Informality: causes and consequences for development[*]

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Abstract

This article reviews the economic literature on informality, its causes and consequences for development. It covers a comprehensive body of research that ranges from well-identified experimental studies to equilibrium macro models, and more recently includes structural models that integrate both micro and macro effects. The results available in the literature indicate that lowering the costs of formality is not an effective policy to reduce informality but may generate positive aggregate effects, such as higher output and TFP. The most effective formalisation policy is to increase enforcement on the extensive margin but not on the intensive margin of informality. The former generates substantial gains in aggregate TFP and output, without necessarily increasing unemployment. However, the overall welfare impacts are likely to depend on the transitional dynamics between steady states, which remains as an open area for future research.

1 INTRODUCTION

The presence of a large informal sector is a defining characteristic of most developing economies. It accounts for between a third and two-thirds of economic activity, 20-80 percent of the labour force and an equally large share of firms in these countries (e.g. Schneider and Enste, 2000; Perry et al., 2007; La Porta and Shleifer, 2008; Ulyssea, 2018). The aim of this article is to review the extensive economic literature that studies informality, its main characteristics, causes and consequences for firms, workers and economic development. To do so, I cover different literature streams that include theoretical developments in conjunction with data, empirical analyses that make credible attempts to draw causal inferences from data and a more recent, but rapidly expanding body of literature that relies on structural estimation.

I start by clearly defining the object of analysis, as informality can be an elusive concept. Indeed, a substantial fraction of the earlier literature focused on the discussion of informal sector's definition. The dominant approach that has emerged from this literature has been dubbed as the "legalistic definition", which defines informal firms and workers as those operating at the margin of the relevant laws and regulations (e.g. Perry et al., 2007).[1] Informal firms are therefore those that not comply with such regulations – for example, not being registered with the tax authorities – and informal workers are those who do not have a formal labour contract. This is the definition used throughout this article.

While the definition of labour informality seems straightforward, that of firm informality is arguably less clear-cut, as firms' compliance is less likely to be a binary decision. For example, in both developed and developing countries many formally registered firms evade taxes by underreporting revenues, which implies partial compliance with tax regulations. Also crucially for the analysis of informal employment, many formal firms hire some fraction of their labour force informally to evade the costs implied by the labour regulation. I thus use the same definitions from my previous work (Ulyssea, 2018) and throughout this review I distinguish between the following margins of informality: (i) extensive margin, whether firms register and pay entry fees to achieve a formal status; and (ii) intensive margin, whether firms that are formal in the first sense hire workers without a formal contract. Sector membership is defined by the extensive margin and the (in)formal sector is comprised by (in)formal firms. As it will be clear throughout this article, the distinction between these two margins of

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[1]An alternative approach is the so-called "productive definition", which defines informal firms and workers according to their productive characteristics, such as being low-productivity or unskilled, small in size and performing low-complexity tasks in low-quality jobs (for discussions, see Fields, 1990; Maloney, 2004; Perry et al., 2007).

informality is crucial.

Having defined what informality is, in Section 2 I start by reviewing some of the main stylised facts that have been established in the literature. These facts help rationalising some of the main modelling choices found in the literature, but more importantly they provide an important background for the discussion of the causes and consequences of informality, which is the main focus of this review. Section 3 thus proceeds to the discussion of the causes. Informality is an endogenous outcome that emerges as the result of firms' and workers' optimal behaviour given their own characteristics (e.g. ability) and the environment they face, which includes: institutions, including laws and regulations; government policies, such as enforcement and welfare programs; and the economic cycle. Therefore, in order to understand the determinants of informality one must build from the micro level – i.e. the behaviour of firms and workers – to the macro level. I do so by separately discussing the determinants of firms' and workers choices in Sections 3.1 and 3.2, respectively. In both cases, I combine the reduced-form evidence with results from structural models.

Having discussed the main determinants of firm and worker informality, Section 4 reviews what we have learned from the literature about the consequences of informality. Since informality is the result of individual agents' decisions, it will clearly have direct implications for (micro) outcomes at the firm, worker and household levels. For example, it can distort firms' size and investment decisions, or individuals' investments in formal schooling and on-the-job, human capital accumulation. Moreover, given the magnitude of informality and the scale of formalisation policies, there are important general equilibrium effects that go beyond the simple aggregation of individual effects. Importantly, since aggregate informality levels build up from micro level decisions of firms and workers, the aggregate effects of having lower or higher levels of informality are intrinsically connected to the means used to achieve them, which can be broadly classified into two groups: (i) those that increase the benefits (or decrease the costs) of formality; and those that increase the costs (decrease the benefits) of formality. The discussion in Section 4 thus follows this classification.

Finally, Section 5 concludes.

2   INFORMALITY FACTS

The challenges of studying informality start with its measurement, since by definition informal activities are not officially registered. The literature has used a combination of direct and indirect approaches to measuring informality (Perry et al., 2007). The direct approach relies on micro data – typically from surveys and, to a lesser extent, tax

audits – which allows both measuring the size of the informal sector and characterising informal firms and workers.[2] I focus on this approach throughout this review.

2.1   Firms

The literature has established a number of facts about informal firms using data from a broad set of countries. It has been systematically shown that informal firms are on average smaller (both in terms of employees and revenues), pay lower wages, are run by less educated individuals, hire less educated workers and earn lower profits than formal firms (e.g. Perry et al., 2007; La Porta and Shleifer, 2008, 2014).

Duality (or lack thereof)   The above differences between formal and informal firms have been often interpreted as evidence of a dualistic view, according to which these firms operate in entirely separate economic spaces, using completely different technologies and producing distinct goods. However, in Ulyssea (2018) I show that formal and informal firms in Brazil coexist even within narrowly defined industries, which contradicts this dualistic view. In a much earlier paper, Maloney (1999) makes the same point using worker-level data and examining transitions between sectors in the Mexican labour market.

More interestingly, not only they coexist within the same industries producing similar products, but there is a substantial overlap in formal and informal firms' productivity distributions, even within industries (Meghir et al., 2015; Ulyssea, 2018; Allen et al., 2018). Thus, over a considerable range in the productivity support one can find firms with the same level of productivity in either the formal or informal sectors, which is also inconsistent with the dual view of informality. Finally, Hsieh and Klenow (2014) find no evidence of a "missing middle" in firm size distributions in the manufacturing sectors of India, Indonesia, or Mexico. The same is true in Brazil even if one incorporates informal firms and data from all industries (Ulyssea, 2018). This is important, as the missing middle is an important presumed fact behind development theories that rely on some variation of the "dual economy" view (for an in-depth discussion, see Hsieh and Klenow, 2014).

The margins of informality   A well-documented fact in the literature is that the extensive margin of informality declines with firm size, that is, the share of informal firms rapidly declines as firms grow larger (e.g. Perry et al., 2007; De Paula and Scheinkman,

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[2]The indirect approach is more aggregate in nature and attempts to measure the size of the informal economy by exploiting discrepancies between aggregate variables, or by combining these variables with a model (e.g. Loayza, 1996; Schneider and Enste, 2000).

