Enterprise creation and economic recovery: the case of Rio Grande do Sul

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ABSTRACT

This article analyses the dynamic of new enterprise creation in Rio Grande do Sul, measured by the business start-up rate in relation to the number of pre-existing firms and also relative to the labour force. The analysis shows that business start-up rates are not homogeneous regionally or across sectors. It also identifies a relation between regional economic growth and the business start-up rate, which depends on the rate of renewal of the enterprise base and fundamentally on the entrepreneurial drive of local workers, which affects the degree to which enterprise creation rates converge between regions. The results also show that an increase in the business start-up rate improves regional economic performance after a period of time.

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I

Introduction

For over 20 years, the business start-up rate has been considered an important factor when formulating regional development policies. The birth of a new business is a valuable expression of entrepreneurship, which is a basic element in economic growth (Johnson, 2004). Spatial variations in the business start-up rate within and between countries pose recurrent challenges to policymakers. Studies published by the Global Entrepreneurship Monitor (GEM) constantly show variations between countries. For example, the 2002 GEM study covering 37 countries, found that total entrepreneurship, defined as a percentage of the labour force involved in the opening or initial steps of a new business, varied from 18.7% in Thailand to just 1.8% in Japan (Reynolds, Bygrave and Autio, 2004, p.4). The same study revealed large disparities between the different regions of the world, with the highest business start-up rates recorded in Latin America and in the countries of developing Asia.

Spatial variation within each country is also considerable: for example, Reynolds, Storey and Westhead (1994) found that the highest business start-up rate the regions of the United States was 4.1 times the lowest rate. Johnson (2004) calculated business start-up rates in the different regions of the United Kingdom from 1994 to 2001, reporting the highest rate in the London region and the lowest in Northern Ireland. Using the United Kingdom municipal database, Ashcroft, Plotnikova and Ritchie (2007) concluded that business start-up rates vary across time and space. According to these authors, the cyclical nature of the business start-up rate reflects the country's macroeconomic fluctuations. Start-up rates also tend to vary between municipalities year by year, and the variations seem to be pro-cyclical. In other words, when the national economy improves generally, municipalities with high business start-up rates tend to outshine the rest of the country in terms of economic performance.

It is therefore unsurprising that empirical studies showing variations in business start-up rates and their repercussions on regional economic performance are given such attention. Many studies also report relations between business start-up and job creation (Hart and Oulton, 2001), innovation (Audretsch, 1999), economic growth (Schmitz, 1989) and the reduction of unemployment (Thurik, 1999). Public-policy makers wishing to improve a region's economic performance should look for effective ways to boost business start-up rates.

Although there are many studies internationally that relate business start-up with spatial issues and regional development (Reynolds, Storey and Westhead, 1994; Johnson, 2004; Van Stel, Carree and Thurik, 2005; Ashcroft, Plotnikova and Ritchie, 2007), a deeper analysis of this topic is still needed in the case of Brazil. The studies by Campos and Iootty (2005); Barros and Pereira (2008), and Canever and others (2010) are recent exceptions. The first of these uses the database of the Brazilian Geography and Statistical Institute (IBGE) to analyse factors that explain the birth and expiry of firms in Brazil. Among other findings, the authors provide empirical evidence of the relation between sector growth and net enterprise creation. Barros and Pereira (2008) analysed the influence of entrepreneurship on gross domestic product (GDP) and unemployment in the municipalities of Minas Gerais and found that a stronger entrepreneurial spirit leads to a reduction in unemployment, but does not necessarily improve economic performance in terms of local GDP growth. In contrast, Canever and others (2010) studied issues that underlie the business start-up rate in Rio Grande do Sul (RS) and the consequences this has on municipal performance, reporting positive relations between entrepreneurship and per capita GDP in subsequent years. A common feature of those three studies is their use of a measure of entrepreneurship. Campos and Iootty (2005) use the difference in the absolute number of firms in consecutive years as a measure of the entrepreneurial spirit. Barros and Pereira (2008) measure the entrepreneurial spirit through the proportion of own-account workers, while Canever and others (2010) use the difference in the number of firms per capita relative to the adult population of a municipality in consecutive years, as an indicator of business activity. Although these measures may be related to business start-up, strictly speaking they are indicators of the proportion of entrepreneurs in the total population and the growth of the business structure, rather than the creation of new enterprises as such.

The present study reformulates the entrepreneurship indicator, providing a conceptual and operational definition of the business start-up rate obtained from data published by the Ministry of Work and Employment in the Annual Social Information Report (RAIS), for the municipalities of the State of Rio Grande do Sul.

Given the importance of new enterprise creation for regional development, and the lack of studies examining this

relation in Brazil, the present article aims to: (i) determine whether business start-up rates in Rio Grande do Sul are homogeneous; (ii) determine whether business start-up rates in regions considered less dynamic are different than state-wide rates; and (iii) show how the business start-up rate affects development of the regions.

