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Contaduría y Administración 65 (2), 2020, 1-21

Contaduría y Administración
Accounting & Management

Are the business regulations creating new entrepreneurship?

¿Son las regulaciones empresariales generadoras de emprendimientos productivos?

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Received July 7, 2017; accepted August 9, 2019
Available online March 3, 2020

Abstract

This article presents the relationship between business regulations and entrepreneurial volumes in sixty-three countries, using data from the World Bank Doing Business (WBDB) and Global Entrepreneurship Monitor (GEM). Based on the results of the model, it is concluded that the administrative complexities of creating a company are not related to the levels of entrepreneurship, coinciding with the findings obtained by Baumol (1990) and Capelleras et al. (2008), which establish that the regulations do not originate volumes of enterprises, but only produce changes in their distribution between formal and informal companies. In addition to the above, the new finding of this article focuses on separating the explanatory variables of control from the scope of supply and demand of the enterprise, which allowed confirming - adding other explanatory variables - what was exposed by Baumol (1990) and Capelleras et al. (2008), among other authors.

JEL code: K20, L26, L51, M13, O57
Keywords: Business regulations; Entrepreneurship; Economics growth

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Peer Review under the responsibility of Universidad Nacional Autónoma de México.

http://dx.doi.org/10.22201/fca.24488410e.2020.1578

http://dx.doi.org/10.22201/fca.24488410e.2020.1578

Resumen

Este artículo presenta la relación entre las regulaciones empresariales y los volúmenes de emprendimiento en sesenta y tres países, utilizando los datos del World Bank Doing Business (WBDB) y el Global Entrepreneurship Monitor (GEM). De los resultados del modelo, se concluye que las complejidades administrativas de crear una empresa no están relacionadas con los niveles de emprendimientos, coincidiendo con los hallazgos obtenidos por Baumol (1990) y Capelleras et al. (2008), que establecen que las regulaciones no originan volúmenes de emprendimientos, sino únicamente produce cambios en su distribución entre empresas formales e informales. Adicionalmente a lo anterior, el nuevo hallazgo de este artículo se centra en separar las variables explicativas de control desde el ámbito de la oferta y demanda del emprendimiento, lo que permitió confirmar —agregando otras variables explicativas— lo expuesto por Baumol (1990) y Capelleras et al. (2008), entre otros autores.

Código JEL: K20, L26, L51, M13, O57
Palabras clave: Regulaciones empresariales; Emprendimiento; Crecimiento económico

Introduction

Studies on economic growth focus on large companies and neglect the role of existing small companies, and even more so, those that are new. However, recent literature has indicated that both small and other companies generate a significant amount of innovation, identify market niches, and increase competition, thereby promoting economic efficiency (Cáceres & Aceytuna, 2008). However, authors such as Dixon *et al*. (2007) consider that there is wide recognition that regulation affects small firms differently from the way it affects large firms. For example, compliance with environmental regulations can be more costly for small firms than for large firms because of the financial and other costs of compliance.

In this sense, considering the complementary nature of economic activity between the different groups of companies (large, medium, and small), it is feasible to imagine an original economic model where economic activity is the result of the interaction of both consolidated and small companies, as well as of recently created ones. This approach analytically illustrates the reasons why entrepreneurship is a determining factor in the growth of the economy of a territory (Cáceres & Aceytuno, 2008).

One of the main development strategies of countries is considered to be building the competitive capacity of their territories. According to Porter (1990), this strategy should stimulate innovation, entrepreneurship, and the flexibility of the production system to obtain competitive advantages that will better position a given region vis-à-vis other territories.

In this sense, Stel *et al*. (2007) highlight the importance of entrepreneurship by stating that small and medium enterprises generate more job opportunities and higher economic growth than large companies. Authors such as Rosero and Molina (2008) highlight entrepreneurship for its contribution in the economic, technological, and social fields since its results have motivated the regional agencies of local development in many countries to consider entrepreneurship as an intelligent response to times of crisis and economic uncertainty. In this regard, Martínez (n.d.) states that the successes in the creation of companies in some countries have led other governments to design public policies and regulations in favor of nascent business activity. In this sense, and from the perspective of generating new conceptual references in business regulation regarding the creation of companies, it becomes necessary to find valid reasons that allow the implementation of national policies with a high degree of success.

The importance of small and medium-sized enterprises (SMEs) in the economy of territories is clear, and policymakers in favor of entrepreneurship are increasingly justifying the use of this strategy to achieve sustainable development, so that it will lead to increased employment, investment and, in turn, protection of natural resources. According to Lundström and Stevenson (2005), these policies aim to strengthen the existing base of small and medium-sized enterprises, to ensure that new ones can compete in the marketplace and that they are not disadvantaged by their small size. According to Stel, Storey, and Thurik (2007), governments have two options: (i) reduce business regulations; or (ii) increase government support (Dennis, 2004, cited by Stel *et al*., 2007). Concerning the first option, reducing regulations seeks to lower entry barriers for new businesses and the regulatory burdens on those already in operation. Finally, with government support, it seeks to assist Smes in the areas of greatest vulnerability, such as information, training, and financing, among others.

