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ENTREPRENEURSHIP AND SOCIOECONOMIC DEVELOPMENT: STUDY WITH CITIES OF THE STATE OF SÃO PAULO

EMPREENDEDORISMO E DESENVOLVIMENTO SOCIOECONÔMICO: ESTUDO COM MUNICÍPIOS DO ESTADO DE SÃO PAULO

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Abstract

Socioeconomic development depends on many variables and entrepreneurship is a relevant way of contributing to its progress. However, there is no international consensus on the positive impact of increased entrepreneurship on local socioeconomic development, and there are few studies in developing countries, such as Brazil. Thus, this research aimed to verify the correlation between entrepreneurship and socioeconomic development of the main cities in the state of São Paulo (18 municipalities) by comparing the rate of entrepreneurship (number of new businesses per 1000 inhabitants) with the Firjan Municipal Development Index (IFDM) from 2005 to 2013. Secondary data were used and the correlation was the data analysis technique. The results show that there is a significant correlation between the variables, demonstrating that although correlations were found with health, and employment and income indicators, education is the variable most strongly related to the advance of entrepreneurship. New studies should be carried out to explore how entrepreneurship influences the quality of life and socioeconomic development of municipalities.

Keywords: Entrepreneurship. Socioeconomic development. Firjan Municipal Development Index. State of São Paulo.

Resumo

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O desenvolvimento socioeconômico depende de muitas variáveis e o empreendedorismo é uma forma relevante de contribuir para seu avanço. No entanto, não há consenso internacional do impacto positivo do aumento do empreendedorismo no desenvolvimento socioeconômico local, além de existirem poucos estudos em países em desenvolvimento, como o Brasil. Assim, esta pesquisa teve como objetivo verificar a correlação entre empreendedorismo e desenvolvimento socioeconômico das principais cidades do estado de São Paulo (18 municípios) por meio da comparação da taxa de empreendedorismo (número de novos negócios por 1000 habitantes) com o Índice Firjan de Desenvolvimento Municipal (IFDM) no período de 2005 a 2013. Utilizaram-se dados secundários e a correlação foi a técnica de análise dos dados. Os resultados revelam existir correlação significativa entre as variáveis, mostrando que, apesar de encontradas correlações com indicadores de saúde e emprego e renda, educação é a variável mais fortemente relacionada com o avanço do empreendedorismo. Novos estudos devem ser realizados para explorar como o empreendedorismo influencia na qualidade de vida e no desenvolvimento socioeconômico dos municípios.

Palavras-chave: Empreendedorismo. Desenvolvimento socioeconômico. Índice Firjan de desenvolvimento municipal. Estado de São Paulo.

Introduction

Many studies have been carried out in order to relate entrepreneurial activity and economic development. It must be considered that entrepreneurship plays an important role in development, and can be considered a fundamental element for the economic development of countries (SCHUMPETER, 1997).

Several researchers have corroborated Schumpeter's theory, in the sense of presenting results that prove the link between economic development and entrepreneurship. These results can be observed for example, in the works of Audretsch, Belitski and Desai (2015), Audrestch, Keilbach and Lehmann (2006), and Adusei (2016). Other authors found positive results when they related entrepreneurship and employment, i.e., entrepreneurial activity can contribute to the increase in the employment rate in the long run, according to Batista, Escaria and Madruga (2008), Chen (2014), and Kasseeah (2016).

When discussing this topic, it is also important to consider the factors that may contribute to the entrepreneurial activity. Among these factors, the education of the population is a key point for the development of entrepreneurship (AUDRETSCH; BELITSKI; DESAI, 2015; GARCIA, 2014).

In the Brazilian context, studies have been identified that present an empirical study that seeks to explain the relationship between the two variables, being that two studies (FONTENELE, 2010; SOUZA; LOPES JUNIOR, 2011) seek this relationship at the national level and two others (FELIX; FARAH JUNIOR, 2013; CANEVER et al., 2010) at a regional level (state and municipal). These data corroborate the point of view of Bruton, Ahlstrom and Obloj (2008), who report that a large part of the research related to entrepreneurship and development is related to developed countries, mainly in Europe, and the United States, while there is a lack of these studies in developing economies, such as Brazil, India, and Russia, with a greater gap to be filled in the study of the relationship between entrepreneurship and socioeconomic development in these countries.

Studies carried out in Brazil at the regional level observed that entrepreneurship was really an important factor in the economic development of those localities, in addition to also collaborating with the human development of the population (FELIX; FARAH JUNIOR, 2013; CANEVER ET AL., 2010). However, both studies were carried out in states in the southern region of the country, Paraná and Rio Grande do Sul, and given the continental dimension and regional differences in Brazil, it is not possible to state that the same positive effect will be found in other states and regions of the country. Thus, it is possible to identify the scarcity of studies in Brazil that consider the analysis of the relationship between entrepreneurship and local development.

When looking at this research opportunity, this work aims to help fill this gap by verifying the correlation between entrepreneurship and socioeconomic development in the main cities of the state of São Paulo. This objective is achieved through an indicator for the entrepreneurship rate.

Therefore, the relevance of this work is justified by the fact that evaluating entrepreneurship is important for regional development. There is a gap to be filled when referring to studies relating

entrepreneurship and economic development in developing countries through an indicator so that it is possible to compare the level of entrepreneurship in cities of different sizes.

In addition to advancing knowledge in the area of entrepreneurship and regional development, this research also contributes to the generation of relevant information for the administration of municipalities, collaborating with public management through indicators that assist in decision making and allocations of public resources, since there little information on entrepreneurship available at the municipal level.

