

Aldo Salinas, Cristian Ortiz*, Moreno Muffatto and
Javier Changoluisa

Formal Institutions and Informal Entrepreneurial Activity: Panel Data Evidence from Latin American Countries

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Abstract: The objective of this work is to examine the influence of formal institutions on the level of informal entrepreneurial activity in Latin American countries. We use a panel dataset for 18 countries during the 2004–2017 periods. This dataset has not been widely used for longitudinal research by academics in the field of entrepreneurship in developing countries. Using the percentage of the adult population identified as self-employed as a proxy for informal entrepreneurial activity, our results suggest that informal entrepreneurial activity is lower in Latin American countries that have stronger property rights and lighter business regulation. However, countries with more flexible labor regulation show higher informal entrepreneurial activity. Therefore, we believe there is margin for policy intervention to reduce informal entrepreneurial activities in Latin America.

Keywords: informal entrepreneurship, formal institutions, regulatory burden, property rights, latinobarometro

1 Introduction

In recent decades, there has been a significant interest in research on institutions and entrepreneurial activity (Álvarez, Urbano, and Amoros 2014; Bruton,

***Corresponding author: Cristian Ortiz**, Universidad Católica del Norte, Department of Economics, Av. Angamos 0610, Antofagasta, Chile; and Universidad Nacional de Loja, Department of Economics, Loja, Ecuador, E-mail: cristian.ortiz@unl.edu.ec. <https://orcid.org/0000-0002-9395-7228>

Aldo Salinas and Javier Changoluisa: Universidad Espíritu Santo, ESAI Business School, Guayaquil, Ecuador

Moreno Muffatto: University of Padua, Department of Industrial Engineering, Padova, Italy

Ahlstrom, and Li 2010). The empirical evidence highlights the importance of the institutional framework as one of the explanatory factors of the wide variation in entrepreneurial activity observed between countries (Acs, Desai, and Hessels 2008a; Boettke and Coyne 2009; Stenholm, Acs, and Wuebker 2013). Nevertheless, most of these studies have focused on the overall rate of entrepreneurial activity, underestimating the differences that might arise among the different types of entrepreneurial activities (Ardagna and Lusardi 2008; Avanzini 2011; Baumol 1990; Fuentelsaz, Gonzales and Maicas 2019; Larroulet and Couyoumdjian 2009; Sobel 2008). Many of these types of entrepreneurial activities exhibit characteristics associated to the country-specific institutional context in which entrepreneurs operate (Letaifa and Goglio-Primard 2016; Urbano and Álvarez 2014). Furthermore, less interest has been devoted to developing countries (Amoros 2011; Naudé 2010), such as those in Latin America (Aparicio, Urbano, and Audretsch 2016; Álvarez, Urbano, and Amoros 2014; Urbano and Álvarez 2014).

Baumol's seminal paper (1990) about the importance of institutional frameworks on the allocation of entrepreneurial talent among productive, unproductive or destructive activities has been highly relevant, particularly as it stressed the importance of focusing not only on the level but also on the type of entrepreneurial activity taking place within a specific society, as a product of returns provided by the institutional context. This approach involves assuming that the type of entrepreneurial activity selected by entrepreneurs will be influenced by the profit rates of alternative activities (El Harbi and Anderson 2010), some of which will be coherent with economic growth, whilst others will not (Boettke and Coyne 2003; Coyne and Leeson 2004; Stenholm, Acs and Wuebker 2013). Therefore, the institutional environment will define the type of entrepreneurial activities that will become the main recipients of entrepreneurial talent (Murphy, Shleifer, and Vishny 1991; Acemoglu 1995).

However, Baumol's categories are centered on the results of entrepreneurial activities, without considering those activities that are inherent to specific economic and cultural contexts associated with developing countries. For example, Desai (2009) identifies three types of entrepreneurial activities normally found in developing countries: legal-illegal, opportunity-necessity; formal-informal. Although the first two categories have been the subject of extensive research (see Acs and Varga 2005; Aidis and Van Praag 2007; Broadman and Recanatini 2001; Fadahunsi and Rosa 2002; Margolis 2014; Reynolds et al. 2002; Williams 2007; Rosa, Kodithuwakku, and Balunywa 2006; among others), there are fewer studies focusing on the latter (Autio and Fu 2015; Dau and Cuervo-Cazurra 2014; Godfrey 2011; McElwee 2009; Nyström 2008; Siquera, Web, and Broton 2016; Webb et al. 2013) even though informal entrepreneurship is considered as a significant source

of employment (ILO 2011) and an important means of reducing poverty in developing countries (Bruton, Ketchen, and Ireland 2013; Tokman 2007).

We contribute to the research on informal entrepreneurial activity, using institutional economics (Baumol 1990; North 1990) as conceptual framework and a panel data for 18 Latin America countries in the period 2004–2017. Our empirical research attempts to shed light on the following issues: How does the formal institutional framework shapes informal entrepreneurial activity in Latin American countries? Is the informal sector an incubator of entrepreneurs with a restricted growth potential due to excessive regulatory burden and lack of property rights or does the informal sector act as a heaven for millions of unemployed individuals who invent jobs in order to survive while waiting for better employment opportunities in the formal sector? Analyzing this topic across several countries and periods further allows us to determine which institutional factors are associated with the size of informal entrepreneurial activity in Latin America.

The last question reflects two views which have framed the debate on informality (De Mel, McKenzie, and Woodruff 2010). The first is related to De Soto (1989), who argues that informal own-account workers are entrepreneurs excluded from the formal sector as a result of high transaction costs imposed by national regulatory frameworks (Perry et al. 2007). The view offered by De Soto (1989) highlights the entrepreneurial capacity of the informally self-employed. At empirical level, the position of De Soto takes a “legalistic” view of informality. According to this view, the distinction between formal and informal entrepreneurial activity is determined by registration status (Desai 2009). The second view is related to Tokman (2007) and the dual economy theory of development (Lewis 1954). The scholars following this view considered that informal entrepreneurship arises as a product of failures by the economic system to generate sufficient productive employment. Therefore, informal activities are often undertaken because of necessity, they are highly inefficient, using primitive technologies and temporary due to a lack of employment in the formal sector (see Banerjee and Duflo 2005; Freije 2002; La Porta and Shleifer 2008, 2014; Mondragón-Vélez and Peña 2010; Tokman 1987; among others).

At empirical level, specific labor categories such as unskilled own-account workers are more likely to be part of such informal activities (Loayza and Rigolini 2006). In this study, we empirically consider a measure of informal entrepreneurial activity based on the “dual” definition of informality, also known as the labor market approach (see Portes 2010). Furthermore, from the dual view of informality, their advocates do not deny the importance of the regulatory and legal framework. However, they consider that those institutional hindrances, rather than constraining informal entrepreneurs, are imposing high entry barriers to the formal sector on those potential entrepreneurs with more considerable human capital,

entrepreneurial talent and technological capacity to establish enterprises with high growth potential. Therefore, potential entrepreneurs do not only face two choices, namely, formal or informal but actually three choices, formal; informal or the decline of starting an entrepreneurial venture.