On the other hand, research by Djankov *et al*. (2002) reveals that in countries where business regulations are more onerous, there are lower levels of entrepreneurship and wealth. In contrast, Capelleras *et al*. (2008) state that regulations do not affect volumes of entrepreneurship but only distribution by economic activity.

This work is of interest when considering the above dilemma, as it aims to analyze the relationship (if any) between business regulations and registered volumes of entrepreneurship, using empirical data from sixty-three countries. The estimate was made using a Tobit model with data obtained from the global indicators of the Global Entrepreneurship Monitor (GEM, 2014) and the World Bank Doing Business (WBDB, 2014).

This article comprises three sections, not counting this introduction. The first section presents a review of the literature and conceptualization of entrepreneurship, considering the volume of entrepreneurship and the regulations of business creation. Next, the article describes

http://dx.doi.org/10.22201/fca.24488410e.2020.1578

the econometric model, highlighting the exogenous and endogenous variables (supply and demand). Likewise, there is an analysis of the results at the level of the explanatory variables in the nascent companies, new entrepreneurship, and rates of entrepreneurship. The last section delivers the conclusions derived from the theoretical analysis and empirical evidence.

Review of the literature on entrepreneurship

Richard Cantillon used the term "entrepreneur" in his work *Essai sur la nature du commerce en general* in 1755 to refer to people who took risks of uncertainty in the markets, as opposed to the so-called "hired men" who obtained a contractual income with a minimal risk (Lupiañez *et al*., 2013). In the same perspective, the concept of Say (1803) stands out, defining the entrepreneur as a superior worker who had to face many obstacles and uncertainties and who optimized the use of resources by allowing the creation of value (Lupiañez *et al*., 2013).

On the other hand, Mill (1848) generalized the term entrepreneur. Later, Marshall (1975), who differentiated the existence of an entrepreneur from that of a "manager," stated that organizational capacity was the fourth "productive factor" among the factors considered in the neoclassical model. Complementarily, the Austrian school, argued that the appearance of enterprising businesspeople arose from unsatisfied demands of an individual and collective character, which forced the production of those goods and services. Along these same lines, Knight (1921), Schumpeter (1934), and Menger (1976) made contributions to the concept of entrepreneurial entrepreneurship, considering that uncertainty is a substantial factor when making decisions with uncertainty (Lupiañez *et al*., 2013).

Schumpeter (1934) defined entrepreneurs as those individuals capable of generating instability in the markets with their business start-up activities. This author proposed the creation of innovative companies as a factor of economic development within the framework of his theory of "creative destruction." Profit opportunities offered by markets are a consequence of the new combinations of the means of production developed by entrepreneurs, which promote technological change and contribute to the creation of innovations and the formation of new companies through creative destruction (Schumpeter, 1934). Kirzner (1997) agrees with Schumpeter on the importance of the entrepreneur in the model of capitalist growth, considering that the entrepreneur is continuously alert and knows how to take advantage of opportunities, and also learns from past mistakes and tries to correct them. However, Kirzner differs from Schumpeter in that the entrepreneur is the cause of the imbalance of the economy, and instead believes that he or she leads it to equilibrium through the process of entrepreneurship.

In line with the above, Galindo and Méndez (n.d.) note that societies in which the values of self-sufficiency, independence, and autonomy are more deeply rooted are more likely to generate

http://dx.doi.org/10.22201/fca.24488410e.2020.1578

a high level of entrepreneurial activity and, therefore, public intervention should be aimed at compensating for the values that burden the creation of companies through an entrepreneurial ecosystem, and at motivating individuals to predispose them to entrepreneurial activities.

For his part, Leibenstein (1968) considered the entrepreneur as that agent capable of responding creatively to the lack of efficiency, as well as connecting different markets to take advantage of their deficiencies. His ideas went beyond the discussion on the determinants of business creation insofar as he proposed new factors (such as the age of the agents) to explain the generation of business ideas from the operation of local markets.

Despite the antiquity of the term entrepreneurship, in the literature, there is extensive discussion with regard to its meaning, which has been changing according to the local economic policy and institutions (formal and informal) that determine the decision to create companies or not. In this sense, this article uses the definition of entrepreneurship provided by the Global Entrepreneurship Monitor (GEM) on its website, understood as "any attempt to engage in new business or the creation of enterprises, whether on one's own account, a new business organization, or the expansion of an existing business, by an individual, a team of people, or an established business" (GEM, 2014).

At a theoretical level, the relationship between business regulations and levels of entrepreneurship has had a long tradition. Economists such as Baumol (1990) have described its characteristics and have coincided in revealing the importance of internal and external factors that determine the levels of entrepreneurship in territories. They also coincide in relating the intrinsic characteristics of the individual or "individual dimension" with those external to it from the process of entrepreneurship.

