-scale entrepreneurs benefit from savings products. Researchers offered free savings accounts to self-employed people in rural Kenya. Women market vendors who signed up for the account increased their daily business investment by 60 percent, equivalent to US\$1.28 per day. They also increased their spending on personal goods and food.^{xxx}

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In Malawi, farmers who used savings accounts increased land cultivation by 7 percent and farm expenditures by 10 percent.^{xxxii} A study in Ghana, Malawi, and Uganda found that village savings and loan associations helped member households open new businesses and keep short-term seasonal businesses open longer.^{xxxiii}

2.1.5 Insurance

Insurance products can give entrepreneurs the confidence to increase investments in their business by reducing the risk of financial losses. Several recent papers have examined the impact of agricultural insurance on farmers' planting decisions. Farmers face constant business risks, including financial losses due to severe weather, crop failures, and fluctuations in market prices. These risks mean that farmers often choose to plant reliable but unprofitable crops. When farmers in Ghana received index insurance, they spent more money on fertilizer and labor, allowing them to cultivate more land.^{xxxiii} When Indian farmers received such insurance, they started planting riskier but more profitable crops.^{xxxiv} In Kenya, households which adopted microinsurance were less likely to sell property or cut food consumption when faced with an economic emergency.^{xxxv} However, very few farmers buy index insurance without high subsidies, and the product has struggled to achieve commercial viability and widespread adoption.

When farmers in Ghana received index insurance, they spent more money on fertilizer and labor, allowing them to cultivate more land.

2.1.6 Digital financial services can help link firms with global value chains

Global value chains—production networks that span countries—capture a major share of world trade but small firms in developing countries often struggle to link up with them. One reason is that small firms lack financing. Another hurdle is that the large firms which run supply chains increasingly want their suppliers to meet labor and environmental standards. These sustainability requirements can increase firm competitiveness and profitability but tend to impose costs on smaller suppliers.^{xxxvi} Taking up digital financial services might help entrepreneurs land supplier contracts with large buyers, which increasingly see digital payroll as a corporate sustainability standard.

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Sustainable global value chains also pose opportunities for would-be suppliers. The Better Than Cash Alliance recently surveyed dozens of major global retailers about how digitization figures into their supply chains. Their findings suggest that retailers see digital payments as key to increasing business efficiency and reducing costs. Given the benefits of digital payments for suppliers and their employees, retailers are pushing digitization as part of corporate social responsibility commitments. Small firms which adopt digital financial services might therefore be better positioned to become suppliers for these global firms.^{xxxvii}

Suppliers in global value chains have benefited in other ways after adopting digital payment systems. As part of the Better Than Cash Alliance study, Gap Inc. said its supplier factories experienced a 15 percent to 20 percent reduction in employee attrition and turnover following adoption of digital payments, potentially due to increased employee satisfaction. In Kenya, Unilever suppliers used their digital transaction history to build creditworthiness and access working capital loans, helping them drive up sales by a fifth.

2.1.7 Financial education

Financial education generally isn't effective when provided through classroom training on accounting concepts or numeracy. It can be more effective when linked to participants' real-world experiences. In the Dominican Republic, a microfinance institution taught clients practical tips for day to day business management, such as storing business and personal cash in different places. Participants who received the training were more likely to adopt the good business practices compared to a group which did not receive the training and another group which received old-fashioned financial education on accounting. Innovations for Poverty Action, a development research organization, is now testing a digital version of the same training. In Uganda, young people who received savings accounts in addition to financial education had higher business incomes years after the intervention.^{xxxviii}

Financial education generally isn't effective when provided through classroom training on accounting concepts or numeracy. It can be more effective when linked to participants' real-world experiences.

2.2 Challenges to informal firm adoption of digital financial services and opportunities to encourage formalization

Policymakers are debating options for bringing informal firms into the formal financial system. These discussions might benefit from data on informal business owners' current access to financial services, digital technology, and identification. Such information can help policymakers understand the needs of informal business owners and identify potential ways to bring them into the formal system. For example, if informal business owners are found to have high access to mobile phones, then mobile-based solutions might be worth considering. This section brings together such data from the 2017 Gallup World Poll and Global Findex database.

2.2.1 Gateways to formalization and financial inclusion: Access to digital technology and national identification

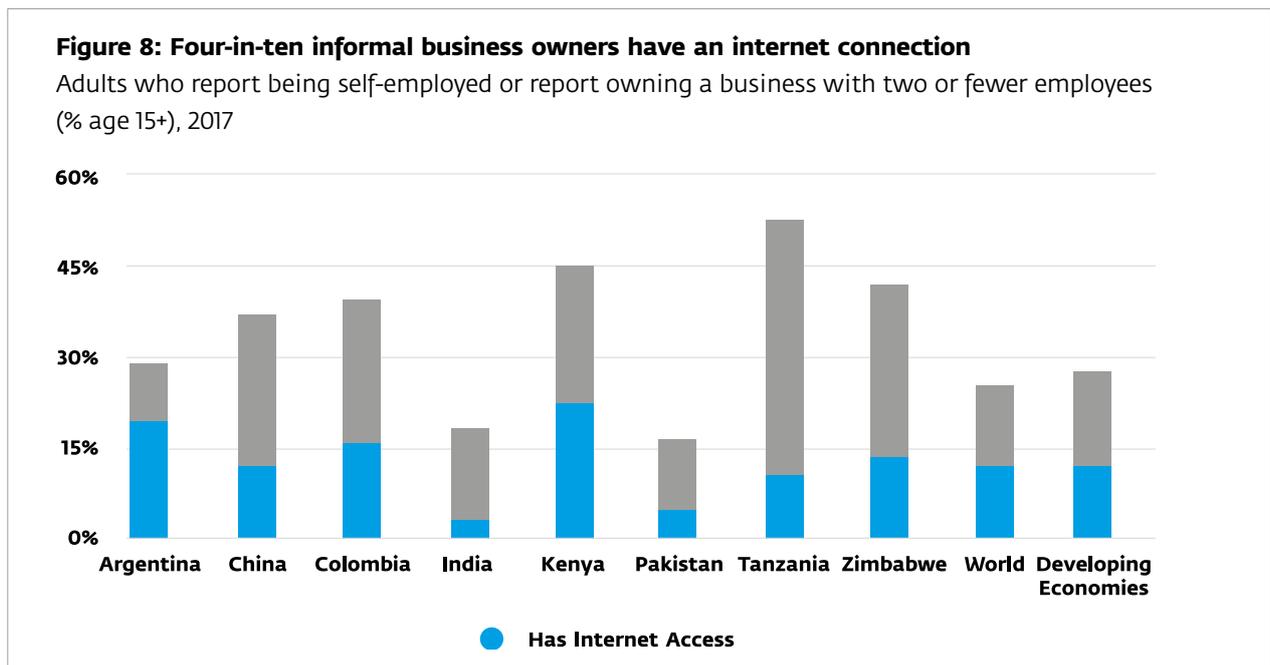
Financial services increasingly are delivered through digital technology—such as the internet and mobile phones—particularly in emerging countries. Digital technology also has the potential to speed up the process of business registration (Box 1). Access to digital technology is therefore a component of financial inclusion and formalization of the informal economy.

Box 1: Online business registration in Argentina

Argentina is among the many countries globally seeking to speed up business registration by using digital technology. According to the World Bank's Doing Business database, Argentina ranks 157 out of 190 countries in terms of starting a business, a variable that gauges the procedures, time, and costs required to launch and formally operate a commercial enterprise. A new law aims to reduce the registration time to 24 hours using an online portal launched in September 2017. Besides signing up with the national tax authority to pay federal and local taxes, business owners can use the portal to enroll in electronic invoices, get a tax ID, open bank accounts, and adopt an electronic wallet for tax payments. Other regulations have mandated acceptance of debit card payments and made electronic invoicing available for all taxpayers starting in April 2019. The reforms are part of a broader government push to boost entrepreneurship and expand small and medium enterprises' access to low-cost credit. The regulation currently applies to Buenos Aires city, the capital's namesake province, and Cordoba province, though the government plans to expand it to other parts of the country.^{xxxix}

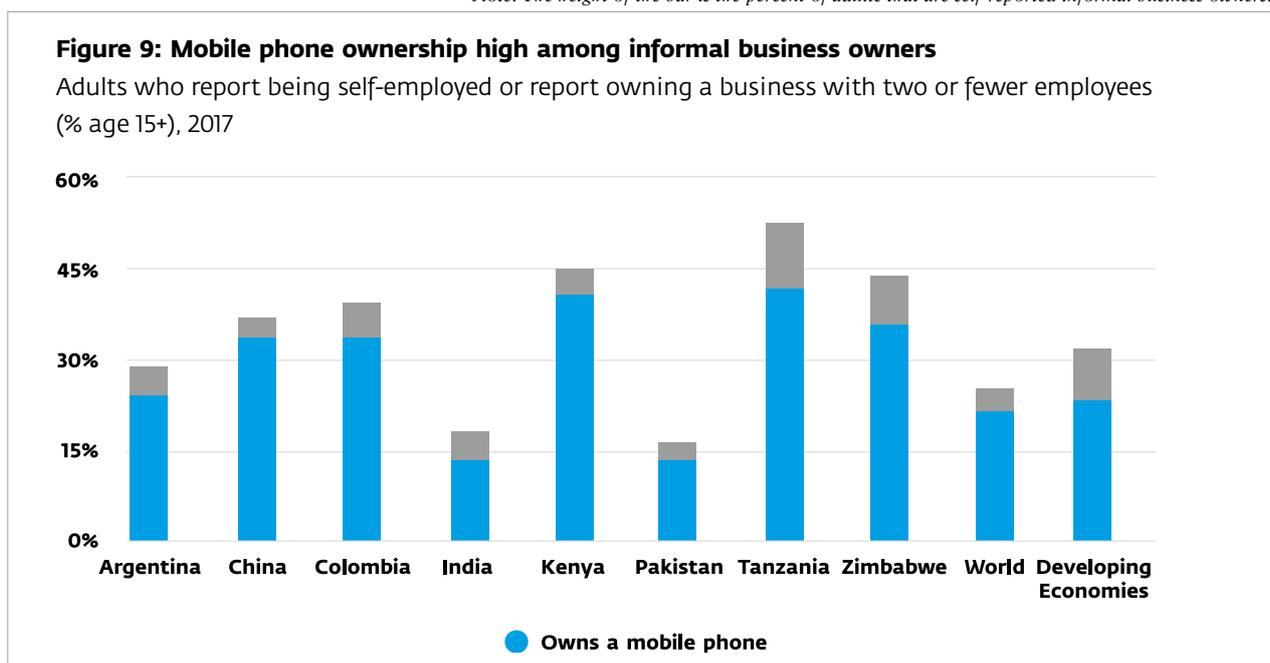
Globally, 42 percent of informal business owners have access to the internet – whether through a smartphone, internet café, personal computer, or some other device. In developing countries, that number is 35 percent. Among our representative countries, internet access among informal business owners ranges from 12 percent in India to 71 percent in Argentina (Figure 8).