2011). This is an important fact, as it indicates that the costs of operating in the informal sector are increasing in firm size. This will be the case, for example, if the probability of detection increases with size (as larger firms are more visible to the government). More broadly, the opportunity costs of operating in the informal sector are likely to be increasing in firm size (and productivity), as larger firms might have greater need of accessing formal credit markets or issuing tax receipts to buyers, among other factors.

Albeit less emphasised, the intensive margin represents a substantial fraction of informal employment in developing countries: 56 percent in Mexico (de la Parra, 2016), at least 40 percent in Brazil (Ulyssea, 2018), and 32 percent in Peru (Cisneros-Acevedo, 2019). As observed for extensive margin, the intensive margin also declines as firms grow larger: the average share of informal employees *within formal firms* declines with firm size.[3] Again, this can be directly rationalised by the fact that larger firms are more visible and therefore more likely to be inspected.

Firm dynamics There is growing evidence that firms in developing countries grow less as they age and that stagnant firms tend to survive longer compared to developed economies (e.g. Hsieh and Klenow, 2014; Akcigit et al., 2018; Eslava et al., 2019). However, most of the stylised facts about firm dynamics in developing countries heavily rely on information about formal firms. Indeed, perhaps one of the largest gaps in our knowledge about informal firms is the lack of longitudinal information about their life cycle behaviour. To the best of my knowledge, Ulyssea (2019) is the only paper that analyses formal versus informal firm dynamics (combining firm level data from Brazil and a structural model),[4] and I show that: (i) both formal and informal firms display an increasing and concave age-size profile; (ii) formal firms grow much more than their informal counterparts, but still much less than firms in the US; and (iii) both the extensive and intensive margins of informality decline with firms' age. These facts suggest that dynamic selection – the process whereby less productive firms exit as firms age – takes place in both sectors, albeit perhaps weaker in the informal sector.

2.2 Workers

It has been extensively documented that the incidence of informal employment displays a U-shape pattern with respect to age (larger among younger and older workers),

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[3]Perry et al. (2007) provide evidence for different Latin American countries, while Ulyssea (2018) documents this regularity using data on Brazilian firms.

[4]Importantly, for informal firms there is only cross-sectional information and therefore it is not possible to separate age, cohort and time effects.

it is higher among women and decreases with schooling, although informality remains large even among high-skill workers (e.g. Funkhouser, 1996; Perry et al., 2007; Gasparini and Tornarolli, 2009; Galiani and Weinschelbaum, 2012). Beyond this basic characterisation, the two main sets of moments documented in the literature refer to the formal-informal wage gap and the transitions in and out of informality.

Formal-informal wage gaps There is an extensive literature that has documented, for a vast array of countries, the existence of a substantial formal-informal wage gap that persists even after controlling for a large set of observable characteristics (e.g. Funkhouser, 1996; Maloney, 1999; Gong and Van Soest, 2002; Pratap and Quintin, 2006; Perry et al., 2007; Botelho and Ponczek, 2011; Gasparini and Tornarolli, 2009).[5] The analysis of formal-informal wage gaps is often linked to the goal of testing for the existence of labour market segmentation. However, different papers have argued that one cannot rely on wage gaps to test for the existence of segmentation and, more broadly, that the segmentation hypothesis seems to have little empirical content (e.g. Paes de Barros, 1988; Magnac, 1991; Maloney, 1999; Ulyssea, 2010a).

More recently, in Ulyssea (2018) I use matched employer-employee data on both formal and informal firms in Brazil to estimate the same log-wage regression estimated in the literature, but adding *firm fixed effects*. When doing that, the wage gap between formal and informal workers completely vanishes.[6] If there is positive assortative matching between firms and workers, firm fixed effects will capture workers' unobserved quality and therefore these results suggest that: (a) self-selection is one of the main drivers of the wage gap between observably equivalent workers; and (b) conditional on skill, formal and informal workers perform the same tasks within the firm.[7]

Ins and outs of informality Unsurprisingly, transitions in and out of informality follow a similar pattern to that observed for the stock of informal employment. In particular, at any point in time the young, women and low-skill workers have a higher probability of transiting from unemployment and formal jobs into informal employment (e.g. Funkhouser, 1996; Gong and Van Soest, 2002; Pagés and Stampini, 2009; Bosch and Maloney, 2010). Perhaps more interestingly, most of the existing literature has

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[5]The results are more nuanced when one examines wage gaps across educational levels or the earnings distribution (e.g. Pratap and Quintin, 2006; Bargain and Kwenda, 2014).

[6]The within-firm, formal-informal wage gap is identified from formal firms that hire both types of workers. However, the result is not driven by the sample used: if I remove the firm fixed effects, I obtain a wage gap of similar magnitude to that typically found in the literature.

[7]Using semi-parametric estimation similar to Pratap and Quintin (2006) and data from Ecuador, El Badaoui et al. (2010) show that the formal-informal wage gap disappears once they control for firm size.

focused on how the ins and outs of informality behave over the business cycle. A well-established stylised fact is that informal employment (like unemployment) is counter-cyclical, expanding during contractions and decreasing during booms *as a fraction of employment* (Loayza, 1996; Perry et al., 2007; Bosch and Maloney, 2010; Bosch and Esteban-Pretel, 2012). This behaviour is explained by three important flows. First, the job finding rate in the formal sector is strongly pro-cyclical, while it remains relatively stable in the informal sector. Second, informal to formal transitions are pro-cyclical. Third, separation rates are counter-cyclical in both sectors but more volatile in the informal sector. These features combined explained the cyclical behaviour of informality (see Perry et al., 2007; Bosch and Esteban-Pretel, 2012, who analyse the cases of Brazil and Mexico).

3 CAUSES

Part of the literature has relied on cross-country data to investigate the correlation between informal sector size and a series of potential determinants, such as: formal sector's entry costs (Auriol and Warlters, 2005; Djankov et al., 2002), labour and tax regulations, corruption, and institutional quality (e.g. Loayza, 1996; Johnson et al., 1998; Friedman et al., 2000; Botero et al., 2004; Dabla-Norris et al., 2008). These results are quite informative, but do not provide causal evidence on the determinants of informality. This section therefore focuses on the empirical literature that exploits within-country, experimental and quasi-experimental variation to identify the causal effects of potential determinants. When relevant, I combine the reduced-form evidence with results from structural models.