The paper provides several contributions. First, research on informal entrepreneurship in Latin America has been hampered by a challenge of measuring informal entrepreneurial activity and limited data existence with regional coverage, comparable across countries and consistency over time. Our work contributes to filling this gap by employing a dataset that enables access to consistent and harmonized information over a span of more than a decade for 18 countries. Data are available not only for a cross section of countries but also for various consecutive periods per country, allowing for data-panel analysis. Specifically, we used the dataset *Latinobarómetro* that has not been extensively considered by scholars in the field of entrepreneurship and could be useful for longitudinal research on entrepreneurial activity in Latin American countries. Secondly, very little is known about the relationship between informal entrepreneurial activity and institutions in a context of institutional change. An analysis of institutional change over time is particularly relevant for developing countries because many of them are prone to frequent institutional changes. Therefore, we contribute to the entrepreneurship literature by analyzing the influence of institutional factors across countries over time and on types of entrepreneurial activities that are specific to developing countries. Third, we carry out our study using data from nearly all Latin American countries (except Cuba). Research on informal entrepreneurship in the region is very relevant, considering that it is estimated that the informal sector accounts for 51% of non-agriculture employment in Latin America and the Caribbean region (ILO 2011). Additionally, studies on informal entrepreneurship in the region have been limited to single-country studies or few countries due to the lack of harmonized cross-country data.

The empirical evidence shows that stronger property rights and lower regulatory burden have a negative significant effect on informal entrepreneurial activity. Our research contributes to improvement on the understanding of the way in which the institutional framework shapes informal entrepreneurial activity. This point is crucial to improving the design of public policy and regulations aimed to reduce informality. Lastly, while informality is a multidimensional phenomenon and some causes have their origin in issues related to the productive structure and the social and demographic characteristics of a country, the paper focuses on institutional causes and specifically on formal rules, because in the last decades, these have been mentioned to be key determinants of informality in Latin America (De Soto 1989; Loayza 1999).

The article is structured as follows. First, we describe the theory and hypotheses that guide the investigation. Second, the methodology employed is explained. Next, our main empirical findings are discussed. Finally, the article establishes some conclusions and identifies limitations and possible extensions for research future.

2 Theoretical Framework

The institutional theory has proposed a series of definitions for institutions. In the old institutionalist school, Veblen (1919: 239) defined institutions as *settled habits of thought common to the generality of man*. Authors ascribing to the new economic institutionalism, like North (1990: 3) define them as *the rules of the game in a society, or more formally, institutions are the constraints that shape human interaction*. Similarly, Scott (2013: 71) defines institutions as *regulative, normative, and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life*. In turn, Hodgson (2003: 7) defines institutions as *durable systems of established and embedded social rules and conventions that structure social interactions*. In the field of economics, research on the relationship between institutions and economic growth has gained new strength in recent decades, particularly following the theoretical contributions of what has been called New Institutional Economics (Coase 1937; North 1990; Williamson 1985). However, studies analyzing the relationship among entrepreneurship and institutions in theoretical and empirical terms are relatively new (Bruton et al. 2010; Veciana and Urbano 2008). Also, traditionally the literature on institutional theory in sociology has analyzed the relationship between the institutional framework and the behavior of existing firms, ignoring the relationship with the process of founding new organizations (Sine and David 2010; Tolbert, David, and Sine 2011). This same trend was maintained in the field of entrepreneurship, where the main research effort focused on the individual level for a long time. That approach which was called by Gartner (1988) personal traits, ignoring the institutional context in which the processes of discovery, evaluation and exploitation of entrepreneurial opportunities take place (Eckhardt and Shane 2010; Shane and Venkataraman 2000; Shane 2003).

The importance of institutions on entrepreneurial activity is made plausible through their role in the market process. For example, reducing uncertainty and making human action predictable (Boettke and Coyne 2003; DiMaggio and Powell 1983), allowing for the formation of entrepreneurial expectations (Sarasvathy et al. 2003), facilitating the coordination of dispersed knowledge in society (Hayek 1945), reducing transaction costs (Coase and Wang 2011), legitimizing the new industries and organizational forms (Aldrich and Fiol 1994), providing access to

resources (Gnyawali and Fogel 1994), generating social capital (Thornton, Ribeiro-Soriano, and Urbano 2011), restricting and allowing entrepreneurial intentions (Bird 1992), and establishing incentives and payments offered by the economy that affect the level and type of entrepreneurial activity (Baumol 1990; Murphy, Shleifer, and Vishny 1991; Acemoglu 1995).

Therefore, our paper is built on the work of North (1990, 2005) and Baumol (1990). For North, the definition of institutions includes both formal rules (constitutions, laws, financial regulation, property rights, and contracts) and informal rules (convention, behavioral norms and self-imposed behavior rules). In this work we focus on formal rules. Moreover, Baumol (1990) emphasizes the importance of focusing not only on the level but also on the type of entrepreneurial activity taking place within a specific society, as a product of payments offered by the institutional context. Basically, we focus on informal entrepreneurial activities which have historically marked entrepreneurial activity in Latin America.

2.1 Formal Institutions and Informal Entrepreneurial Activity

Some institutions are formally designed in the political arena through interaction and pressure from various groups in society. These groups share common interests and have enough strength to preserve the status quo or promote institutional change (Acemoglu and Robinson 2012). For instance, De Soto (1989) argues that the presence of a deficient regulatory and legal framework is due to the historic presence of interest groups that are more centered on how to redistribute wealth rather than generate it. Likewise, Sautet (2005) considers that the problem of economic stagnation in many developing countries is not as a result of a deficit of entrepreneurial skills in their societies, but rather because of the lack of an institutional framework that allows for the type of entrepreneurial activity beneficial to society to take place. As North (1990) argues, institutional change generally creates opportunities for both types of activities: those that increase productivity and those that decrease productivity. All this turns institutions and regulations into complex and fluid concepts.

For North (1990) the definition of institutions includes both formal (constitutions, laws, economic rules, property rights, and contracts) and informal rules (convention, norms of behavior, and self-imposed rules of behavior). Formal institutions are those that are officially codified in written documents (Lauth 2015). According to North (1990), the role of formal rules is to facilitate economic and political exchanges in the presence of uncertainty and their importance is relevant when those exchanges become impersonal. However, it is important to consider that formal institutions arise from politics, and hence, political factors acquire

relevance (Acemoglu and Robinson 2012; Autio and Fu 2015). Therefore, there is no guarantee that formal rules will be efficient and inclusive (Acemoglu and Robinson 2012), protect property rights and contract enforcement (North 1990), coordinate and correct market failures (Rodrik 2008), and promote productive activities that generate economic growth (Acemoglu and Johnson 2005; Acemoglu and Robinson 2012; Baumol 1990; North 1990). Moreover, formal rules may even be maintained in spite of a proven inefficiency (DiMaggio and Powell 1983; Greif and Kingston 2011; North 1990). According to Hall and Jones (1999), there is a series of formal rules that are important for entrepreneurship, such as property rights, tax codes, social insurance systems, labor market legislation, competition policy, trade policies, capital market regulation, and law and order. However, we focus on two main categories: regulatory burden and property rights, which have been the most prominent in studies on institutions and entrepreneurial activity (see Aidis, Estrin, and Mickiewicz 2012; De Soto 2000; Djankov et al. 2002; Klapper, Amit, and Guillen 2010; Levie and Autio 2011; among others).