The theoretical framework will now be presented, which will deal with the relationship between entrepreneurship and socioeconomic development. Subsequently the methodology, results and discussions, and final considerations will be presented.

Entrepreneurship and development

Schumpeter (1997) presented entrepreneurship as a "fundamental phenomenon" for economic development. However, some authors have considered that entrepreneurship can impede economic growth, and may even accentuate poverty and inequality (HE; CHEN, 2016).

To support Schumpeter's (1997) ideas, empirical studies have emerged in order to demonstrate the link between entrepreneurial activity and economic development (FRITSCH; MULLER, 2004; TOMA; GRIGORE; MARINESCU, 2014).

It is important to highlight that through the studies of Audretsch, Belitski, and Desai (2015), Baptista, Escaria, and Madruga (2008), and Garcia (2014), it was observed that some elements are constant in the relationship between socioeconomic development and entrepreneurship. These authors point out the elements of education, employment and income, and health as relevant.

The study by Audretsch, Belitski, and Desai (2015) for example, corroborates the relationship between entrepreneurship and socioeconomic development. The authors identified through studies with small, medium, and large European cities, evidence that entrepreneurship has a strong and immediate impact on urban economic development, i.e., there is an evident and convincing link between entrepreneurial activity and economic performance. (AUDRESTCH; KEILBACH; LEHMANN, 2006)

Despite the relationship found by the authors, differences in impact were identified when considering the size of cities, in terms of the direct effects related to the employment rate and the indirect effects: efficiency, innovation, variety, and competitiveness. Direct effects were found in all cities regardless of size, while the impact on indirect effects was not observed in small and medium-sized cities (AUDRETSCH; BELITSKI; DESAI, 2015).

On the element of employment and income, which is associated with job creation, Baptista, Escaria, and Madruga (2008), in a survey conducted in Portugal, show positive effects of entrepreneurship on job creation. These effects were observed in three periods, where at the beginning startups have a weak influence on the employment rate; in the subsequent period they have a negative effect; and only after the eighth year, the third period, begin to show a positive effect.

Similar results were found by Mueller, van Stel and Storey (2008) in Great Britain, considering that the effects on the employment rate happen in three phases, i.e., according to Fritsch and Mueller (2004) startups are able to collaborate with the growth of the employment rate only in the long term.

Dvouletý (2017), through his research in regions of the Czech Republic, observed that entrepreneurship rates are related to low unemployment rates. He also argues that the high rates of creation of new businesses or partnerships were associated with high levels of per capita income. It is important to note that the regions where high rates of per capita income were found were also those where the highest number of people with higher levels of education was observed.

Chen (2014) and Kasseeah (2016) also found results that confirm the relationship between per capita income and the intensity of new businesses, with a positive relationship between entrepreneurship and economic development, and consequently, the emergence of new jobs. For Kasseeah (2016) the results confirm that entrepreneurship is an important factor for the economic development of countries regardless of their level of development.

This reality matches the factors that Audretsch, Belitski and Desai (2015) identified as relevant to the effects of entrepreneurship on the development of cities. The presence of development and research centers in large cities, accompanied by a more sophisticated workforce due to the presence of universities, can be considered important factors for the impact of

entrepreneurship on indirect effects (efficiency, innovation, variety, and competitiveness) in larger cities (AUDRETSCH; BELITSKI; DESAI, 2015).

Garcia (2014), in his research involving 184 cities in twenty European countries, found empirical results that those cities where the number of people with a higher level of education was higher, had higher rates of entrepreneurial activity. He also concluded that there was a positive link between entrepreneurship, the size of the city, and self-employment.

In research carried out in Germany, it was observed that in regions where university centers with a great capacity to generate and share knowledge are found, it was also possible to find a high number of startups, mainly linked to the technological sector (AUDRESTCH; KEILBACH; LEHMANN, 2006).

Within the perspective of economic development provided by entrepreneurship, Souza and Lopes Junior (2011) found that there is a negative correlation between the Total Entrepreneurship Activity (TEA) indicator released by the Global Entrepreneurship Monitor (GEM) and the Human Development Index (HDI).

In countries where the HDI is low, a high TEA was observed, i.e., in countries with low human development there is a high rate of entrepreneurship and in countries with a high HDI, a low entrepreneurial activity was observed (SOUZA; LOPES JUNIOR, 2011). This phenomenon was also considered by Acs, Desai and Hessels (2008), and Prieger et al. (2016).

Evidence of the positive impact of entrepreneurship on economic development has also been identified in research in the Chinese context (LI; DING, 2015; HE; CHEN, 2016). He and Chen (2016), who used the HDI as one of the metrics, found results that suggest that those regions with greater entrepreneurial activities are those capable of absorbing all the labor from rural areas and present a population with a higher quality of life.

In these regions, there is also a better qualification of the workforce, growth in entrepreneurial activity, better health conditions, and a smaller number of people living below the poverty line. On the other hand, due to industrial growth, the region has a higher CO_2 emission when compared to other Chinese regions (HE; CHEN, 2016).

In another Chinese study, which aimed to investigate the impacts of entrepreneurial activity and innovation on poverty reduction, there was a positive effect of entrepreneurship on poverty reduction (SI et al., 2015).

These authors identified that the new businesses created by the peasants, accompanied by innovative projects, were responsible for lifting that region out of extreme poverty. This fact made the region the most entrepreneurial in China, in addition to contributing to the reduction of poverty in other countries, since a large number of foreigners seek the region to study or develop new businesses for their countries of origin (SI et al., 2015).