In development terms, the State of Rio Grande do Sul is divided into two distinct regions (see figure 1). The northern part, which encompasses about 80% of the state's municipalities and 50% of its land area, is considered more developed and more dynamic; and its average per capita GDP in 2008 was roughly R$20,000. In contrast, the southern portion, located on the border with Uruguay, is less dynamic and had a per capita GDP of R$15,000 in that year. These data describe a dual

income-distribution dynamic in the state. Although many plausible reasons have been offered to explain this disparity, no study has analysed the business start-up rate and entrepreneurial spirit as potential causes. In this context, Rio Grande do Sul seems to be a special case for illustrating the relation between enterprise creation and economic growth — a topic that has been little explored in a developing-country context.

This article is divided into five sections, including this introduction. Section II considers the importance of the entrepreneurial spirit and new business creation for local development, and section III presents the data and describes the methodological procedures used. Section IV describes and analyses the results, and section V sets forth the conclusions.

FIGURE 1

Regions of Rio Grande do Sul
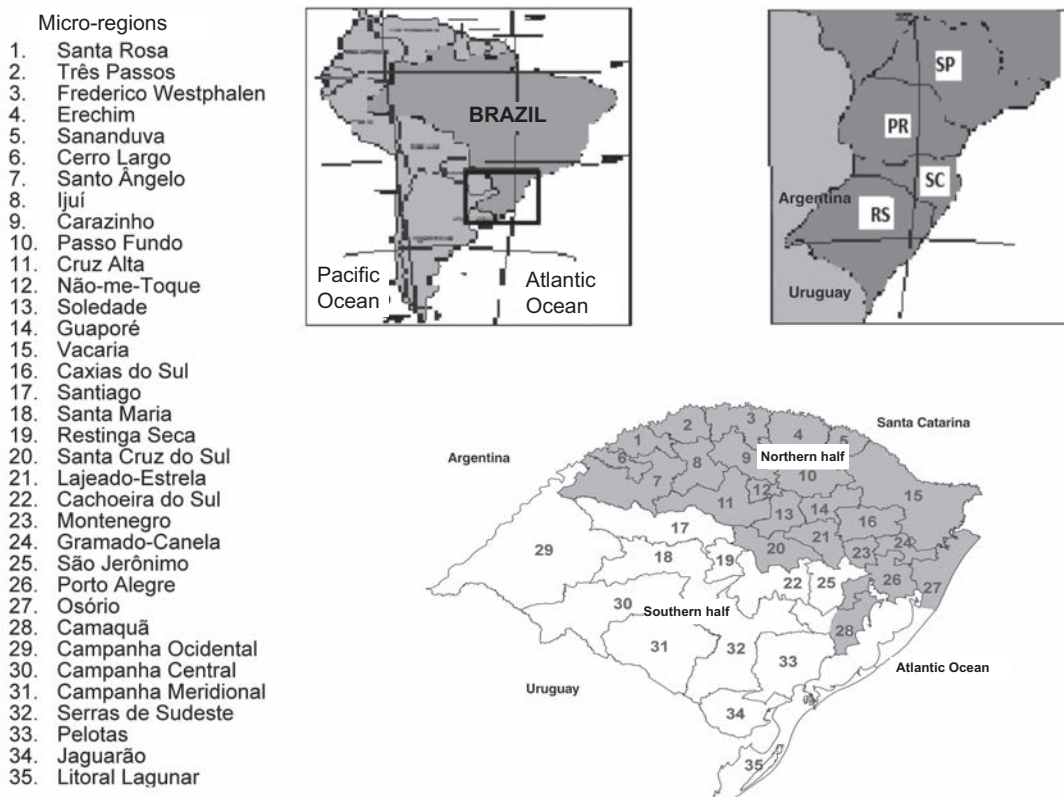
Source: prepared by the authors on the basis of http://pt.wikipedia.org/wiki/Rio Grande do Sul.

II

Development, entrepreneurial spirit
and the business start-up rate

There is currently great interest in the inter-relationships that exist between entrepreneurship and economic development, and between entrepreneurship and social-human development — both at the academic level and among corporate leaders in the private sector and public-policy makers. Nonetheless, owing to conceptual and methodological shortcomings, few studies have researched the relations between these variables (exceptions include Wennekers and Thurik, 1999; Van Stel, Carree and Thurik, 2005). The entrepreneurial spirit and development are complex phenomena that are hard to measure; and their concepts can take on various meanings depending on the theoretical currents that sustain them. This means that constructing theories and tests is also a complex and difficult task.[1]

The relation between the entrepreneurial spirit and development was discovered many years ago, when the Austrian economist Joseph A. Schumpeter (1883-1950) formulated the theory of circular flows and explained the factors that constrain the economic development process. Development, in the sense proposed by the author, stems from innovative creation promoted by entrepreneurs.

Following Schumpeter's pioneering work (see Schumpeter, 1982), economic growth models evolved on the basis of the neoclassical production function, in which the factor of production was the key variable for solving the economic-growth problem. The forerunner of this line of work was Solow (1956), which proposed an economic growth model containing capital and labour as factors of production. Despite the advances proposed by Solow (1956), the Romer critique (1986) directed the attention of researchers in this area towards what he considered a shortcoming of the Solow model, namely knowledge. The contribution made by Romer (1986) elicited a vast range of studies that highlighted the role of investment in human capital, education and research and development (R&D) within so-called "endogenous growth theory".[2]

Despite the theoretical and empirical evolution of the new endogenous growth models, a new set of studies has recently emerged, including Garther and Carter (2003) and Audretsch (2007), which suggest a new variable omitted from Solow's pioneering model: the Schumpeterian entrepreneur. For those authors, the entrepreneurial spirit, understood as the capacity of economic agents to generate new enterprises, should be included in economic growth models, thereby explicitly recognizing a new form of capital: entrepreneurial capital.