3.1 Firms

This section focuses on the determinants of firms' decisions regarding both margins of informality. Before discussing the empirical results, I lay out a very simple framework to provide some structure to the discussion that follows. Since the empirical literature has mostly focused on the extensive margin, the framework abstracts from the intensive margin of informality and also assumes no uncertainty. The profit functions of formal and informal firms are thus given by:

$$
\begin{aligned}
\pi_f(\theta) &= (1 - \tau_y)\underbrace{\theta F(k, \ell)}_{\equiv y(\theta)} - (1 + \tau_w)w_f\ell - r_f k - \bar{c}_f \\
\pi_i(\theta) &= (1 - p(y(\theta)))\,\theta F(k, \ell) - w_i\ell - r_i k
\end{aligned}
$$

where θ denotes firm's productivity; τ_y is the revenue tax (which corresponds to a value added tax); $F(\cdot)$ is the production function, which is increasing and concave in both labour, ℓ, and capital, k; w_s and r_s denote labour and capital prices in sector $s = i, f$, respectively; τ_w denotes the payroll taxes; $\bar{c}_f$ denotes the per-period fixed cost of operation that formal firms must pay, which aims at capturing the administrative burden of paying taxes and contributions, as emphasised in Djankov et al. (2010); and $p(y(\theta))$ denotes the "cost of informality", which is assumed to be increasing and convex in firm's output.[8]

Firms do not face uncertainty about the evolution of their productivity, but they are subject to an exogenous death shock, denoted by δ_s, $s = i, f$. In this very simple setting, firms' value functions in either sector are given by the present value of the infinite stream of profits, discounted by the exogenous exit probability: $V_s(\theta) = \frac{\pi_s(\theta)}{\delta_s}$, $s = i, f$, where to simplify notation I normalise the discount rate to one. The formal and informal value functions are thus given by

$$
V_f(\theta) = \frac{\theta F(k, \ell)}{\delta_f} - \left(\frac{w_f \ell + r_f k}{\delta_f} \right) - \underbrace{\left(\frac{\tau_y \theta F(k, \ell) + \tau_w w_f \ell + \bar{c}_f}{\delta_f} \right)}_{\text{Costs of remaining formal (A)}}
$$

$$
V_i(\theta) = \frac{\theta F(k, \ell)}{\delta_i} - \left(\frac{w_i \ell + r_i k}{\delta_i} \right) - \underbrace{\frac{p(y(\theta))\theta F(k, \ell)}{\delta_i}}_{\text{Costs of remaining informal (B)}}
$$

and firms decide to formalise if

$$
V_f(\theta) - c_f^e \geq V_i(\theta)
$$

where c_f^e represents the fixed registration costs (see Djankov et al., 2002).

Hence, the costs of being formal can be broadly divided into the costs of entering the formal sector, summarised by c_f^e, and the costs of remaining formal given by the term (A) above. The latter corresponds to tax payments and all the recurrent administrative costs associated to being formal (captured by $\bar{c}_f$). If policy makers want to incentivise firms to formalise, the first alternative is to reduce the costs of formality, which can be achieved by reducing the costs of entering the formal sector, the costs of remaining formal or both. The second, to increase the benefits of formality, which can be achieved by increasing access to capital (a lower r_f). The third, to increase the costs of informality (the term B), which could be done by increasing enforcement of the existing laws and

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[8]This is a standard formulation in the literature (e.g. Rauch, 1991; Fortin et al., 1997; De Paula and Scheinkman, 2011; Meghir et al., 2015; Ulyssea, 2018).

regulations (e.g. increasing the intensity of government inspections). In the equations above, this could represent a higher exit rate, δ_i, or a steeper cost function, $p(y(\theta))$.

3.1.1 Evidence from experimental and quasi-experimental studies

The papers that seek to identify the causal effect of potential determinants of firms' formalisation decision estimate variations of the following general model:

$$y_{it} = \alpha + \beta Treatment_{it} + \gamma X_{it} + \epsilon_i t$$

where t denotes time and i indexes the unit of analysis, which is typically the firm or entrepreneur, but can also be a more aggregate unit such as the local economy (e.g. municipality, commuting zone) or industry; y_{it} is a dummy for whether the firm is formal or, when more aggregate units are being used, it can be the share of formal firms in a given municipality or industry; $Treatment_{it}$ can denote a dummy for whether the firm was offered a formalisation treatment or whether a given municipality was included in a formalisation program; and X_{it} is a vector of i-level controls. In the experimental benchmark, the β corresponds to the intention-to-treat (ITT) parameter of a given intervention.

Most of the formalisation policies implemented and analysed in the literature have been in the direction of reducing the costs of formality, in particular registration costs. The existence of high registration costs has been often emphasised as one of the main constraints to firm creation and formalisation (e.g. De Soto, 1989; Djankov et al., 2002), and substantial efforts have been made to reduce them around the world.[9] Notwithstanding the relevance of these reforms, the results have been quite limited in terms of inducing firms to formalise (Bruhn and McKenzie, 2014). Indeed, taken as a whole the results from both experimental and quasi-experimental studies indicate that reducing the costs of entering the formal sector have no (or a very limited) effect on formalisation.

Figure 1 summarises the results from different studies and provides a visual comparison of the effects from different interventions.[10] As the figure shows, providing information about the process and potential benefits of registration (De Giorgi and

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[9]Around 368 reforms that reduce the costs of formally registering a business were implemented in 149 countries between 2003 and 2012 (Rocha et al., 2018).

[10]This figure focuses on papers that have a credible research design to identify the causal effect of a given policy. I focus on authors' preferred specifications and standardise the reported point estimate so that all results reflect effects on formalisation rates. For the experimental papers, I only report ITT estimates. Piza (2018) revisits the results of Monteiro and Assunção (2012) and Fajnzylber et al. (2011), highlighting the threats to identification and confounding factors that were not accounted for in these studies. Notwithstanding the importance of these papers, I choose to report only the latest and revised estimate provided by Piza (2018).

Rahman, 2013), providing information and reimbursing all registration costs (De Mel et al., 2013; de Andrade et al., 2014), or creating economy-wide programs to simplify and reducing the monetary costs of registering a firm (Bruhn, 2011; Kaplan et al., 2011; Piza, 2018; Rocha et al., 2018) have very limited effects on registration. The results from Benhassine et al. (2018) constitute an important exception, as they find a positive and significant effect (6.6 to 9.6 percentage points) even in the treatment that only provides information and assistance in registering.[11] In order to separate the effect of information *per se* and of the high-quality staff who provided the information, the authors designed and implemented an additional experiment that provides the same information in a more standard way (without the qualified staff). In this case the authors find no effect.