One factor that interferes in this relationship between entrepreneurship and socioeconomic development is the type of entrepreneurship. Countries with higher per capita income have a higher rate of entrepreneurship per opportunity, while those with lower per capita income have a high rate of entrepreneurship by need (ACS; DESAI; HESSELS, 2008; FONTENELE, 2010). In the case of Brazil, entrepreneurship by necessity predominates (ACS; DESAI; HESSELS, 2008).

Within this perspective of the type of entrepreneurship Amoros, Borraz and Veiga (2016) demonstrated, through a study involving Latin American countries, that the rate of entrepreneurship by necessity in this region is not related to the countries' wealth, but to economic cycles, i.e., the higher the economic growth, the higher the rate of entrepreneurship, corroborating Li and Ding (2015) and Chen (2014), which show that the impacts of entrepreneurship can vary in different economic periods.

According to Amoros, Borraz and Veiga (2016), the results do not confirm the relationship between entrepreneurship by necessity and the levels of unemployment in the region, as proposed by Acs, Desai and Hessels (2008), and Fontenele (2010). Amoros, Borraz and Veiga (2016) found the same characteristics for both types of entrepreneurship (opportunity and need). Research has shown that in the realities of high unemployment rates, the most qualified professionals are not attracted to wages, which are at their lowest level, which makes them choose to open their own businesses.

Another result observed by the authors is that economic growth is related to entrepreneurship by opportunity, in addition to results that suggest a positive relationship between entrepreneurship by necessity and inflation, and also the degree of informality in the economy (AMOROS; BORRAZ; VEIGA, 2016).

The study on entrepreneurship in different regions of different countries in Europe, led Bosma and Sternberg (2014) to argue that economic diversity affects the occurrence of new businesses, demonstrating that there is no difference in the rate of entrepreneurship between the main cities and other regions of the country. This contradicts the hypothesis of Audretsch, Belitski, and Desai (2015), in which the largest urban areas have an advantage over the smaller, in terms of the level of entrepreneurial activity.

Bosma and Sternberg (2014), show that the regions with the highest GDP favor the creation of new businesses by opportunity, while the increase in unemployment leads to the emergence of new businesses by necessity.

Regarding the impact of the health variable on the relationship of entrepreneurship and socioeconomic development, Frederick and Monsen (2011), based on research on entrepreneurship and public investment in health in New Zealand, identified that entrepreneurship thrives in environments with low social welfare situations. For them, variations in public investments in health can stimulate entrepreneurial activity.

The authors point out that in developed countries with high wages, public investments in health have a negative relationship with the rate of entrepreneurial activity, while spending on private health contributes to the increase in the rate of entrepreneurship.

One factor that can contribute to the creation of new businesses is the entrepreneurial culture of the population. Fritsch and Wyrwich (2017) demonstrate through empirical results that entrepreneurship rates are higher in some regions of Germany.

These regions have at their roots an entrepreneurial culture that has remained active over time, even due to the financial and social difficulties and instabilities faced by the region. These regions are the same as those that had high rates of self-employment in 1925, and currently have a high rate of new business creation. The authors argue that creating an entrepreneurial culture is a long-term investment (FRITSCH; WYRWICH, 2017).

As demonstrated so far, much of the research related to entrepreneurship relates to countries in Europe and the United States, while studies outside these regions are still somewhat limited, especially in developing economies (BRUTON; AHLSTROM; OBLOJ, 2008).

In this sense, Adusei (2016) carried out a study in twelve African countries in order to observe whether entrepreneurship was capable of promoting economic growth in that region. From the results obtained, he concluded that in fact entrepreneurship has sustained economic growth in those countries.

In Brazil, some research has been carried out to relate entrepreneurial activity and economic development. Felix and Farah Junior (2013), when conducting a study in municipalities in the state of Paraná, a region of southern Brazil, showed that there is a positive correlation between entrepreneurship and the development of these locations, considering an index that demonstrates the level of favorable environment for micro and small businesses, and another indicator of employment and income.

According to Canever et al. (2010), in research carried out in another state in the south of the country, Rio Grande do Sul, they concluded that there is also a strong relationship between entrepreneurship and economic and human development. Among other interesting results, they demonstrate that the level of education of the population plays an important role in the development of new businesses.

Since the relationship between entrepreneurship and socioeconomic development was found in several studies, Prieger et al. (2016) ask the following question: despite the high rate of entrepreneurship, why do many developing countries remain poor? They propose three alternative response factors: these countries need more entrepreneurship; there must be other factors that reduce the impact of entrepreneurship on development (such as the lack of research and development and venture capital companies); or perhaps the type of entrepreneurship is not the most appropriate (PRIEGER et al., 2016).

Methodology

This is a quantitative study with secondary data. This work was composed of two stages: collection and construction of the database, and data analysis. The variables of the study, the form of collection, and the construction of the database, the sample universe, and finally the form of data analysis are presented below.

Research variables

Much research has been carried out in order to deepen knowledge regarding the factors that stimulate entrepreneurial activity, both at the regional or municipal level (GARCIA, 2014).

Researchers have used several indicators to study the rate of entrepreneurship, because in fact there is no unanimity among them regarding an ideal measure for such a study (ADESUI, 2016). Many have used the rate of entrepreneurship provided by the Global Entrepreneurship Monitor (GEM), which is a survey conducted in several countries around the world in order to identify the degree of entrepreneurial activity (ACS; DESAI; HESSELS, 2008; FONTENELE, 2010; SOUZA; LOPES JUNIOR, 2011; PRIEGER ET AL., 2016).