2.2 Regulatory Burden

Although, ideally, formal regulations should be created to facilitate economic exchange and reduce transaction costs, in reality many of them become obstacles for entrepreneurial activity (Gnyawali and Fogel 1994). For example, several authors find that entrepreneurial activity is affected by excessive bureaucratic requirements for start-ups (Aparicio, Urbano, and Audretsch 2016; Desai, Gompers, Lerner 2003; Urbano and Álvarez 2014). In the same approach, Klapper et al. (2006, 2010) find that the entry rate of new businesses is lower in countries with high entry costs. Moreover, Prantl and Spitz-Oener (2009) find that entry barriers reduce the rate of self-employment. In turn, De Soto (1989), Loayza (1999), Djankov et al. (2002) and Loayza and Rigolini (2006) find that excessive regulation is linked to higher levels of informal activity and fewer registered businesses (La Porta and Shleifer 2008). These arguments suggest that when the business regulation is high, the cost of operating in the formality exceeds the benefits associated with registration and entrepreneurs are therefore more likely to operate in the informality. Thus, in countries with lighter business regulations we expect less informal entrepreneurial activity in the economy.

Hypothesis 1a: *Lighter business regulations are associated with lower levels of informal entrepreneurial activity.*

Another relevant factor for informal entrepreneurial activity is taxation. We argued that in a business environment characterized by high tax rates many entrepreneurs

choose to stay small and informal. For example, La Porta and Shleifer (2008), Djankov et al. (2010) and Block et al. (2016) find that the corporate tax rate negatively affects business entry. The same findings were observed by Da Rin, Di Giacomo, and Sembenelli (2011) for 17 European countries. In the same sense, Balamoune-Lutz and Garello (2014) using data from the Global Entrepreneurship Monitor (GEM) for a large group of European countries find that tax progressivity at higher than average incomes have a robust negative effect on nascent entrepreneurship. Thus, when tax rates are high we should see a greater rate of informal entrepreneurial activity.

Hypothesis 1b: *Higher tax rates are associated with higher levels of informal entrepreneurial activity.*

According to Scarpeta et al. (2002) the high costs of hiring and firing seem to hinder productivity, especially when these costs are not compensated with lower wages or more internal productivity. Thus, excessive labor regulation may dissuade formal employers from generating new sources of employment, and push many individual workers towards informality (Margolis 2014). Likewise, expensive regulations hinder the creation of new companies especially in industries that should naturally have a high entrance (Van Stel, Storey, and Thurik 2007). Several authors find that entrepreneurial activity is affected by rigid labor regulations (see Fuentelsaz et al. 2015; Klapper, Laeven, and Rajan 2006; McMullen, Bagby, and Palich 2008; Scarpeta et al. 2002; Van Stel, Storey, and Thurik 2007). Moreover, authors such as Loayza and Rigolini (2006) find that labor market regulations have a positive effect on informality. For instance, Roman, Congregado, and Millan (2013) suggest that stricter labor regulations are likely to promote entrepreneur without employees, since hiring costs are difficult to fulfil. Lastly, stronger levels of labor regulation might incentivize employers to circumvent labor regulations by contracting out own-account workers (Román, Congregado, and Milan 2011). Thus, more relaxed regulation burden of labor should decrease informal entrepreneurial activity.

Hypothesis 1c: *Labor freedom is associated with lower levels of informal entrepreneurial activity.*

2.3 Property Rights

Barzel (1997: 3) defined property rights as “individuals’ ability, in expected terms, to consume the good (or the services of the asset) directly, or to consume it indirectly through exchange.” The security of property rights has been identified as key to the establishment and development of a market economy (Acemoglu, Johnson, and Robinson 2005; De Soto 2000; North 1990; Rodrik 2000). In the context of entrepreneurship, weak property rights can be a dissuasive factor for

entrepreneurial activity (Johnson, McMillan, and Woodruff 2002). For example, McMullen, Bagby, and Palich (2008), Aidis et al. (2008), Estrin, Korosteleva, and Mickiewicz (2013) and Angulo-Guerrero, Perez-moreno, and Abad-Guerrero (2017) show a positive relationship between enforcement of property rights and opportunity, and high growth entrepreneurship. Desai, Gompers, and Lerner (2003) demonstrate that entry rates for businesses are higher in countries where courts are just and impartial. Nyström (2008) show that better property rights are positively associated with higher rates of self-employment in 23 OECD countries. In turn, Acs, Desai, and Klapper (2008b) point out that legal and judicial efficiency are crucial in the decision whether to operate in the formal sector or not. For Knack and Keefer (1995), in countries where property rights are not assured, entrepreneurs reduce their investment levels in specialized physical and human capital.

Nevertheless, the mere existence of property rights does not guarantee entrepreneurial activity, much more relevant are the enforceability of contracts (North 1990) and the level of extension of those rights to the entire population (Acemoglu and Robinson 2012; De Soto 1989; Sonin 2003). The presence of strong property rights improves the exploitation of entrepreneurial opportunities, as individuals believe that business profits will not be taken arbitrarily (Shane 2003), including the risk of illegal expropriation by the government (Acemoglu and Robinson 2012; McMillan and Woodruff 2002). Similarly, strong property rights facilitate the establishment of transactions over different points in time (Harper 2003), making it possible to carry out productive long-term investments (Portes 2010) and depersonalizing economic exchanges (Centeno and Portes 2006; Portes 2010). Furthermore, weak enforcement of property rights creates an incentive for individuals to build their own self-regulation mechanisms, as in the case of informal economy (Centeno and Portes 2006). For instance, Loayza and Rigolini (2006), Acs et al. (2008b) and La Porta and Shleifer (2008) find that strong property rights are associated negatively with informality. Therefore, we propose the following hypothesis:

Hypothesis 2: *Stronger property rights are associated with lower levels of informal entrepreneurial activity.*

3 Data and Methodology

3.1 Data

As previously mentioned, this article seeks to estimate the relationship between formal rules and informal entrepreneurial activity for different Latin American

countries, using panel regression techniques. A panel data methodology has several advantages over conventional OLS techniques. For instance, OLS techniques are not suitable for explaining any variation in our dependent variable over time. This is because OLS estimators ignore the panel structure of the data. Therefore, if we analyze several periods, the OLS estimators will be biased and inconsistent (Wooldridge 2002). The panel data methodology allows many of these deficiencies to be addressed.

3.1.1 Dependent Variable

Although there is a certain consensus regarding the role of entrepreneurship in economic growth (Audretsch 2007; Audretsch, Keilbach, and Lehmann 2006; Baumol, Litan, and Schramm 2007; Changoluisa and Fritsch 2019; Fritsch and Changoluisa 2017; Kirzner 1973; Schumpeter 1934), there is no consensus on the exact meaning of entrepreneurship and the definition of entrepreneurs (Parker 2004). According to Peneder (2009), it is possible to define and identify entrepreneurs according to their function, behavior and occupational status. The first refers to the role played by an entrepreneur in the economy, either as an innovator who interrupts the market (Schumpeter 1934), a coordinator who balances the market (Kirzner 1973) or a diffuser of technology (Schultz 1975). The second considers entrepreneurs to be individuals who discover and exploit entrepreneurial opportunities (Shane and Venkataraman 2000). The third refers to each individual entrepreneur's decision to opt for paid work or manage their own business (Knight 1985; Lucas 1978).

The latter definition has been extensively used to conduct empirical research on entrepreneurship in developed countries. This research uses data generated from surveys that allow identifying the category commonly known as *self-employment* which generally includes both business owners and self-employed individuals. Those belonging to this broad category of *self-employment* are considered as entrepreneurs (Van Praag and Versloot 2007; Van Praag and Van Stel 2013; Van Stel, Cieslik, and Hartog 2010). The evidence shows that for developed countries, the distinction between business owners and the self-employed does not seem to be relevant, since both reflect reasonably well the entrepreneurial behaviors and traits attributed to entrepreneurs by the first two definitions offered by Peneder (2009) (see Benz and Frey 2003, 2008; Blanchflower and Oswald 1998; Caliendo, Fossen, and Kritikos 2014; Kirchoff 1996; Van Praag and Versloot 2007; among others).

