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Early Entrepreneurial Activity in South American Countries: A Study from its Economic Dynamics

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Abstract

The early entrepreneurial activity (TEA) gathers the characteristics of the entrepreneurial dynamics of each country. This study addresses the situation of the countries of South America in order to identify the relationship between economic activity and macroeconomic stability with the TEA and the established enterprises. For this, data from the Global Entrepreneurship Monitor is used, the period includes 2008 to 2017 due to their availability, and a particular exercise for the Bolivian case. The autoregressive model with distributed delays (ARDL) is used for analysis, with the goal of establishing the short and long-term effects between study variables. The results establish an important relationship between economic activity and macroeconomic stability with early entrepreneurial activity. Showing that in the long-term GDP per capita, inflation and vulnerable employment are positively related to the TEA, however, in the short-term GDP per capita is the only significant variable with the TEA.

Keywords: GDP, early entrepreneurial activity, entrepreneurship, business

1. Introduction

There are several studies that affirm that the lack of job opportunities in the market is one of the factors that affects the creation of new businesses, ventures that not only improve the economic conditions of the family, but also generate jobs and opportunities for personal and professional

growth (Alvarado et al., 2017; Moreira et al. 2018). Likewise, the opening to new markets and innovative products that allow changes in the tastes and preferences of consumers, which in the medium and long term, allows the company to remain and thus contribute to the strengthening of the local and regional economy (Edwards et al., 2020)

Entrepreneurship is considered as the factor, entrepreneurial function, entrepreneurship initiative, entrepreneurial behavior, and even the entrepreneurial spirit. The entrepreneurial factor is understood as a new element of production distinct from the classics land, labor, and capital, which requires explaining its remuneration through the entrepreneur's salary combined with the scarcity of people with entrepreneurial abilities (Omri, 2020; Chase, 2020). Consideration as a business function refers to the discovery and exploitation of opportunities, as well as the establishment of businesses (Si et al., 2020; Ayaviri-Nina et al., 2023). By entrepreneurial behavior we understand the behavior that manages to combine innovation, risk taking and proactivity in the establishment of business initiatives (Kerr, Nanda, and Rhodes-Kropf, 2014). Entrepreneurial initiative encompasses creation, risk-taking, renewal, or innovation within or outside of an existing organization. Finally, the entrepreneurial spirit stands out, compared to the exploitation of business opportunities typical of managers, exploration, search and innovation (Amorós and Tapia 2012; Edwards et al. 2020; Fernández et al., 2017)

Thus, entrepreneurship is a way of innovating, a way of competing in new complex scenarios (Batuka et al., 2019). In the last decade, the entrepreneurship generated by the entrepreneurial population worldwide has tripled. This has generated new business spaces and interactions between companies and consumers, given that supply and demand have presented a fair behavior and in line with the changes that globalization has caused. Consequently, it was crucial for the development of the economy in the different countries (Alvarez-Risco et al., 2021; Ingalagi et al., 2021; Wardana et al., 2020)

The relationship of entrepreneurship with the economic and social structure of the economy. It is argued that the field of entrepreneurship benefits local economic growth and changes in economic structures as a result of technological and market development. Strategies aimed at promotion and strengthening determine their actions (Toma, Grigore and Marinescu, 2014; Zsuzsanna and Herman, 2012)

Several studies conducted in Latin America indicate that the region is considered emerging or developing, with significant macroeconomic instability, low levels of investment in research and development, low productivity, and significant social inequality (Anis, 2020). Similarly, Amorós and Cristi (2008) indicate that the region's countries have considerable potential to generate competitiveness and well-being through the establishment of new businesses but have yet to achieve a stable business environment. In comparison to other regions, Latin America has experienced very slow long-term growth.

Between 1960 and 2017, GDP per capita increased by 1.76%, less than half of what other emerging regions, such as East Asia and the Pacific represented by 3.67%, and less than the -2.03% achieved by developed economies in the United States; 2.21% in member countries of the Organization for Economic Cooperation and Development (OECD). Empirical evidence indicates that innovation and entrepreneurial spirit are important factors in determining productivity growth (Lopes et al., 2021; Otekunrin et al., 2021; Zsuzsanna and Herman, 2012). On one hand, the positive relationship between research and development (R&D), innovation, and productivity (Ingalagi et al., 2021, 2021; Veeraraghavan et al., 2016) and, on the other hand, the positive effects of the entrepreneurial spirit on productivity growth (Quispe et al., 2017; Álvarez and Grazzi, 2018).