Ownership of mobile phones tends to be more widespread than internet access. Globally, and in developing countries, nearly 80 percent of informal business owners have a mobile phone. Mobile phone ownership is practically universal for informal business owners in countries such as China and Kenya (Figure 9).



Source: Gallup World Poll.

Note: The height of the bar is the percent of adults that are self-reported informal business owners.

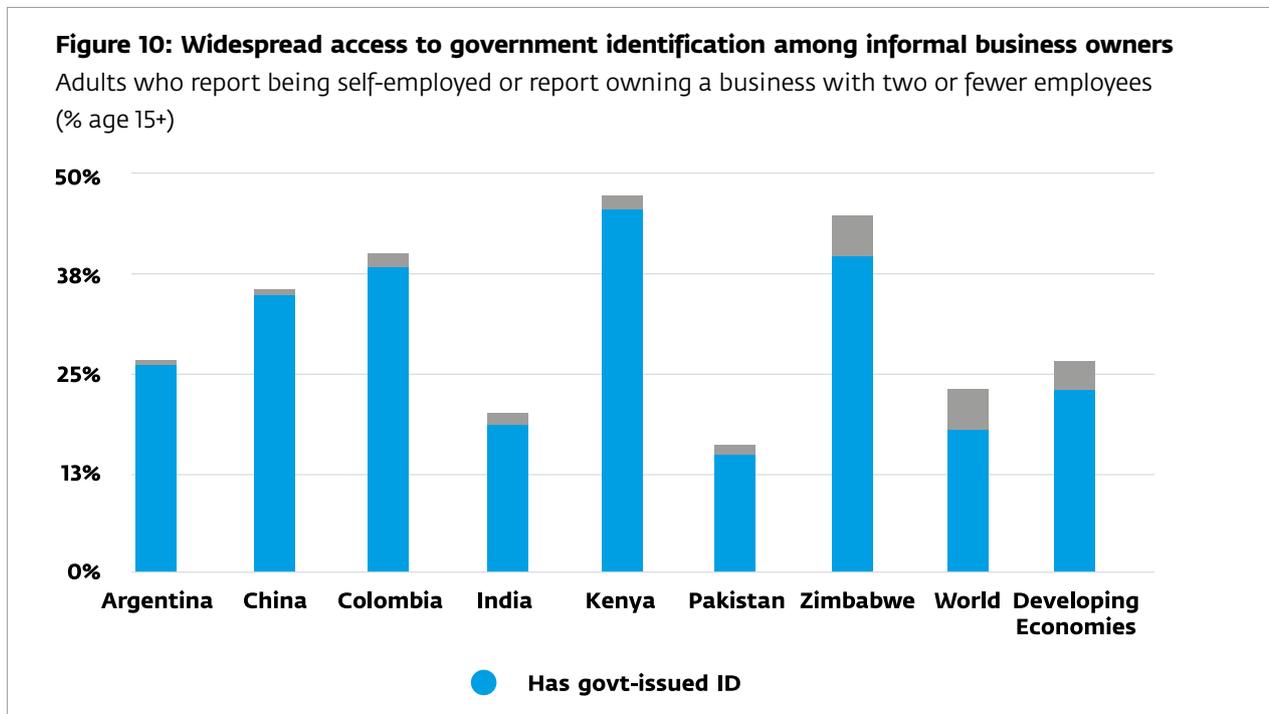


Source: World Bank Global Findex database and Gallup World Poll.

Note: The height of the bar is the percent of adults that are self-reported informal business owners.

In many countries, having government-issued identification is a prerequisite for accessing financial services or social benefits, participating in elections, and registering businesses or property. Reducing the number of people without ID can facilitate formalization and development more generally (see Box 2 below). New Global Findex data collected in collaboration with the World Bank's Identification for Development (ID4D) team is encouraging. It shows that globally and in developing countries, nearly 9 in 10 informal business owners have government-issued ID. The numbers are even higher in our sample of representative countries, including in Argentina, China, Colombia, and India (Figure 10).

In many countries, having government-issued identification is a prerequisite for accessing financial services or social benefits, participating in elections, and registering businesses or property. Reducing the number of people without ID can facilitate formalization and development more generally



Source: World Bank Global Findex database and Gallup World Poll.
Note: The height of the bar is the percent of adults that are self-reported informal business owners.

Box 2: Facilitating business registration through biometric ID in India

In 2014, India launched a policy to equip citizens with biometric identification numbers. Since then, roughly 1.2 billion people have received official ID. The government reports that nearly 50 million micro-, small-, and medium- enterprises have registered online using a biometric ID number.³¹ This policy has helped increase financial inclusion. As of 2017, 80 percent of Indian adults have an account, up from 53 percent in 2014, according to the Global Findex. The policy has faced challenges due to privacy concerns and the potential for misuse of the identification data. Still, policy-makers looking to reduce the size of the informal economy might consider expanding access to digital identification and simplified online registration.

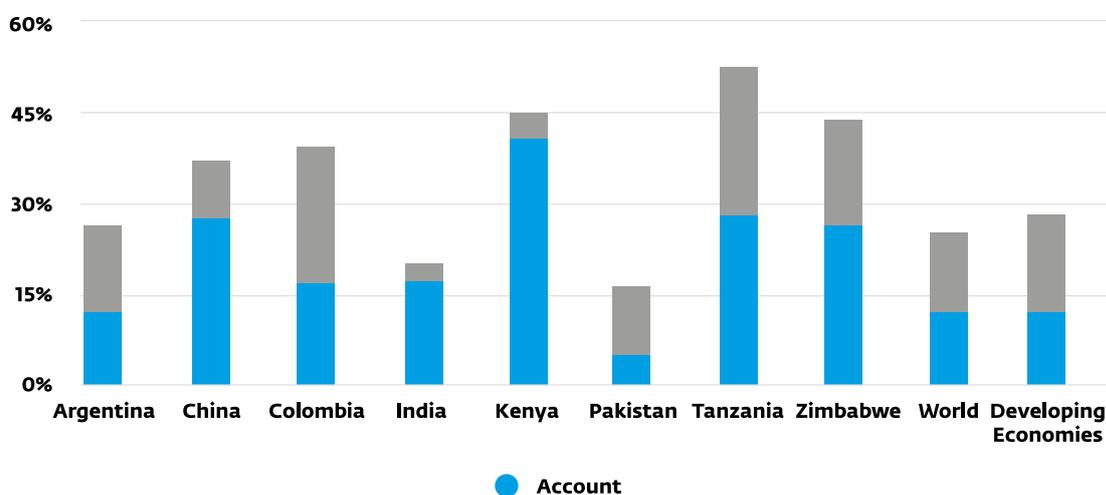
2.2.2 Use of accounts, payments, savings, and credit among informal business owners

The most basic measure of financial inclusion is ownership of an account – whether a mobile money account, or an account at a bank or other formal financial institution. As of 2017, roughly half of informal business owners globally and in developing countries have an account (Figure 11). Among our representative countries, the share ranges from 37 percent in Pakistan to more than 80 percent each in India and Kenya.

The most basic measure of financial inclusion is ownership of an account – whether a mobile money account, or an account at a bank or other formal financial institution. As of 2017, roughly half of informal business owners globally and in developing countries have an account

Figure 11: Account ownership among informal business owners

Adults who report being self-employed or report owning a business with two or fewer employees (% age 15+), 2017



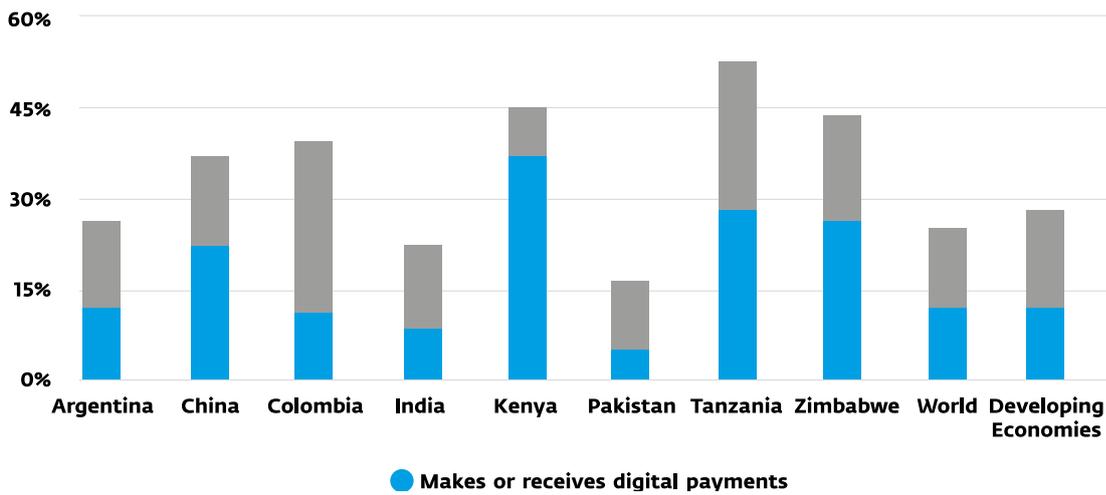
Source: World Bank Global Findex database and Gallup World Poll.
Note: The height of the bar is the percent of adults that are self-reported informal business owners.

Globally, about 4 in 10 informal business owners make or receive digital payments through a bank account, mobile money service, mobile phone, the internet, payment card, or some other method. This variable also captures the receipt of digital wage payments, government social benefits, or payments for agricultural sales. In developing countries, roughly 1 in 3 informal business owners make or receive digital payments. The number is considerably higher in China, Tanzania, and Zimbabwe, and especially Kenya, where about 84 percent of informal business owners make such payments (Figure 12).

Globally, about 4 in 10 informal business owners make or receive digital payments through a bank account, mobile money service, mobile phone, the internet, payment card, or some other method.