Other studies use the Human Development Index (HDI) (SOUZA; LOPES JUNIOR, 2011, HE; CHEN, 2016) as well as the Gross Domestic Product (GDP) in order to present the relationship between entrepreneurship and development (AUDRESTCH; BELITSKI ; DESAI, 2015, ADUSEI, 2016) or the local employment rate, in the sense of correlating entrepreneurship and job creation (BAPTISTA; ESCARIA; MADRUGA, 2008).

Some other indicators are also used, for example the Eurostat Urban Audit, which provides information and standardized metrics related to various aspects related to quality of life in European cities (GARCIA, 2014; DVOULETÝ, 2017). In other studies, the number of companies registered within the fiscal year in which the survey was conducted was considered (ADUSEI, 2016; GARCIA, 2014, BAPTISTA; ESCARIA; MADRUGA, 2008, KASSEEAH, 2016; DVOULETÝ, 2017).

In research conducted by Felix and Farah Junior (2013), also with the purpose of correlating entrepreneurship and development in certain locations in a state in the south of the country, the authors used the indicators provided by the Federation of Industries of Rio de Janeiro (*Federação das Indústrias do Rio de Janeiro - FIRJAN*) and by the Support Service for Micro and Small Businesses in the State of Paraná (*Serviço de Apoio às Micros e Pequenas Empresas do Estado do Paraná - SEBRAE Paraná*).

To meet the purpose of verifying possible correlations between local development and entrepreneurship, the gross entrepreneurship rate - GER - (number of new businesses created in a period *n* for every 1000 inhabitants) and the Firjan Municipal Development Index (*Indice Firjan de Desenvolvimento Municipal - IFDM*) were adopted as variables. The gross entrepreneurship rate (GER) was developed with the aim of making cities of different sizes comparable. It was inspired by the entrepreneurship rate (TEA) provided by the Global Entrepreneurship Monitor (GEM), but it also considers the population contingent, being possible to visualize the amount of companies that start their activities in a certain period for every 1000 inhabitants. This rate assists in analyzes aimed at investigating the role of organizations in the socioeconomic development of a region.

The GER index was adapted from the studies by Dvouletý (2017), which used the rate of creation of new businesses and partnerships per capita as a metric of entrepreneurial activity in the various regions of the Czech Republic where the research was conducted. Kasseeah (2016), who also used the rate of new registered companies, divided by groups of one thousand people aged between 15 and 64 years old, and Canever et al. (2010) observed the number of new companies established for every 1000 inhabitants of different countries.

In choosing this index, the importance of the relationship between population growth and the creation of new businesses was taken into account, as argued by Canever et al., 2010.

The IFDM - FIRJAN Municipal Development Index - is a study of the FIRJAN System that annually tracks the socioeconomic development of more than 5,000 Brazilian municipalities in three areas: employment and income, education, and health. Created in 2008, it is based exclusively on official public statistics made available by the ministries of Labor, Education and Health (FIRJAN, 2017). This index was inspired by the Human Development Index of the UN, considering employment and income, education, and health, but makes a deeper analysis also considering other variables, as shown in Chart 1. The index varies from 0 (minimum) to 1 point (maximum) to classify the level of each location in four development categories: low (from 0 to 0.4), regular (0.4 to 0.6), moderate (from 0.6 to 0.8) and high (0.8 to 1). That is, the closer to 1, the greater the development of the locality.

In addition to the GER and IFDM variables, three control variables were also used: education, health, and employment and income. All of these variables were obtained through the FIRJAN system, as well as from the IFDM. They make up the IFDM and are also disclosed for each area that makes up the index. The components of each of the control variables are shown in Chart 1.

Another variable generated by the study was composed of the growth rates of the GER, IFDM indicators, and demographic growth in the period from 2005 to 2013, thus it was possible to observe the behavior of each indicator in each of the cities in the period studied.

Chart 1: IFDM components by development areas

IFDM		
Employment/Income	Education	Health
• Generation of formal employment • Absorption of local workforce • Income generation • Average wages of formal employment • Inequality **Source:** Ministry of Labor and Employment	• Childhood education enrolments • Elementary education drop-out • Age-grade distortion in elementary education • Teachers, who have completed university degree course, working in elementary education • Average hours/lessons per day in elementary education • The Basic Education Development Index (IDEB) outcome in elementary education **Source:** Ministry of Education	• Number of prenatal consultations • Poorly defined causes of deaths • Child deaths from avoidable causes • Internments suitable for Basic Healthcare (ISAB) **Source:** Ministry of Health

Sourse: FIRJAN (2015)

Collection and construction of the database

It is worth mentioning that in Brazil there are no indicators that generate this information. To build the Gross Entrepreneurship Rate (GER), the information available at the São Paulo State Board of Trade (*Junta Comercial do Estado de São Paulo - JUCESP*) was used, which gathers all records of active and disabled companies. The historical series of the population of the cities under study were obtained through the State System of Data Analysis Foundation (*Fundação Sistema Estadual de Análise de Dados - SEADE*), which gathers data from all municipalities in the state of São Paulo.

Garcia (2014) highlights that the advantage of considering research with regional limits and the emphasis on political responsibility, i.e., each indicator is under the responsibility of local authorities. Therefore, administrative limits can optimize the level of analysis because the information is more accessible, and the indicators can be adapted to local contexts.