In the last five years, countries such as Peru, Chile, Brazil, Argentina, Ecuador, and Mexico have seen an increase in the generation of new businesses, due to a larger population of young people eager to undertake, as age is a determinant of success (Prasad et al., 2018). Similarly, young entrepreneurs have greater ambition, energy, and creativity, which allows them to overcome their lack of credibility, and experience, as well as attract financing (Alvarez-Risco et al., 2021; Nair et al., 2021). However, entrepreneurs with a longer history in the market are generally more reserved and

conservative when starting a business (Edwards et al., 2020). Entrepreneurial success in the region can be explained by a variety of factors, including a high level of university education since knowledge can help overcome many financial challenges, and in turn, entrepreneurs have new business opportunities (Messina and Hochsztain, 2015).

As a result, entrepreneurship is a process that has had a positive impact on the creation of businesses in Latin America. This phenomenon contributes to the creation of jobs, improving their efficiency in productivity and achieving a level of competitiveness in national and international markets (Veeraraghavan et al., 2016; Cantillo et al., 2021; Lopes et al., 2021). In this context, micro, small and medium-sized enterprises are considered very important for economic development and accompany macroeconomic stability, through the generation of new sources of employment (Chinonso and Ogbaekirigwe, 2014; Sunday, 2021; Ijieh, 2021).

Because of this, entrepreneurship has emerged as the primary engine of the economy in recent decades, prompting governments to implement a variety of public policies and programs designed to promote entrepreneurship, whether in the financial, training, educational, infrastructure, or consultancies sectors (Okolie and Ogbaekirigwe, 2014; Si et al., 2020; Sanjeev et al., 2021).

Thus, entrepreneurship is a task that requires a continuous effort to achieve the proposed goal. This activity is present in Latin America and the strategies are based on private, family or individual initiatives with great limitations in financing and training cadres with skills and competencies that allow growth in early entrepreneurial activity (Santana and Sánchez, 2018; Amorós and Tapia, 2012; Kreuz y Roberts, 2019; Sáenz and López, 2015). According to the GEM report, entrepreneurship presents several facets and behaviors according to different plausible scenarios that are shown in the economic moments of a country.

In this regard, the current study seeks to determine the relationship between the TEA and elements of economic activity as well as the matter of macroeconomic stability. In the context of Latin America, it will be possible to provide and reflect on the situation of early-stage entrepreneurship concerning the environment in which they operate.

2. Methodological Aspects

This study considers the deductive analytic method, which is descriptive because it describes the behavior of businesses. On the other hand, exploratory research is also used, which seeks to collect data on new fields of study. It is correlational because it relates economic activity and macroeconomic stability in relation to the TEA and South American ventures. A correlation analysis of the variables GDP per capita, inflation, vulnerable employment, and interest rate differential, where the qualitative and quantitative approach is considered.

Because this research is carried out in Latin America, the countries involved are: Argentina, Brazil, Colombia, Chile, Ecuador, Peru, Uruguay, and Bolivia for a specific analysis. Therefore, the population refers to seven observed countries. The analysis period is 2008-2017 due to the availability of data in the Global Entrepreneurship Monitor (GEM), every single report is considered. For the analysis of the data, the econometric model of distributed lags ARDL is used, which seeks to establish the short- and long-term effects between the study variables, whose model is:

$$TEA_{it} = \alpha 1 + \alpha 2 PIB_{it} + \alpha 3 Emp\_vul_{it} + \alpha 4 Dife\_tas\_int._{it} + \alpha 5 Inflación_{it} + \varepsilon_{it}$$

Where:

TEA: is the early entrepreneurial activity rate of seven South American countries. *GDP*: is the Gross Domestic Product per capita, and measures economic activity in general terms. *Emp_vul:* is the unsuitable employment rate; that is, the percentage of the economically active population without a stable job. *Dife_tas_int*: is the interest rate differential, whose calculation comes from the difference between the interest rate of the United States and the local interest rate of each country. *Inflation:* measures the general variation of prices, and its figures are in percentages. $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$: These are the coefficients to be estimated. *t:* is the study period. *i:* refers to the total number of countries sampled in the study. ε_{it}: is the stochastic disturbance of the model.

3. Results

The comparison of the perspectives and attitudes in the year 2017 shows that undertakings in Chile have a high value of perceived opportunities represented by 55.50%. In other words, the adult population has good opportunities to start a business in the area where they live. On the other hand, 74.10% of the capacities perceived by the adult population represent Ecuador, that is, they believe they have the relevant skills and knowledge to start their venture. Colombia presents the highest value of people with the intention of starting a business, represented by 52.50%, that is, the adult population intends to start their business in the next three years.