Unlike the typical notion of the entrepreneurial spirit as an action, process or vocational activity, this line of research sees it as a reserve of capital (Hofsteder and others, 2002). The proposal does not deny the progress made in Solow's model, but enhances it by subdividing his "capital" variable into physical capital, human capital, and entrepreneurial capital. At the same time, this makes it possible to reconcile two major currents of economic-growth research, by contending that entrepreneurial capital allows for convergence between the romantic and naive entrepreneur of the Schumpeterian model and the scientific and rigid R&D model proposed by Romer (1990) and Grossman and Helpman (1991).

The production function, composed of its main determining factors, can be expressed through a typical Cobb-Douglas function:

$$Y_i = \alpha \ K_i^{\beta} \ L_i^{\delta} \ R_i^{\phi} \ E_i^{\gamma} \ e_i^{\varepsilon}$$

where K represents physical capital, L is the labour force, R stands for knowledge capital, E represents entrepreneurial capital, and i identifies different regions.

Here, the physical-capital variable characterizes a region's capacity to invest in creating a reserve of physical capital. The variable L corresponds to the labour force needed for the production function; and R represents the set of ideas that result from the research process, which are available to any interested person. Lastly, the entrepreneurial capital variable E captures the effect of the entrepreneurial agent who is capable of perceiving opportunities arising from a change in demand or supply. The exponents represent the marginal productivities of the respective variables, which in this study are assumed to be decreasing.

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[1] For an analysis of the debate over the entrepreneurial-spirit concept, see Herbert and Link (1989); Thorton and Flynne (2003), and OECD (1998).
[2] On endogenous growth models, see Romer (1990); Grossman and Helpman (1991) and Aghion and Howitt (1998).

By highlighting entrepreneurial capital, this approach makes up for a common shortcoming in this type of study, by assigning entrepreneurship an explicit role in the economic growth process. In other words, *ceteris paribus*, the existence of agents who are relatively more inclined to assume the risks inherent to new businesses allows for better utilization of existing physical capital, labour and knowledge; and this leads to more efficient resource allocation and promotes economic growth.

Consequently, the birth of new firms (entrepreneurial capital) is formally related to economic growth through at least three different channels (Audretsch, 2007). The first is the role of entrepreneurial capital as a mechanism for disseminating the knowledge generated by R&D models. Although Romer (1990), Lucas (1988) and Grossman and Helpman (1991) stress the importance of knowledge spillovers as a key variable in endogenous growth models, they have little to say about the mechanism through which knowledge is disseminated throughout society. While it is true that an innovation system consists of R&D, it also seems that dissemination of the knowledge generated by investment in research requires entrepreneurial capital to form the bridge between invention and innovation. In other words, while in Schumpeter's 1912 model (Schumpeter, 1982) the innovating entrepreneur is responsible for breaking the circular flow of income, in the endogenous growth model it is entrepreneurial capital that is responsible for disseminating information.[3]

The second channel linking entrepreneurial capital to economic growth corresponds to the competition effect. The creation of a larger number of firms increases a region's entrepreneurial capital and, at the same time,

boosts competition. In microeconomic models (Varian, 1992), and also in the Porter (1991) model, knowledge is more widely disseminated in competitive market structures than in monopolies. This theory is supported by empirical evidence published in studies by Feldmann and Audretsch (1999) and Glaeser and others (1992), which found a positive relation between economic growth and an increase in competition, measured by the number of firms in a city.

The third and last channel is based on the classification effect. The presence of greater entrepreneurial capital affects economic growth not only through the larger number of firms, but also through a wider diversification of enterprises in a given region. The pioneering analysis of the economy of cities by Jacobs (1969) found that the complementarity of knowledge and information held by different firms within a geographic region generates a positive externality and increases the return on investments, innovative activity and economic growth.

In the Brazilian case, studies of the relation between development and the entrepreneurial spirit are mainly descriptive analyses of productive clusters or technological hubs existing in the different regions.[4] Although those studies outline the economic and social profile of various regions that have specific industrial productive clusters with local development potential, they do not analyse entrepreneurial capital *per se*, but the innovative actions needed for the region to develop. In the case of Rio Grande do Sul, the debate on the spatial dynamics of the income distribution allows for a more detailed analysis of the distribution of the business start-up rate (entrepreneurial capital) and its relation to economic growth.[5]

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[3] Under this approach, important research with great market potential in the biotechnology area will remain no more than a research report until a firm emerges that is willing to disseminate the new knowledge.

[4] See, for example, the studies by Haddad (1999); Castilhos (2002); Lastres, Cassiolato and Maciel (2003); Cassiolato and Szapiro (2000); Cassiolato, Lastres and Szapiro (2000), among others.
[5] See Porsse, Rosa and Porto (2008).