Figure 12: Digital payments among informal business owners

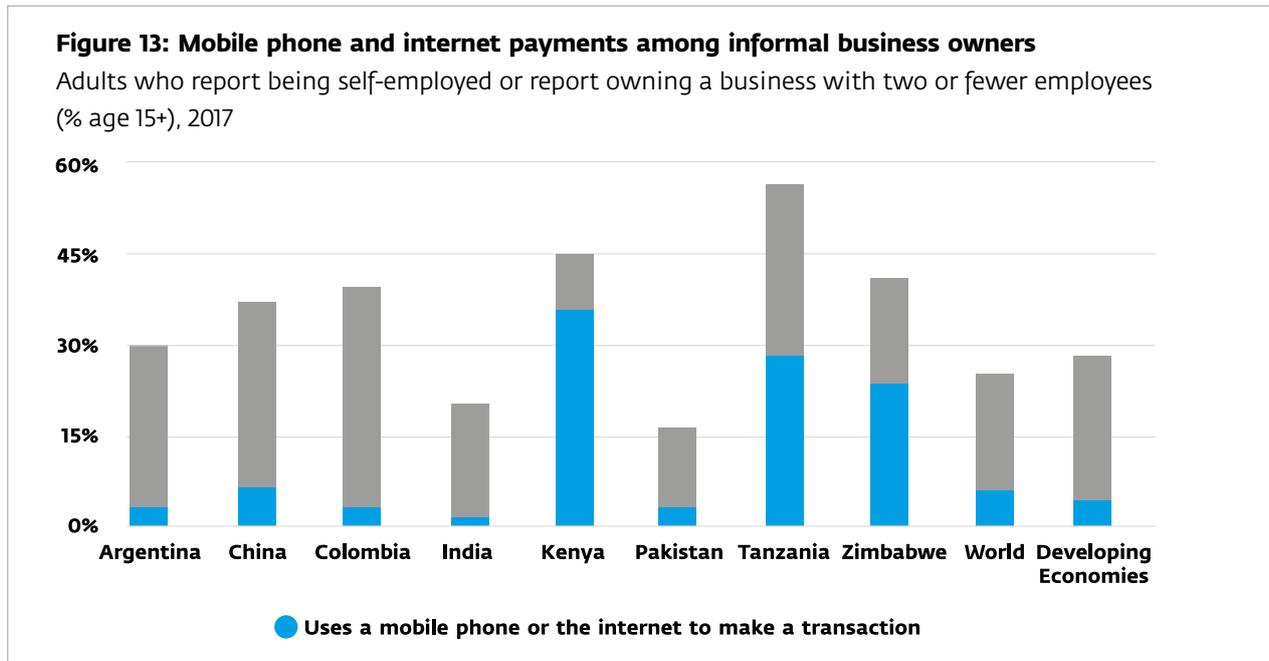
Adults who report being self-employed or report owning a business with two or fewer employees (% age 15+), 2017



Source: World Bank Global Findex database and Gallup World Poll.

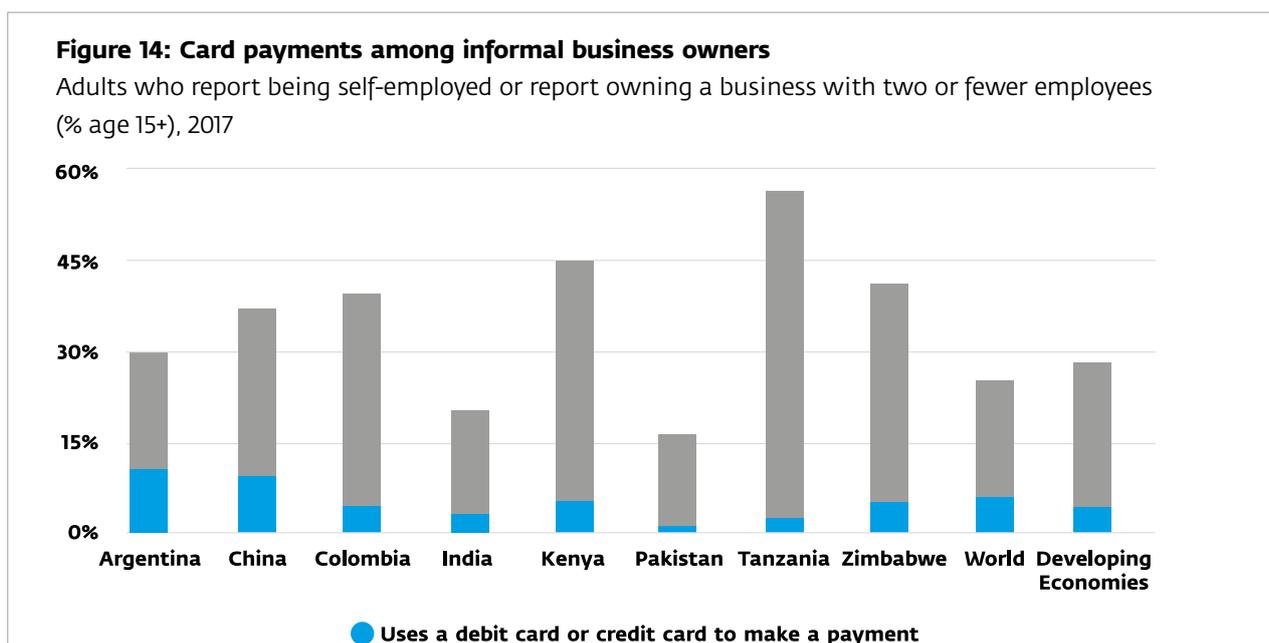
Note: The height of the bar is the percent of adults that are self-reported informal business owners.

About 1 in 5 informal business owners worldwide use mobile phones or the internet to make a payment through an account. The share is similar in developing countries. Mobile phone and internet payments are higher in Sub-Saharan African countries with strong mobile money penetration. In Kenya, for example, 78 percent of informal business owners make such payments, as do roughly half in Tanzania and Zimbabwe (Figure 13).



Source: World Bank Global Findex database and Gallup World Poll.
Note: The height of the bar is the percent of adults that are self-reported informal business owners.

Card-based payments often predominate in countries where mobile money is uncommon or non-existent. In Argentina, 32 percent of informal business owners use a debit or credit card, while 21 percent do in China (Figure 14). The share is slightly more than 10 percent in both Zimbabwe and Kenya.

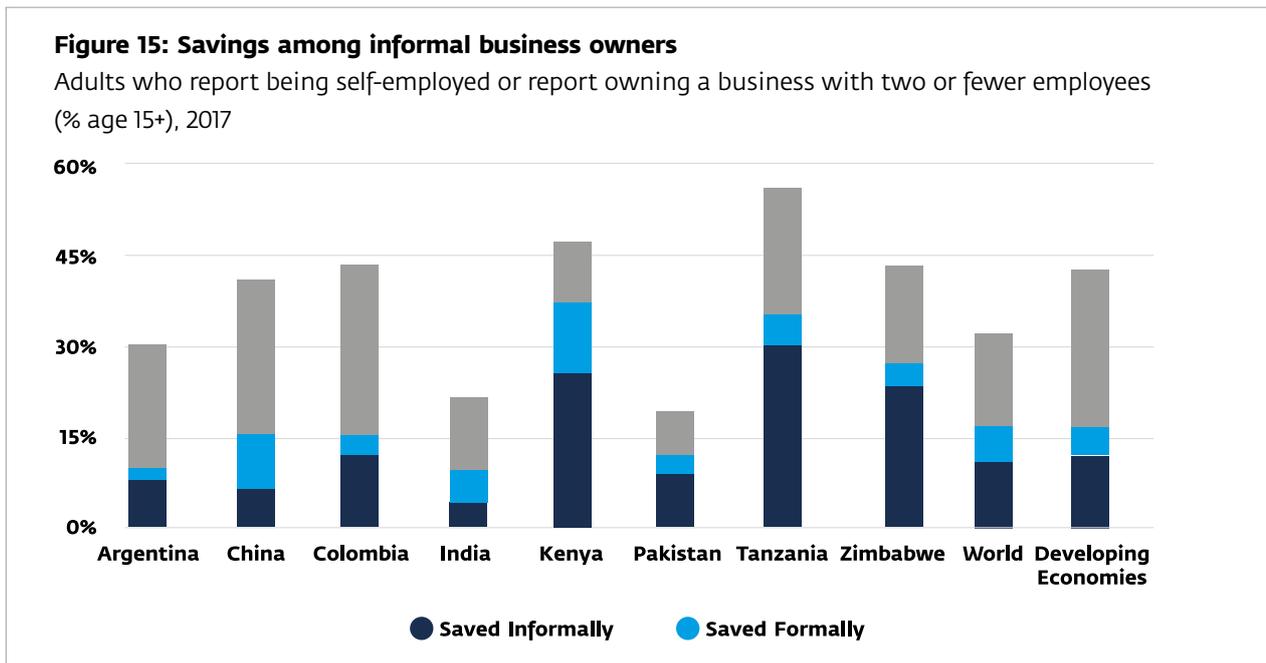


Source: World Bank Global Findex database and Gallup World Poll.
Note: The height of the bar is the percent of adults that are self-reported informal business owners.

Globally and in developing countries, roughly half of informal business owners report saving any money in the past year. Savings rates vary considerably among our representative countries (Figure 15). In Kenya, about three-quarters of informal business owners save, compared to only one-third in Argentina. Most informal business owners save outside the formal financial system, using methods such as stuffing cash under a mattress or buying livestock. Two exceptions are China and India, where informal business owners are more inclined to use formal savings methods.

The share of business owners who report borrowing money in the past year is roughly 50 percent globally and in developing countries.

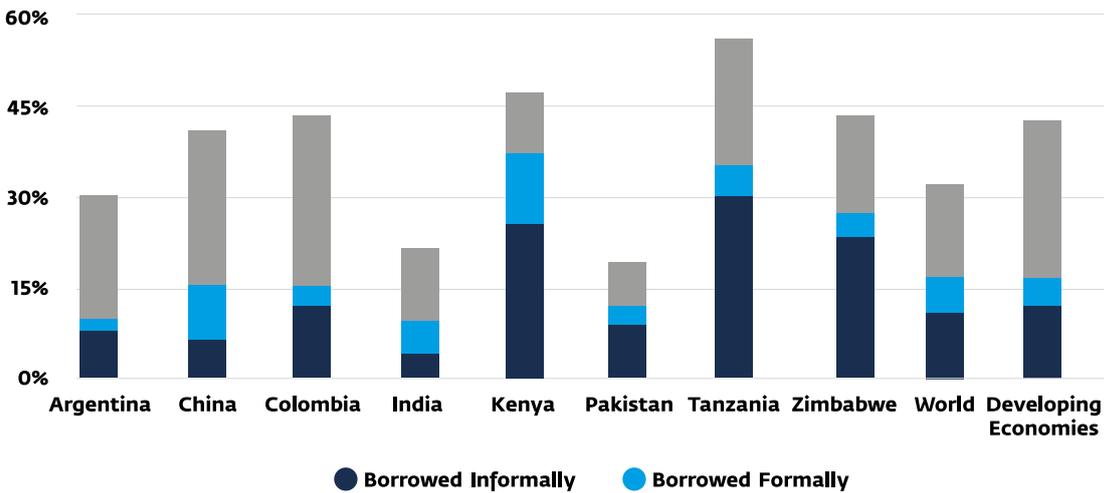
The share of business owners who report borrowing money in the past year is roughly 50 percent globally and in developing countries. The number is much higher in Kenya, where it is 70 percent (Figure 16). Digital technology is changing the way business owners access financing. Mobile money-based credit products have emerged in some countries, with mixed results (Box 3). The internet has also opened the way to creative methods for raising funds (Box 4). But borrowing from sources other than a bank—including informal lenders and family and friends— still predominates among informal business owners who report borrowing. Argentina and Colombia are the only representative countries where most of these borrowers use formal credit sources.



Source: World Bank Global Findex database and Gallup World Poll.
 Note: The height of the bar is the percent of adults that are self-reported informal business owners.