Figure 1: Estimates of formalisation effects from the literature
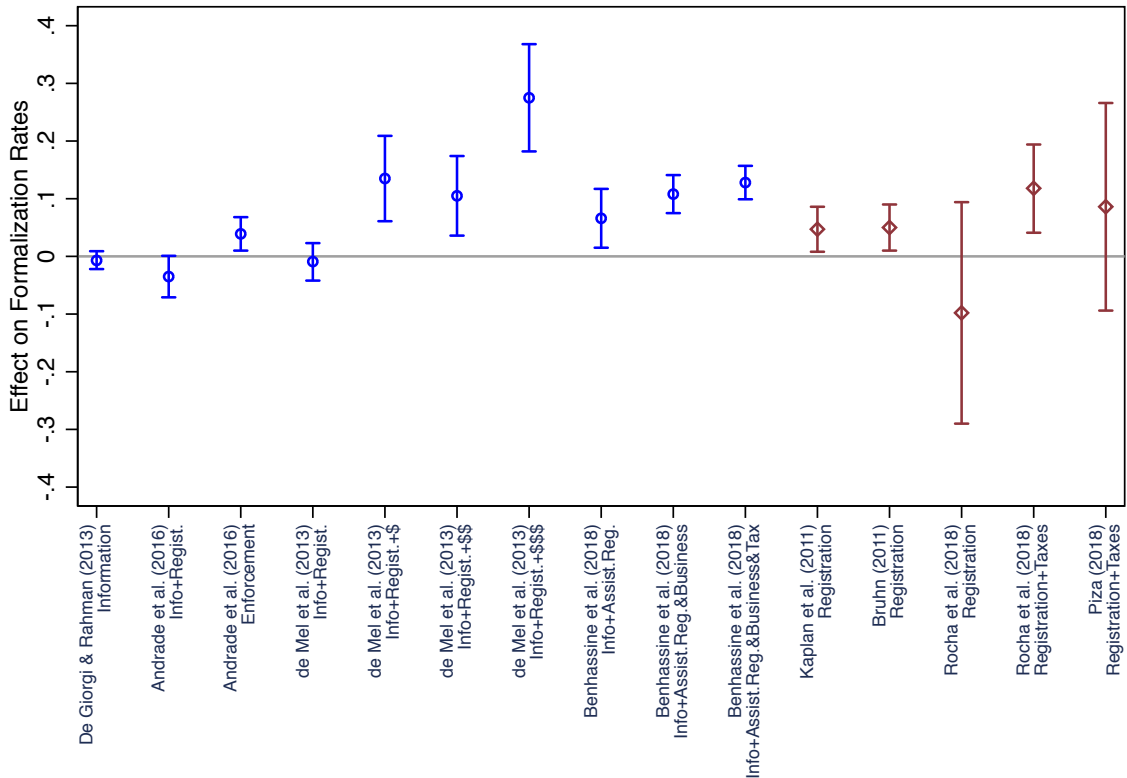
Notes: Blue circles represent the results from experimental studies, while the maroon diamonds represent the results from the non-experimental literature. Only the ITT estimates are shown for the experimental papers.

As Figure 1 shows, the largest formalisation effects come from interventions that

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[11]Their empirical context is the introduction of a simplified formalisation regime being offered to small informal businesses in Benin.

reduce the ongoing costs of formality or increase its benefits. This is very clear from the results of De Mel et al. (2013). When firms were offered information and had all registration costs covered, the authors find no formalisation effect. When in addition to that firms were offered a substantial compensation for formalising (the equivalent of two months' profits for the median firm), then 47 percent of firms registered (this is the TOT estimate, while Figure 1 depicts the ITT, of 27.5 percent). With a few more assumptions they are able to back out the demand curve for formalisation, which is downward sloping with respect to the present discount cost of formalising. They find a steep slope when net costs are negative and a much flatter slope when net costs are positive, which indicates that few firms perceive substantial positive benefits from being formal. Hence, in order to induce substantial formalisation it is necessary to either substantially reduce the costs of remaining formal (term A in Expression 1) or increase its benefits.

Rocha et al. (2018) find similar results when estimating the effect of a formalisation policy in Brazil targeted at entrepreneurs with at most one employee. In its first phase the policy eliminated entry costs for eligible entrepreneurs and in the second phase substantially reduced the tax burden. The first phase had no effect on formalisation, while the second led to an increase of around 11 percent that is entirely driven by the formalisation of existing informal firms and not from the creation of new formal businesses nor greater survival among formal firms. Similarly, Benhassine et al. (2018) conclude that they find stronger formalisation effects from a simplified formalisation regime because their treatments ultimately enhance the potential benefits of formalisation.[12] Even in this case, the authors argue that these interventions are not cost effective, which is the same conclusion of Rocha et al. (2018) for Brazil.

Finally, a far less emphasised formalisation policy is to increase enforcement of existing laws and regulations. To the best of my knowledge, the only exception is the work of de Andrade et al. (2014), who randomly assign municipal inspectors to firms in order to assess whether higher enforcement could induce firms to formalise in the state of Minas Gerais, Brazil. Their results show that being assigned to the enforcement treatment increases registration rates with the municipality by 2-4 percentage points. As discussed by the authors, the ITT is not necessarily the most informative parameter in their setting, as many firms assigned to treatment were closed, could not be found or were already formal. Indeed, the IV estimate of the impact of actually receiving an additional inspector visit is much higher, indicating an effect of 21-27 percentage points

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[12]In addition to the first treatment discussed above, the second treatment offered business services – facilitating access to training and commercial banks – and the third treatment added tax services aimed at reducing the costs and uncertainty associated to tax compliance.

in firms' registration. The authors find no evidence of spillovers on neighbouring firms, which they attribute to the relatively low increase in inspections and to the fact that many firms indicate that they do not communicate with their neighbours.

3.1.2 Interpreting the evidence

The results discussed so far indicate that reducing the costs of entering the formal sector have very limited or no formalisation effects, while reducing the ongoing costs of formality (or increasing its benefits) is more effective, but not necessarily cost-effective. Overall, the largest formalisation effects come from greater enforcement. The natural question then is: Why does reducing the costs of formality have such limited effects?

To a large extent, these different policies can be directly linked to the three leading views about informality in the literature (La Porta and Shleifer, 2014). The first argues that the informal sector is a reservoir of potentially productive entrepreneurs who are kept out of formality by high regulatory costs, most notably entry regulation. This view dates back to De Soto (1989) and provides the rationale for the numerous efforts to reduce fixed costs of registration around the world. The second view sees informal firms as "parasite firms", which are productive enough to survive in the formal sector but choose to remain informal to earn higher profits from the cost advantages of not complying with taxes and regulations (e.g. Levy, 2008). This view therefore justifies the use of increased enforcement as a way to effectively reduce informality. The third view posits that informality is a survival strategy for low-skill individuals, who are too unproductive to ever become formal. In this case, reducing the costs of formality will not be effective, and increasing enforcement can generate substantial adverse effects, as these informal business would not formalise but simply exit.

Until recently these these views were seen as competing frameworks for understanding informality, but in Ulyssea (2018) I show that in fact they are not. They just reflect the existence of heterogeneous firms optimally choosing to comply or not with the relevant laws and regulations. These views are thus complementary and not competing frameworks for understanding informality, in which case the relevant question becomes what it the relative importance of each view in the data. In the paper I propose a simple taxonomy of informal firms based on these views and use the estimated model to infer the relative importance of these types in the Brazilian context.

As Figure 2 shows, the mass of firms that correspond to the De Soto view is quite small, only 9.3 percent of all informal firms. The informal firms that could formalise once formal sector's entry costs are removed, but choose to remain informal to enjoy the cost advantages of informality correspond to 41.9 percent of all informal firms.