III

Data and methodological procedures

1. Data

To estimate enterprise creation rates, this study uses the number of local units (firms) according to the activity classification sections proposed in the RAIS, published by the Ministry of Work and Employment for each city (municipality) and micro-region of the state of Rio Grande do Sul. The data cover all of the state's 496 municipalities for the period 1995-2008. To be

able to use the database to calculate the new enterprise creation rate, new firms (parent companies) were first separated from already existing ones (subsidiaries). The birth (opening) of a new firm is identified by its presence for the first time in the RAIS database. Thus a firm that did not appear in the RAIS in year *t-1* but does appear in year *t* is considered to have been born in *t*, since that was the year of its first appearance in the database.

Only firms appearing in the database in consecutive years were counted, which means that firms that appeared in the database in a given year, but disappeared the following year only to reappear in the next year, were not considered. Enterprises that were born in a given year, disappeared for a longer period (*t+2*, for example) and reappeared in later periods were also filtered out. This procedure meant that the rates relating to the last year of the series (2008) were not estimated, because it was impossible to use the filter as described. This procedure was also adopted by Souza and others (2007) to purge the database for calculating business start-up rates, which otherwise would be biased. In fact, these firms are believed to remain active although they do not contribute data. Although the enterprise population was reduced by about 1% per year by the aforementioned exclusions, this does not compromise the validity of the results since the sample includes over 100,000 enterprises each year.

To facilitate the analysis, data were compiled from the 21 economic sectors defined by the RAIS in three traditional economic sectors, namely:

(i) Agriculture – includes firms operating in the crop-farming, livestock, forestry production, fishing and aquaculture sectors.

(ii) Industry – encompasses firms from the extractive industry, manufacturing industry and civil construction.

(iii) Commerce and services – covers electricity and gas companies; water, sewerage, waste management and pollution abatement activities; commerce, automobile and motorcycle repair; transport, storage and postal services; accommodation and food; information and communication; financial activities, insurance and related services; real-estate activities; professional, scientific and technical activities; administrative activities and complementary services; public administration, defence and social security; education, human health and social services; arts, culture, sport and recreation; other service activities; domestic services, international organizations and other institutions outside the country.

2. Methodological procedures

The business start-up rate can be measured in various ways. Considering economic sector i in region r, the business start-up rate in that sector can be defined as follows:

$$Fir = \frac{NEtir - NEtir - 1}{NEtir - 1}$$

where: NE = number of firms from sector i in region r; and t represents the year in question.

The denominator of the business start-up rate as defined above is the number of companies existing in the year prior to that being estimated. This procedure is particularly important for analysing the renewal of the enterprise base, since the resultant rate measures the proportion of enterprises that represents the new business fabric. In general, this business start-up indicator is expressed in relation to 100 pre-existing firms; and, according to Johnson (2004), this method is known as the "ecological approach". An alternative measure — defined as the enterprise creation rate in relation to the labour force, or the "labour-market" approach, proposed by Armington and Acs (2002) — uses the population (or labour force) as denominator. The business start-up rate in relation to the labour force is more appropriate for gauging the entrepreneurial spirit of the local population, in other words finding the proportion of inhabitants who are involved in creating a new business. This alternative specification for the business start-up rate in region r aggregated across all sectors, and denoted here as Fir^*, can be therefore be defined as:

$$\frac{\sum_{i=1}^{n} NEtir - \sum_{i=1}^{n} NEtir - 1}{\sum_{i=1}^{n} Pr}$$

where Pr is a measure of the population or labour force in region r. Obviously the calculation of the business start-up rate for a given sector only uses the labour force employed in that sector. This indicator is expressed per 1,000 employees in the region, such that an $Fir^* = 10$ means that 10 new firms were formed for every 1,000 workers in the region.

Lastly, the empirical test of the business start-up rate in relation to economic growth was estimated from the following model:

$$\Delta PIB = c + PIB_{i,t} + PIBPC_{i,t} + TM_{i,t} + TX_{i,t} + \varepsilon_{i,t}$$

where i identifies the municipality and ΔPIB represents the variation in municipal GDP. The fact that municipal GDP data were not available for all years of the series made it impossible to use panel data; so it was decided to test the aforementioned model with cross-section data relating to certain years. The model therefore indicates whether the business start-up rate $TX_{i,t}$ between 2002 and 2005 has repercussions on average municipal GDP growth between 2005 and 2007. The control variables $PIB_{i,t}$ and $PIBPC_{i,t}$ represent GDP and per capita GDP in 2001; and $TM_{i,t}$ is the average firm size in each municipality from 2002 to 2005.

IV

Results and discussion

Table 1 shows the two business start-up rates for each of the micro-regions of Rio Grande do Sul. The two measures produce different regional rankings and are poorly correlated (r = 0.08). This result does not agree with those reported for the United States (Armington and Acs, 2002) or the United Kingdom (Johnson, 2004). Surprisingly, both measures show a high business start-up rates in certain micro-regions that are not among the most developed in the state, including Soledade, Frederico Westphalen, Osorio and Cerro Largo. In contrast, other micro-regions, such as Caxias do Sul, Porto Alegre and Santa Cruz do Sul, display low business start-up rates despite being among the most developed in the state. Clearly, the two measures have different policy repercussions. For example, if the goal of the Caxias do Sul micro-region in 2007 had been to attain the state-wide business start-up rate, 225 new firms would need to have been created according to the ecological approach *(Fir)*, but 505 according to the alternative labour-market *(Fir*)* measure.