Sample universe

The object of the study were cities of the administrative regions and urban agglomerations of the state of São Paulo, totaling 18 municipalities studied. The choice of these cities was due to the fact that they represent important regional development hubs in the state. The municipalities are: Araçatuba, Araraquara, Barretos, Bauru, Campinas, Franca, Jundiaí, Marília, Piracicaba, Presidente Prudente, Registro, Ribeirão Preto, Santos, São Carlos, São José do Rio Preto, São José dos Campos, São Paulo, and Sorocaba.

The period covered for data collection and analysis was from 2005 to 2013 due to the fact that it comprises all the indexes released by Firjan.

Data analysis

For data analysis, Pearson's correlation was used, which shows the degree of relationship between two variables. In this case, there was a perfect positive relationship when the value is equal to 1, moderate positive when it is around 0.70 and there is no relationship when it is equal to 0. This relationship can also be moderate negative -0.70, and negative perfect when it is equal to -1 (STEVENSON, 2001).

To carry out the analyzes, a database was built with all the information extracted from the JUCESP portal, and the FIRJAN and SEADE systems for the period studied. All statistical analyzes were performed using Excel.

Results and discussion

The database built for this research allows a historical analysis of the 18 municipalities under study, with regard to the evolution in the number of companies registered with JUCESP, the annual mortality rate, the composition by size of the nascent companies, the demographic variation, and the variation of the Firjan Municipal Development Index and its respective sub-areas (education, health, and employment and income).

The results shown in Table 1 show a ranking of growth in the gross entrepreneurship rate (GER) over the period analyzed, in addition to the growth of the IFDM, and demographic growth for the same period, and the population in 2013. These data are gathered to demonstrate that the rate of entrepreneurship does not depend on the size of the municipality, in contrast to what Garcia (2004) concluded in his study of European cities by demonstrating a positive relationship between entrepreneurship, the size of the city, and self-employment. The most populous municipality in the sample, São Paulo, had the 3rd highest growth (205 %) while the smallest municipality, Registro, had the highest growth in the period (303 %).

The relationship between the growth in the entrepreneurship rate and the growth of the Firjan Municipal Development index for this period did not show any pattern. Santos presented one of the highest growths in the IFDM (12.15 %) but it was also that which presented one of the lowest growths of GER (128 %). Araraquara showed the lowest growth in the IFDM (1.01 %) and a 149 % growth in GER. Registro showed the greatest growth in GER (303 %) and the greatest socioeconomic development (15.04 %), in addition to being the only city in the sample that has a population of less than 100 thousand inhabitants and being the only one to present a decreased demographic in the period.

Table : GER growth rate x IFDM growth rate x demographic growth rate (period 2005-2013)

Position	Municipality	GER growth rate	IFDM growth rate	Demographic growth rate	Population 2013*
1º	Registro	303%	15,04%	-0,6%	54.107
2º	Sorocaba	226%	5,36%	12,6%	608.269
3º	São Paulo	205%	8,59%	5,3%	11.446.275
4º	Campinas	201%	3,26%	8,6%	1.112.050
5º	Pres. Prudente	192%	8,60%	6,5%	211.832
6º	Marília	188%	7,19%	6,7%	221.378
7º	São Carlos	185%	5,62%	10,2%	228.556
8º	Ribeirão Preto	183%	4,65%	13,5%	629.855
9º	Bauru	182%	1,20%	5,9%	350.392
10º	SJ dos Campos	176%	2,67%	12,1%	654.827
11º	Jundiaí	165%	5,91%	10,3%	382.363
12º	Piracicaba	152%	12,89%	7,3%	372.553
13º	Barretos	152%	5,33%	5,7%	114.027
14º	Araraquara	149%	1,01%	10,1%	215.080
15º	Franca	134%	13,32%	7,3%	326.042
16º	Araçatuba	131%	6,14%	4,9%	184.491
17º	Santos	128%	12,15%	0,5%	421.896
18º	SJ do Rio Preto	115%	6,86%	9,9%	421.169
-	**Mean**	171%	6,99%	7,6%	-

Source: research data. *SEADE (2017).

Demographic growth did not prove to be a determinant of the growth rate. Registro registered a negative demographic growth (-0.6 %) and presented the highest growth of GER, while Santos, also with a little significant demographic growth (0.5 %), presented one of the lowest growths in GER (128 %). The same can be seen in the municipalities with the highest demographic growth: Sorocaba (12.6 %) presented one of the largest growths of new companies in proportion to its population (226 %) while Ribeirão Preto and São José dos Campos, municipalities of the same size and similar demographic growth of 13.5 % and 12.1 % respectively, accumulated a lower growth in the gross entrepreneurship rate of 183 % and 176 % respectively.

For the analysis of the correlation between entrepreneurship and socioeconomic development, the IFDM and each of its components was used separately - education, health, and employment and income, as shown in Table 2. The coefficients highlighted in blue represent a positive correlation greater than 0.7 and the coefficients highlighted in red demonstrate the negative correlations.

Table 2 brings together in the second column the correlations between GER and the IFDM, which represent entrepreneurship and socioeconomic development, respectively; and in the third, fourth and last column, the correlation between entrepreneurship (GER) and each of the separate variables: education, health, and employment and income, respectively.

In contrast to what Souza and Lopes Júnior (2011) concluded, the result of the correlation between entrepreneurship and socioeconomic development in most cities proved to be relevant (> 0.70) corroborating the studies carried out by Schumpeter (1997), Toma, Grigore and Marinescu (2014), and Audretsch, Belitski and Desai (2015).