However, Argentina shows a high percentage of fear of failure when starting a venture, represented as 37.80%. This indicator shows that the adult population will not develop new businesses. See graph 1.
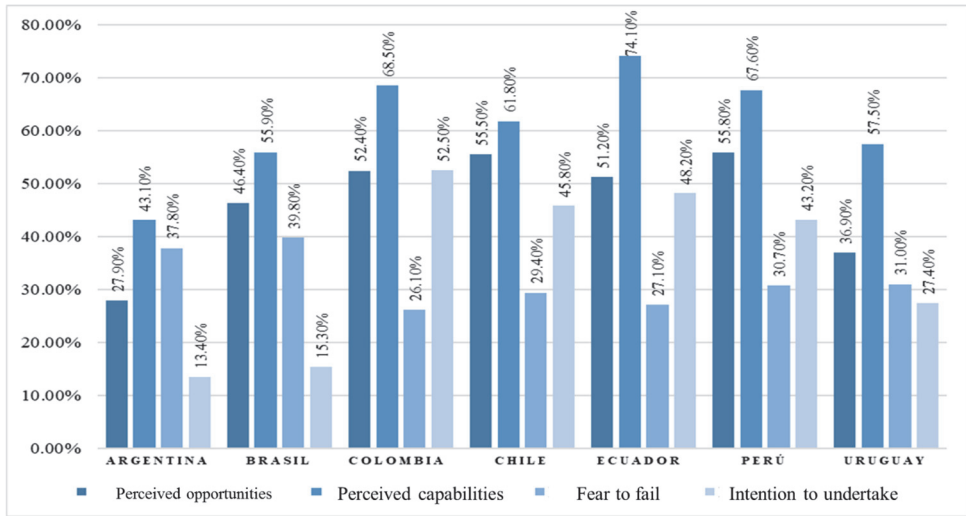
Graph 1. Perspectives and actions towards entrepreneurship of the Latin American population.
Source: Global GEM (2018).

The countries of Latin America represent the second region with a high performance in entrepreneurship, the first being Europe according to the Global Entrepreneurship Monitor (GEM). One of the indicators that allow for measuring the level of entrepreneurship is the TEA (early entrepreneurship rate), which evaluates the undertakings that are in the market between 0 and 3.5 years with the population in the range of 18-64 years of a country, since it is considered as a definitive period for the consolidation of the ventures. Table 1 details the variables that correspond to the TEA and its derivatives.

Table 1. The Evolution of Early Entrepreneurial Activity (TEA) in South American countries from 2008 to 2019.

	Argentina	Brazil	Colombia	Chile	Ecuador	Perú	Uruguay
2008	16.50%	12.00%	24.50%	14.10%	17.20%	25.60%	11.90%
2009	14.70%	15.30%	22.40%	14.90%	15.82%	20.90%	12.20%
2010	14.20%	17.50%	20.60%	16.80%	21.30%	27.20%	11.70%
2011	20.80%	14.90%	21.40%	23.70%	24.13%	22.90%	16.70%

	Argentina	Brazil	Colombia	Chile	Ecuador	Perú	Uruguay
2012	18.88%	15.44%	20.11%	22.58%	26.60%	20.21%	14.63%
2013	15.90%	17.30%	23.70%	24.30%	36%	23.40%	14.10%
2014	14.40%	17.20%	18.50%	26.80%	32.60%	28.80%	16.10%
2015	17.70%	21.00%	22.70%	25.90%	33.60%	22.20%	14.30%
2016	14.50%	19.60%	27.40%	24.20%	31.80%	25.10%	14.10%
2017	6.00%	20.30%	18.70%	23.80%	29.60%	24.60%	14.70%
2018	9.11%	21.79%	21.20%	25.10%	31.80%	22.40%	15.12%
2019	6.00%	23.30%	22.30%	36.70%	36.20%	25.42%	15.56%

Source: Global GEM (2008-2020).

As shown in the table, Ecuador has maintained a high early entrepreneurial activity in recent years, followed by Chile, Peru, and Colombia. In 2013 Ecuador presents the highest TEA with 36%, because entrepreneurs are focusing on developing an optimistic entrepreneurial culture. Furthermore, the support provided by public and private institutions plays an important role in entrepreneurship. However, Argentina had a significant decline in the 2017 fiscal year, which was 6.00% compared to 14.50% in 2016. This decline can be attributed to the fact that at the time the information was collected, Argentina was going through a time of great social uncertainty regarding the economic future of the country, due to the previous elections in October (GEM, 2018). See table 2.

Table 2. Rate of nascent ventures in Latin American countries, period 2008-2017.

Year	Argentina	Brazil	Colombia	Chile	Ecuador	Perú	Uruguay
2008	8.50%	2.90%	13.80%	8.60%	8.70%	19.70%	7.70%
2009	6.10%	5.80%	15%	9.60%	6.30%	16.10%	8.10%
2010	7.00%	5.80%	8.60%	11.10%	10.40%	22.10%	7.80%
2012	11.79%	4.48%	13.58%	14.68%	16.72%	14.67%	10.18%
2013	10.50%	5.10%	13.60%	15.40%	25.30%	17.80%	8.50%
2014	9.50%	3.70%	12.40%	16.60%	24.50%	23.10%	10.50%
2015	11.70%	6.70%	15.60%	16.50%	25.90%	17.80%	10.60%
2016	8.90%	6.20%	16.30%	15.60%	22.40%	19.90%	10.10%
2017	3.90%	4.40%	10.80%	14.70%	21.20%	18.70%	10.70%

Source: Global GEM (2008-2018).