TABLE 1

Rio Grande do Sul: business start-up rates, alternative specifications, 1996-2007

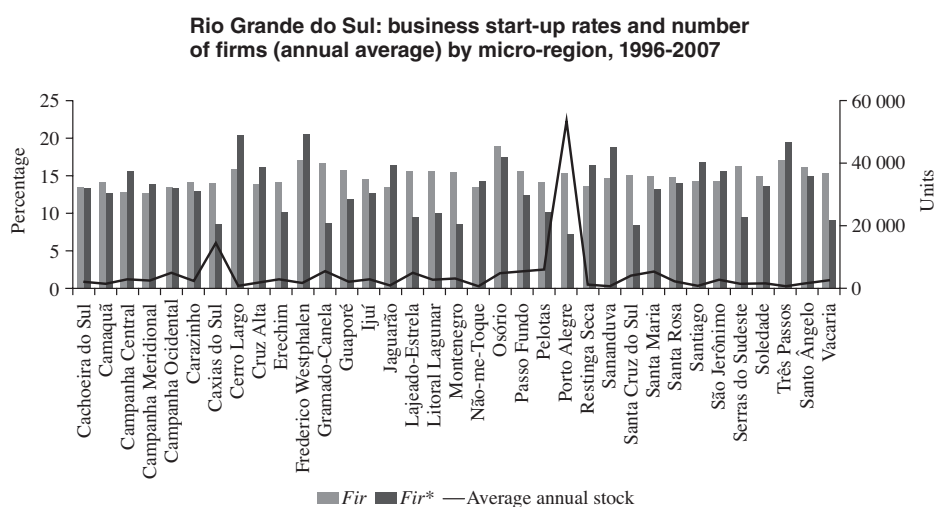| Micro-region	*Fir* (percentages)	*Fir** (percentages)	Average No. of firms (units)	Per capita GDP 2005 (R$ thousand)
Cachoeira do Sul	13.4	13.4	2 159.8	7.9
Camaqua	14.3	12.8	1 441.7	8.8
Campanha Central	12.8	15.6	3 134.2	6.7
Campanha Meridional	12.8	13.9	2 710.7	8.5
Campanha Ocidental	13.5	13.4	5 280.0	9.1
Carazinho	14.2	13.0	2 560.1	9.4
Caxias do Sul	14.1	8.7	15 003.0	19.5
Cerro Largo	16.0	20.5	913.0	8.5
Cruz Alta	14.0	16.2	2 436.5	9.9
Erechim	14.3	10.3	3 222.6	11.3
Frederico Westphalen	17.1	20.7	1 992.8	7.4
Gramado-Canela	16.7	8.7	5 379.2	11.3
Guapore	15.9	12.0	2 214.4	16.5
Ijui	14.6	12.8	2 954.2	11.3
Jaguarao	13.7	16.5	947.7	7.0
Lajeado-Estrela	15.7	9.6	5 234.5	14.4
Litoral Lagunar	15.6	10.1	2 956.5	12.0
Montenegro	15.6	8.6	2 951.2	14.3
Nao-me-Toque	13.5	14.4	882.7	13.4
Osorio	19.0	17.5	5 112.7	8.1
Passo Fundo	15.6	12.5	5 584.4	13.4
Pelotas	14.2	10.4	6 083.0	7.5
Porto Alegre	15.4	7.2	53 237.9	16.1
Restinga Seca	13.6	16.4	896.6	8.5
Sananduva	14.8	18.8	757.2	8.4
Santa Cruz do Sul	15.1	8.4	4 143.1	16.7
Santa Maria	15.1	13.4	5 517.2	8.5
Santa Rosa	14.8	14.0	2 438.2	10.2
Santiago	14.3	16.9	1 018.0	8.0
Santo Angelo	14.4	15.7	2 874.1	7.8
Sao Jeronimo	16.3	9.7	1 429.2	45.2
Serras de Sudeste	14.9	13.6	1 441.6	8.3
Soledade	17.2	19.5	791.5	6.6
Tres Passos	16.2	15.1	1 935.6	11.0
Vacaria	15.4	9.1	2 719.1	9.7
Average	15.1	9.5	160 995.7	13.3

Source: prepared by the authors on the basis of the Annual Social Information Report (RAIS).

Graphically, it can be seen that the state is concentrated in Porto Alegre and Caxias do Sul. Nonetheless, this concentration is tending to decline, in particular because these micro-regions have relatively lower business start-up rates. Moreover, rapid growth in previously undynamic regions means these are starting to gain importance in the state, thereby consolidating a convergence process in the Rio Grande do Sul business structure.

The data show that business start-up rates vary considerably between sectors. Table 2 presents the *Fir* and *Fir** rates for the 16 sectors analysed. Here again, the figures vary according to the measures used, but there is a closer correlation between the two indices at the sector level than at the micro-regional level (r = 0.45). Both indices report the lowest business start-up rates in the public administration, defence and social security sector, followed by the electricity and gas sector. The highest rates are found in the sectors of commerce and vehicle repair, international organizations and other institutions outside the country, and food and accommodation.