Figure 16: Borrowing among informal business owners

Adults who report being self-employed or report owning a business with two or fewer employees (% age 15+), 2017



Source: World Bank Global Findex database and Gallup World Poll.
 Note: The height of the bar is the percent of adults that are self-reported informal business owners.

Box 3: Kenya and Tanzania: The opportunities and perils of digital credit for entrepreneurs

Mobile money has made it easier for entrepreneurs to access digital credit—lending that involves limited inperson contact and leverages digital infrastructure.^{xli} In Kenya and Tanzania—two of the world's mobile money hubs—all it takes is a few text messages to access small, short-term loans. Recent research by CGAP suggests that these digital credit services pose threats as well as opportunities. In Kenya – home of the world's first digital credit service – roughly a quarter of adults have taken out a digital loan. Entrepreneurs are among the beneficiaries: 37 percent of digital credit users report borrowing for short-term business needs (working capital), making this one of the two most frequently-cited borrowing purposes. Yet there are signs that some digital credit users have been drawn into dangerous debt. Roughly half of borrowers have missed at least one loan payment, while at least 13 percent say they defaulted on a loan. Business underperformance and income losses are the two main reasons for late repayment.^{xliii} To cover borrowing costs, half of borrowers report tapping into savings, a fifth report reducing food expenditures, and 1 in 6

report borrowing from other sources (primarily friends and relatives). In Tanzania, 72 percent of digital credit users are self-employed. Overall, roughly a third of borrowers (and less than 40 percent of self-employed borrowers) use their loans for business needs. More than half of all borrowers have missed a payment, while nearly 1 in 3 have defaulted. A lack of transparency has created risks for borrowers. In Tanzania, CGAP reports, "Just over a quarter of digital borrowers report that they were charged fees they didn't expect, that they did not fully understand the costs associated with a loan, or that a lender unexpectedly withdrew money from their account."^{xliii} These findings suggest that digital credit can pose risks to consumers – especially if there are no vigorous consumer protections. Steps are also needed to ensure that women have equal opportunities to benefit from financial innovations. In both Kenya and Tanzania, men make up the majority of digital credit users.

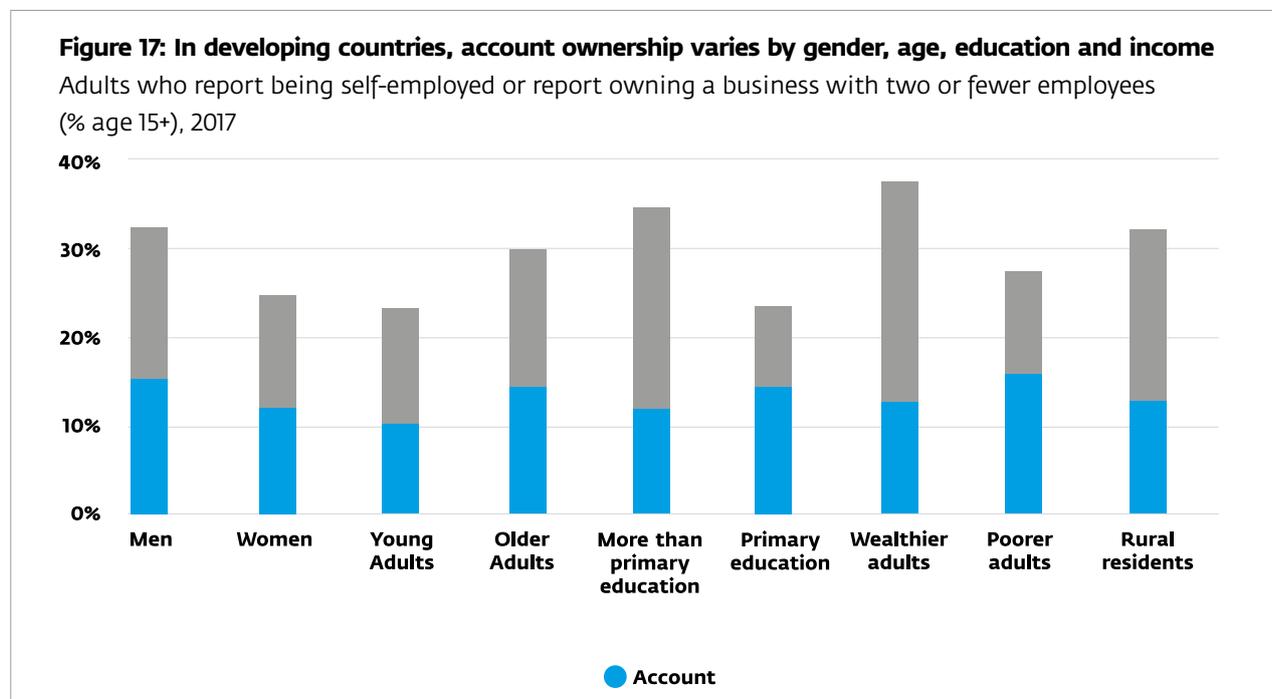
Box 4: China: Raising SME financing through internet-based crowdfunding

It is notoriously difficult for SMEs to get loans from traditional banks – but digital technology has given rise to new financing models. China's first internet equity-based crowdfunding website was launched in 2011. Within a few years, the number of platforms exceeded 300, raising a total of almost US \$101.7 billion in 2015.^{xliv} Most of the funding has gone to risky, innovative technical projects which were searching for startup funding. At first, these platforms were predominantly used by small businesses to raise small investments from a wide body of investors that included the public. More recently, the government has enacted regulations that limit the total number of investors, exclude the public from participating, and establish high investment minimums. A World Bank Group study finds that internet crowdfunding has the potential to alleviate funding constraints faced by small businesses in China, though regulatory uncertainty persists.^{xlv}

2.2.3 Account ownership among informal business owners varies by gender and income

The share of informal business owners who have an account varies by demographic characteristics. In developing countries, account ownership stands at 52 percent among men who have an informal business. Among women who have an informal business, the share is 46 percent (Figure 17). While 54 percent of informal business owners in wealthier households have an account, the same is true of just 39 percent of informal business owners in poorer households. The gap is similar between informal business owners with a secondary education or more and a primary education or less.

In developing countries, account ownership stands at 52 percent among men who have an informal business. Among women who have an informal business, the share is 46 percent



Source: World Bank Global Findex database and Gallup World Poll.
Note: The height of the bar is the percent of adults that are self-reported informal business owners.

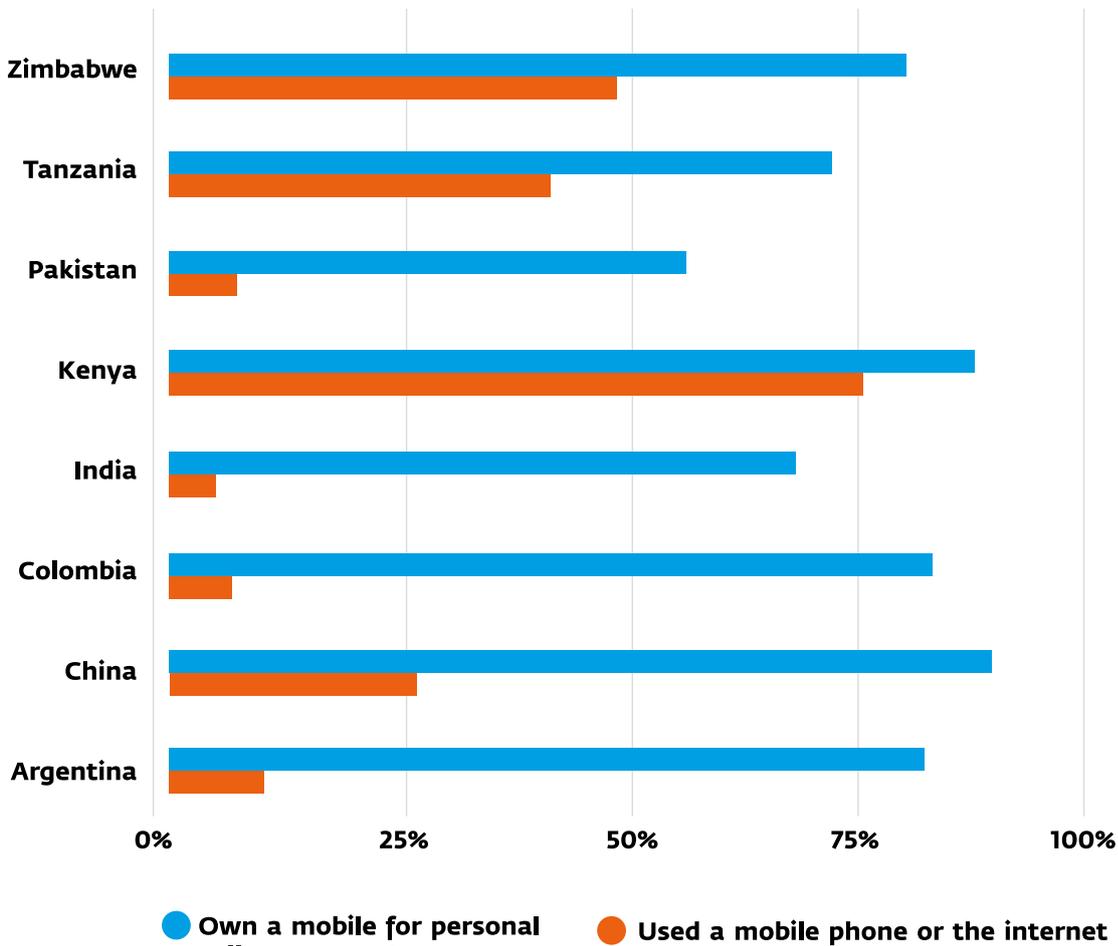
2.2.4 Use of digital payments by consumers

Digital retail payments are an important financial service for merchants. Naturally, a merchant's decision to adopt digital payments depends on the number of his or her customers using digital systems. Globally, the number of adults using digital payments varies. In high-income countries, 87 percent of adults on average have a debit or credit card, and 78 percent used a plastic card to make a payment in the past year. The share is lower in developing countries, where only 31 percent report having a card and only 16 percent made a payment with a card. The ownership of plastic cards ranges from a high of 60 percent in China and 52 percent in Argentina, to a low of 17 percent in Tanzania and 10 percent in Pakistan.

Similarly, half of all adults, on average, in high-income countries have used a phone or the internet to make a payment from their account, compared to 15 percent in developing countries on average. Whereas 76 percent of adults in Kenya made a payment using their mobile, only 7 percent of adults in Pakistan did so. However, the data in Figure 18 shows that large shares of adults are in a position to adopt digital payments. In India, nearly 70 percent of adults have a mobile phone, while only about 5 percent use a mobile phone or the internet to make a payment. Yet it is important to remember that any expansion of digital merchant payments should be accompanied by adequate regulations and protections for consumers.

Figure 18: The huge potential for mobile payments in developing countries

Adults who report owning a mobile phone and making payments using a phone or the internet (% age 15+), 2017



Source: Gallup World Poll (2017) and Global Findex (2017).