Table 2 shows the values that the nascent enterprises have had, which have taken the necessary steps to run a business but have not yet paid salaries for more than three months. In this case, Ecuador has shown a great increase as can be seen in the years 2013 and 2015 with 25.30% and 25.90%, which indicates that more and more people are willing to undertake. On the other hand, Peru in 2017 presents a high value with 18.70% compared to the other countries studied; this is due to strong support from the public, private, and government sectors in that year.

Table 3 shows the values attained by new businesses in the countries studied. These ventures make reference to a running business that pays salaries or has other restrictions between 3 and 42 months. In the years 2014, 2015 and 2017, the country with the highest percentage of entrepreneurship is Brazil with 13.80%, 14.90% and 16.30% respectively, followed by Ecuador, which in 2017 obtained 9.80%.

Table 3. Rate of new ventures in Latin American countries period 2008-2017

Year	Argentina	Brazil	Colombia	Chile	Ecuador	Perú	Uruguay
2008	8.50%	9.30%	11.70%	5.80%	9.10%	6.80%	4.40%

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Year	Argentina	Brazil	Colombia	Chile	Ecuador	Perú	Uruguay
2009	9.30%	9.80%	8%	5.60%	9.70%	5.10%	4.20%
2010	7.40%	11.80%	12.70%	6.10%	11.50%	6%	4.10%
2012	7.30%	11.30%	6.86%	8.43%	11.68%	6.22%	4.71%
2013	5.60%	12.60%	10.30%	9.60%	13.60%	5.90%	5.70%
2014	5.20%	13.80%	6.70%	11.00%	9.90%	7.30%	5.70%
2015	6.30%	14.90%	7.50%	9.80%	9.80%	4.90%	3.80%
2016	5.70%	14.00%	11.30%	9.30%	11%	5.70%	4.20%
2017	2.10%	16.30%	8.10%	9.70%	9.80%	6.50%	4.30%

Source: Global GEM (2008-2018).

Likewise, Table 4 shows the growth that established enterprises have had in the region. Brazil is the country with the highest value, with 16.50% in 2017, followed by Ecuador, Chile, and Peru with 15.40%, 9.90%, and 7.40% respectively. These entrepreneurships refer to the proportion of the adult population who own or manage a running business. Established ventures in Ecuador are in the service sector, with a focus on accounting, public relations, film production, and photography.

Table 4. Rate of ventures established in Latin American countries, period 2008-2017

Year	Argentina	Brazil	Colombia	Chile	Ecuador	Perú	Uruguay
2008	13.50%	14.60%	14.10%	6.80%	11.90%	8.30%	7.90%
2009	13.50%	11.80%	12.60%	6.70%	16.10%	7.50%	5.90%
2010	12.40%	15.30%	12.20%	6.00%	14.70%	7.20%	7.20%
2012	9.63%	15.19%	6.72%	7.77%	18.92%	5.10%	4.97%
2013	9.60%	15.40%	5.90%	8.50%	18%	5.40%	4.90%
2014	9.10%	17.50%	4.90%	8.80%	17.70%	9.20%	6.70%
2015	9.50%	18.90%	5.20%	8.20%	17.40%	6.60%	2.10%
2016	7.90%	16.90%	8.90%	8.00%	14.30%	6.10%	7.40%
2017	6.70%	16.50%	8.70%	9.90%	15.40%	7.40%	6.40%

Source: Global GEM (2008-2018).

The following table shows the closure rate that the countries studied have reached in recent years; Ecuador, Chile and Colombia present the highest closing values of a venture with an 8.80%, 7.10% and 6.50% respectively, this can be attributed to: financing problems, lack of profitability, other business opportunities, etc. (See table 5).

Table 5. Business closing rate in Latin American countries, period 2008-2017

Year	Argentina	Brazil	Colombia	Chile	Ecuador	Perú	Uruguay
2008	10.20%	3.50%	7.10%	5.80%	5.90%	10.40%	9.10%
2009	6.20%	4.00%	7.10%	6.40%	6.00%	7.10%	4.90%
2010	3.80%	5.30%	5.10%	5.60%	7.20%	9.20%	3.50%
2012	4.92%	4.51%	6.74%	4.97%	7.59%	6.75%	4.99%
2013	5.50%	4.70%	5.40%	7.60%	8.30%	4.20%	3.40%
2014	4.90%	4.10%	5.60%	8.30%	8.10%	8%	4.40%
2015	6.30%	6.70%	7.20%	8.50%	8.30%	8.80%	4.70%
2016	10.00%	5.60%	8.90%	10.10%	11.80%	8.30%	14.60%
2017	3.00%	5.30%	6.50%	7.10%	8.80%	6.20%	5.00%

Source: Global GEM (2008-2018).