The positive correlation found in most cities in the state of São Paulo (with the exception of Araraquara and São José dos Campos), the object of this study, had a similar result to that found by Felix and Farah Júnior (2013) when carrying out a study aiming to relate entrepreneurship and socioeconomic development in cities in the state of Paraná and also with the results obtained by Canever et al. (2010) in a study conducted in cities in the state of Rio Grande do Sul.

Another variable that was shown to be significantly related to the increase of nascent companies and socioeconomic development was education. This variable was the only one that was positive in all the municipalities studied and the correlation between the entrepreneurship rate and the Firjan Education index was positive and higher than 0.7 in 95 % of the municipalities (only Araçatuba showed a correlation lower than 0.7).

This result confirms the conclusions of Audrestch, Keilbach and Lehmann (2006), and Garcia (2014) who maintained that the higher the educational level of a region and the presence of educational centers, influenced the increase in the rate of entrepreneurship, however it is worth mentioning that the results found in the present work refer to a linear correlation, showing no causality between the variables.

Regarding the behavior of the health variable when related to entrepreneurship, there was great variation in the results. Municipalities such as Araçatuba and Bauru showed an intense negative correlation, -0.93 and -0.90 respectively, which means that when the rate of gross entrepreneurship increases, the Firjan health index tends to decrease. However, significant positive correlations (> 0.70) were found in 44 % of the municipalities.

Table 2: Summary of the correlations between entrepreneurship and socio-economic development (period 2005-2013)

Municipality	GER x IFDM	GER x Education	GER x Health	GER x Employment and income
Franca	0,927	0,988	0,637	0,729
Registro	0,902	0,922	0,918	0,707
Barretos	0,891	0,940	0,096	0,315
Santos	0,880	0,878	0,906	0,657
Pres. Prudente	0,880	0,702	0,979	0,572
Marília	0,864	0,920	0,748	0,588
Jundiaí	0,833	0,905	0,864	0,070
SJ do Rio Preto	0,817	0,900	0,851	0,417
Sorocaba	0,801	0,951	-0,285	0,358
Campinas	0,795	0,949	-0,011	0,334
São Paulo	0,788	0,848	0,915	0,330
Piracicaba	0,771	0,954	0,174	0,440
Bauru	0,750	0,798	-0,902	0,818
São Carlos	0,746	0,856	0,747	-0,356
Araçatuba	0,663	0,672	-0,934	0,755
Ribeirão Preto	0,645	0,901	-0,549	0,379
SJ dos Campos	0,085	0,924	-0,075	-0,794
Araraquara	-0,137	0,713	-0,055	-0,448

Source: research data.

As well as the health variable, the correlation between entrepreneurship and employment and income varied considerably. São José dos Campos, Araraquara, and São Carlos presented a negative correlation, -0.79; -0.45 and -0.36 respectively, while 4 municipalities (Bauru, Araçatuba, Franca and Registro) showed a positive correlation greater than 0.7. Unlike that found by Baptista, Escaria and Madruga (2008), the variable employment and income did not show a significant positive correlation in all the municipalities studied, but found negative correlations greater than -0.7.

To conclude the discussions, the historical series of the gross entrepreneurship rate calculated for the municipalities (Appendix A) and the historical series of the FIRJAN Municipal Development Index (Appendix A) were analyzed. Interestingly during this period, economic crises impacted the national economy such as the 2008-2009 period, and even considering this, there was a positive growth both in socioeconomic indicators and in the gross entrepreneurship rate.

The tables presented in Appendices A and B show in blue the three most positive (best) results of each year, and in red the three most negative (worst) among the municipalities that make up the sample.

When analyzing Appendix A, there is also a positive result in the period, being that there was an average increase of 171 % in the number of nascent companies per 100 inhabitants, increasing from an average rate of 4.7 companies in 2005 to 12.6 in 2013. It is noted that Ribeirão Preto and São José do Rio Preto, both from the northern region of the state, were municipalities that were at the top of the ranking throughout the period. At the bottom of the ranking, cities such as Araçatuba, São José dos Campos, and Registro were the most frequent.

Regarding the data in Appendix B, Araraquara, São José do Rio Preto, and Jundiaí stand out as the best indexes over the period and, occupying the worst positions, the cities with the lowest IFDM in the same period over the years were Araçatuba, São José dos Campos, and Registro.

Finally, relating the two tables, it is noted that São José do Rio Preto occupies the best positions both in the entrepreneurship rate and in the IFDM, which also occurs in the cities with the lowest indexes, thus Araçatuba, São José dos Campos, and Registro occupy the lowest positions in both indexes: entrepreneurship and socioeconomic development.

Discussion of the results

The results showed a positive correlation between entrepreneurship and socioeconomic development, and also between entrepreneurship and education in all the cities surveyed, corroborating Garcia (2004), and Audretsch, Belitski and Desai, 2015. The positive correlation between entrepreneurship and health was found in most of the municipalities, while the correlation between entrepreneurship and income was the variable that showed the lowest correlation with entrepreneurship.

This is an unprecedented study in the state of São Paulo, using the Gross Entrepreneurship Rate (GER) and the individual analysis of each municipality. The results corroborate the results found in other studies carried out in Brazil (CANEVER ET AL, 2010; FELIX; FARAH JÚNIOR, 2013) confirming the existence of a correlation between entrepreneurship and socioeconomic development, in addition to contributing to fill the lack of studies on entrepreneurship in developing countries (BRUTON; AHLSTROM; OBLOJ, 2008), specifically in Brazil. On the other hand, the employment and income variable showed quite different results, and further studies are needed to determine the correlation at optimal levels for entrepreneurship.