3. Barriers to formality and country experiences addressing such barriers

This section documents some of the key barriers, especially taxation, that prevent companies from formally registering their business operations. It explores the ways that digital technologies, such as electronic business registration, and digital financial services, such as digital tax payment systems, can help nudge underground firms toward the formal economy.

3.1 Taxation is the biggest barrier to formal registration

As section 2 of this paper notes, our analysis suggests that well-developed taxation systems are associated with higher formal business registration rates. This finding is consistent with academic research. Schneider and Williams examined the main drivers of the informal economy across various regions and countries from 1989 to 2012.^{xlvi} Their analysis suggests that the main reason people stay in the informal economy is to avoid paying taxes and social security. Informality is also shaped by public trust in the taxation system, quality of institutions, and state regulations (Table 1). Over the period examined, some nations that embraced tax reforms and other initiatives that increased incentives for business owners to register their companies saw a significant decrease in informal economic activity. This, along with extensive academic literature and economic analysis in a range of country settings, suggests that reforms aimed at addressing the non-financial factors that discourage businesses from registering can have a considerable impact on decreasing informal economic activity.

The main reason people stay in the informal economy is to avoid paying taxes and social security.

Table 1: Main causes behind the growth of the informal economy

Cause of increase in the informal economy	
	Average of 22 studies (%) [*]
Tax and social security contribution burdens	45-52
Quality of state institutions	12-17
Labor market regulation	7-9
Transfer payments	7-9
Public sector services	7-9
Tax morale	--
Influence of all factors	78-96

^{*} This is the normalized or standardized influence of the variable average over 12 studies (column a) and 22 studies (column b).
Source: Schneider and Williams (2013).

3.2 Digital financial services and technology can facilitate formalization

Digital technology can make it easier for firms to comply with tax requirements and other regulations. At the same time, the use of such tools can help governments remedy institutional weaknesses, which contribute to informality in developing countries. As Loeprick describes, the use of mobile phone-based banking systems allows businesses to pay taxes and fees while substantially reducing the number of physical interactions with tax officials (occasions that create opportunities for demanding bribes or other forms of corruption) and ensuring better recordkeeping and proper tax collection.^{xlvii} According to McKinsey, governments in emerging markets could save approximately US \$110 billion annually by utilizing digital services for tax and government-to-person payments.^{xlviii} The use of digital services in these cases could significantly reduce leakage in expenditure and tax collection due to corruption, and could potentially boost tax revenues by increasing the number of businesses joining the formal sector.^{xlix}

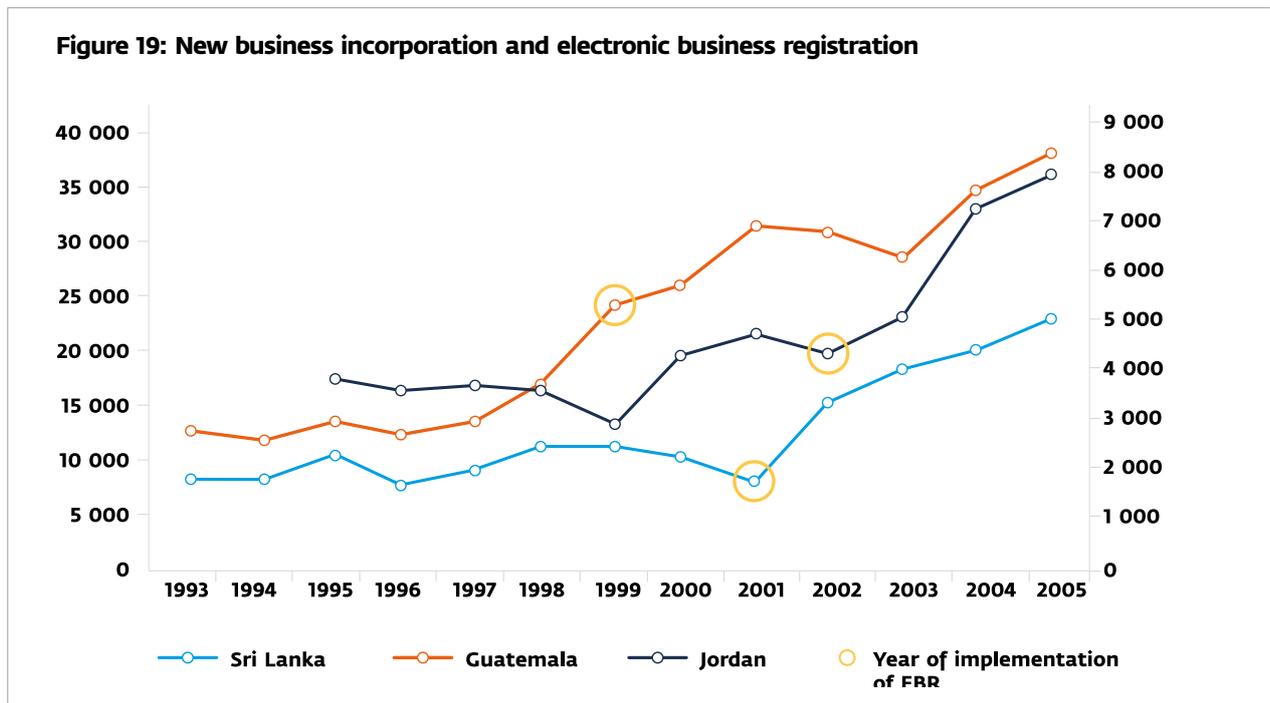
Digital technology can make it easier for firms to comply with tax requirements and other regulations. At the same time, the use of such tools can help governments remedy institutional weaknesses, which contribute to informality in developing countries.

Middle and high-income countries have sought to use digital tools such as electronic business registration, tax payments, and tax invoicing to encourage formalization. Others have simply tried to change their tax laws. Below, we review some of these cases.

3.2.1 Electronic business registration

Electronic business registration systems can improve a country's business environment and encourage businesses to register by reducing red tape and improving regulatory capabilities.¹ After Guatemala introduced e-registration in 1999, business registration jumped by 40 percent. Similar reforms in Jordan (1997) and Sri Lanka (2001) had modest positive impacts on new business registrations. World Bank Doing Business data demonstrate a modest positive relationship between the implementation of electronic registration systems and business incorporation (Figure 19). Still, developing countries are less likely than wealthier countries to have electronic registration systems. Klapper et al. (2013) found that nearly 90 percent of industrialized countries had e-registration services compared to a global rate of approximately 70 percent and a regional rate for Latin America and the Caribbean of about 54 percent.

After Guatemala introduced e-registration in 1999, business registration jumped by 40 percent. Similar reforms in Jordan (1997) and Sri Lanka (2001) had modest positive impacts on new business registrations.



Source: Doing Business database (2018).

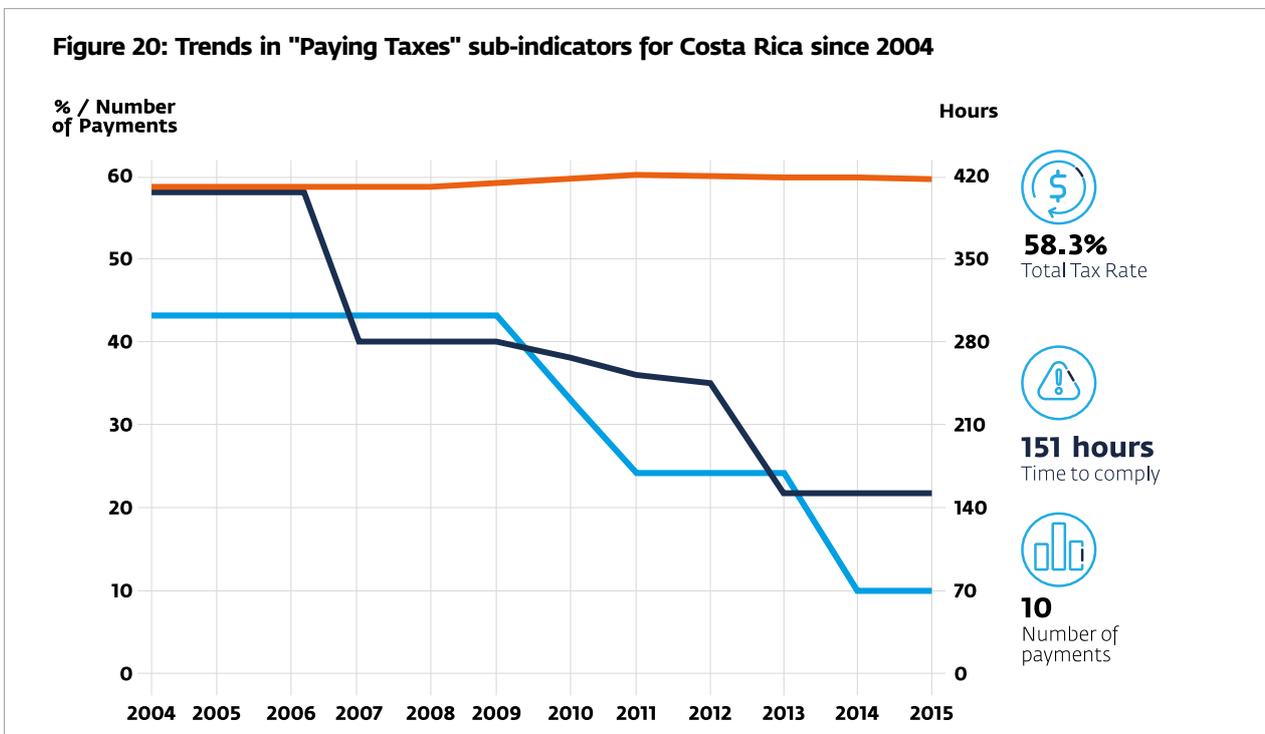
Reducing judicial involvement in registration decisions might help increase firm registration in places with weak public confidence in courts. Serbia introduced an electronic business registry in 2005 as part of reforms that transferred responsibility for business registration from the judiciary to a new administrative agency. Previously, judges were responsible for approving registration applications. The process was discretionary and created opportunities for registration decisions to get stuck in various legal bottlenecks. After the reform, registration decisions were made by a new office called the Serbian Business Registers Agency. Minimum capital requirements for LLCs were lowered, and registration rules were made more flexible. In the years following the reform, the number of new businesses increased by up to 34 percent. In regions where distrust in courts was high, the increase was even greater. The researchers also found positive impacts on firm survival, but did not find evidence that the reform impacted the number of employees at new firms or employment growth rates.ⁱⁱ

Serbia introduced an electronic business registry in 2005 as part of reforms that transferred responsibility for business registration from the judiciary to a new administrative agency.

In the years following the reform, the number of new businesses increased by up to 34 percent.