FIGURE 2

Rio Grande do Sul: business start-up rates and number of firms (annual average) by micro-region, 1996-2007

Legend: ▇ *Fir*   ▇ *Fir**   —Average annual stock

Source: prepared by the authors on the basis of the Annual Social Information Report (RAIS).

TABLE 2

Rio Grande do Sul: business start-up rates by sector, 1996-2007
(Percentages)

Sectors	Fir	Fir*
Crop farming livestock breeding forestry production, fishing and aquaculture	11.1	16.0
Manufacturing industry	13.3	4.0
Electricity and gas	8.0	2.3
Water, sewerage, waste management and pollution abatement activities	12.0	5.4
Commerce; automobile and motorcycle repair services	47.0	25.3
Transport, storage and postal services	14.2	18.2
Food and accommodation	18.3	18.5
Information and communication	13.9	8.6
Financial activities, insurance and related services	10.2	5.2
Professional, scientific and technical activities	12.4	10.7
Administrative activities and confirmatory services	21.4	5.8
Public administration, defence and social security	4.3	0.1
Education	10.0	17.3
Human health and social services	18.6	2.7
Arts, culture, sport and recreation	9.9	9.4
International organizations and other institutions outside the country	18.0	42.6
Total	*15.1*	*9.5*

Source: prepared by the authors on the basis of the Annual Social Information Report (RAIS).
Note: Extractive industries, civil construction, real estate activities, other service activities and domestic services are not included as separate categories because they only appear in the RAIS from 2006 onwards.

As noted above, business start-up rates are not homogeneous across micro-regions or between sectors; and they are potentially higher (lower) in areas with a larger (smaller) proportion of sectors with high business start-up rates, respectively. The regional variation in the location of sectors with different business start-up rates might reflect differences in regional competitive advantages; but, as noted by Johnson (2005), alternative explanations are possible, such as path dependency, the availability of opportunities and how opportunities are perceived, and the supply of potential entrepreneurs.

Comparing business start-up rates in regions considered less dynamic with those for the state as a whole reveals considerable heterogeneity (see table 3). Nonetheless, the relation between economic dynamism and the business start-up rate can be discerned. For example, in the case of micro-regions located in what is conventionally referred to as the "southern half" of the state, the business start-up rate in relation to total enterprises (*Fir*) is just 94% of that recorded for the state as a whole. On the other hand, the business start-up rate in relation to the labour force (*Fir**) is 32% above the state average, which suggests that workers in the southern half of the state are more entrepreneurially minded than their peers in the northern half. Consequently, while there is greater renewal of the entrepreneurial base in the northern half of the state, there is also a lower index of enterprise creation per worker; with exactly the opposite situation prevailing in the southern half.

TABLE 3

Rio Grande do Sul: sector and total business start-up rates in each micro-region, in relation to the state average, 1996-2008
(Percentages)

Part of the state	Micro-regions	*Fir*				*Fir**			
		Agriculture	Industry	Commerce	Total	Agriculture	Industry	Commerce	Total
Northern half	Camaquã	1.03	0.92	0.99	0.95	1.04	1.55	1.27	1.34
	Carazinho	0.62	1.00	1.04	0.94	0.73	1.57	1.34	1.37
	Caxias do Sul	1.69	0.83	0.92	0.93	1.48	0.94	1.03	0.91
	Cerro Largo	1.12	0.91	1.07	1.06	2.35	3.15	1.88	2.15
	Cruz Alta	0.73	0.90	1.04	0.93	1.22	2.32	1.49	1.71
	Erechim	1.06	0.95	0.94	0.95	1.72	1.11	1.09	1.08
	Frederico Westphalen	1.16	1.22	1.10	1.13	2.28	4.04	1.87	2.17
	Gramado-Canela	1.56	1.22	1.06	1.11	2.41	0.93	1.37	0.92
	Guapore	1.59	0.98	1.05	1.05	1.60	1.40	1.50	1.26
	Ijui	0.80	0.87	1.01	0.97	1.04	1.23	1.35	1.34
	Lajeado-Estrela	1.23	1.01	1.03	1.04	0.92	0.69	1.46	1.00
	Montenegro	1.45	1.00	1.01	1.03	1.49	0.70	1.29	0.91
	Nao-me-Toque	0.67	0.81	1.02	0.89	1.20	1.08	1.63	1.51
	Osorio	1.12	1.32	1.24	1.26	1.25	2.07	1.73	1.84
	Passo Fundo	0.93	0.99	1.04	1.03	1.38	1.13	1.34	1.31
	Porto Alegre	1.18	1.08	0.98	1.02	1.19	0.92	0.72	0.75
	Sananduva	0.93	0.95	1.01	0.98	2.16	2.88	1.73	1.98
	Santa Cruz do Sul	1.00	0.93	0.99	1.00	0.86	0.54	1.19	0.89
	Santa Rosa	0.94	0.99	0.98	0.98	1.54	1.73	1.38	1.47
	Santo Angelo	0.90	1.02	1.00	0.95	2.00	1.99	1.37	1.65
	Soledade	0.99	1.31	1.16	1.14	1.49	4.26	1.74	2.05
	Tres Passos	1.05	1.05	1.07	1.07	2.01	1.51	1.54	1.58
	Vacaria	1.34	0.88	1.03	1.02	0.28	1.63	1.51	0.96
	Total North	**1.08**	**1.02**	**1.00**	**1.02**	**0.93**	**0.99**	**0.96**	**0.94**
Southern half	Santiago	0.85	0.95	1.09	0.95	1.45	1.61	1.54	1.77
	Santa Maria	0.94	0.86	1.02	1.00	2.12	1.53	1.19	1.40
	Restinga Seca	0.79	0.76	1.01	0.90	2.49	1.78	1.56	1.72
	Cachoeira do Sul	0.85	0.78	0.98	0.89	1.41	1.50	1.26	1.40
	Sao Jeronimo	1.25	1.28	1.05	1.08	0.69	0.81	1.15	1.02
	Campanha Central	0.77	0.84	0.95	0.85	1.06	1.93	1.43	1.64
	Campanha Meridional	0.91	0.89	0.92	0.85	1.27	1.52	1.17	1.46
	Campanha Ocidental	0.93	0.90	0.96	0.89	1.01	1.32	1.21	1.41
	Serras de Sudeste	1.18	0.99	1.02	0.98	1.11	0.85	1.43	1.43
	Pelotas	0.97	0.80	0.95	0.94	1.06	0.88	1.07	1.09
	Jaguarao	0.99	1.05	0.97	0.90	0.98	4.31	1.51	1.73
	Litoral Lagunar	1.02	0.99	1.03	1.03	0.52	0.72	1.07	1.06
	Total South	**0.93**	**0.88**	**0.99**	**0.94**	**1.10**	**1.13**	**1.20**	**1.32**
General total		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*