Nevertheless, in the case of developing countries, self-employed individuals and business owners present some very different nuances (Gindling and Newhouse 2014). For instance, in Latin American countries, the self-employed have

less human capital, smaller incomes, and a lower level of work satisfaction than business owners (Aguilar, Munoz, and Margo-Egido 2013; Mondragón-Vélez and Peña 2010). There exists robust evidence for developing economies showing that self-employment is associated with informality (see Biles 2009; Hart 1973; De Mel McKenzie, and Woodruff 2010; De Soto 1989; Henley, Arabsheibani, and Carneiro 2009; Loayza and Rigolini 2006; 2011; La Porta and Shleifer 2008, 2014; Tokman 1987; Salinas, Ortiz, and Muffatto 2019; Williams and Nadin 2010). Therefore, in developing countries it is necessary and useful to distinguish entrepreneurial activities. This is not necessary in developed countries where the terms self-employed and business owners are normally used indistinctly when referring to entrepreneurship (see Carree et al. 2002; Van Stel 2005; Van Stel, Cielik, and Hartlog 2010; among others).

Loayza and Rigolini (2006) find a correlation coefficient of 0.75 between self-employment and the alternative estimations of informal activity conducted by Schneider (2005). Likewise, due to their own nature, the self-employed are more likely to hide their income-generating activities from tax and registry authorities (La Porta and Shleifer 2008; Portes and Haller 2005). For instance, Mondragón-Vélez and Peña (2010) find that only five percent of own-account workers registered their activity in Colombia over the period 2002–2006. Moreover, depending on country, in Latin America between 89 and 97% of the self-employed do not pay social security taxes (Henley, Arabsheibani, and Carneiro 2006). Therefore, in this research, and following the pioneering work of Hart (1973), who was the first to coin the term "informality" and apply it to self-employment, we categorize the self-employed as informal entrepreneurs. Hart's definition is related to the dual view of development (Lewis 1954). According to this approach, the informal economy is related to those working in low productivity, unskilled, marginal jobs with low capacity of accumulation (Gasparini and Tornarolli 2009; La Porta and Shleifer 2008). At the empirical level, specific labor categories, such as unskilled own-account workers, are more likely to form part of such activities (Loayza and Rigolini 2011). This perspective involves viewing the self-employed not as individuals, but rather as activities capable of producing goods and/or services for the market (Tokman 1987). Therefore, we empirically implement a measure of informal entrepreneurial activity based on the "dual" definition of informality, corresponding to the percentage of the adult population identified as own-account workers.

We obtain data about informality from the Latinobarómetro dataset. The Latinobarómetro Corporation is a nonprofit NGO headquartered in Santiago de Chile that receives funding from organizations such as: IADB (Inter-American Development Bank), UNDP (United Nations Development Program), AECI (Agencia Española de Cooperación Internacional), SIDA (Swedish International

Development Cooperation Agency), CIDA (Canadian International Development Agency), CAF (Corporación Andina de Fomento), and OAS (Organization of American States) among others. The survey has been conducted in the region since 1995 until the present date; however, since 2004, the surveys have presented a national coverage of nearly one hundred percent for all countries and a common questionnaire leading to harmonized data.

The surveys have consisted of approximately 1000–1200 individuals per country and year. The methodology applied by the administrators of the dataset includes a modified probability sample, probabilistic in three stages and quotas in the final stage. The samples are representative of the adult population of each country, with a margin of error of approximately 3%. In this paper we use the survey waves that include the period 2004–2017 and provide information for 18 countries in Latin America: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela. The data are available not only for a cross-section of countries but also for various consecutive periods per country, building a panel dataset from 2004 to 2017. Another advantage of *Latinobarómetro* is that it is harmonized *ex-ante* and is suitable for cross-country studies (Neidhöfer, Serrano, and Gasparini 2018).

In addition to this, the dataset allows for the heterogeneous nature of entrepreneurial activity, a main objective of our research. That is, the database distinguishes between own-account workers and business owners, excluding agricultural sectors. We also exclude professionals for being high-skill own-account workers and incorporated into the formal economy. There is robust evidence for developing economies showing that self-employment is associated with informality (see Biles 2009; De Mel, McKenzie, and Woodruff 2010; De Soto 1989; Hart 1973; Henley, Arabsheibani, and Carneiro 2009; La Porta and Shleifer 2008, 2014; Loayza and Rigolini 2006, 2011; Tokman 1987; Williams and Nadin 2010; among others). Furthermore, our measure fits in the simplest definitions of entrepreneur commonly related to people who own the business they work on and bear responsibility and risk of the business (Knight 1985; Van Stel 2005).

We are aware of the limitation regarding our measure of informal entrepreneurial activity. However, the fact that it derives from a survey considering nearly all Latin American countries, previously harmonized and available for several consecutive years per country, makes the measure adequate to capture changes over time and make cross-country comparisons. On the contrary, other measures of informal entrepreneurship, such as those proposed by Dau and Cuervo-Cazurra (2014) or Autio and Fu (2015), have very limited data and are available only for a few Latin America countries. In addition, the most common survey on entrepreneurship, the Global Entrepreneurship Monitor (GEM), does not distinguish between formal

and informal entrepreneurship (Nyström 2008). Likewise, in line with our argumentation discussed before, differentiating between own-account workers and businesses owners in developing countries seems quite relevant. Thus, the fact that business owners have employees in their charge may be a good sign of a successful business, started by the identification of an opportunity, different from the marginal and low productivity jobs that characterize the own-account workers. Lastly, although our measure is incomplete and captures part of the informal entrepreneurial activity, as it does not include employers with a few employees in their own informal enterprises. Authors, such as Loayza and Rigolini (2006, 2011), suggest using own account workers as a good proxy for informality in developing countries.

3.1.2 Comparing Latinobarómetro Data with Other Survey Data

Latinobarómetro Dataset has not been used extensively by academics in the field of entrepreneurship. For this reason, we would like to compare this data with other better-known surveys in research on entrepreneurship and informality: the Global Entrepreneurship Monitor (GEM) and Household Surveys from the Socio-Economic Database for Latin America and the Caribbean (SEDLAC).¹ As previously mentioned, the main reason for selecting Latinobarómetro is the time-consistency of its data for all the countries in the region (12 years and 18 countries) and the possibility to categorize entrepreneurial activities. GEM and SEDLAC report relatively similar information to that of Latinobarómetro in terms of differentiating between entrepreneurs (business owners and self-employed) and salaried employees. Basically, we compared the rates of total entrepreneurial activity of each survey in order to show that the data from Latinobarómetro are consistent with those obtained by other surveys.² Although not all countries are covered by all the surveys and for different years, we attempted to establish a comparison using countries for which there is information on both surveys and for the same periods.