3.2.2 Electronic tax filing and payments

When Costa Rica mandated large taxpayers to file and pay their taxes electronically in 2002–2003, the government introduced a digital tax management system that includes simplified tax return filing requirements and an electronic payment option for person-to-government obligations. Further advances, including the acceptance of digital signatures in 2006 and the launch of the National System of Electronic Payments (Sinpe) in 2013, reduced the amount of time it takes businesses to comply with tax regulations. In the decade after 2005, the total required time reported by businesses dropped by more than 62 percent to an average of 151 hours, while the number of tax payments they were required to make also decreased (Figure 20).ⁱⁱⁱ



Source: World Bank Group and PricewaterhouseCoopers, 2016

3.2.3 Electronic tax invoicing

Implementing compulsory electronic tax invoicing (ETI) regimes can increase transparency and expand a country's tax base. But businesses may attempt to limit their paper trail or withdraw their formal registration if policy changes are ill received and enforcement mechanisms are weak, according to Lee.ⁱⁱⁱⁱ The Republic of Korea offers an example of how electronic tax invoicing systems can help to bolster tax collection. Since the late 1970s, the Republic of Korea has become increasingly reliant on its value-added tax (VAT) for revenues, which accounted for 29 percent of tax revenue in 2013. In 1997, South Korean officials rolled out an optional ETI system, which became compulsory in 2008. Officials in the finance ministry and tax agency coordinated

enforcement efforts and used the electronic tax invoicing system to monitor compliance in real time. As a result of beefed up enforcement, the ETI adoption rate reached 99.8 percent in the first year that adoption was compulsory, compared to only 15 percent under the optional ETI regime. Uruguay has also introduced tax incentives and policies aimed at moving cash transactions into formal financial accounts, thereby contributing to the formalization of the economy (Box 5).

In 1997, South Korean officials rolled out an optional Electronic Tax Invoicing system, which became compulsory in 2008.

As a result of beefed up enforcement, the ETI adoption rate reached 99.8 percent in the first year that adoption was compulsory, compared to only 15 percent under the optional ETI regime.

Box 5: Tax incentives to promote the use of digital payments in Uruguay^{iv}

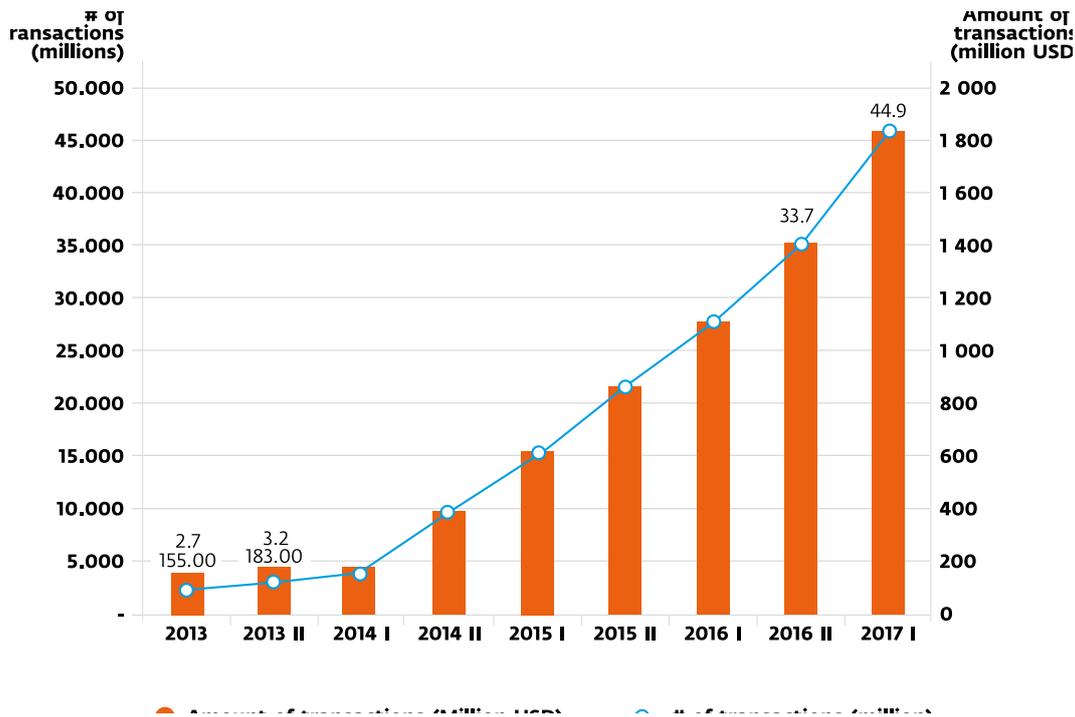
Although the benefits of electronic payments are well-documented, several barriers can reduce use of electronic payment systems. These include economic factors, such as the cost of use and the value provided to merchants, the financial risks of adopting digital payment technology, and difficulty persuading customers, especially low-income adults and those excluded from the formal financial sector, to use the system. Digitizing payments can address the institutional weaknesses that contribute to the existence of an informal economy, and can have a positive, if modest, impact in nudging firms toward formalizing their businesses.

Uruguay's 2014 financial inclusion law has made it mandatory to conduct a wide range of transactions through digital channels, including the payment of wages, salaries, and fees for professional services; pension payments; social welfare payments; and tax payments. At the same time, the government has taken steps to lower the costs for businesses adopting digital payment systems and to improve ease of use to encourage consumers to spend directly and digitally from their accounts. Measures include subsidizing the cost of adopting point-of-sale facilities for small businesses, slashing fees for digital payments, expanding interoperability among different brands, types, and networks of payments, lowering tax-withholding requirements for electronic sales made by small businesses, and reducing ATM fees. Consumers benefit from a VAT reduction for digital retail purchases as well as for utility bills that are paid digitally—a policy that can lead to more consumers to demand that merchants accept digital payments.

Early results suggest that the number of formal financial transactions has increased, and that the country's financial infrastructure has expanded. From 2014–2017, the volume of interbank transfers grew sevenfold and that of debit card transactions more than doubled; the number of point-of-sale (POS) terminals increased from 30,000 to more than 52,000; and the number of ATMs nearly doubled, to 2,200 (Figure 21). These reforms have only been in effect for a few years, and further research is needed to study if they will help increase formal business registration or employment.

Although digital transactions have increased in Uruguay, ongoing research using firm-level tax data show that there has been a negligible increase in tax revenue. A comparison of retail and wholesale firms (using multiple methodologies) before and after the 2014 financial inclusion reform estimates a zero effect on VAT liabilities. Even among small firms, an effect is hard to detect. This may be because firms that have card machines process only about 30 percent of their sales through electronic payment methods, so that even a large increase in electronic sales does not create a binding constraint requiring firms to declare higher tax liabilities.^{lv}

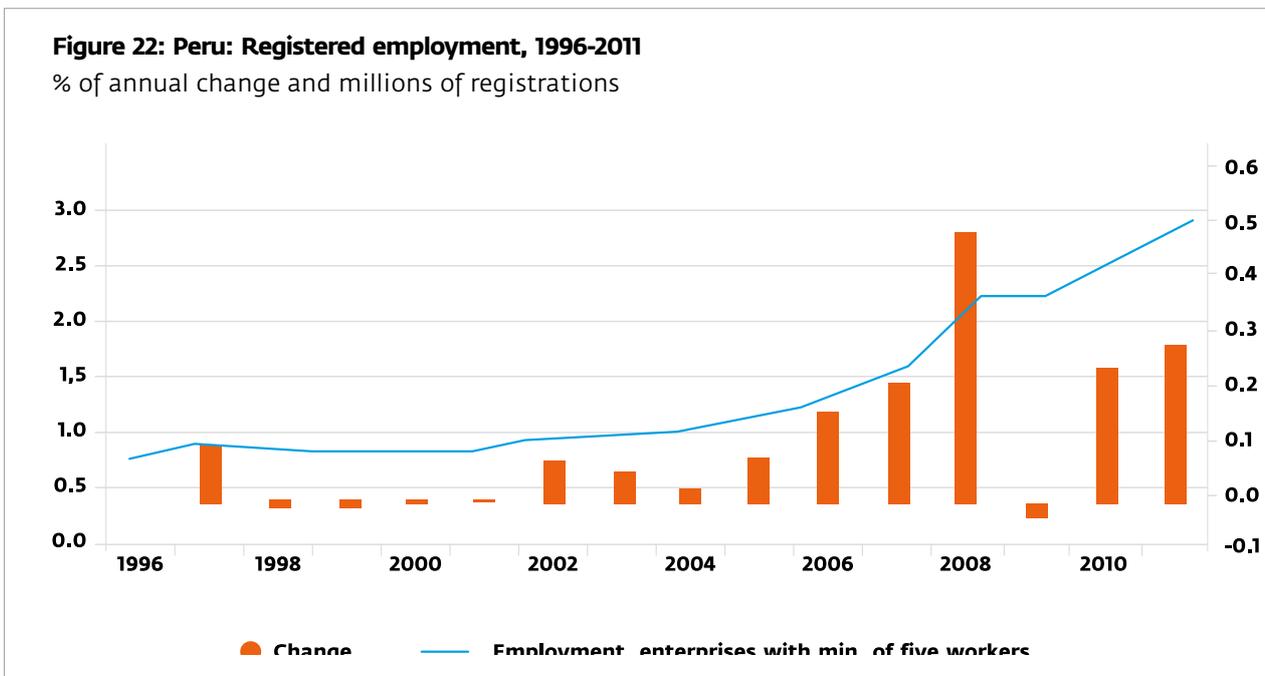
Figure 21: Debit card transactions in Uruguay



Source: BCU, Retail Payment System. Informative Report 16, 2017.

3.2.4 Electronic payroll technology

Electronic payroll technology can encourage formalization of business operations by creating digital records of employment relationships. In 2007, Peru rolled out an e-payroll system that requires firms with more than two employees to submit monthly reports to the tax authority on their workers, pensioners, and service providers. This has allowed e-payroll data to be cross-verified between labor regulators and tax authorities, which in turn has strengthened regulatory capacity and helped increase formal employment. The ILO estimates that after accounting for the role of growth in reducing informal economic activity, the government's e-payroll policy led to the registration of more than 275,000 new formal jobs.^{lvi} Meanwhile, the overall number of registered workers increased to more than 2.7 million in 2011 from only 1 million at the turn of the century. Despite these encouraging metrics, progress among micro and small enterprises has been limited, and, as of 2011, the e-payroll system only covers 7 percent of small and medium enterprises in the country.



Source: Diaz (2014).

An analysis by Ernst & Young in 2017 found that the impact of electronic wage payment systems on reducing informal economic activity was highly country-specific and varied based on the share of cash and cashless transactions, tax regimes and overall size of the shadow economy.^{lvii} Ultimately, regulations mandating the electronic payment of unemployment benefits were estimated to reduce the size of the passive shadow economy by 0.002-0.013 percent of GDP, compared to more effective reforms, such as electronic payment of wages (0.02-0.28 percent), and POS terminal requirements, which are estimated to reduce informal economic activity by 0.26 percent of GDP in Bulgaria up to 1.14 percent in the Czech Republic (Figure 23). Furthermore, mandating thresholds for consumer cash payments and POS terminal requirements were found to significantly increase government revenue from both VAT and corporate income taxes.