Source: prepared by the authors on the basis of the Annual Social Information Report (RAIS).

Figure 3 shows business start-up rates for the northern and southern halves of the State of Rio Grande do Sul for the period 1996-2007. The paths of the *Fir* and *Fir** are similar in the two geographic units, trending slightly downwards over the period. Although residents in the southern half of the state are on average less entrepreneurial than workers across the state as a whole, table 3 shows that this disparity as diminishing through time, such that in 2007 the *Fir* rates are practically equal in the two regions. In the case of the *Fir** rate, there is some stability in the southern half of the state, while the north shows a small but steady reduction. These results suggest that the lower level of economic development in the southern half of the state is not related to the recent entrepreneurial impulse among local workers, but instead reflects a poorly developed business base. This suggests that the rate of enterprise creation relative to existing firms in the southern half of the state needs to be accelerated, to attain the development level of the rest of the state. Nonetheless, this is merely one hypothesis that warrants deeper analysis, because the effect could also be in the opposite direction. In other words, a high level of business renewal in a given region could indicate that the region does not yet have consolidated industries and sectors, and its competitive advantages are still poorly defined, resulting in slower economic growth.

The effect of enterprise creation on the growth of economic activity has been one of the main justifications for projects investigating the entrepreneurial spirit. Table 4 shows while the assumed effect does in fact exist, it is neither simple nor constant. As last two columns of table 4 show, the business start-up rate is initially negatively related to municipal economic growth (measured by GDP growth between 2005 and 2007). But, this relation is not significant, which means that high business start-up rates are not effective in promoting development in the short run; and only after a certain time will entrant enterprises be able to affect regional economic performance through the satisfactory introduction of new solutions, methods, processes and products. The negative relation may also point to lower productivity in the regional economy in the short run, owing to poor allocation of resources in new and, as yet, inefficient firms that are highly likely to close down.

On the other hand, the results also show that the effect becomes positive and significant as years pass, with an increase in the business start-up rate in a given year (n for example) being positively associated with GDP growth in n+1. The maximum effect is felt one year after the increase in the business start-up rate — *Fir** — fading thereafter. The peak occurs later in the case of the *Fir* rate, which remains positive and significant until the fourth and fifth years after the increase in the start-up rate.

FIGURE 3

Rio Grande do Sul: business start-up rates in the northern and southern halves of the state, 1996-2007
(Percentages)
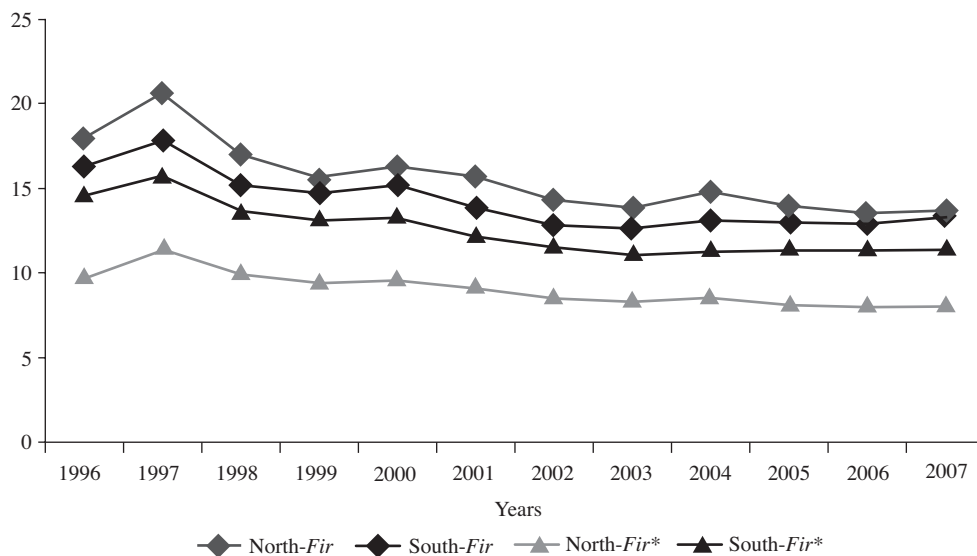
◆ North-*Fir*   ◆ South-*Fir*   ▲ North-*Fir**   ▲ South-*Fir**

Source: prepared by the authors on the basis of the Annual Social Information Report (RAIS).).