By doing so we would like to ensure the highest possible level of comparability, always considering that these surveys have been conducted for different

1 To access a detailed information on the database: <http://www.cedlas.econo.unlp.edu.ar/wp/estadisticas/sedlac/>.

2 i) Total Entrepreneurial Activity rate (GEM): we added two measurements calculated in GEM: Total early-stage Entrepreneurial Activity (TEA) and Established Business Ownership Rate. ii) Total Entrepreneurial Activity rate (SEDLAC): we added three categories defined in the survey: entrepreneurs (employers), skilled self-employed workers and unskilled self-employed workers (includes farmer/fisherman self-employed). iii) Total Entrepreneurial Activity rate (Latinobarómetro): we added four categories defined in the survey: 1) Professional (doctor, lawyer, accountant, etc.), 2) business owner, 3) farmer/fisherman, and 4) own-account workers or street peddlers.

purposes. When comparing SEDLAC and Latinobarómetro, the percentage of individuals involved in total entrepreneurial activity is very similar in both cases (32.5% in SEDLAC and 33.8% in Latinobarómetro). The difference is slightly more notable when comparing GEM and Latinobarómetro (30.5% in Latinobarómetro and 27.1% in GEM). This difference probably reflects the fact that there is greater compatibility in the definition of labour categories between SEDLAC and Latinobarómetro. Likewise, the level of correlation between SEDLAC and Latinobarómetro at 1% level of significance is 0.58, whereas the level of correlation between GEM and Latinobarómetro at 1% level of significance is 0.51.

3.1.3 Independents Variables

Following De Soto (1989), we divide the independent variables according to the cost of becoming formal, the cost of staying formal, and the benefits of being formal.³ As a proxy for the cost of becoming formal, we include the variable business regulation (Fraser Institute), which includes an average of six categories: administrative requirements, bureaucracy costs, starting a business, extra payments-bribes, licensing restrictions and tax compliance, which measures the difficulty of starting and operating a business in the formal sector. The cost of remaining formal includes total tax rate paid by businesses after deductions and exceptions (World Bank Doing Business Project) and obeying government regulations such as labor regulations (World Bank Doing Business Project). To this end, we used the Labor Freedom Index by the Fraser Institute. Within the benefits of being formal, we include the access to a judicial system in order to enforce property rights and adjudicate disputes. Therefore, as a proxy for property rights, we use the Rule of Law Index (World Bank's Governance Indicators project). According to Kaufmann et al. (2007: 4) this index measures "the degree to which agents have confidence in and abide by the rules of society, as well as the quality of contract enforcement, the police, and the courts, and also the likelihood of crime and violence."

3.1.4 Control Variables

Several studies find a relationship between the level of entrepreneurial activity and economic development (see Acs et al. 2008a; Acs, Audretsch, and Evans 1994;

³ Cases in which the data had missing values were resolved by nearest neighbor imputation, i.e., identifying and substituting the nearest case in the cell with a missing value. Normally, this was the information from the preceding year for the same variable within a country. This allowed us to run regressions with a balanced panel and, fundamentally, has vectors of valuable information that would have been lost without imputation.

Carree et al. 2002; Estrin, Korosteleva, and Mickiewicz 2013; Levie and Autio 2011; Van Stel, Carree, and Thurik 2005; Wennekers et al. 2005; among others). For this reason, we use GDP per capita (purchasing power parity) as a control variable. We also control by the rate of economic growth (Dau and Cuervo-Cazurra 2014). The study period coincides with a cycle of strong growth in the region and some scholars recognize the importance of the business cycle as a potential determinant of informality (Tornarolly et al. 2014). However, a high population growth rate, particularly among the poor, could raise demand for informal goods and, therefore the supply of informal workers. We therefore control for the population growth rate (La Porta and Shleifer 2014). Other researchers find that informality is related to the productive structure of a country and the educational level. We control for productive structure by using the percentage of the economically active population working in the agricultural sector (Gasparini and Tornarolli 2009). As a control of the education level, we use the average years of secondary schooling of the adult population (Barro and Lee 2013; Loayza and Rigolini 2006). Here, we also include time-fixed effects to capture the business cycle of these countries. Dependent, independents and controls variables are described in Table 1.

3.2 Methodology

In order to analyze the relationship between institutional factors and informal entrepreneurial activity in Latin America countries, we use a balanced panel data for the period 2004–2017. Therefore, the following general model is proposed:

$$\begin{aligned}
 \text{Informal Entrepreneurial Activity}_{it} = & \beta_0 + \beta_1 \text{ GDP_percapita}_{it} + \beta_2 \text{ Growth} \\
 & \text{- rate_GDP}_{it} + \beta_3 \text{ Population_Growth}_{it} \\
 & + \beta_4 \text{ Agricultural_Population}_{it} + \beta_5 \\
 & \text{Secondary_Education}_{it} + \beta_6 \text{ Trend} \\
 & (t)_{it} + \beta_7 \text{ Business regulation}_{it} \\
 & + \beta_8 \text{ Total_tax_rate}_{it} + \beta_9 \text{ Labor} \\
 & \text{- freedom}_{it} + \beta_{10} \text{ Rule_of_law}_{it} + \mu_{it}.
 \end{aligned}
 \tag{1}$$

Firstly, we check whether the use of panel data versus a simple OLS regression is justified. This is done by applying the Breusch and Pagan test (Breusch and Pagan 1980). We reject the null hypothesis ($\text{Prob} > \text{chibar2} = 0.000$), which argues that panel data are preferable to using a pooled dataset. To verify whether it is

Table 1: Description of variables.

Variable	Measure	Description	Source
Informal entrepreneurial activity rate	Percent	Percentage of the adult population who identify themselves as self-employed or street vendors (excluding self-employed professionals and agricultural) (Log for analysis).	Latinobarómetro
GDP per capita	USD	GDP per capita, purchasing power parities (Log for analysis).	International Monetary Fund Data
GDP change	Percent	Growth rate GDP.	International Monetary Fund Data
Population growth	Percent	Population growth rate.	International Monetary Fund Data
Agricultural population	Percent	Percentage of economically active population working in agriculture.	World Bank Data Base
Secondary education attainment	Percent	Average years of secondary schooling.	World Bank Data Base – Barro and Lee (2013)
Business regulation	Index	A measure of the level of administrative requirements and bureaucratic procedures that entrepreneurs must comply with to open or operate a formal business. This variable assumes higher values the lighter the business regulation in a country. Therefore, 1 = Lightest business regulation, 0 = Strictest business regulation.	Fraser Institute
Total taxes as percent of profits	Percent	Total tax rate paid by businesses after deductions and exemptions (log for analysis).	Doing Business
Labor Freedom	Index	It is a quantitative measure that considers various aspects of the legal and regulatory framework of a country's labor market. Normalized between 0 and 1. A higher value indicates greater freedom.	Fraser Institute
Rule of Law Index	Index	This index measures the degree to which agents have confidence in and abide by the rules of society, as well as the quality of contract enforcement, the police, and the courts, and	World Bank Governance Indicators

Table 1: (continued)

Variable	Measure	Description	Source
		also the likelihood of crime and violence (Kaufmann et al. 2011: 4). Normalized between 0 and 1. A higher value indicates stronger rule of law.	

preferable to use fixed effects or random effects, we perform a Hausman test (Wooldridge 2002). The test consistently suggested that the random effects model is better suited to the data ($\text{Prob} > \chi^2 = 0.4976$). In other words, there is no correlation between the individual effects and the explanatory variables, indicating the use of the random effects model. We also evaluate the presence of autocorrelation. We use the test for serial correlation derived by Wooldridge (2002). We obtained a result of $F > 0.05$ ($\text{Prob} > F = 0.3128$), therefore autocorrelation is not a concern in our data. Finally, we test the existence of severe multicollinearity problems, particularly considering that the correlation matrix showed some correlations over 50%. To this end, we use the variance inflation factor (VIF). The maximum value of VIF was 2.54. The average VIF was 1.73, which in any case shows values below the commonly accepted threshold of 5 and 10 (Cullen, Johnson, and Parboteeah 2014; Dau and Cuervo-Cazurra 2014). Therefore, multicollinearity does not appear to be a problem.