Figure 2: The distribution of informal firms types in Brazil
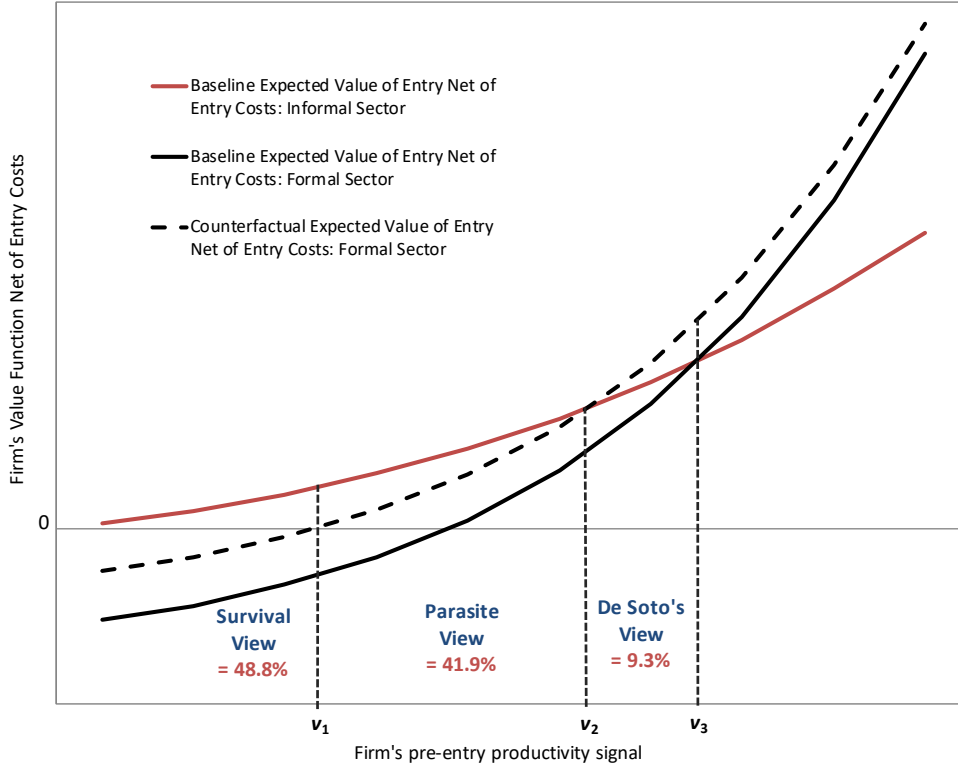
Finally, the remaining 48.8 percent correspond to the survival view, i.e. they are too unproductive to ever become formal. If the results from Brazil are informative for other contexts, then Figure 2 provides a rationale for the results discussed in the previous section. A very small fraction of firms are actually constrained by high registration costs and therefore reducing them will have a limited effect on formality. In contrast, increasing enforcement can have a substantial impact, as a large fraction of firms could be formal but optimally choose to remain informal. However, this policy can have potentially large negative effects, as these types are not directly observable and nearly half of all informal firms are not productive enough to ever survive in the formal sector (see Section 4 ahead).

3.1.3 Other potential channels

Access to the formal financial system and credit markets is often cited as a potential benefit of formality. Thus, the more developed the financial sector and credit markets are, the greater the opportunity cost of being informal. The credit channel has been theoretically analysed in early papers such as Straub (2005) and Quintin (2008), which

emphasise the role of weaker (or inexistent) contract and debt enforcement in the informal sector. However, the empirical evidence in support of this channel is very scarce. To the best of my knowledge, the only paper that empirically tests this channel is Catão et al. (2009), who find a positive association between formalisation rates at 2-digit industry level and financial deepening.[13] D'Erasmo and Boedo (2012), Lopez-Martin (2018) and D'erasmo (2016) confirm these results using general equilibrium models of firm dynamics with different forms of financial frictions, in which firms can operate formally or informally. In these models, operating in the formal sector is costly (due to taxes and regulations), but it allows firms to access better functioning credit markets and cheaper capital. These models are calibrated to different developing economies and the results show that reducing financial frictions in the formal sector leads to a substantial decrease in firm informality.

A second less emphasised but important determinant of firm informality is the tax structure (and not only the tax burden) of the economy. In order to analyse the role of value-added tax (VAT) in transmitting informality, de Paula and Scheinkman (2010) develop a model where the VAT collected according to a credit scheme creates a mechanism for the transmission of informality. In the credit scheme, the VAT applies to each sale and establishments receive a credit for the amount of tax paid upstream in the production chain, which is used against future tax liabilities. Since informal transactions are not recorded, informal suppliers do not generate tax credits. Similarly, informal firms cannot use payments from formal suppliers to generate tax credits. Hence, there is an incentive for the formation of largely formal or informal production chains. Firm-level data from Brazil confirms the predictions of the model: formality of a firm's suppliers and buyers is correlated with its own formal status; and the greater enforcement of labour regulations in upstream or downstream stages, the higher the probability of a firm being formal.[14]

Finally, a long-standing concern is that the competitive pressure introduced by trade reforms could induce reallocation of firms and workers from the formal to the informal sector (Goldberg and Pavcnik, 2003), specially in the case of a unilateral trade opening episode. The basic argument is that negative demand shocks would push formal firms to downsize, hire a larger share of informal workers (the intensive margin), or exit al-

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[13]The authors explore variation in financial dependence across sectors (*a la* Rajan and Zingales (1998)) interacted with time-varying economy-wide measures of financial deepening.

[14]In a related paper, Pomeranz (2015) shows that the paper trail generated by a VAT system has a preventive deterrence effect on tax evasion, which corresponds to the intensive margin of informality discussed above, but applied to tax compliance (instead of labour regulations). Similarly, Naritomi (2018) uses a unique administrative data from Brazil to show, among other results, that introducing incentives similar to the VAT for final sales leads to substantial increase in firms' reported revenue.

together. Workers laid off from the formal sector would subsequently seek employment in the informal sector, and potential entrants could be discouraged to enter the formal sector and choose informality instead (the extensive margin). Using different research designs, Paz (2014); Dix-Carneiro and Kovak (2019); Cruces et al. (2018) and Ponczek and Ulyssea (2019) find positive and substantial effects of trade opening (tariff reduction) on informal employment in Argentina and Brazil.[15] These results mirror those of McCaig and Pavcnik (2018), who show that a positive export shock in Vietnam (due to the U.S.-Vietnam Bilateral Trade Agreement) caused a substantial reallocation of workers from informal micro-enterprises to formal sector firms. In Dix-Carneiro et al. (2019) we develop an equilibrium trade model with firm dynamics and firm heterogeneity, formal and informal sectors, labour market frictions and a rich institutional setting, which is estimated using several data sources from Brazil. Our counterfactual results are broadly consistent with this recent literature, as we find that reductions in (bilateral) trade costs lead to a sizeable reduction in informality within manufacturing. However, the total effect on informality – which cannot be assessed in these reduced-form studies – is close to zero.

3.2 Workers

Similarly to firms, workers choose between formal and informal jobs comparing costs and benefits. On the one hand, formal employment implies coverage by labour regulations and social security; there is typically higher job security and lower volatility in earnings (Gomes et al., 2018); and there can be higher on-the-job human capital accumulation (Bobba et al., 2019). On the other hand, individuals can evade income taxes if working informally and can have greater flexibility in hours worked in face of a restrictive labour market regulation. Additionally, part of the potential costs of formality might be the expected waiting time if formal jobs are in short supply due to say, the presence of a binding minimum wage. In this case, informal jobs might represent a desirable alternative for unemployed individuals who would have to otherwise face long queues for a formal job. Some of these dimensions are more static in nature, while others have a direct connection to individuals' life cycle. In what follows I use this separation to discuss the existing literature.