When an entrepreneur begins his or her business, it is critical to consider the capital available to facilitate investment and the major costs associated with its operation. Entrepreneurs face difficulties in obtaining formal financing since they frequently lack a credit history.

According to the 2017 GEM report, the investments needed to start a business vary from country to country. The average investment to start a business in Europe is $17,200; for Asia and Oceania it is $15,200 and for North America it is $18,500. Each region points out that economies are based on innovation and technology. The value to start a business in Latin American and Caribbean countries also varies considerably, for example if in Uruguay it is $257, in Colombia it can reach $6,400 and in Ecuador it costs $2,000 as an initial investment (Santana and Sánchez, 2018).

Among the sources of funds to entrepreneurs when starting their own business are personal resources, investment funds, family loans, and financial institution loans. However, there are exceptions. In Chile, CORFO provides financial support focused on two main areas: the first on research and the second on business development; while in Costa Rica two state banks, Banco Nacional and Banco Popular, have been successfully financing SMEs for ten years. Being the reason why this sector has presented a very accelerated growth. In the south of Nigeria, credit unions have evolved over time to provide credit and develop the entrepreneurial capacity of micro-business owners (Haar and Brenes, 2012). It is seen in the graph 2.
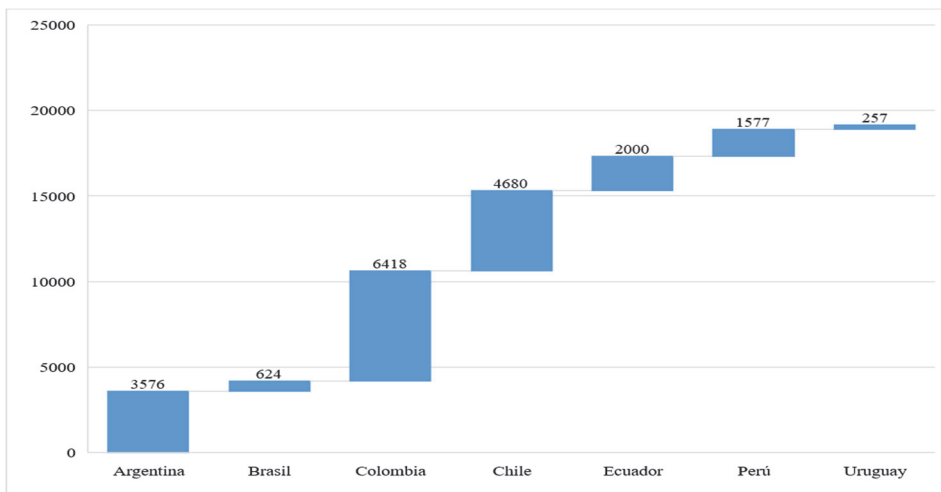

Graph 2. Initial amount in US dollars to start a business in 2017.
Source: Global GEM (2018).

Graph 2 shows that Colombia, Chile and Argentina have the highest initial amount represented by $6,418, $4.80 and $3,576 respectively. It is critical to include this type of investment in a running business because it will support the implementation of primary materials, innovation, technology, and so on that allows the venture to develop better in the market.

Below (graph 3), the main sources of financing for a business or for the initial investment of a venture are observed. The highest percentage in the countries studied is Peru, which represents 41% support from family members, and 49% support from Banks, however, it has not had great support from the government, which only represents 1%. Followed by Colombia with 35% family support, 45% bank support and 26% government support.
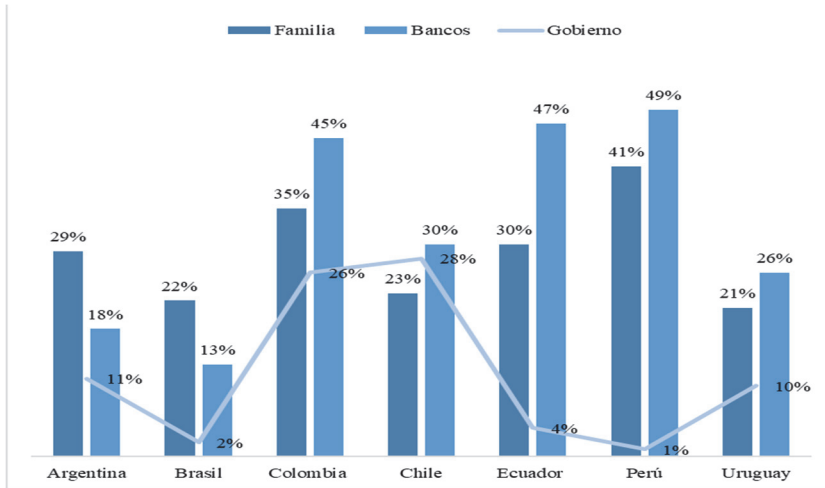
Graph 3. Main sources of financing for entrepreneurs
Source: Global GEM (2018).