4 Results and Discussion

Table 2 shows the descriptive statistics of the variables considered in the econometric analysis. The variables form a strictly balanced panel with 216 observations ($N = 216$). The standard deviation (SD) of the variables shows that there is greater variability between countries than within countries, this is due to the heterogeneity of the economic and social structures of the countries. The investigated period is 12 years ($T = 12$) and the number of countries is 18 ($n = 18$).

Table 3 shows the correlation matrix, where an asterisk identifies statistical significance. These univariate tests show that some independent variables are significantly related to each other; however, as previously mentioned, this did not represent any serious multicollinearity problem.

In Table 4 we present multiple regression results. In model 1 we present the results of OLS estimations as a starting point of the econometric analysis. We show

the results of the random effect estimation in Model 2. Based on these model estimations, we find a negative and statistically significant relationship between business regulations and informal entrepreneurial activity ($p < 0.001$). Both the OLS and random effect estimations show a qualitative consistent picture of our analysis signaling robustness in our findings. However, as presented in the data analysis section, random effects panel models should be our preferred estimations. Based on these consistent findings, we argue that lighter business regulation is

Table 2: Descriptive statistics of the variables.

Variable		Mean	S.D.	Min.	Max.	N
(Log) Informal entrepreneurial activity rate	Overall	2.73	0.43	1.38	3.35	N = 216
	Between		0.31	2.06	3.20	n = 18
	Within		0.30	1.61	3.33	T = 12
(Log) GDP per capita	Overall	9.23	0.51	8.05	10.1	N = 216
	Between		0.49	8.32	9.87	n = 18
	Within		0.18	8.73	9.65	T = 12
GDP change	Overall	4.08	3.34	-8.00	18.2	N = 216
	Between		1.30	2.00	7.37	n = 18
	Within		3.09	-6.54	19.4	T = 12
Population growth	Overall	1.40	0.55	-0.06	3.44	N = 216
	Between		0.52	0.43	2.50	n = 18
	Within		0.22	0.73	3.50	T = 12
Agricultural population	Overall	19.01	10.1	0.61	39.51	N = 216
	Between		10.1	1.81	33.2	n = 18
	Within		2.21	11.2	25.0	T = 12
Secondary education attainment	Overall	2.40	0.71	0.82	3.81	N = 216
	Between		0.71	0.89	3.73	n = 18
	Within		0.18	1.70	2.79	T = 12
Business regulation	Overall	0.56	0.09	0.31	0.73	N = 216
	Between		0.09	0.35	0.67	n = 18
	Within		0.03	0.43	0.66	T = 12
(Log) Total taxes as percent of profits	Overall	3.90	0.36	3.19	4.92	N = 216
	Between		0.36	3.27	4.71	n = 18
	Within		0.09	3.71	4.25	T = 12
Labor freedom	Overall	0.53	0.14	0.24	0.81	N = 216
	Between		0.14	0.27	0.73	n = 18
	Within		0.05	0.41	0.65	T = 12
Rule of Law Index	Overall	0.39	0.13	0.12	0.78	N = 216
	Between		0.13	0.17	0.76	n = 18
	Within		0.02	0.34	0.47	T = 12

associated with less rates of informal entrepreneurial activity.⁴ These findings are in accordance with Loayza et al. (2009) for Latin American and the Caribbean. This is also consistent with the relationship reported by Thießen (2003) and La Porta and Shleifer (2008) for complexity of the tax system. Then, our empirical findings support our Hypothesis 1a.

In regards to the total tax rate, we do not find a statistically significant relationship with informal entrepreneurial activity in any of the principal models presented in Table 4. This coincides with the results reported by Friedman et al. (2000) for Latin American countries. Similarly, La Porta and Shleifer (2008) do not find any statistical significance using self-employment data for 133 countries. Then, we reject our Hypotheses 1b.

Moreover, we find a positive and statistically significant relationship among labor market freedom and informal entrepreneurial activity ($p < 0.01$). In the 1990s there was an increase in the rate of informality, despite greater labor flexibility (Freeman 2010; Chong, Galdo, and Saavedra 2008). For example, Maloney (2004) find that in countries with relative labor flexibility, as Mexico, this was accompanied by a large informal sector, because the individuals could not find significant differences between both sectors in terms of income or benefits, and thus preferred the informal sector, which offered greater flexibility and autonomy. Furthermore, after building an index of labor market legislation rigidity for an extended period, Campos and Nugent (2018) find that countries with lower GDP per capita tended to show lower levels of labor rigidity. Also, the author concludes that the relationship among employment protection and economic growth seems to be inconclusive. On the other hand, Botero et al. (2004) find that heavier regulation of labor has no effect on informality. However, authors such as Loayza (1999) and Loayza and Rigolini (2006) point out that labor market regulation have a positive effect on informality. Therefore, based on our results we reject hypotheses 1c.

Meanwhile, the Rule of law index is strongly and negatively associated with informal entrepreneurial activity ($p < 0.001$), similar to that found in previous studies (see Acs et al. 2008b; La Porta and Shleifer 2008; Loayza and Rigolini 2006). Therefore, we accept hypotheses 2. An increase in the Rule of law index is associated with a reduction of informal entrepreneurial activity.

⁴ Please recall that higher values of the variable Business Regulation signals lighter business regulations. Therefore, the negative coefficient shown in Table 4 indicates that lighther business regulation is negatively associated with less informal entrepreneurial activity.

Table 3: Informal entrepreneurial activity and socio-demographic/formal institutions factors (correlation matrix).

	1	2	3	4	5	6	7	8	9	10	11
1. Informal entrep. activ. rate	1										
2. % of EAP self-employed	0.3835***	1									
3. GDP per capita -log	-0.4172***	-0.6025***	1								
4. Growth rate GDP	0.0438	-0.0148	-0.0540	1							
5. The population growth	0.2299***	0.3175***	-0.3796***	0.1036	1						
6. Agricultural	0.2919***	0.3529***	-0.4667***	0.0043	0.3397**	1					
7. Secondary educ. attainm.	-0.2401***	-0.1477**	0.6187***	0.0805	-0.2071**	-0.3563***	1				
8. Business regulations	-0.4752***	0.0903	-0.0421	0.0936	-0.0556	0.0417	0.0941	1			
9. Total taxes % of profits	0.2001**	-0.1820**	0.0252	-0.0323	-0.0829	-0.2038**	-0.0533	-0.4690***	1		
10. Labor freedom	-0.2314*	-0.2159*	0.2085*	-0.0190	-0.5116*	-0.1463	0.1610	0.3629*	-0.0674	1	
11. Rule of Law	-0.5451***	-0.5734***	0.4684***	0.1037	-0.4514***	-0.3787***	0.4053***	0.4068***	-0.2169***	-0.0624	1

Significance level: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4: Formal institutional factors and informal entrepreneur activity rate.