3.2.5 Reforming tax laws—with and without digital tools

Governments have tried reforming tax laws to reduce informal economic activity. Some of these efforts have involved the use of digital tools, while others have not. In Costa Rica, Brockmeyer and Hernandez show that a firm's reported tax liability increases sharply in the month in which the firm uses a debit/credit card machine for the first time. In addition, an increase in the tax withholding rate (applied by card processing companies) show that withholding increases tax compliance, particularly among small firms. Perry et al. discuss the use of tax reforms in conjunction with modern audit systems and other electronic services to reduce informal economic activity in Spain and Chile.^{lviii} The report suggests that strengthened oversight and enforcement efforts are more effective than standalone reforms aimed at easing administrative costs. In Spain, measures aimed at preventing tax evasion included cross-referencing business registration data with other databases and criminalizing specific tax offenses; these initiatives were central to the near doubling of the country's tax revenue to GDP ratio in the 1970s and 1980s. Similarly, in Chile, the use of digital auditing systems, together with consistent imposition of penalties for non-compliance, increased both oversight capabilities and tax collection and compliance rates.

Governments have had mixed success using only tax reforms to try and curb the shadow economy.

Governments have had mixed success using only tax reforms to try and curb the shadow economy. The Brazilian government in 1996 adopted a streamlined tax regime for microenterprises with a maximum of five paid employees. The objective was to promote small, unskilled firms by facilitating formalization and fostering competitiveness. The program was known as Simples Nacional. As detailed in Elk and Kok,^{lix} the SIMPLES program introduced a simplified tax system along with reduced tax rates and social contribution requirements and was accompanied by an extensive information campaign particularly targeted at urban populations.

Previously, businesses would often be required to register with multiple agencies at different levels of government, a burdensome policy that inhibited economic formalization. The reforms allowed many small and micro businesses to pay a single monthly contribution based on a percentage of their revenue.

Survey data from 1997 found that formalization rates among microenterprises established immediately following the implementation of SIMPLES were markedly higher than those founded immediately prior. This suggests that the program encouraged businesses to register with authorities at the time of founding. Critically, findings documented by Fajnzylber and Maloney, and Elk and Kok suggest that microenterprises that registered at the time of founding tended to maintain a fixed presence in an area, which in turn, can promote firm growth.^{lx} However, formal registration was not associated with a meaningful increase in the companies' access to external capital.

Besides increasing licensing between 7.1 percent and 11.6 percent, statistics suggest that the SIMPLES program also bolstered tax payments by 3–5 percent, with these and similar positive effects more significant for firms with paid employees. And formal firms were found to have revenues and profits that were 55–57 percent higher and 45–49 percent higher, respectively, than firms operating in the informal sector. However, more recent analysis of the SIMPLES program by Piza, who sought to reconcile conflicting empirical studies, found little evidence that the program had a large impact on formalization rates.^{lxii} The inconclusive results of the program's impact should cause policymakers to reconsider simplifying tax systems as a standalone reform. In Georgia, a simplified tax system aimed at microenterprises increased small-firm registration by 27 percent to 41 percent in the first year, but there was no increase in the following years. The researchers found evidence that the system was abused. Small taxpayers reduced their tax compliance for several years after the reform, and microenterprises did so during the reform's first year.^{lxiii}

4. Policy considerations and conclusions

Although most efforts to formalize firms have had modest impacts, reducing the size of the informal economy could prove beneficial on several levels. For firms, formalization could bring profitable new business relationships, including with supply chain leaders. Formalization might also help improve firm performance and access to financial services. Wider use of digital technology for formal financial transactions could provide governments access to new tax revenues.

There are reasons to believe that digital financial services accessed through mobile phones and the internet could accelerate and lower the costs of formalization.

Strengthening formalization does not need to come at the expense of jobs. Some research suggests that cracking down on the informal economy does not increase unemployment and might instead increase wages, output, and welfare by moving workers into better jobs in the formal sector.^{lxiii} More generally, promoting entrepreneurship can create new jobs, especially during economic downturns,^{lxiv} and have a positive impact on economic growth.^{lxv}

There are reasons to believe that digital financial services accessed through mobile phones and the internet could accelerate and lower the costs of formalization. Use of digital financial services for business transactions – including retail sales and wage payments – may also increase transparency and registration of economic activity. Digital technology can speed up the process of formalization by facilitating online registration. Online tax and fee payments have the potential to improve ease of compliance as well. Therefore, adoption of digital financial services is a step on the road to formality. Digital financial services offer firms and individuals access to economic opportunities, such as access to new markets and alternative data to gauge creditworthiness. But the benefits of formalization are not automatic. Researchers in Malawi found that business registration improved firm performance and access to bank accounts – but only when coupled with 20-hour information sessions explaining financial services and how they can be used for business purposes.^{lxvi}

However, pushing firms to formalize can have negative economic consequences. As was discussed in the research on Benin, the cost of enforcing compliance with tax policies and other business regulations far exceeded the immediate benefits for the government and presumably also for the microenterprises that were reluctant to formalize. Aggressively trying to reduce informality could put small, marginal firms out of business. In the absence of robust safety nets or opportunities for formal employment, people affected could end up worse off. There are added downsides to using the financial system to compel formalization. If informal firms believe that using formal financial services will increase their tax burden, for example, they may opt out of the formal financial system, thereby reducing financial inclusion. It makes sense for policymakers to promote financial inclusion in order to facilitate development goals such as gender empowerment, food security, and ability to manage economic shocks. However, there is probably less benefit in explicitly pairing financial inclusion to formalization compliance in areas such as taxes, at least for low income individuals and microenterprises.

However, pushing firms to formalize can have negative economic consequences.

In light of the above, governments are exploring the possibility of harnessing digital financial inclusion as part of broader programs to reduce informality. This section outlines questions for policymakers to consider as they grapple with these issues.

- *Who may be excluded from the digital economy as formalization and digital financial inclusion efforts proceed?*

Not everyone will benefit from government efforts to promote digital financial services and formalization. For example, some firms and individuals might not have access to the technology needed to access digital financial services. Some communities—such as immigrants—might lack the legal status or documentation to use accounts, savings, or digital payments. In many developing countries, most firms and business activities, including through self-employment, remain informal, and transactions are largely made in cash, even where formal financial options exist and mobile phones and other technology that could facilitate access to digital financial services are ubiquitous. As policymakers seek to promote financial inclusion and business formalization, they should ensure that disadvantaged populations are not excluded from the digital economy. Groups that merit special attention include women, rural populations, migrants, the least educated, the poor, and disabled people.

As policymakers seek to promote financial inclusion and business formalization, they should ensure that disadvantaged populations are not excluded from the digital economy. Groups that merit special attention include women, rural populations, migrants, the least educated, the poor, and disabled people.

A review of the literature and country experiences shows the importance of recognizing that different market segments, such as farmers, microenterprises, and SMEs, need different policy approaches. As discussed in the paper, it is important to tailor policy responses to the realities and needs of different population groups and different economic contexts. For instance, incentives to formalize and access digital financial services might be most attractive to firms that aspire to increase customers and foreign sales, hire more workers, purchase property, or access formal pensions or bank credit. Moreover, recent research in Malawi suggests that even firms that could benefit from formalization might need additional information and training about how to access the benefits of being formally registered.

- *Is infrastructure available to maximize the benefits of digital financial services for businesses that join the formal economy?*

Policymakers need to ensure that the needed infrastructure is present to make formalization and digital financial inclusion more appealing for firms than if they were to remain in the informal economy. When individuals or firms perceive greater benefit from formalizing, such as gaining access to financial services, they are more likely to decide to emerge from the shadow economy. Likewise, shifting from cash to digital financial services is only attractive if options for making electronic transactions are widely available and cheaper than the alternatives. Governments can help by investing in systems that simplify business registration and fee payments; building financial systems infrastructure; and incentivizing investments by the private sector through subsidies or tax breaks. Fair competition policies, interoperability of payments systems, and consumer protections are also key components of a vibrant digital financial infrastructure. Other policies, such as the establishment of a national digital identification system, can help to reduce costs of moving to the formal economy for all stakeholders, including consumers, financial service providers, and governments. It might also be important to invest in programs to educate small business owners on how they can use financial services.

- *Where is new research needed?*

Analysis on how digital financial services can impact formalization decisions has up to now largely been based on limited or anecdotal evidence, and much more data collection and research on the topic is needed. Using a proxy for informality based on self-employment or a firm size of no more than two employees, the analysis in this paper shows significant variation both in levels of informality and in use of digital finance across countries. Unfortunately, the data do not allow for direct analysis of how access to formal financial services, and especially digital financial services, impacts formalization.

Further research is needed to understand links between digital financial services and aspects of business formalization. For example, tax morale—people's attitudes toward paying taxes—has been shown to significantly influence business owners' decision to remain in the informal economy.

Further research is needed to understand links between digital financial services and aspects of business formalization. For example, tax morale—people's attitudes toward paying taxes—has been shown to significantly influence business owners' decision to remain in the informal economy. One contributing factor to poor tax morale is a lack of confidence in the tax system, which is related to a lack of transparency. Future research could explore whether digital financial services promote greater transparency and fairness in tax collection, and thereby help to boost tax morale. It would also be worth probing any relationships between digital financial inclusion and business registration and compliance with regulations on labor, health, safety, and environmental protection.

- *What are the most promising ways forward?*

The paper briefly describes research on efforts to increase formalization through policies and programs that directly target informality, including through tax policy, enforcement and business registration. The evidence indicates that reducing informality through more narrowly defined approaches, such as streamlining business registration or simplifying the tax code, often results in only small changes. For larger firms which are far above the subsistence levels, a few factors have stood out in their considerations on whether to formalize operations:

- **Quality of enforcement/institutional strength:** In several examples included in this paper, the quality of enforcement was critical in reducing informality. When South Korea introduced optional electronic tax invoicing, adoption and compliance was only 15 percent – but that number rose to 99.8 percent when the policy became compulsory.
- **Creating incentives:** In Uruguay, the 2014 financial inclusion law created tax incentives to encourage use of digital payments for both firms (lowered tax withholding) and consumers (VAT reduction). In the years since the law was enacted, formal transactions have increased 7-fold and digital payment infrastructure (ATMs, point-of-sale terminals) has expanded to keep up with demand.

Ultimately, the relationship between formalization of small firms and digital financial services remains unclear. But the analysis in this paper suggests that fair, efficient taxation systems, combined with widespread access to affordable and transparent financial services, can help countries nurture formal entrepreneurship.