Final considerations, limitations and future work

This work aimed to verify the correlation between entrepreneurship and socioeconomic development of the main cities in the state of São Paulo by comparing the rate of gross entrepreneurship (number of new businesses created in a period *n* for each 1000 inhabitants) with the Firjan Municipal Development Index (IFDM) from 2005 to 2013.

The results show that entrepreneurship is an important factor for social and economic development, thus, it is concluded that more attention should be directed to its stimulus, being a way to contribute to local development and quality of life. In this way, this study contributes not only to advance scarce knowledge in Brazil regarding entrepreneurship and development, but also to indicate paths for public policies that consider these two themes together.

New studies can be carried out to explore how these correlations between entrepreneurship and local development occur in order to optimize the allocation of resources to maximize results. Other studies can be carried out covering a larger number of municipalities in the state of São Paulo, also considering their size and longevity. Comparative studies between the different Brazilian states are also important to verify whether the correlations found have the same behavior across the country.

The main limitation of the work is the fact that it constitutes a linear correlation research, so the results do not mean causality. For this reason, new studies that identify the causal relationship between the variables would be relevant, as also pointed out by Felix and Farah Junior (2013).

Finally, the study of the influence of different cultures on entrepreneurial activity and the role of entrepreneurial culture in regional development is suggested as a perspective for future work (FRITSCH; WYRWICH, 2017).

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APPENDIX A: Historical series of Gross Entrepreneurship Rate – GER of the main cities of the Administrative Regions and Urban Conglomerates of São Paulo State (2005-2013)

Position	2005		2006		2007		2008		2009		2010		2011		2012		2013	
1º	SJ do Rio Preto	6,59	SJ do Rio Preto	6,19	SJ do Rio Preto	6,30	SJ do Rio Preto	6,86	SJ do Rio Preto	8,12	Ribeirão Preto	11,82	São Paulo	14,79	Ribeirão Preto	15,05	Ribeirão Preto	15,69
2º	Araçatuba	6,02	Ribeirão Preto	5,35	Ribeirão Preto	5,67	Ribeirão Preto	6,66	Bauru	7,24	São Paulo	10,46	Ribeirão Preto	14,18	São Paulo	13,95	Sorocaba	15,24
3º	Ribeirão Preto	5,54	São Carlos	5,01	São Paulo	5,32	São Paulo	6,12	Sorocaba	7,24	SJ do Rio Preto	10,36	Campinas	11,97	SJ do Rio Preto	13,26	São Paulo	14,21
4º	Franca	5,50	Araçatuba	4,94	São Carlos	5,29	Araçatuba	5,58	Ribeirão Preto	7,22	Campinas	10,26	Sorocaba	11,81	Sorocaba	12,95	SJ do Rio Preto	14,16
5º	Araraquara	4,81	São Paulo	4,87	Araçatuba	5,17	Sorocaba	5,56	Marília	7,10	Franca	9,85	Franca	11,62	Araçatuba	12,66	Araçatuba	13,87
6º	Santos	4,80	Sorocaba	4,54	Sorocaba	4,92	Marília	5,49	São Paulo	7,09	Sorocaba	9,83	SJ do Rio Preto	11,59	São Carlos	12,57	Campinas	13,48
7º	Bauru	4,76	Franca	4,50	Bauru	4,88	Franca	5,41	Araçatuba	7,07	Araçatuba	9,34	Araçatuba	11,55	Bauru	12,41	São Carlos	13,41
8º	São Carlos	4,70	Santos	4,39	Franca	4,85	São Carlos	5,33	Campinas	6,98	Marília	9,12	São Carlos	11,35	Franca	12,36	Bauru	13,40
9º	Sorocaba	4,67	Campinas	4,24	Marília	4,80	Campinas	5,18	Pres. Prudente	6,75	São Carlos	8,84	Bauru	10,91	Campinas	12,24	Franca	12,89
10º	São Paulo	4,66	Pres. Prudente	4,23	Santos	4,71	Bauru	5,11	São Carlos	6,63	Bauru	8,83	Marília	10,27	Piracicaba	11,34	Marília	12,36
11º	Campinas	4,48	Bauru	4,07	Campinas	4,56	Santos	5,04	Franca	6,50	Araraquara	8,79	Pres. Prudente	10,11	Marília	11,14	Pres. Prudente	12,31
12º	Piracicaba	4,30	Jundiaí	3,98	Pres. Prudente	4,47	Pres. Prudente	4,80	Registro	6,49	Registro	8,53	Araraquara	10,04	Pres. Prudente	10,74	Araraquara	11,97
13º	Marília	4,30	Piracicaba	3,95	Barretos	4,36	Araraquara	4,75	Santos	6,20	Piracicaba	8,25	Piracicaba	9,71	Jundiaí	10,28	Jundiaí	11,15
14º	Pres. Prudente	4,22	Araraquara	3,89	Araraquara	4,15	Jundiaí	4,64	Araraquara	6,19	Santos	8,20	Santos	9,36	Araraquara	10,25	Registro	10,96
15º	Jundiaí	4,21	Barretos	3,86	Jundiaí	4,14	Piracicaba	4,52	SJ dos Campos	5,93	Pres. Prudente	8,17	Jundiaí	9,26	Registro	9,97	Santos	10,95
16º	Barretos	3,85	Marília	3,76	Piracicaba	3,74	Barretos	4,38	Barretos	5,92	Jundiaí	7,84	Registro	8,56	Santos	9,93	Piracicaba	10,86
17º	SJ dos Campos	3,67	SJ dos Campos	3,34	SJ dos Campos	3,67	SJ dos Campos	4,25	Piracicaba	5,66	SJ dos Campos	7,82	SJ dos Campos	8,54	SJ dos Campos	9,67	SJ dos Campos	10,10
18º	Registro	2,72	Registro	2,87	Registro	3,29	Registro	3,65	Jundiaí	4,96	Barretos	7,27	Barretos	7,90	Barretos	8,39	Barretos	9,68