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[15]Goldberg and Pavcnik (2003) and Bosch et al. (2012) find no effect of trade opening on informal employment in Brazil, but as discussed by Dix-Carneiro and Kovak (2019) these differences can be explained by differences in research design.

3.2.1 Static determinants

The literature has largely focused on the effect of welfare policies on labour supply and the allocation between formal and informal employment. Bosch and Campos-Vazquez (2014) analyse the case of *Seguro Popular* (SP) in Mexico, which was created in 2002 and aimed at creating universal health coverage, in particular including all informal (previously uninsured) workers. Since SP provides free health coverage – which was before tied to payroll contributions – the program decreased the costs of informality and was thus expected to cause an increase in informal employment (Levy, 2008). The authors show that the program indeed had a negative effect on the formality trend (i.e. affiliation to social security) in small and medium firms: had the program not been in place, around 4.6 and 4 percent additional employers and employees would have formally registered, respectively.[16] This effect is not very large, which suggests that the value of the health insurance provided by the program is not substantial. Conti et al. (2018) develop and estimate a household search model with formal and informal sectors and show that this is indeed the case: they estimate the utility value of SP to be around 4 and 9 percent of the mean household income for high and low education households, respectively.

Another potentially important determinant is the availability of cash transfer programs. Despite the gains from these programs in terms of reducing poverty, improving educational outcomes and access to health services, a long-standing concern is that they might discourage work (Banerjee et al., 2017). Additionally, since these programs are often means-tested and governments can only verify earnings from registered employment, they could generate strong incentives for workers to reallocate their labour supply to the informal sector. Evidence from the *Bolsa Família* in Brazil (De Brauw et al., 2015), the *Plan de Atención Nacional a la Emergencia Social* in Uruguay (Bergolo and Cruces, 2018), and the Universal Child Allowance in Argentina (Garganta and Gasparini, 2015) systematically suggest that this is the case. In particular, Bergolo and Cruces (2018) find a reduction of formal employment in eligible households of around 8 percentage points, which are equally distributed between informal employment and non-employment. Garganta and Gasparini (2015) find an even stronger effect: the probability of formalisation declines 28-43 percent with respect to the counterfactual with no program.

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[16]Camacho et al. (2013) find similar effects from a related program in Colombia (the Subsidised Health Regime), which lead to an increase in informal employment of around 4 percentage points. In contrast, Azuara and Marinescu (2013) find a very small effect of SP on informality among unskilled workers (0.9 percentage points for a baseline informality rate of 60 percent), and no effect on the overall sample. The main difference between the two studies is that Bosch and Campos-Vazquez (2014) use administrative data, which substantially reduces measurement error.

Unemployment insurance (UI) programs have also been investigated as potential determinants of formalisation decisions. On the one hand, the higher the generosity of UI the stronger the incentive to get a formal job. On the other hand, once workers qualify for UI there is an incentive to accumulate the benefits with non-taxed earnings from an informal job (Gerard and Gonzaga (2018) provide evidence that this is indeed the case in Brazil). Bosch and Esteban-Pretel (2015) develop a search and matching model that is one of the few that accounts for both directions of UI effects on informality. Their results indicate that introducing a UI system in Mexico with a relatively low replacement rate (30 percent) would decrease the share of formal employment with no effect on unemployment. Increasing the generosity of UI – to a replacement rate of 70 percent – generates the opposite effects, increasing unemployment and formality. Their results therefore suggest that a more generous UI system induces more people to queue for a formal job and this effect dominates the incentives to accumulating both the benefit and informal earnings. However, the literature as a whole shows mixed results regarding the implications of UI for unemployment and informality, as the results largely depend on the models' details and the country/data used to calibrate/estimate them.[17]

3.2.2 Dynamics

Some important determinants of informal labour supply can have effects over the individuals' life cycle, such as social security contributions and the incentives embedded in the design of the pension system. In particular, it is often the case that pension systems include some form of noncontributory, government-provided safety net that aims to guarantee a minimum income level for the elderly (Joubert, 2015). These noncontributory benefits are typically decreasing in workers' contributions over their life-cycle. Thus, they implicitly represent a tax on pension contributions, which reduces incentives to work formally, especially for low-skill individuals (for whom these benefits represent a greater share of their life-time income). Joubert (2015) develops and estimates a dynamic discrete choice model in the spirit of Keane and Wolpin (1997), which captures household's labor supply choice between formal and informal employment, and saving decisions under the rules of Chile's pension system. His results indicate that mandatory pension contributions can induce substantial shifts to informality: increasing the contribution rate by 5 percentage points increases the size of the informal sector by 12.5 and 9.3 percent for men and women, respectively.

Finally, as discussed in Section 2.2, education and informality are strongly and negatively correlated in the data. Thus, to study individuals' decisions regarding human

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[17]See, for example, Fugazza and Jacques (2004); Boeri and Garibaldi (2005); Albrecht et al. (2009); Ulyssea (2010b); Margolis et al. (2012) amd Meghir et al. (2015).

capital investments and sectoral choice in a unified framework seems arguably important. However, very few papers have used life-cycle models to jointly analyse human capital investments and formal/informal labour supply decisions. Two notable exceptions are the studies of Joubert (2015) and Garcia (2019), who use structural life-cycle models (both estimated using Chilean micro data) to analyse this joint decision. Their results show that differences in perceived returns (pecuniary and non-pecuniary) explain most of the sorting between sectors (as opposed to potential barriers to workers' mobility), and that returns are higher in the formal sector for high-skill individuals. Moreover, their results indicate that the interactions between schooling and formal/informal labour supply decisions have important implications for the analysis of formalisation policies, as I discuss in the next section.

4 CONSEQUENCES

This section starts by reviewing the literature on the firm-level effects of formalisation and then proceed to the discussion of more aggregate effects. The latter relies on an extensive macro literature, but also on a fairly recent but growing structural literature that integrates both micro and macro effects (Meghir et al., 2015; Ulyssea, 2018; Bobba et al., 2017, 2019). The aggregate consequences are organised according to the two broad sets of determinants mentioned in the introduction: those that increase the costs (decrease the benefits) of informality (the "stick") and those that decrease the costs (increase the benefits) of formality (the "carrot").

4.1 Firm-level effects of formalisation

Since the seminal paper of Rauch (1991) – who builds on Lucas (1978) – the theoretical literature has modelled informality as the outcome of firms self-selecting into the formal and informal sectors based on their productivity and relative payoffs. In that sense, informality does not cause low productivity, but rather lower quality firms self-select into informality (e.g. Arias et al., 2010). Thus, in a static world the causal effect of formality on firm productivity is not well-defined, although one can still observe differences in firms' outcomes such as sales and size, since newly formalised firms no longer have to stay small to hide from the government. Dynamically, however, informality can have a negative effect on firms productivity, as it can affect firms' investment decisions, technology adoption and access to capital, among other factors.