The analysis of the results presented by the GEM makes it possible to establish the basis for implementing public programs that are aimed at promoting innovation and high-impact entrepreneurship. Tax policies and payment systems affect new businesses in two ways: the complexity of the tax system and the impact of taxes. In this context, Brazil is an example of complexity around the tax system. It takes 2,600 hours for a medium-sized business to keep up with its taxes each year. The same hypothetical business pays 69% of its second-year profits in taxes, this is if it complied with the rules and did not receive special tax breaks (Haar and Brenes, 2012).

The hypothesis is expressed in the following terms: H1 as economic activity and macroeconomic stability, has a positive relationship with the TEA and established ventures. In contrast, the ARDL econometric model of distributed lags seeks to establish the short and long-term effects of the variables under consideration. The shape of the model is as follows:

$$TEA_{it} = \alpha1 + \alpha2 PIB_{it} + \alpha3 Emp\_vul_{it} + \alpha4 Dife\_tas\_int.it + \alpha5 Inflación_{it} + \varepsilon_{it}$$

Where:

TEA: is the early entrepreneurial activity rate of seven South American countries.

PIB: is the Gross Domestic Product per capita, and measures economic activity in general terms.

Emp_vul: is the unsuitable employment rate; that is, the percentage of the economically active population without a stable job.

Dife_tas_int.: is the interest rate differential, whose calculation comes from the difference between the interest rate of the United States and the local interest rate of each country.

Inflation: measures the general variation of prices, and its figures are in percentages.

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$: These are the coefficients to be estimated.

t: is the study period.

i: refers to the total number of countries sampled in the study.

ε_{it}: is the stochastic disturbance of the model.

4. Model Results

As shown in Table 6, a correlation analysis was performed between the model's variables in order to determine their relationship. The results show that there is an inverse ordinal relationship between the rate of early entrepreneurial activity and GDP per capita, interest rate differential and inflation. Meanwhile,

there is a positive or direct relationship between the TEA and the vulnerable employment rate, in other words, the higher the unemployment rate, the higher the rate of early entrepreneurship.

Table 6. Correlation Analysis

	TEA	GDP	Vulnerable Employment	Interest Rate Differential	Inflation
TEA	1				
GDP per capita	-0.230	1			
Total vulnerable employment	0.025	-0.864	1		
Interest rate differential	-0.397	0.129	-0.229	1	
Inflation	-0.164	0.160	-0.401	0.216	1

Source: Own making with CEPAL's data base (2021) and Banco Mundial (2021).

However, from the results in Table 6, it is possible that there are biases derived from unobservable aspects. Due to this reason and to deepen the analysis, a lag distribution model is carried out. But first, it is necessary to estimate the optimal number of lags, for which the Akaike Information Criterion is used, and whose results are:

Table 7. Determination of Lags

Lags	LogL	LR	FPE	AIC	SC	HQ
0	-1247216	NA	2.37e+09	3577761	3593822	3584140
1	-7447946	918.7140*	2834.758*	22.13699*	23.10063*	22.51976*
2	-7283429	2773286	3659094	2238123	2414790	2308297

* selection of optimum lags; Logl refers to the maximum likelihood statistic, LR the likelihood ratio, FPE: final Prediction error, the values AIC, SC and HQ refer to the goodness of fit of the model.

The results of table 7 and especially the statistics of Akaike, Schwarz and Hannan Quinn indicate that the optimal or necessary lags to enter all the information are one. Thus, Table 8 shows the results of the empirical exercise, based on a lag distribution model, ARDL.

Table 8. ARDL Model

| Dependent variable	Early entrepreneurial activity rate (TEA)	
Dependent variables	Coefficient	Std. Error
	Long term equation	
GDP per capita	1.84E-05**	7.95E-06
Vulnerable employment	0.005512***	0.001996
Interest rate differential	-0.006153	0.003900
Inflation	0.010676***	0.002866
	Short term equation	
*COINTEQ01**	-0.344718	0.146224
*D(GDP per capita)**	1.91E-05	1.06E-05
D(Vulnerable employment)	-0.000924	0.008735
D(Interest rate differential)	0.004048	0.002916
D(Inflation)	0.000135	0.000467
*C***	-0.121919	0.051443
Akaike info criterion	-5175756	
Schwarz criterion	-3844594	
Hannan-Quinn criter.	-4640640	

Note: ***prob<0.01; **prob<0.05; *prob<0.1*.

Source: Own making.

The results of Table 8 show the long-term estimation relationships, where GDP per capita, vulnerable employment, and inflation are directly and significantly related to the rate of early entrepreneurial activity. Whereas the interest rate differential is not significant. In the long term, vulnerable employment is the most significant variable and, therefore, the one with the greatest incidence in the behavior of the TEA, followed by inflation and GDP per capita.