Following these ideas, Baumol (1990) used historical evidence from ancient Rome, China, and some European countries, to test his hypothesis of the relationship between business regulations and entrepreneurial volumes. His hypothesis held that, although the total supply of entrepreneurs varies among societies, the productive contribution of entrepreneurial activities varies much more because of their distribution among "productive" activities (easily grasped or perceived by society) and "unproductive" ones (which are not easily grasped or perceived by society and probably do not benefit it).

According to Baumol (1990), this distribution is strongly influenced by the "relative profitability" that society offers to these activities. Therefore, the results imply that regulatory policies can influence more effectively the distribution of the enterprise than the supply of it. In summary, for Baumol, stronger business regulations tend to shift the distribution of entrepreneurship towards "unproductive" activities, rather than reducing the volume of entrepreneurship. In this regard, Capelleras (2008), Bowen, and Clercq (2005) call these "productive" activities formal or registered entrepreneurship, and the "unproductive" ones informal entrepreneurship.

http://dx.doi.org/10.22201/fca.24488410e.2020.1578

On the other hand, one of the pioneering works in the 21st century was that of Djankov *et al*. (2002). These authors use a database of 85 countries that demonstrates that where onerous business regulation exists, countries are more likely to be less democratic, less entrepreneurial, more corrupt, and have more informal economies, as well as lower levels of wealth. This finding is significant as it led to the adoption of public policies and adjustments to the institutional framework in several countries (mainly in the European Union) to reduce barriers to the creation of new businesses.

Likewise, Stel and Stunnenberg (2004), using information from 18 countries of the Organization for Economic Cooperation and Development (OECD), confirmed that administrative complexity is negatively related to potential entrepreneurial activity. These authors determined that the lack of financial support has almost no influence on the decision of people to start a business. Moreover, they found that risk tolerance affects entrepreneurial activity and that unemployed people with little prospect of finding employment see self-employment as a viable alternative for generating income.

Similarly, the work of Grilo and Thurik (2005), prepared for 15 countries of the European Union and the United States, explains the differences between countries at the level of latent or "potential" entrepreneurship and the actual one. Like the work of Stel and Stunnenberg (2004), these authors conclude that administrative complexities are also perceived as an obstacle by most of the population, and harm both potential and actual entrepreneurial activity. Furthermore, they suggest that country-specific effects are important for entrepreneurial activity and that the lack of financial support to start a new business has no impact on such activity.

Similarly, Storey and Thurik (2007), following the work of Stel and Stunnenberg (2004), examined the relationship between regulation and entrepreneurial activity in 39 countries, using data from the GEM (2014) and the WBDB (2014). The authors found that the minimum capital requirement for starting a business, as well as labor market regulations, reduce the chances of success of an entrepreneurial initiative. However, they find that the administrative considerations of starting a business (time, cost, and number of procedures required) are not related to the speed of creation (entrepreneurial activity) of start-ups.

On the other hand, Capelleras *et al*. (2008) contrasted the findings of Djankov *et al*. (2002), with the theories of Baumol (1990). In their work, the authors examined two alternative perspectives on the size and subsequent growth of new firms in a heavily regulated economy and a lightly regulated one. The first view—in line with Djankov *et al*. (2002)—holds that in a highly regulated economy, there will be fewer new firms, and those that do manage to start up will be larger than those in a lightly regulated economy but will grow more slowly. The second perspective—in agreement with Baumol—suggests that regulation does not influence the scale of entrepreneurial activity, but only its distribution among those that are registered (formal) and those that are not (informal).

http://dx.doi.org/10.22201/fca.24488410e.2020.1578

In the case of some countries with emerging economies (e.g., Colombia), according to Vesga and Gonzalez (2012), the debate is moving toward the recognition of the differences between necessity and the spirit of opportunity entrepreneurship, and the development of separate mechanisms to promote entrepreneurship as distinct phenomena. Policymakers are trying to create a more favorable environment for the development of new high-potential businesses.

However, in the relationship between pro-business regulation and the level of entrepreneurship, institutionalist theory and neo-institutionalism provide insights that explain the functioning of this binomial. For the institutionalists, as noted by Gómez (2004), "growth and survival of enterprises depend on the established rules and norms followed by society" (p. 119), adding, in disagreement with Scott (1995), "that the concept of entrepreneurial activity goes beyond the simple decision to enter or not to enter an industry" (p. 120).

In line with the above, the arguments by Steele (1997) go further by stating that entrepreneurs discover and exploit new territory motivated by the situation of their context. The above implies a relationship between the capacity of the territories to generate economies of agglomeration and the pro-business culture that facilitates the success of the entrepreneurial activity. In other words, there could be a mixture of formal institutions promoted by local governments, and informal ones, resulting from the set of values, norms or beliefs that act as rational myths and guide the behavior of organizations (Meyer & Rowan, 1977).

Going further into the relationship between companies and institutions, knowledge of the latter is important for companies, because they may experience higher costs for not adjusting to institutional patterns. If they do not interpret or share cognitive structures with the rest of the business community, they will need more time and care, both economic and intellectual, to understand and adapt to institutional requirements.

