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## Determinants of territorial differences in entrepreneurial rates. An empirical analysis of Italian local systems

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# **Determinants of territorial differences in entrepreneurial rates. An empirical analysis of Italian local systems**

## **Abstract**

Italy has one of the lowest rates of entrepreneurial activity among innovation driven countries. Moreover, Italy is characterized by large territorial differences in the entrepreneurial rates. The main aims of this paper are to provide a better understanding of the factors affecting territorial differences in entrepreneurial rates and to explain their persistence over time. Specifically, the paper compares the relative importance of socio-demographics factors, such as activity rates and social capital, and economic factors, such as the structure and organization of local production systems. The persistence of territorial differences may depend on the persistence of differences in explanatory variables or on the path dependent effect. For the empirical analysis, we consider the creation of new firms in Italy from 2001 to 2009 using the Movimprese database provided by the Chambers of Commerce. The database provides information on new firm formation at territorial level (103 provinces) and disaggregated by sector of activity. Using the adult population as normalizing variable, the entrepreneurial rate is defined as the total number of new firms in a year on the adult population at the beginning of the year. We consider entrepreneurial rates referring to the overall sectors and for the manufacturing industry.

The first result is that the territorial differences of entrepreneurial rates shows a strong persistence over time: provinces with high entry-rates in the past are most likely to have high level of start-up activity in the future. This is true most of all for the new firms in manufacturing sectors where the factors linked to the social and economic context are important are stable over time. Moreover, socio-demographic factors show a higher relevance in explaining territorial differences in entrepreneurial rates than economic factors. This is valid for the total entrepreneurial rate as well as for explaining new firm formation in manufacturing sectors.

Entrepreneurship; entrepreneurial rates; path dependence; local production systems

## **1. Introduction**

New firm creation is one of the most important drivers of regional growth and productivity. Fostering the emergence of new ventures is central to economic adaptation and change. A better understanding of the factors affecting the differences in the dynamics of firm creation at local level is important from a scientific, practical and political point of view (Reynolds, 2010).

At policy level, recent documents by the European Commission (2010) and OECD (2010) have emphasized the importance of entrepreneurship to promote the development of member countries. National and local governments have increasingly paid attention to developing a “culture” of entrepreneurship. The European Commission has placed great emphasis on stimulating entrepreneurship across EU nations and regions, as one of the major drivers of innovation, competitiveness and growth: “for a variety of reasons, promoting entrepreneurship enjoys support from governments at both ends of the political spectrum. Pro-entrepreneurship policies have been embraced as a means of increasing economic growth and diversity, ensuring competitive markets, helping the unemployed to generate additional jobs for themselves and others (rather than share existing work), countering poverty and welfare dependency, encouraging labour market flexibility, and drawing individuals out of informal economic activity.” (OECD, 2003, pp.9-10).

The policy interest has been accompanied by growing academic research into the dynamics and processes associated with new firm formation. The scientific debate on this issue has shown that willingness and ability of individuals to identify and implement new business opportunities depend on a number of personal, social and economic factors. From a macroeconomic perspective, the ability of a country to support entrepreneurship is determined by the overall institutional context, while at a micro level the likelihood of a person becoming an entrepreneur is influenced by the local context and by individual variables that determine the entrepreneur’s response to entrepreneurial push or pull factors.

A strand of literature emphasized the “pull” factors that foster entrepreneurial carrier and considers this as a process generated by expectations of extra profits and obstructed by barriers to entry such as scale economies, investment costs and industry specific sunk costs, i.e. innovation and advertising expenditures (Acs & Audretsch, 1989). Another pull side factor is the job satisfaction defined as a positive emotional state resulting from the appraisal of job experiences. These studies show that the potential entrepreneur is influenced by psychological attitudes such as the need for autonomy, the strong desire to be independent, the ambition to exploit previous experiences or acquired abilities, the desire to acquire a better social status.