Now, in the estimation under the short-term equation, it is observed that GDP is the only significant variable at 10% and whose effect on the TEA is positive. Meaning that as economic activity grows, the rate of early entrepreneurial activity increases. These findings are in line with reality, in which the effects of the macroeconomic environment are significantly noticed in the long term. Likewise, it is observed how the cointegration vector (COINTEQ01) meets the parameters of being significant and negative, as mentioned by Gujarati (2010) and indicates the speed of adjustment in the long term. In such a way that the GDP variable, vulnerable employment, interest rate differential and inflation are adjusted with the TEA in the long term by 34.4%.

Finally, graph 4 shows the normality test of the estimated model, where it is observed that the probability of the Jarque Bera test is greater than 5%. Which means that the residuals of the model are distributed in a normal way, thus fulfilling the assumption. Additionally, the Kurtosis test is close to three and the Skewness statistic is close to zero, providing evidence that the results are significant. See graph 4.
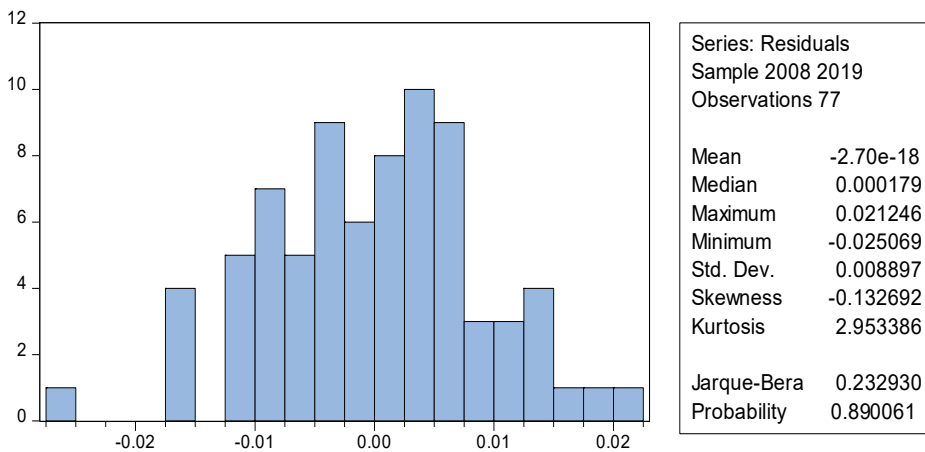

Graph 4. Normality test

5. Entrepreneurship in Bolivia

Currently the topic of entrepreneurship and innovation in Bolivia is under development. Most of them are out of necessity, this reflects in some way the stagnant situation of the economy, the weakness of the productive apparatus, and the low level of education. The average age of a Bolivian entrepreneur is 25 to 34 years old, with a wage of around BS $2,000, and 47.9% have a secondary education. The sector where they prefer to undertake is consumer service, with 41% focused on commerce and 15% on restaurants and accommodation (GEM, 2015).

Graph 5 shows how the perspectives towards entrepreneurship have evolved, in which the perception of opportunities in 2014 is the highest, which was 57.70%, In other words, the adult population has great opportunities to start a business in the place where they live. Furthermore, the perception of capability in 2008 was 76.20%, indicating that the adult population believes they have the skills and knowledge to start their own business. In 2010 the intentions to undertake had a value

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of 49.30% which is high compared to the years studied. However, the year 2014 had the highest level of fear of failure at 38.40%, indicating that the adult population does not want to start a new business because they are afraid of failing.
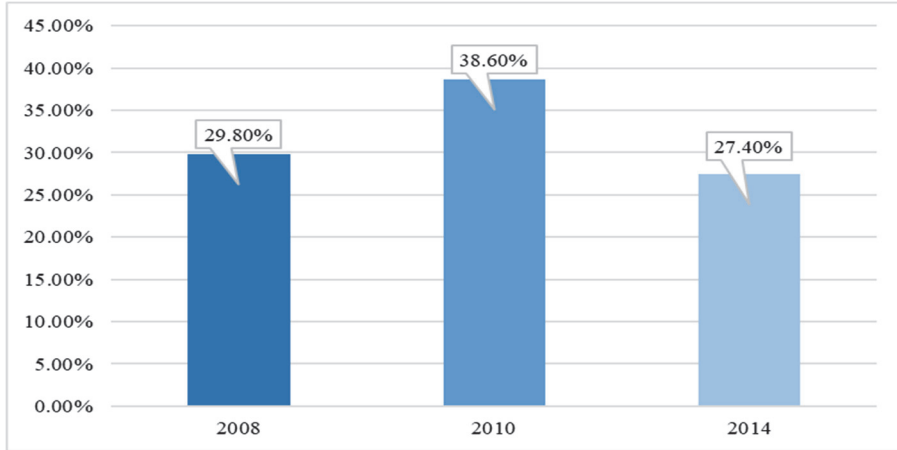
Graph 5. Early entrepreneurial activity (TEA) in Bolivia years 2008-2014.
Source: GEM Bolivia (2015).