In the Latin American case, for example, authors such as Etchart and Comolli (2016) point out that this not only creates certain inequities in the application of laws and regulations but is also very confusing for entities that often do not have access to low-cost legal or tax advice. Trying to navigate the various regulations is time-consuming and discourages many emerging companies from doing business. Regulations and procedures remain unclear or unknown to social enterprise professionals, tax and legal professionals, and authorities that control and monitor the activities of emerging companies in the country.

For the neo-institutionalists, the relationship between pro-business regulation and the level of entrepreneurship is determined by the definition of property rights and the existence of transaction costs, the former being understood as the rights of economic agents (companies) to use available resources. In other words, these rights confer on companies the power to select the best alternative use, within a set of possible uses that are not prohibited (Eggertsson, 1995); being, in this case, the use of resources to generate entrepreneurship that leads them to physically transform an intermediate good into a final good, to obtain income through a

http://dx.doi.org/10.22201/fca.24488410e.2020.1578

contract or the alienation or sale of an asset.

Concerning transaction costs, these are those that arise when agents (enterprises) exchange property rights over economic assets, seeking to exercise their exclusive rights. In this regard, Eggertsson (1995), referring to Matthews (1986), defines them as the costs derived from the ex-ante subscription of a contract (including the search for information) and its control and ex-post compliance; as opposed to production costs, which are the costs of the execution of a contract. The identification of transaction costs is useful to the extent that public policy plans and incentives for business creation would have a positive effect on the level of entrepreneurship. However, the lack of complete and reliable information on the procedures for entrepreneurship produces a lack of motivation among agents who initiate the incorporation of a company (World Bank, 2014). New enterprise formation goes beyond causal representation between regulation and income (Campbell, 2010).

Alvarez *et al*. (2014) examine the impact of regulations on business through aspects such as government spending, investment freedom, financial freedom, legislation, and unemployment legislation through a comparison between developed and developing countries. Through an unbalanced panel data model from 49 countries over the 2001-2010 period, the study results reveal that government spending has a positive impact on advanced and especially emerging economies; investment freedom impacts entrepreneurship negatively, while financial freedom impacts it positively; legislation and entrepreneurship have a positive relationship; unemployment legislation impacts entrepreneurship negatively.

Likewise, Williams (2015) analyzes entrepreneurship considering its informal manifestation and the role of regulations in the latter. The author argues that there are four possible policy options to address informal entrepreneurship, which are: take no action, eradicate it, encourage entrepreneurship in the informal economy, or transform it into formal entrepreneurship, stating that the latter option is the most viable. Williams asserts that direct control measures, along with various indirect controls, could be employed within public policy, outlining various ways of combining these types of controls when addressing informal entrepreneurship.

For Leyden (2016), the entrepreneurial action of a territory must be based on the creation of National Systems of Entrepreneurship, an approach that recognizes the uncertainty of the entrepreneurial process and focuses on the enactment of policies through public entrepreneurship to create a more nurturing environment, within which action can emerge spontaneously, both in the private and public sectors. His article theorizes a model based on this approach, which integrates, into a functional whole, the various subsets of the business environment, which must have the capacity to access resources, create networks, offer innovative products or services to customers, as well as obtain feedback.

As for the impact that taxes and regulations can have on the birth and death of firms, Crum and Gohmann (2016), taking border counties in the east of the United States, analyze the

relationship of tax levels, size of government, unionization, and minimum wages to the birth and death rates of firms. Their findings demonstrated that state tax levels and minimum wages were not significantly related to business birth rates, but there was a negative relationship between state union densities and birth rates. Both state education and welfare expenditures were slightly negatively related to corporate birth rates. State welfare expenditures were negatively related to business death rates.

In their integration with the local economy, Tarapuez *et al*. (2013), taking the arguments of Kantis *et al*. (2002), Lundström and Stevenson (2005) and Cooper (2003), conclude that an entrepreneurship policy can increase the sources of economic wealth and strengthen the channels of social mobility. Furthermore, they propose (based on Kantis *et al*., 2002), that entrepreneurship should be addressed through a comprehensive policy consisting of a set of strategies that address each of the factors that influence the different stages of the entrepreneurial process, with close coordination between national and local programs and entities involved in implementation. Likewise, Tarapuez *et al*. (2013) conclude that pro-entrepreneurship policies have their essence in the "coordinated interaction that the Government has with society as a whole. Therefore, they require government institutions with experience, leadership, and credibility, which are also guided by officials with stability in their positions" (p. 282).

As a complement and as a closing point, Santillana *et al*. (2015), reconfirm, in their study *El perfil del emprendedor que apoyan los fondos de capital privado/capital emprendedor en México (2015)*, that entrepreneurial activities contribute to the reduction of poverty through employment, income generation and the raising of economic levels, which has an impact on the well-being of citizens and economic benefit (Santillan *et al*., 2015 and Murdock, 2012). Therefore, its regulation should consider people, given that they are the ones who obtain an answer to their application to receive investment from the financing funds (Santillán *et al*., 2015).