The papers that seek to identify the effect of formality on firms' performance typi-

cally estimate some version of the following general model:

$$y_{it} = \alpha + \beta Formal_{it} + \gamma X_{it} + \epsilon_i t$$

where i indexes firms and t time; y_{it} is a measure of firm performance, such as sales per worker, profits, number of employees and so on; $Formal_{it}$ is a dummy variable for being formal (i.e. registered); and X_{it} a vector of firm-level controls.

The identification problem is that the decision to be formal is clearly not exogenous and can be affected by elements that are unobservable to the econometrician (but not to the entrepreneurs), such as firm-level demand or productivity shocks and unobserved, time-varying entrepreneurial quality. The basic approach to circumvent this problem has been to use experimental or quasi-experimental variation in access to policies/interventions that change the costs of formalising, such as those discussed in Section 3.1, to instrument the formalisation dummy, $Formal_{it}$.

The results in the literature are somewhat mixed, but generally indicate that formalising has no statistically significant effects on different measures of firm performance, such as sales, profits and number of employees (e.g. Rocha et al., 2018; Benhassine et al., 2018). For example, De Mel et al. (2013) find a positive average effect of formalisation on profits, but this impact seems to be driven by few firms experiencing substantial growth. Looking at the distribution of profits, their results show that they are almost identical for treatment and control firms over most of the support. When examining the channels through which formalisation could benefit firms, they find that firms that formalised increased advertising and use of receipt books, but no increases in government contracts or participation in government programs, nor greater use of bank accounts or loans.[18] This body of evidence is thus consistent with the argument that the perceived benefits of formalisation are very low for most small-scale entrepreneurs (Bruhn and McKenzie, 2014). Importantly, however, these firm-level outcomes are typically measured in relatively short time horizons (up to 2-3 years post formalisation), while it might be the case that the dynamic formalisation effects take time to materialise.

4.2 Increasing the costs of informality

As discussed in Section 2.1, data from different countries show that both the extensive and intensive margins of informality decline with firm size, which suggests that the costs of informality are increasing in firm size. Accordingly, a common feature of most

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[18]It is worth noting that the point estimates in these studies are often large, but very imprecisely estimated. Thus, these null results are not very precisely estimated zeros, but rather often economically meaningful point estimates with large standard errors.

models in the literature is to assume some form of an increasing cost of informality with respect to firm size.[19] Thus, a prototypical counterfactual experiment in equilibrium informality models is to simulate higher enforcement on informal firms by making this cost function steeper. This would correspond to the government cracking down on all informal firms, leading to a substantial reduction or complete eradication of informal firms and their workers.

All results available in the literature indicate that such policy would lead to potentially high gains in aggregate productivity. These positive effects can come from a number of different channels that have been documented in the literature. First, mechanical composition effects and misallocation effects, as greater enforcement eliminates many low-productivity (informal) firms and resources are reallocated to more productive formal firms (e.g. Ulyssea, 2010b; Charlot et al., 2015; Bosch and Esteban-Pretel, 2012; Meghir et al., 2015; Ulyssea, 2018). Second and analogously to the latter point, in the presence of labour market frictions reducing the availability of low quality informal jobs can make it easier for workers to find higher quality formal jobs (e.g. Meghir et al., 2015). Third, greater capital accumulation, as informal firms face greater financial frictions and therefore capital is more costly and they are more credit constrained than formal sector firms (e.g. D'Erasmo and Boedo, 2012; Ordonez, 2014). Fourth, changing occupational choices and discouraging low-skill individuals to self-select into informal entrepreneurship, therefore increasing labour supply (e.g. Ordonez, 2014; López, 2017). Fifth, higher investments in human capital, both before entering the labour market (i.e. formal schooling) and on-the-job accumulation (Bobba et al., 2017, 2019).

The relevant tradeoff then comes from the potential adverse consequences of greater enforcement. Indeed, in an earlier paper Boeri and Garibaldi (2005) argued that large informal sectors are widely tolerated – despite substantial improvements in detection technologies – because increasing enforcement would lead to higher unemployment. Using different equilibrium matching models calibrated to the Brazilian economy, Ulyssea (2010a) and Charlot et al. (2015) find results consistent with this tradeoff: even though greater enforcement substantially reduces informality, it also increases unemployment and reduces welfare. More recently, however, Meghir et al. (2015), Haanwinckel and Soares (2016) and Dix-Carneiro et al. (2019) find no unemployment effects from higher enforcement, while Meghir et al. (2015) even show that it could lead to higher wages and lower inequality among their sample of low-skill males in the state of São Paulo,

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[19]Since Rauch (1991), the cost of informality either assumes the form of perfect enforcement (penalty) after a size threshold – typically measured by number of employees, revenues or capital – or a smoother and increasing cost function with respect to size (e.g. Fortin et al., 1997; De Paula and Scheinkman, 2011; Ordonez, 2014; Meghir et al., 2015; Ulyssea, 2018).

Brazil.[20] Importantly, these papers move away from the one-to-one matching structure, so their models allow for the presence of large and productive formal firms that can absorb workers displaced from the informal sector.

Similarly, D'Erasmo and Boedo (2012), Ordonez (2014), and Ulyssea (2018, 2019) show in their counterfactual analysis that output increases with higher enforcement. Thus, even though their models do not include labour market frictions (and therefore cannot speak to unemployment effects), their results also indicate that the reallocation of resources to the formal sector more than compensates potential losses of output due to many informal firms shutting down entirely (i.e. never formalising). The welfare implications in all of these exercises, however, must be considered with care for at least two reasons. First, these counterfactuals refer to steady state equilibria and cannot speak to the adjustment costs between steady states. Second, there are no good estimates of the policy's implementation costs. Given that informal firms are numerous, small in scale and often geographically spread, these costs are likely to be very high and therefore can have a first order effect on any welfare measure.

So far, the discussion has focused on enforcement on the *extensive margin of informality*. However, as I argue in Ulyssea (2018), greater enforcement on the intensive margin generates very different results: it reduces the share of *informal employment*, but can actually lead to a *higher* share of *informal firms*. The reason is very simple: by increasing enforcement of costly labour regulations the government increases the *de facto* costs of formality for smaller formal firms. Thus, in the new steady state equilibrium many firms self-select out of formality and into the informal sector. This policy also has redistributive effects across formal firms: low-productivity firms incur in losses in their life-time profits, while high-productivity firms benefit from it. The effects on aggregate TFP are very small (1.7 percent increase) and output actually decreases (by 1.6 percent) because the net displacement of firms dominates the gains in aggregate TFP.