TABLE 4

**Rio Grande do Sul: effect of enterprise creation
on average municipal GDP growth, 2005-2007**
(Regression coefficients obtained from equation 4)

Variables	2002		2003		2004		2005	
	Fir	*Fir**	*Fir*	*Fir**	*Fir*	*Fir**	*Fir*	*Fir**
Municipal GDP 2001	-.419***	-.416***	-.423***	-.427***	-.430***	-.415***	-.422***	-.422***
	(-9.00)	(-9.01)	(-9.06)	(-9.31)	(-9.39)	(-9.09)	(-9.25)	(-9.26)
Per capita GDP 2001	.240***	.236***	.235***	.240***	.242***	.242***	.250***	.250***
	(5.21)	(5.14)	(5.07)	(5.20)	(5.24)	(5.29)	(5.41)	(5.43)
Average size	-.177***	-.110**	-.147***	-.084*	-.182***	-.097**	-.220***	-.228***
	(-4.23)	(-2.43)	(-3.52)	(.-1.84)	(-4.33)	(-2.03)	(-5.12)	(-4.70)
Start-up rate	.090**	.127**	.078*	.131**	.046	.155***	-.006	-.013
	(2.13)	(2.76)	(1.85)	(2.85)	(1.11)	(3.24)	(-.13)	(-.27)
No. of observations	494	494	494	494	494	494	494	494
Adjusted R²	.18	.18	.17	.18	.18	.19	.19	.19
F-test	28.62	29.57	26.99	28.42	28.35	31.19	31.06	31.07

Source: prepared by the authors on the basis of the Brazilian Geography and Statistical Institute (IBGE).
Note 1 – Beta coefficients, t-statistics in parentheses; *<.10 **<.05 ***<.001.

The effect of the business start-up rate on economic performance may therefore not be constant through time. Audretsch and Fritsch (2002) found similar results to those of this study, while also evoking the market-reaction stages proposed by Carree and Thurik (2006), who recognize that profits decline in the years directly following the entry of new firms. This is explained by the high rate at which the new firms disappear and pre-existing firms are replaced. After the first year of operations, the economy becomes more competitive thanks to improvements in production processes and products, and this enhances economic performance. In this period, the surviving firms start to make a real contribution to economic and social growth.

V

Final thoughts

This article has analysed the dynamic of new enterprise creation in Rio Grande do Sul, measured as the business start-up rate relative to the number of pre-existing firms and in relation to the labour force in each economic sector. The breakdown of the new business start-up rate as presented here could help to identify the source of the differences between a specific region and the rest of the state. For example, analyses for the southern half of the state showed that while there are differences in terms of development level, these are linked to a backlog in capacity to renew the entrepreneurial base compared to the situation in state as a whole. Moreover, the business start-up rate per 1,000 persons employed in the southern half of Rio Grande do Sul is higher than the average for the state as a whole, thereby potentially leading to convergence between the regions. Clearly, a

direct consequence of this result is that the analysis of municipal income growth, particularly with respect to the convergence process, will be more robust if it takes account of the business start-up phenomenon between the different regions of the state.

While business start-up rates are not homogeneous regionally, they also vary at the sector level. This suggests that regional differences may not depend exclusively on differences between the regions in enterprise creation within a given sector, but on differences in the sector structure between regions. In other words, a region's sector structure could be more or less favourable for starting up new businesses. Nonetheless, as this study did not make a breakdown of the effect of the sector structure on the business start-up rate, it is impossible to claim that differences between one region and another depend

more on the business start-up rate in a given sector, or on differences in the sector structure between regions. Clearly, this is a topic for future research.

Although much remains to be analysed in terms of the importance of the entrepreneurial spirit and particularly new business creation for regional progress, this study provides an initial framework, given the scarcity of studies on the subject in Brazil. Deeper analysis in this area would clearly be very useful for understanding regional differences and for policy making.

In terms of the latter, the fact that the business start-up rate is related to wealth creation (as shown in table 4) shows that policies to improve the entrepreneurial drive and the quality of the entrepreneurial spirit could have significant effects on regional development. Although this relation needs to be controlled through other variables in future studies, to rule out spurious correlations, the authors believe this study is the first to empirically demonstrate the relation between the business start-up rate and performance variables such as GDP in Brazil.

Although shortcomings in the data and in the level of aggregation of the sectors need to be acknowledged, this study will benefit from future research to better understand regional differences in specific sectors. It will also be necessary to analyse regional differences in the quality of new business start-ups, mainly in terms of enterprise survival and growth.

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