Methodology and Data

This study uses data from countries from different continents and different income levels in order to obtain conclusive and inclusive results. According to this classification, 56% of the countries included in the sample belong to the high-income group, while the remaining 44% belong to the low-income group. Six relatively homogeneous geographical areas were also identified, in which the sample of 63 countries is distributed: Europe is the geographical area with the largest number of countries (with 29); it is followed in order of importance by Africa (with 13); Asia (with 8); South America (with 7); Central America (with 4) and finally, North America (with 2).

Specifically, to study the relationship between pro-business creation regulations and the

http://dx.doi.org/10.22201/fca.24488410e.2020.1578

level of entrepreneurship, an econometric model supported by the GEM (2014) and WBDB (2014) databases was specified for 63 countries. The GEM (2014) provided the endogenous variables that represent the level of entrepreneurship of each country, while the WBDB (2014) provided the exogenous variables that reflect the administrative complexities of starting and maintaining a business.

In this academic work, the inclusion of a differential element in comparison with other studies is highlighted, such as supply and demand conditions, which finally end up affecting individual entrepreneurial decisions. On the supply side are the following: education, demographic characteristics (population growth, composition, and density), unemployment, and capital availability; while on the demand side there is economic growth, technological development, economic globalization, and industrial structure.

Variables of the empirical model: Table 1 below explains the endogenous variables used:

Table 1

Endogenous variables that explain the relationship: business regulations and entrepreneurship

Variables	Definition / Measurement	Source (Year)
Emerging entrepreneurs	Percentage of the population aged 18-64, who have been involved in the start-up of a business for up to 3 months, either self-employed or in conjunction with other work.	GEM (2014)
New entrepreneurs	Percentage of the population between 18 and 64 years old, whose new company has been in operation between 3 and 42 months.	GEM (2014)
Total Entrepreneurial Activity (TEA)	Percentage of the population between 18 and 64 years of age who are emerging entrepreneurs or new entrepreneurs.	GEM (2014)
TEA by necessity	Percentage of those involved in a TEA who became entrepreneurs because they had no other job options.	GEM (2014)
TEA by opportunity	Percentage of those involved in a TEA who say they became entrepreneurs out of (i) opportunity rather than necessity, and (ii) to become independent or increase their income, rather than to maintain one.	GEM (2014)

Source: own elaboration based on the GEM (2014).

On the other hand, the exogenous variables had three categories: (i) variables associated with business regulations, obtained from the WBDB (2014); (ii) variables associated with the supply side of entrepreneurship; and (iii) variables associated with the demand side of entrepreneurship, described in Tables 2, 3, and 4.

http://dx.doi.org/10.22201/fca.24488410e.2020.1578

Table 2

Exogenous variables or government intervention (Business Regulations)

Variables	Definition / Measurement	Source (Year)
Procedures (number)	Procedures that are officially required or carried out in practice for an entrepreneur to open and formally operate an industrial or commercial enterprise.	WBDB (2014)
Time (days)	The average length of time that the lawyers who are experts in the incorporation of companies consider necessary to complete the required procedures, with a minimum follow-up with public bodies and without making extraordinary payments.	WBDB (2014)
Cost (% of income per capita)	Costs associated with the procedures required to open and formally operate an industrial or commercial enterprise.	WBDB (2014)
Minimum paid-in capital requirement (% of income per capita)	Amount of money that the entrepreneur needs to deposit in a bank or before a notary before registration and up to three months after incorporation, computed as a percentage of the per capita income of the economy.	WBDB (2014)
Total tax rate (% of profit)	Measures the total taxes and mandatory contributions that a business must pay during its second year of operation, expressed as a portion of business profits.	WBDB (2014)

Note: The variables procedures, time, cost, and minimum paid capital requirement belong to the same indicator called starting a business, which is the main indicator of the WBDB, and measures how difficult it is to start and formally operate a new business. Additionally, the total tax rate variable is included because (all other variables of the WBDB), it was considered that this could be one of the most influential in the decision to undertake a new business. In the references, there is a link that explains in detail what is included and how each variable of the WBDB is calculated.
Source: own elaboration with data from the WBDB (2014).

Table 3

Variables that reflect the supply of entrepreneurship

Variables	Definition / Measurement	Source (Year)
Urban Population (% of the Total)	Refers to people living in urban areas. It is calculated using the population estimates of the World Bank and urban ratios.	WB (2014)
Population growth (% annual)	Corresponds to the exponential rate of population increase at mid-year, counted from year t-1 to t.	WB (2014)
Unemployment	The ratio of the labor force not working but looking for work and available to work.	WB (2014)

Note: The literature review explains, in detail, the reasons why variables are distinguished in supply and demand, and how it is known which variable belongs to which. More control variables were considered according to the literature, but only those with complete databases were chosen.
Source: Data from the WBDB (2014). Own elaboration with statistics from the World Bank (2014).