Source: research data. JUCESP (2016); SEADE (2016)

APPENDIX B: Historical series of FIRJAN index of Municipal Development of the main cities of the Administrative Regions and Urban Conglomerates of São Paulo State (2005-2013)

Position	2005		2006		2007		2008		2009		2010		2011		2012		2013	
1º	Araraquara	0,875	Araraquara	0,893	Araraquara	0,892	Araraquara	0,881	Araraquara	0,892	SJ do Rio Preto	0,912	SJ do Rio Preto	0,916	SJ do Rio Preto	0,914	SJ do Rio Preto	0,905
2º	Bauru	0,848	SJ do Rio Preto	0,870	Jundiaí	0,876	SJ do Rio Preto	0,879	SJ do Rio Preto	0,887	Marília	0,884	Santos	0,902	Araraquara	0,898	Jundiaí	0,889
3º	SJ do Rio Preto	0,847	Ribeirão Preto	0,856	SJ do Rio Preto	0,830	Jundiaí	0,861	Ribeirão Preto	0,886	Ribeirão Preto	0,883	Jundiaí	0,895	Jundiaí	0,893	Santos	0,885
4º	Jundiaí	0,840	Bauru	0,843	Marília	0,830	Marília	0,857	Marília	0,859	Bauru	0,878	Bauru	0,878	Ribeirão Preto	0,880	Araraquara	0,884
5º	Ribeirão Preto	0,833	Jundiaí	0,835	Ribeirão Preto	0,829	Ribeirão Preto	0,852	Bauru	0,856	Araraquara	0,876	Marília	0,876	Franca	0,879	Franca	0,875
6º	São Carlos	0,824	Barretos	0,832	Bauru	0,824	Santos	0,842	São Paulo	0,850	Jundiaí	0,875	Araraquara	0,875	Bauru	0,878	Marília	0,873
7º	Barretos	0,820	Marília	0,830	Campinas	0,816	Bauru	0,842	São Carlos	0,849	Campinas	0,870	Campinas	0,870	Marília	0,877	Ribeirão Preto	0,872
8º	Campinas	0,815	São Carlos	0,827	Sorocaba	0,802	São Paulo	0,838	Piracicaba	0,848	Santos	0,868	Ribeirão Preto	0,868	Santos	0,864	São Carlos	0,870
9º	Marília	0,814	Campinas	0,826	Barretos	0,799	Sorocaba	0,837	Santos	0,844	Franca	0,863	Sorocaba	0,865	Campinas	0,862	Barretos	0,864
10º	Sorocaba	0,808	Sorocaba	0,820	São Carlos	0,799	Campinas	0,836	Jundiaí	0,844	Sorocaba	0,856	São Paulo	0,864	Barretos	0,858	Bauru	0,858
11º	Santos	0,789	São Paulo	0,810	Santos	0,794	Piracicaba	0,834	Campinas	0,843	Piracicaba	0,852	Piracicaba	0,861	São Carlos	0,856	Pres. Prudente	0,855
12º	Pres. Prudente	0,787	Araçatuba	0,810	São Paulo	0,791	São Carlos	0,829	Barretos	0,837	São Paulo	0,851	Barretos	0,853	Piracicaba	0,855	Piracicaba	0,855
13º	SJ dos Campos	0,785	SJ dos Campos	0,807	Franca	0,791	Barretos	0,815	Araçatuba	0,828	São Carlos	0,850	Franca	0,846	São Paulo	0,852	Sorocaba	0,852
14º	Araçatuba	0,782	Franca	0,800	SJ dos Campos	0,786	Pres. Prudente	0,813	Franca	0,820	Barretos	0,844	Pres. Prudente	0,837	Sorocaba	0,850	São Paulo	0,849
15º	São Paulo	0,782	Pres. Prudente	0,799	Piracicaba	0,771	Franca	0,807	Pres. Prudente	0,814	Araçatuba	0,838	São Carlos	0,832	Pres. Prudente	0,828	Campinas	0,842
16º	Franca	0,772	Piracicaba	0,797	Pres. Prudente	0,767	Araçatuba	0,804	Sorocaba	0,812	Pres. Prudente	0,828	Araçatuba	0,822	Araçatuba	0,825	Araçatuba	0,830
17º	Piracicaba	0,757	Santos	0,794	Araçatuba	0,766	SJ dos Campos	0,802	SJ dos Campos	0,809	Registro	0,809	Registro	0,815	Registro	0,822	SJ dos Campos	0,806
18º	Registro	0,692	Registro	0,708	Registro	0,683	Registro	0,751	Registro	0,786	SJ dos Campos	0,797	SJ dos Campos	0,797	SJ dos Campos	0,787	Registro	0,796

Source: FIRJAN (2016)