5. Endnotes

- i International Labour Conference, Recommendation 204, "Recommendation Concerning the Transition from the Informal to the Formal Economy," June 12, 2015.
- ii Johannes P. Jütting and Juan R. de Laiglesia, "Is informal normal? Towards more and better jobs in developing countries," OECD 2009, p. 11
- iii Friedrich Schneider, Andreas Buehn, and Claudio E. Montenegro, "Shadow Economies All over the World: New Estimates for 162 Countries from 1999 to 2007," World Bank Policy Research Working Paper 5356, July 2010; Friedrich Schneider and Colin C. Williams, "The Shadow Economy," Institute of Economic Affairs 2013, p. 25.
- iv In this paper, the data and analysis include anyone who identifies themselves as "self-employed", which would apply to adults engaged in any type of economic activities, including agriculture.
- v Friedrich Schneider "Outside the State-The Shadow Economy and Shadow Economy Labor Force", p. 15
- vi Friedrich Schneider, "Out of the Shadows: Measuring Informal Economic Activity," in Heritage Foundation, 2016 Index of Economic Freedom, p. 41.
- vii Loayza, N. 2018. "Informality: Why Is It So Widespread and How Can It Be Reduced?" Research & Policy Brief No. 20, World Bank Malaysia Hub, World Bank Group.
- viii IFC "Closing the credit gap for formal and informal micro, small and medium enterprises" 2013, p. 7.
- ix Guillermo E. Perry et al., Informality: Exit and Exclusion. World Bank, 2007, p. 10.
- x There are reasons beyond income which might explain the higher number of LLCs in high income countries. For example, in poorer countries, there might be fewer firms overall, with more people employed in agriculture. And firms might use forms of registration other than limited liability incorporation.
- xi These eight countries are priorities for the UNSGSA.
- xii Kanbur, R. 2017. "Informality: Causes, consequences, and policy responses." Review of Development Economics 21(2017): pp. 939-961.
- xiii Rand, J., and N. Torm. 2012. "The Benefits of Formalization: Evidence from Vietnamese Manufacturing SMEs." World Development 40(5): pp. 983-998.
- xiv Campos, F., M. Goldstein, and D. McKenzie (2018), "How should the government bring small firms into the formal system? Experimental evidence from Malawi," World Bank Policy Research Working Paper No. 8601.
- xv De Mel, S., D. McKenzie, and C. Woodruff. 2013. "The Demand for, and Consequences of, Formalization among Informal Firms in Sri Lanka." American Economic Journal: Applied Economics 2013, 5(2): pp. 122-150.
- xvi De Andrade, G.H., M. Bruhn, and D. McKenzie. 2014. "A Helping Hand of the Long Arm of the Law? Experimental Evidence on What Governments Can Do to Formalize Firms." World Bank Economic Review 30(1): pp. 24-54.
- xvii Ulyssea, G. 2018. "Firms, Informality, and Development: Theory and Evidence from Brazil." American Economic Review 108(8): 2015-2047.
- xviii Benhassine, N., D. McKenzie, V. Pouliquen, and M. Santini. 2018. "Does inducing informal firms to formalize make sense? Experimental evidence from Benin." Journal of Public Economics 157(2018): pp. 1-14.
- xix De Giorgi, G., and A. Rahman. 2013. "SME's registration: Evidence from an RCT in Bangladesh." Economics Letters 120(2013): pp. 573-578.
- xx Bruhn, M., and D. McKenzie. 2014. "Entry Regulation and the Formalization of Microenterprises in Developing Countries." World Bank Research Observer 29(2): pp. 186-201.
- xxi Ulyssea, Gabriel. 2018. "Firms, Informality, and Development: Theory and Evidence from Brazil." American Economic Review, 108 (8): 2015-47.

- xxii Alstadsaeter, Annette, Niels Johannesen, and Gabriel Zucman. "Tax Evasion and Inequality." Forthcoming from the American Economic Review.
- xxiii Bachas, Pierre, Roberto N. Fattal Jaef, and Anders Jensen. 2018. "Size-Dependent Tax Enforcement and Compliance: Global Evidence and Aggregate Implications." World Bank Policy Research Working Paper No. 8363.
- xxiv La Porta, R., and A. Shleifer. 2014. "Informality and Development." *Journal of Economic Perspectives* 28(3): pp. 109-126.
- xxv Breza, E., M. Kanz and L. Klapper. 2017. "The Real Effects of Electronic Wage Payments: First Results." International Growth Centre.
- xxvi Blumenstock, Joshua E., Michael Callen, Tarek Ghani, and Lucas Koepke. 2015. "Promises and Pitfalls of Mobile Money in Afghanistan: Evidence from a Randomized Control Trial." In *Proceedings of the Seventh International Conference on Information and Communication Technologies and Development*.
- xxvii Beck, T., H. Pamuk, R. Ramrattan, and B.R. Uras. 2018. "Payment instruments, finance, and development." *Journal of Development Economics* (2018): forthcoming.
- xxviii Suri, T., and W. Jack. 2016. "The long-run poverty impacts of mobile money." *Science* 354(6317): pp. 1288-1292.
- xxix JPAL. 2018. "Microcredit: impacts and limitations." J-PAL Policy Insights. Last modified April 2018.
- xxx Dupas, P., and J. Robinson. 2013. "Saving Constraints and Microenterprise Development: Evidence from a Field Experiment in Kenya." *American Economic Journal: Applied Economics* 2013, 5(1): pp. 163-192.
- xxxi Brune, L., X. Gine, J. Goldberg, and D. Yang. 2016. "Facilitating Savings for Agriculture: Field Experimental Evidence from Malawi." *Economic Development and Cultural Change* 64(2): pp. 187-220.
- xxxii Karlan, D., B. Savonitto, B. Thuysbaert, and C. Udry. 2017. "Impact of savings groups on the lives of the poor." *PNAS* 114(12), pp. 3079-3084.
- xxxiii Karlan, D., R. Osei, I. Osei-Akoto, and C. Udry. 2015. "Agricultural Decisions after Relaxing Credit and Risk Constraints." *Quarterly Journal of Economics* 129(2): pp. 597-652.
- xxxiv Cole, S., X. Gine, J. Tobacman, P. Topalova, R. Townsend, and J. Vickery. 2013. "Barriers to household risk management: Evidence from India." *American Economic Journal: Applied Economics* 5(1): pp. 104-135; Mobarak, A. M., and M. R. Rosenzweig. 2013. "Informal Risk Sharing, Index Insurance, and Risk Taking in Developing Countries." *American Economic Review: Papers & Proceedings* 103(3): pp. 375-380.
- xxxv Janzen, Sarah A., and M. R. Carter. 2018. "After the drought: The impact of microinsurance on consumption smoothing and asset protection." NBER Working Paper 19702.
- xxxvi For an overview, see: Klapper, L., and J. Hess. 2017. "Financing for SMEs in Sustainable Global Value Chains." Washington, DC: World Bank.
- xxxvii Better Than Cash Alliance. 2018. "The Future of Supply Chains: Why Companies Are Digitizing Payments." Business Series, June 2018.
- xxxviii IPA. 2017. "Beyond the Classroom: Evidence on New Directions in Financial Education." Financial Inclusion Program Brief, Innovations for Poverty Action.
- xxxix Kendall, Matt. 2017. "Q&A: Mariano Mayer Reveals the Key Strategies behind Argentina's Entrepreneurial Ambitions." *Nearshore Americas*, September 5.
- xl The Hindu, "48 lakh MSMEs registered on Udyog Aadhaar portal," July 18, 2018.
- xli For an overview of Digital Credit, see "An Introduction to Digital Credit: Resources to Plan a Deployment" from CGAP: <http://www.cgap.org/blog/introductory-course-digital-credit>.
- xlii Totolo, Eduardo. 2018. "Kenya's Digital Credit Revolution Five Years On." Washington, DC: CGAP.
- xliii Kaffenberger, Michelle. 2018. "Helping or Hurting? 10 Facts About Digital Credit in Tanzania." Washington, DC: CGAP.

- xliv Crowdfunding Innovation. 2017. "Country fiche for China." Study commissioned by the European Commission.
- xlv World Bank Group. 2018. "Toward Universal Financial Inclusion in China: Models, Challenges, and Global Lessons."
- xlvi Schneider, F., and C. C. Williams. 2013. "The Shadow Economy." Institute of Economic Affairs.
- xlvii Loeprick, Jan. 2009. "Small Business Taxation: Reform to Encourage Formality and Firm Growth." World Bank Investment Climate in Practice Note 48313.
- xlviii McKinsey & Company. 2016. "Digital Finance for All: Powering Inclusive Growth in Emerging Economies."
- xlix Sharma, S. 2009. "Entry Regulation, Labor Laws, and Informality." World Bank Enterprise Note Series No. 50337.
- I Klapper, L., R. Amit, M.F. Guillén and J. Quesada. 2013. "Entrepreneurship and Firm Formation Across Countries." World Bank Group and the Wharton School, University of Pennsylvania.
- li Bruhn, M., C. Cho, and A. Marusic, et al. 2018. "Courts and Business Registration: Evidence from Serbia." World Bank Policy Research Working Paper 8611, October 2018.
- lii World Bank Group and PWC. 2016. "Paying Taxes 2016: The 10th Edition."
- liii Lee, H.C. 2016. "Can Electronic Tax Invoicing Improve Tax Compliance?: A Case Study of the Republic of Korea's Electronic Tax Invoicing for Value-Added Tax." World Bank Policy Research Working Paper 792.
- liv This box draws from Arenaza, S., and C. Trivelli. 2017. "Tax incentives to promote the use of digital payments with a focus on financial inclusion: Uruguay's experience." Better Than Cash Alliance, Evidence note, January 2017.
- Iv ILO. 2014. "Trends in Informal Employment in Peru: 2004-2012."
- lvi Ernst & Young. 2017. "Reducing the Shadow Economy through Electronic Payments."
- lvii Guillermo E. Perry et al., Informality: Exit and Exclusion. World Bank, 2007.
- lviii Brockmeyer, Anne and Marco Hernandez, 2019. "Taxation, Information and Withholding: Evidence from Costa Rica." World Bank.
- lix Van Elk, K., and J. Kok. 2014. "Enterprise formalization: Fact or fiction? A quest for case studies. ILO and GIZ.
- Ix Fajnzylber, P., and W. Maloney. 2011. "Does formality improve micro-firm performance? Evidence from the Brazilian SIMPLES program." *Journal of Development Economics* 94(2), pp. 262-276.
- lxi Piza, C. 2016. "Revisiting the Impact of the Brazilian SIMPLES Program on Firms' Formalization Rates." World Bank Policy Research Working Paper 7605.
- lxii Bruhn, Miriam and Jan Loeprick. "Small business tax policy and informality: evidence from Georgia" *International Tax and Public Finance*, 23(5): 834-853, 2016.
- lxiii Meghir, C., R. Narita, and J.M. Robin. 2015. "Wages and Informality in Developing Countries." *American Economic Review* 2015 105(4): pp. 1509-1546.
- lxiv Adelino, M., S. Ma, and D. Robinson. 2017. "Firm Age, Investment Opportunities, and Job Creation." *Journal of Finance* LXXII(3): pp. 999-1038.
- lxv Prieger, J.E., C. Bampoky, L. R. Blanco, and A. Liu. 2016. "Economic Growth and the Optimal Level of Entrepreneurship." *World Development* 82: pp. 95-109.
- lxvi Campos, F., M. Goldstein, and D. McKenzie (2018), "How should the government bring small firms into the formal system? Experimental evidence from Malawi," World Bank Policy Research Working Paper No. 8601.

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