Table 4

Variables that reflect the demand of entrepreneurship

Variables	Definition/ Measurement	Source (Year)
Established Companies	Percentage of the adult population (18-64) that owns a business that is more than 42 months old.	GEM (2014)
GDP per capita (US$ at constant 2005 prices)	Calculated without making deductions for depreciation of manufactured goods or depletion and degradation of natural resources.	WB (2014)
GDP growth (% annual)	Annual percentage growth rate of GDP at market prices in local currency, at constant prices.	WB (2014)
per capita GDP growth (% annual)	Annual percentage growth rate of GDP per capita in local currency, at constant prices.	WB (2014)

Note: *The reasons why variables are distinguished in supply and demand, and how it is known which variable belongs to which, are explained in detail in the literature review. More control variables were considered according to the literature, but only those with complete databases were chosen.*
Source: Data from the GEM and the WB. Own elaboration based on data from the GEM and the World Bank (2014).

Econometric model and result

Considering that the structure of the endogenous variable is expressed in percentages, a model was needed that would allow the delimitation of working intervals (*between 0 and 100 in this case*), in order to keep the possible results of the independent variable within the limits of their nature. In consideration of the above, a Tobit model was used to carry out the regressions, since it can work with predetermined limits for the endogenous variable. Likewise, this model was selected because, for this case, the interpretation of the coefficients is the same as for an ordinary least-squares model because the independent variable is continuous despite being limited.

The following equation expresses the theoretical model:

$$\boldsymbol{GEM_i = f(X, Z_1, Z_2,)}\ \textit{where}$$

http://dx.doi.org/10.22201/fca.24488410e.2020.1578

GEM_i: *Explained variable selected from the list of potential endogenous variables.*
X: *Vector of explanatory variables reflecting government intervention (business regulations in this case).*
Z_1: *Vector of explanatory control variables reflecting the supply side of entrepreneurship.*
Z_2: *Vector of explanatory control variables reflecting the demand side of entrepreneurship.*

Considering the specifications of the econometric model, different regressions were done for each endogenous variable to determine whether there is a significant relationship between business regulations and the levels of entrepreneurship recorded.

For the construction of the definitive model, a parsimonious regression was carried out where all the control variables previously described were considered, and the non-significant variables were eliminated sequentially. Similarly, the study uses different models with different combinations of the target variables (*business regulations*), in order to observe their behavior by omitting some of them. Finally, all the target variables were included in the selected model and only the control variables that were considered significant in economic and explanatory terms. Furthermore, due to the similarity between the endogenous variables, the ease with which the results could be compared, and the apparent simplification that this implies, the same model was used for each independent variable. Table 5 presents the results of the estimates.

As can be seen in Table 5, the main results of the regression are conclusive. For both the model of the main indicator of entrepreneurship, (TEA), and the Emerging Entrepreneurs (EENTR), and the New Entrepreneurs (NENTR), the explanatory variables that reflect the administrative complexities established by the government do not seem to have any effect on the volumes of entrepreneurship in the countries under study. The variables Procedures, Time, Cost, Minimum Paid Capital Requirement (MPCR), and Total Tax Rate turn out to be non-significant in each of the regressions of the three endogenous variables previously mentioned.

http://dx.doi.org/10.22201/fca.24488410e.2020.1578

Table 5

Results of the Econometric Model (Coefficients)

Variables	Emerging Entr. (EEntr.)	New Entr. (NEntr.)	TEA	TEA Op.	TEA Nec.
Procedures	*0.112*	*-.069*	*.040 (0.292)*	*-.450*	*1.244 (0.504)***
	(0.098)	*(0.220)*		*(0.690)*	
Time	*0.001*	*.055*	*.049 (0.067)*	*-.170*	*.032 (0.103)*
	(0.025)	*(0.049)*		*(0.151)*	
Costs	*0.002*	*.0049*	*.009 (0.073)*	*-.710 (0.180)****	*.249 (0.132)*
	(0.025)	*(0.058)*			
Minimum Paid Capital Requirement [MPCR]	*0.004*	*-.028*	*-.020 (0.030)*	*.052 (0.074)*	*-.025 (0.054)*
	(0.010)	*(0.024)*			
Total Tax Rate	*-0.025*	*-.009*	*-.035 (0.046)*	*-.118*	*-.193 (0.083)***
	(0.016)	*(0.037)*		*(0.114)*	
Established Companies	*0.309 (0.046)****	*.287*	*.547*	*.872 (0.325)****	*-.256 (0.237)*
		*(0.105)****	*(0.133)****		
GDP per capita (GDPpp)	*-0.001*	*-.001*	*-.001*	*-.002*	*-.007 (0.001)*
	*(0.000)****	*(0.000)****	*(0.000)****	*(0.000)****	
Urban Population	*0.038*	*.110*	*.156 (0.050)****	*.440 (0.131)****	*-.199 (0.099)***
	*(0.021)***	*(0.049)****			
Unemployment	*0.097 (0.044)****	*.059*	*-.144 (0.090)*	*.919 (0.283)****	*.839 (0.187)****
		(0.088)			
Constant	*2.530*	*-.031*	*2.70 (4.780)*	*41.035*	*33.728*
	(1.860)	*(3.790)*		*(11.670)****	*(8.545)****
Pseudo R2	*0.284*	*0.192*	*0.124*	*0.112*	*0.149*
N	*63*	*63*	*63*	*63*	*63*

Note: Confidence levels are expressed as * p<0.05; ** p<0.01; *** p<0.001.