The reduced-form evidence on the effects of enforcement is restricted to the intensive margin. Using micro data from Brazil, Almeida and Carneiro (2009) exploit the fact that enforcement of labor regulation in the country is decentralised and shows substantial geographic variation (their unit of analysis is the municipality). They use a credible IV strategy to show that an increase in the number of inspections per hundred formal firms leads to modest reductions in average firm size, output and sales at the municipality level. Hence, their results are very much in line with those in Ulyssea (2018). In

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[20]Prado (2011) shows a more nuanced view by exploring difference across a broad set of countries. His results indicate that the welfare effects of greater enforcement largely depend on the baseline regulatory costs of each country.

a follow-up paper (Almeida and Carneiro, 2012), the authors show that more inspections cause modest reductions in the proportion of formal workers and self-employed and an increase in non-employment. Using the same data on enforcement but with a different empirical strategy, in Ponczek and Ulyssea (2019) we assess whether greater enforcement of labour regulations can amplify the adverse labour market effects of a negative economic shock. For that, we exploit the strong, largely negative shock to local labour markets brought about the trade liberalisation in Brazil. We show that for a given trade-induce negative shock, regions within Brazil that had a weaker enforcement of labour regulations experienced higher informality effects but no disemployment effects. Symmetrically, regions with stricter enforcement did not observe informality increases as a result of the shock, but experienced substantial increases in unemployment.[21] Hence, our results suggest that the *de facto* labor market flexibility introduced by informality leads to lower employment losses in face of an adverse economic shock.

Finally, using a unique firm-level data from Mexico, de la Parra (2016) investigates the consequences of increasing enforcement on the intensive margin of informality. She uses data on inspections at randomly selected formal establishments in Mexico to analyse the effect of enforcement of labor regulation on informal and formal employment, turnover and wages. Her results show that inspections increase the transition probability from informal to formal jobs within the same establishment from 14 to 20 percent within the first 3 months after the inspection occurs. She also finds disemployment effects, as informal workers at inspected establishments are more likely to transit into unemployment. Hence, de la Parra's results confirm the potential disemployment effects of greater enforcement on the intensive margin.

4.3   Reducing the costs, or increasing the benefits of formality

As mentioned in Section 3.1, perhaps the most studied formalisation policy is the reduction of formal sector's entry costs generated by the regulation of entry. Even though these reforms have not been effective in inducing firms to formalise (see Section 3.1), they might still produce important aggregate effects.

Indeed, different papers in the literature have shown that reducing entry costs into the formal sector can produce positive and sizeable aggregate effects (Ulyssea, 2010a; D'Erasmo and Boedo, 2012; Charlot et al., 2015; Ulyssea, 2018). In Ulyssea (2018) I show that reducing entry costs into the formal sector eliminates deadweight losses from wasteful barriers to entry, which leads to higher competition, aggregate production in

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[21]Almeida and Poole (2017) find related results when analysing industry-specific exchange rate shocks in the late 1990's in Brazil, and their effects on formal employment.

the formal sector and high-skill wages (the formal sector is more intensive in high-skill labour). Since the formalisation process is concentrated among low-productivity firms, there is a negative composition effect that leads to a decrease in aggregate TFP. Nevertheless, total output increases because there is a substantial increase on the mass of active firms in the economy. Ulyssea (2010a) and Charlot et al. (2015) find similar positive aggregate effects, which also translate into substantially lower unemployment and formal-informal wage gap. D'Erasmo and Boedo (2012) argue that differences in formal sector's entry costs can explain roughly 3/4 of the gap in TFP between the US and their calibration of a prototypical Low and Middle-Income Country.

In contrast, Lopez-Martin (2018) find limited aggregate effects from reducing entry costs in Mexico and Egypt: in Mexico the gains in aggregate TFP and output per capita would be of 0.5 and 0.7 percentage points, respectively, with even more limited gains in Egypt. The main reason for this difference seems to be the fact that his model strongly emphasises the role played by financial frictions in the formal sector (the ability of firms to collateralise their assets and access credit), and these are the binding constraints that, once relaxed, generate substantial gains in aggregate productivity, output and welfare (D'erasmo (2016) finds similar results).

As argued in Section 3.1, another important dimension of the costs of formality relates to tax payments. Indeed, the reduced-form evidence suggests that reducing the tax burden can induce some formalisation, albeit the elasticity seems to be low. The counterfactual results from both macro and structural models seem to corroborate that, as reductions in payroll tax seem to generate some formalisation but with a low elasticity (e.g. D'Erasmo and Boedo, 2012; Haanwinckel and Soares, 2016). If one differentiates the effects on the intensive and extensive margins of informality, the effects are stronger on labour informality (via the intensive margin) and weaker on firm informality (Ulyssea, 2018). Consistently with the limited effects on informality, the results from different papers indicate that reducing payroll taxes has very limited (but overall positive) aggregate effects (Ulyssea, 2010a; D'Erasmo and Boedo, 2012; Haanwinckel and Soares, 2016; Ulyssea, 2018).

5 CONCLUSION

This article reviews and synthesises an extensive economic literature that investigates informality, its causes and consequences for development. As this review makes clear, this body of research is not only extensive, but also quite diverse in terms of the approaches and tools used, ranging from well-identified experimental studies to equilibrium macro models, and more recently structural models. This variety of approaches

is a natural consequence of the very nature of the object of interest. On the one hand, informality is a micro phenomenon, as it is the result of individual agents maximising their payoffs in face of the economic environment they face. On the other hand, the sheer magnitude of informality, and the scale of the policies used to address it, make it a macro phenomenon as well, and one that has deep implications for the economy as a whole. Thus, a complete understanding of the consequences of informality must encompass both dimensions.

Overall, the existing studies seem to indicate that reducing the costs of entering the formal sector is not the most effective way to reduce informality, but it can nevertheless have important positive effects on the economy. The magnitude of these positive effects, however, remains as a point of some controversy, with different studies finding different results. Reducing the ongoing costs of formality, in particular taxes, has stronger formalisation effects but not strong enough to make these policies cost-effective. On the macro side, they seem to produce some positive but very modest effects on output and TFP. Finally, the most effective policy to reduce informality seems to be intensifying enforcement. However, it is crucial to differentiate between enforcement on the extensive versus intensive margins, as higher enforcement on the latter tends to produce more disemployment effects and worse aggregate effects. As for greater enforcement on the extensive margin, it generates substantial positive effects on aggregate TFP and output, while the key point is the net effect on employment. More recent results from structural studies seem to indicate that greater enforcement does not increase long run unemployment and therefore this policy should generate net welfare gains. However, a key unexplored area of research is the transitional dynamics of such policies. In particular, if the adjustment of labour from the informal to the formal sector takes a lot of time and differs across skill levels, then the overall welfare cost might be substantially higher.

Finally, another interesting and largely unexplored area of research relates to the role of informality in developed economies. In particular, the importance of the intensive margin of informality is likely to increase with the raise of nonstandard (or atypical) work arrangements, also commonly referred to as "gig economy" jobs. No only the visibility of these nonstandard work arrangements has substantially increased with the rise of companies such as Uber, AirBnB and TaskRabbit, but also the actual fraction of the workforce in the gig economy seems to have reached quite substantial levels, at least in the US (Bracha and Burke, 2016, 2018). Clearly, the economic contexts are quite different. In particular, the emergence of gig jobs seems to be disproportionally benefitting large and high-productivity firms, while the intensive margin of informality in developing countries is concentrated on the left tail of the productivity distribution.

Nevertheless, many of the main economic forces at play are similar and a better understanding of this "rise of informality" in developed countries is arguably an exciting area for future research.

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