	Principal models				Robusnes check			
	[M1] OLS	[M2] RE	[M3] GEE	[M4] RE	[M5] RE	[M6] RE	[M7] GLS	[M8] GLS
(Log) GDP per capita	-0.176** (0.0614)	-0.317 (0.202)	-0.259* (0.105)	-0.123 (0.143)	-0.319 (0.216)	-0.203*** (0.0431)	-0.0876 (0.0544)	-11.67*** (0.839)
Growth rate GDP	-0.0011 (0.00649)	-0.0031 (0.00612)	-0.0031 (0.00573)	-0.0032 (0.00623)	-0.0057 (0.00608)	-0.0010 (0.00115)	0.0040 (0.00603)	-0.077 (0.0459)
Population growth	-0.00405 (0.0451)	0.0571 (0.0593)	0.0454 (0.0587)	0.104* (0.0496)	0.0224 (0.0578)	0.00996 (0.0141)	0.0293 (0.0394)	0.292 (0.507)
Agricultural population	0.00253 (0.0024)	-0.00468 (0.0051)	-0.00201 (0.0043)	0.00409 (0.0042)	-0.00319 (0.0054)	0.000502 (0.0016)	0.0180*** (0.0025)	0.248*** (0.027)
Secondary education attainment	0.0921* (0.0369)	0.0799 (0.0568)	0.0859 (0.0603)	0.0901 (0.0584)	0.122* (0.0619)	0.00968 (0.0189)	0.153*** (0.0368)	-1.553** (0.506)
Trend	-0.0303*** (0.0061)	-0.0243 (0.012)	-0.0267*** (0.0067)	-0.0234 (0.013)	-0.0288 (0.014)	0.0151*** (0.002)	0.0272*** (0.005)	0.328*** (0.054)
Business regulations	-1.482*** (0.291)	-1.802*** (0.401)	-1.723*** (0.425)		-1.720** (0.525)	-0.254* (0.116)	-0.741** (0.279)	-29.00*** (2.087)
(Log) Total taxes as percent of profits	-0.0222 (0.0651)	-0.0728 (0.179)	-0.0619 (0.111)	0.0598 (0.134)	-0.0888 (0.181)	0.0462 (0.0371)	-0.0850 (0.0677)	-1.007* (0.506)
Labor freedom	0.476 (0.198)	0.799** (0.292)	0.716** (0.267)		0.841** (0.320)	0.329*** (0.0643)	0.498* (0.171)	7.114** (2.629)
Rule of law Index	-1.474*** (0.241)	-1.348*** (0.387)	-1.403*** (0.391)		-1.749*** (0.395)	-0.458*** (0.133)	-0.678*** (0.194)	-14.05*** (2.107)
(Log) Days to start a business				0.151** (0.0521)				
Rigidity of employment				-0.335* (0.161)				

Table 4: (continued)

	Principal models			Robusnes check				
	[M1] OLS	[M2] RE	[M3] GEE	[M4] RE	[M5] RE	[M6] RE	[M7] GLS	[M8] GLS
Legal system & property rights								
Constant	5.576*** (0.674)	7.082*** (1.803)	6.488*** (1.126)	-1.502** (0.493)	7.177*** (1.880)	4.999*** (0.452)		160.0*** (7.484)
Observations	216	216	216	216	198	251	216	204
N_g	18	18	18	18	18	18	18	17
R2 within		0.417		0.393	0.433	0.317		
R2 between		0.635		0.801	0.627	0.465		
R2 adjusted/overall	0.537	0.523		0.593	0.528	0.456		
chi2		289.2	175.6	247.9	207.8	118.7	195.7	3942.5
Serial correlation test (p value)	0.45	0.38	0.25	0.32	0.65	0.32	0.61	0.35

Standard errors in parentheses, $p < 0.05$, $**p < 0.01$, $***p < 0.00$.

4.1 Robustness Checks

As a verification of the robustness of the results, we use an appropriate alternative method for data panels: a time-series generalized estimating equation (GEE) model (see Acs, Desai, and Klapper 2008b; Dau and Cuervo-Cazurra 2014; Klapper, Amit, and Guillen 2010). As shown in Table 4 (Model 3), the results are very similar to those obtained by random effects estimations (our preferred estimations). Therefore, the results are robust to the estimation method used. Moreover, we also employ alternative measures for business regulation; labor freedom and rule of law (Model 4): number of days to start a new business and Rigidity of employment from Doing Business; and Legal System & Property Rights Index from Fraser Institute.⁵ As displayed in model 4, the results are similar to model 2. Therefore, the results prove robustness against specification changes. Next, in Model 5 we lag each of the independent variables by one year. As shown in Table 4, the results remained qualitatively the same. Again, the results prove robustness against specification changes.

A further alternative specification was performed (Results not shown). Firstly, we depart from a baseline model by including all control variables in the regression. Then, we operate several auxiliary regressions, which include the baseline model, adding one institutional variable at a time. The result showed that almost all the institutional variables were significant except total taxes rate. The next step was combined only the institutional variables that had a substantial impact on the auxiliary regressions (including the variables of the baseline model). The variables that were significant in the auxiliary regressions maintained their significance. In addition, we use an additional measure of informal entrepreneurial activity (Model 6). This measure comes from ILOSTAT database and corresponds to the percentage of the active workforce that is an own-account worker. As displayed in the Model 6, the Rule of law index and labor freedom maintain their significance. However, business regulation loses its significance. This is probably due to the fact that ILOSTAT includes agricultural self-employed, while Latinobarómetro allows making the differentiation. However, overall the results described before are robust.

In Table 4 (Model 7) we include results for the case of formal entrepreneurial activity. As explained previously, our measure of informality stems from “dual” view of the informal economy. This is, the distinction among formal and informal entrepreneurial activity is determined by labor status: own-account workers vs. business owners (Gasparini and Tornarolli 2009). Therefore, we use the percentage of the adult population who identify themselves as owners of the non-agricultural

5 Regarding the variable Labor freedom: Higher value indicates more labor flexibility.

business as a proxy for formal entrepreneurial activity. As with informal entrepreneurial activity, we use the Latinobarómetro dataset. The purpose of our analysis is to conduct a comparative analysis to determine if institutional variables have a different impact on informal and formal entrepreneurial activity. If we compare informal and formal entrepreneurial activity (see Table 4, Model 2 and Model 7), the results suggest that property rights and business regulation negatively impact both types of activities in the same direction. That is to say that a better institutional framework not only would lead to a less amount of own-account workers, but also to a fewer number of small-scale business owners. Finally, in order to strengthen the robustness analysis, Model eight reports the results obtained when the dependent variable is the shadow economy as a proxy for informal entrepreneurial activity. As displayed in the model 8, the findings are consistent with the previous results.⁶

5 Conclusions and Policy Implications

In this paper we analyze empirically the relationship between formal rules and informal entrepreneurial activity in Latin America countries. This was done using a balanced panel covering the period 2004–2017 and taking institutional economics (Baumol 1990; North 1990, 2005) as the theoretical framework. We used the percentage of the adult population identified as own-account workers as the measure of informal entrepreneurial activity. The empirical evidence shows that stronger property rights and lighter business regulations tend to decrease informal entrepreneurial activity. However, higher labor freedom is associated with higher informal entrepreneurial activity.

We speculate that the negative and strong correlation between property rights, lighter business regulation and informal entrepreneurial activity does not necessarily imply a conversion of informal entrepreneurs to formal status. Although we have not addressed directly the-possible-or-not substitution between formal and informal entrepreneurial activity, a joint analysis of the results obtained in the model 2 and model 7 suggests that in general, formal rules impact both types of activities in the same direction. Therefore, the results do not suggest a transition between own-account workers and business ownership, and it is difficult to think that merely by improving the legal and regulatory framework there will be a

⁶ The variable shadow economy is measured as a percentage of GDP, therefore, the coefficients of this regression should be interpreted as those of a lin-log regression (Coef/100). The data for this variable were obtained from Medina and Schneider (2018) for 17 Latin American countries (except Panama) in the period 2004–2015.

massive conversion of informal entrepreneurs to formal status just as suggested by De Soto.