Source: own elaboration based on data from the GEM, WBDB, and WB (2014).

In contrast, the control variables were significant for all the regressions (except *Unemployment* for the Tea and Nentr regressions), and their signs are consistent with Verheul *et al*. (2002), who state that the cost of being self-employed (as an entrepreneur) is higher in rich countries since the workers enjoy not only higher wages, but also greater and better social benefits than workers in developing countries.

On the other hand, when analyzing the variables of total entrepreneurial activity (Tea) by opportunity (Tea Op.), and Tea by necessity (Tea Nec.), it becomes evident that, although the results are very similar in terms of the significance of the variables, they differ in some points that are worth highlighting. For the Tea Op., the model suggests that the cost of starting a business is high and has a negative influence on said business, implying that the higher the cost, the lower the level of opportunistic entrepreneurship. An explanation of this effect could be the fact that visionary entrepreneurs are extremely concerned about the cost, perhaps because they have other income alternatives than entrepreneurial activity. Likewise, the control variables behaved correctly as in the previous regressions, with GDP per capita being the only non-significant control variable.

As for the total entrepreneurial activity by necessity (Tea Nec.), the records indicate that the number of procedures required to create a company, such as the total tax rate, are statistically significant. Economic logic indicates that the simplification of procedures and formalities provides incentives for the creation of new companies (Nentr.). However, the results of the model reveal the opposite. It could be said that the results are counter-intuitive, insofar as one would expect that the greater the number of procedures, the lower the level of entrepreneurship. Conversely, for the explanatory variable total tax rate, there is a negative relationship, which can be understood intuitively, since the expectation is that the higher the taxes, the lower the number of individuals willing to undertake a new business. Finally, it is noteworthy that the administrative complexities of starting a business—understood as the business regulations measured by the World Bank in the WBDB—do not have a significant relationship with the levels of entrepreneurship recorded by the GEM.

Despite appearing counter-intuitive at first glance, the results of this research are in line with the theoretical precepts of Baumol (1990), Capelleras *et al*. (2008), and Stel *et al*. (2007), who have reached similar conclusions, as explained in the section on the literature review. In this sense, Baumol (1990) and Capelleras *et al*. (2008) argue that business regulations do not affect the total volumes of entrepreneurship, but rather the distribution between formal and informal firms; the more onerous the regulations, the more informal they are. The findings of these authors support and are in line with those of this work, as they present a concrete explanation for the lack of correlation between entrepreneurial volumes and business regulations.

On the other hand, when reviewing the statistical data of the GEM (2014) and the WBDB (2014), it is evident that the countries with more significant conditions of poverty register

http://dx.doi.org/10.22201/fca.24488410e.2020.1578

higher rates of entrepreneurial activity than European and OECD member countries (2007). In the literature on entrepreneurship, this difference can be explained in part by the features associated with the predisposition to carry out entrepreneurial activities that generate freedom and social recognition. In the same vein, the study by the Latin American Development Bank—Andean Development Corporation (CAF), 2013—indicates that:

There are certain personality characteristics and aptitudes of individuals that may be relevant in the decision to become an entrepreneur. Among these are: the belief that events occur primarily as an effect of an action; innovation and creativity; tolerance for taking certain risks; the impression of being able to perform in a certain way and to achieve certain goals (self-efficacy); and the ability to carry out several activities simultaneously, among others. (p. 84)

Other aspects that the literature points out of regulation and entrepreneurship among poor and rich countries are related to culture, idiosyncrasy, education, age, gender, mental models, autonomy, entrepreneurial skills, hostility, communication difficulties, low self-confidence, and high risk, among others.

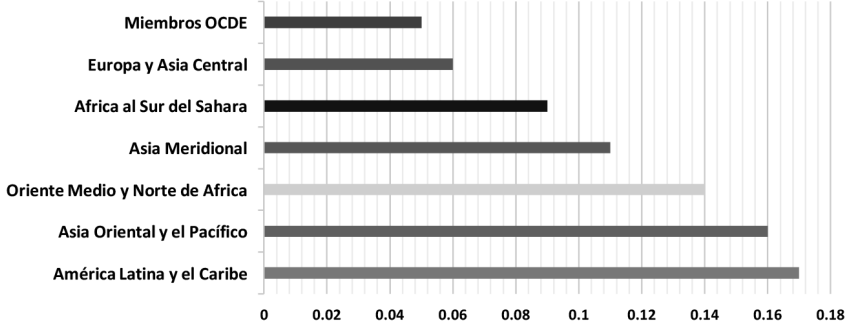

Figure 1. Entrepreneurial Activity Rate by Region (Average 2004 – 2017)
Source: own elaboration based on the GEM (2004 –2017)

On the other hand, Djankov *et al*. (2002) state that countries where business regulations are more onerous and complex, tend to generate results contrary to the desire to become an entrepreneur. The problem with this statement is that it suggests a causal relationship that, while it may be true, could be the opposite, because the problematic constitution processes in developing countries—marked by structural problems in public administrations—led to the complicated and inefficient business regulations that these countries have today. In other words, if both causal relationships are present, it means that as long as business regulations remain high in developing countries, they will be trapped in a kind of vicious circle, from which they will not emerge until they reduce the complexity of regulations.