According to the 2014 GEM report, Bolivia is the fourth country with the highest early entrepreneurial activity among factor-driven economies and the sixth among the economies that participated. On the other hand, at the regional level, Bolivia ranks third, below Ecuador and Peru (Querejazu, Zavaleta and Mendizabal, 2014).

The closing rate of the venture for 2014 was 6.90% of the population, which has shown a decrease compared to 2008 and 2010 (see graph 6). However, Bolivia presents the highest rates compared to countries in the region.
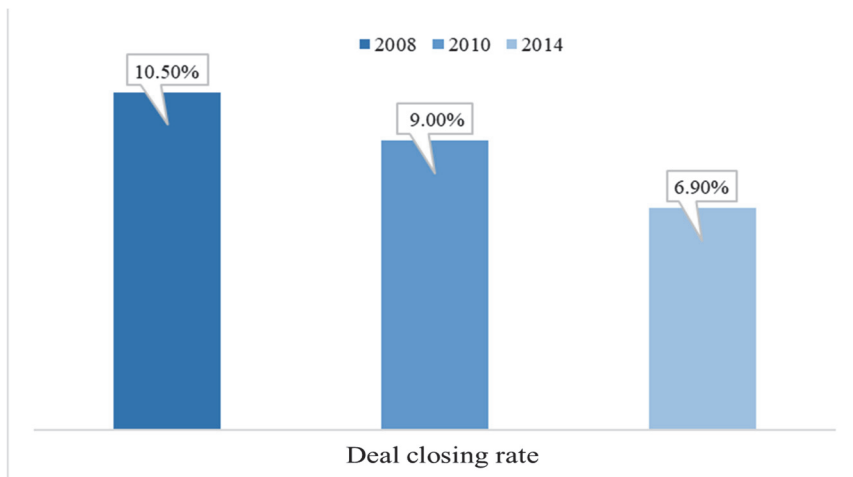
Graph 6. Venture closing rate in Bolivia.
Source: GEM Bolivia (2015).

Entrepreneurship is developed in a specific cultural and social environment, that is why individuals make perceptions about entrepreneurship, since they play a fundamental role for the population to motivate people who are about to undertake.

In the case of Bolivia, data are limited; therefore, to contrast the previously mentioned hypothesis, a Pearson correlation lineal is used, which measures the degree of linear association between two variables. This coefficient oscillates between –1 and +1. A value of –1 indicates a linear relationship or perfect positive straight line. A correlation close to zero indicates that there is no linear relationship between the two variables. Table 9 shows the correlation analysis for the case of Bolivia with the variables studied.

Table 9. Correlation Analysis

	TEA	GDP per Capita	Inflation	Total Vulnerable Employment	Interest Rate Differential
TEA	1	-0.522	-0.563	-0.399	0.765
GDP per Capita	-0.522	1	-0.412	0.990	-0.948
Inflation	-0.563	-0.412	1	-0.534	0.102
Total Vulnerable Employment	-0.399	0.990	-0.534	1	-0.896
Interest Rate Differential	0.765	-0.948	0.102	-0.896	1

Source: Own making

As can be seen, most of the variables do not present a linear relationship between their pairs, but there could be other types of relationships. Regarding the TEA and the variables: GDP per capita, inflation and total vulnerable employment, there is a negative correlation and a medium dependency, which represent -0.522, -0.563 and -0.399 respectively, meaning that as the TEA increases GDP per capita, inflation and total vulnerable employment decrease and vice versa.

In contrast, there is a positive correlation between the TEA and the difference in interest rate, with a significant dependence, meaning that as the TEA increases, the interest rate differential goes up, and if both variables decrease.

6. Conclusions

This research establishes that in the long term, GDP per capita, inflation and vulnerable employment are positively related to the TEA. However, in the short-term GDP per capita is the only significant variable with the TEA. Entrepreneurial activity in South American countries has significant rates, however, there is still a lack of greater creativity, innovation, and productivity, which leads to the development of uncompetitive ventures in the market and therefore do not contribute to economic growth.

Early entrepreneurial activity in Bolivia has declined in recent years. Despite the fact that the majority of them are driven by necessity, the country is a home for entrepreneurs, with a large population that possesses the traits and perceptions necessary to launch a business, in other words, people who feel capable of undertaking. However, they state that they have a high fear of failure, due to the economic instability in the country, the weakness of the productive system, the low educational level, etc. As shown in the correlation, the interest rate differential variable shows a positive correlation with the TEA, but not with GDP per capita, inflation and total vulnerable employment.

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