On the contrary, our results seem to be consistent with La Porta and Shleifer (2008) who do not find evidence that informal firms tend to become formal. Moreover, in a study for Colombia, Mondragón-Vélez and Peña (2010) find that the transitions between self-employment and business ownership (and vice versa) are extremely low. One explanation of these results is that the reduction of informality depends more the entry of new firms registered run by better-educated managers than through conversion to the legal status (La Porta and Shleifer 2008). Hence, our findings favour the dual view of informality related to Tokman.

Also, the empirical evidence has produced contradictory results concerning the effect of institutions on entrepreneurship. For example, traditional approaches suggest that institutional improvements are related to greater levels of entrepreneurship and economic development. However, our findings challenge these perspectives and confirm that the total entrepreneurial activity rate may decrease with the level of economic development. Then, to the extent that Latin American countries improve the regulatory and legal framework, both the number of own-account workers and business owners will tend to fall. Hence, a relevant contribution of this research is that it provides evidence of the existence of different types of entrepreneurial activities and supports the need to move the analysis towards the various types of entrepreneurial activities that arise in an economy. In sum, the results suggest that the heterogeneity of entrepreneurial activities must be acknowledged and taken into account. For instance, the more entrepreneurship is not necessarily the better, and therefore entrepreneurs must be considered a heterogeneous group, where only a minority will create firms highly productive. In turn, those new firms will absorb the millions of own-account workers and micro-entrepreneurs who currently operate in the economies of developing countries. From the point of view of public policies, the paper suggests that the objective of entrepreneurial policy in Latin America should focus on the quality of entrepreneurship rather than the number of entrepreneurs.

Nonetheless, while Latin America countries manage to stimulate formal entrepreneurship, informal entrepreneurial activity is essential in terms of being a source of employment that provides a livelihood for millions of economically disadvantaged individuals. The good message, on the other hand, is that it is not possible to discard that within this group there are entrepreneurs with growth potential who are possibly restricted by an inadequate regulatory and legal framework. Therefore, public policy should be directed to identify who the restricted informal entrepreneurs are, and to help them move towards formality. This means that public policies must take into account the realities and particularities of the sector. These include issues such as reduced costs of entry, the

recognition of property rights, access to microfinance, training programs, among others.

In addition, the results can contribute to the discussion that exists in civil society concerning whether governments and the general population should be permissive towards informal entrepreneurial activity or whether, by contrast, it is necessary to force them to comply with government regulations. The latter option seems to be unsuitable. As it was previously explained, the results suggest that the reduction of informality depends more on the entry of formal firms than through conversion to the legal status. In other words, in the absence of improvement in the rule of law and regulatory burden, which encourages formal entrepreneurship, probably an aggressive policy forcing the informal entrepreneurs to comply with legal regulations will lead to higher unemployment and poverty, taking into account that around 50% of the economically active population in Latin America participate directly or indirectly in the informal economy. Therefore, our results suggest that each of these entrepreneurial activities requires different types of public policy.

Moreover, the results concerning the positive relationship between labor freedom and informal entrepreneurial activity (Model 4) should be interpreted cautiously. One possible explanation of this result is that in Latin America the decade of the 90s was a period marked by the deregulation of labor markets (Freeman 2010; Chong, Galdo, and Saavedra 2008), which in turn encouraged employers to contract out work to their own paid employees by the formula of dependent or false self-employment (Portes 2010; Román, Congrado, and Millan 2011). However, since the year 2000 there was a reversal in labor policy regarding the 90s. Thus, Latin American labor markets became more regulated, and for employers it became increasingly difficult to contract out directly. Therefore, stricter labor regulations could have caused movements from own-account workers to paid employment. In sequence, this resulted in lower levels of informal entrepreneurial activity. In any case, a robust possible explanation to this result is open to question. In addition, this finding does not necessarily entail that stricter labor market regulation is better, but suggests that labor market deregulation cannot be an objective in itself and that multiple factors must be taken into account in order to choose an appropriate balance between efficiency and quality of employment. Regarding total tax rate, we did not find a significant effect on informal entrepreneurial activity. This is probably explained by the fact that own-account workers engage simple transactions involving small amounts of money and, therefore they do not attract attention of tax officials.

Moreover, the results have some implications from the point of view of public policy. For example, the empirical findings suggest that an excessive regulatory burden positively affects the level of informal entrepreneurial activity, because it

either encourages individuals to operate in the informal sector or because it discourages potential entrepreneurs with good entrepreneurial ideas from deciding to start new ventures and thus absorb labor from the informal sector. Nevertheless, this provides notable leeway for public policy to seek a way to reduce those restrictions. In practice, some critical factors for the success of any reform are related to the quality of bureaucracy and the level of coordination between the national government and sub-national governments, because many rules are executed at different levels of government.

The quality of bureaucracy is a critical factor in any strategy that aims to reduce regulatory burden. As noted by De Soto (1989), most of the business regulations do not come directly from the legislative or executive branch, but straight from the bureaucracy. Also, these controls often respond to the interests of particular powerful interest groups. Therefore, Latin American governments should promote the strengthening of the capacities of its bureaucracy. This implies, among other things, the construction of a professional bureaucratic apparatus, where recruitment is carried out under the principles of the Weberian bureaucracy, as well as the merit and the expectations of promotion in the long term, which is different from the current characteristics of the Latin American bureaucracy, historically related to political clientelism or loyalties to the governing party. Likewise, a high level of coordination and interaction between the public and private sectors is necessary, allowing for a continuous flow of information from private actors regarding the various bottlenecks that might inadvertently be generating public regulation. Therefore, the construction of external networks that connect the public sector with the private sector is necessary. However, this presents a dilemma. Such connection with the private sector can lead to institutional capture by the elite for predatory purposes (Evans 2005). Therefore, the development of a bureaucracy must not only be professional but also autonomous, or what Peter Evans (2012) calls “embedded autonomy”.

The results consistently show a negative and robust relationship between the rule of law and informal entrepreneurial activity. As explained above, we believe that this mechanism operates through better incentives to affect the decision-making of entrepreneurs, encouraging them to invest in new ventures and pursue new ideas in the formal sector, rather than by a massive conversion of informal entrepreneurs to official status. The results are quite robust in pointing out that institutions matter and that the establishments of secure and stable property rights are essential elements for allocation of entrepreneurial talent towards types of entrepreneurial activities consistent with economic growth. Hence, policymakers should place institutions and especially rule of law at the core of their agenda and political reform.

Finally, we must acknowledge the limitations of the proxy for informal entrepreneurial activity. A better empirical approach to the theoretical definition of informal entrepreneurship is required, closer to the conceptual framework of the new institutional economics (see Desai 2009; Feige 1990). However, this work has managed to cover nearly the entire set of Latin American countries over a significant period. Lastly, future research might include other types of entrepreneurial activities which are vital for Latin America's long-term growth perspectives, such as innovative entrepreneurship (Baumol, Litan, and Schramm 2007), high growth entrepreneurship (Estrin, Korosteleva, and Mickiewicz 2013; Stenholm, Acs, and Wubker 2013), transformational entrepreneurship (Schoar 2010), and strategic entrepreneurship (Levie and Autio 2011), among others.

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