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In line with the above, and as evidenced by the econometric results, it is concluded that reducing the administrative complexities (procedures, time, cost) of starting a business in rich and developing countries does not increase the levels of entrepreneurship, and it is supremely important to try to reduce them from the context of each country because this could mainly result in a reduction of transaction costs and levels of informality (see Table 6).

Table 6

Classification of countries by level of entrepreneurship, 2017

15 MOST ENTREPRENEURIAL COUNTRIES ACCORDING TO GEM 2017				
N°	Country	TEA (2017)	Ranking WBDB (2017)(*)	GDP Pc PPP, 2017
1	Ecuador	29.6	114	10,555
2	Guatemala	24.8	88	7,424
3	Peru	24.6	54	12,237
4	Lebanon	24.1	126	13,191
5	Chile	23.8	57	22,767
6	Madagascar	21.8	167	1,416
7	Thailand	21.6	46	16,279
8	Malaysia	21.6	23	26,824
9	Brazil	20.3	123	14,137
10	Estonia	19.4	12	29,916
11	Canada	18.8	22	44,018
12	Colombia	18.7	53	13,183
13	Panama	16.2	70	22,288
14	Uruguay	14.7	90	20,551
15	Mexico	14.1	47	17,331

15 LEAST ENTREPRENEURIAL COUNTRIES ACCORDING TO GEM 2017				
N°	Country	TEA (2017)	Ranking WBDB (2017)(*)	GDP Pc PPP, 2017
1	England	8.4	7	39,889
2	Indonesia	7.5	91	11,189
3	Qatar	7.4	83	116,932
4	Cyprus	7.3	45	33,048
5	Sweden	7.3	9	46,681

6	Slovenia	6.9	30	31,406
7	Spain	6.2	32	34,269
8	Argentina	6.0	116	18,932
9	Germany	5.3	17	45,446
10	Greece	4.8	62	24,604
11	Japan	4.7	34	39,011
12	Italy	4.3	50	35,343
13	Bosnia and Herzegovina	4.0	81	11,731
14	France	3.9	29	38,808
15	Bulgaria	3.7	39	18,606

Source: own elaboration based on the WBDB (2016-2017) and the GEM (2017). (*) Measurement of 191 countries.

Likewise, using the latest information from the GEM (2017) and WBDB (2017) and contrasting it with the results of the econometric model, it is possible to affirm that the countries ranked in lower positions present higher volumes of entrepreneurship. The explanation lies in the fact that it is the lower-income countries that have this trend, and the fact that these have more complex business regulations generates a slight unexplained correlation between these two variables.

Conclusions

Evidence registered worldwide reveals that the successful development of a business venture depends on the conditions of physical and legal security and regulations with expeditious and straightforward procedures, among other aspects. However, the results of this study lead to the conclusion that the administrative complexities of starting a business, understood in this article as the business regulations measured by the World Bank Doing Business, do not have a significant relationship with the levels of entrepreneurship registered by the Global Entrepreneurship Monitor. These results are concomitant with those of Baumol (1990) and Capelleras *et al*. (2008), where they generalize that business regulations do not affect the total volume of entrepreneurship, but rather its distribution between formal and informal enterprises; the more onerous the regulations, the more informal they are. The findings of these authors support the empirical evidence found for the countries studied, as they present a concrete explanation for the fact that there is no correlation between volumes of entrepreneurship and regulations. One explanation for this situation could relate to the existence of wage replacement business entrepreneurship—in which workers carry out entrepreneurial activities due to poor

economic conditions—and market opportunity ventures—where large economies generate profitable opportunities for the generation of new goods and services (Campbell *et al*., 2010).

Likewise, the results of this study are also in line with the findings of Baumol (1990) and Capelleras *et al*. (2008), that the relationship continues between the higher the poverty levels of countries, the higher the levels of entrepreneurship. Entrepreneurship is seen as a way to generate employment and income and to maintain the welfare of citizens (Santillan *et al*. 2015). Nevertheless, it is important to note that these findings only take into account the volumes of entrepreneurship, and not their quality (in terms of technology, human capital, relational capital, and organizational systems, among others), which is a significant limitation to consider when analyzed in developed countries and those that are not. The latter can have an impact on the success of entrepreneurship, which is also not assessed in this study.

Finally, and given the need for countries to have a long-term strategy institutionally articulated at all levels of territorial government, the suggestion is to research the impact of Research and Development (R&D) on the generation of enterprises, as proposed by Murdock (2012), where the author states that a high level of education represents a direct measure of investment in the creation of new knowledge and demonstrates a positive impact on the economy through? new businesses. On the other hand, it is necessary to study whether the relational capital determines the success of ventures.

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