The second strand of literature focuses on the “push factors” which can be linked to the personal characteristics of entrepreneurs such as age, education, individual motivations and the environmental characteristics of potential founders. Some studies demonstrate, for example, that self-employment is positively associated with unemployment: in this circumstance people establish their own business ventures because they cannot find other paid-employment opportunities. From this point of view, unemployment, or the fear of becoming unemployed forces people into self-employment (Audretsch & Vivarelli, 1996). This phenomenon has been labelled as ‘necessity entrepreneurship’ (P. Reynolds et al., 2005). The literature that examined entrepreneurial rates at local level has combined push and pull factors to explain the differences in entrepreneurial rates across local systems.

Many empirical studies follow an ‘eclectic’ approach by pooling pull and push factors in explaining territorial differences in entrepreneurial rates.

Despite the abundance of empirical studies on the determinants of entrepreneurial rates at local level, there are still a number of open research questions, most of them at a methodological level. Given the persistence of entrepreneurial rates at local level (Fritsch & Mueller, 2007) it is better to concentrate the analysis on time variations rather than their levels. Moreover, factors affecting time variations are better captured considering long periods of time (5 to 10 years), while most empirical studies use cross-section data.

Moreover, the persistence of territorial differences may depend on the persistence of differences in explanatory variable or by a path dependent effect that determine a different influence of the same variables across different areas.

We address these issues by analysing the entrepreneurial rates in Italian provinces in the period 2001-2009. The Italian case is specifically relevant for the aim of this paper given the presence of large economic and social differences between territories. At the same time, Italy experienced a decline in entrepreneurial rates during the last decade, which makes particularly relevant to single out the factors responsible for entrepreneurial dynamics.

Thus, the aims of this papers are the following:

- a) provide an analysis of the variations of entrepreneurial rates across local systems in Italy and their persistence over time;
- b) provide a better understanding of factors affecting the differences in entrepreneurial rates across local systems and their evolution over time.

The paper is organized as follows. In section 2 we discuss the literature on this subject and define the research questions. Section 3 discusses the data and methodology used in the paper. Section 4 provide an empirical analysis of entrepreneurial rates in Italian provinces over the period 2001-2009. Finally, section 5 discusses the empirical results, draws the policy implications and point out to further development.

## 2. Background literature

Variables explaining the differences in entrepreneurial rates have been categorized in several ways. One of such categorization distinguishes between several sets of variables:

- human capital (such as the level of education), personal skills (employment in manufacturing and services) and employment wages;
- industry structure, such as the presence of specific industries and the importance of small firms;
- agglomeration factors, such as population density and industry specialization;
- local specific factors, such as the level of physical infrastructure and social capital, local taxes, etc.

Davidsson et al. (1994) classified these variables into four categories:

- 1) Micro level, which are variables related to potential entrepreneurs: socio-demographic (age structure, education, employment status, participation of women in the labour market) and experience (occupational structure);
- 2) Macro level, which are related to market conditions (population density, population growth and income)
- 3) Variables related to availability of capital such as the availability of private capital (income and wealth per capita) and direct and indirect public support;
- 4) Social variables linked with environment (culture of entrepreneurship, welfare state, etc.)

Audretsch and Fritsch (1999) demonstrate that human capital and labour skills, unemployment rate, population density, mean establishment size, mean manufacturing wage and local taxes are the specific geographic factors that have an influence on activity rate and that this impact varies considerably from industry to industry for the presence of agglomeration economies. These economies are linked to three factors: a) the local labour market; b) the externalities linked to the supply of specialized service c) the presence of knowledge spill-overs. For example, the presence of a labour market for workers with industry-specific skills is more frequent in agglomerations and urban areas than in rural areas. In addition, urban areas usually attract younger and better-educated people, that are a source of entrepreneurial talents.

Besides the relevance of the above mentioned variables, the empirical literature on entrepreneurial rates has identifies a few regularities (Andersson & Koster, 2011; Fritsch & Mueller, 2007): a) there are large variations in entrepreneurial rates across local systems in the same country; b) these differences are persistent over time. This means that entrepreneurial rates are explained for the most part by the structural characteristics of local systems (for example industry composition)

rather than by short term variations of push or pull factors (such as demand growth or unemployment rates).

Fritsch and Mueller (2007) analysing the data on start-ups rate and unemployment in West Germany from 1983 to 2002, find that the level of regional new business formation is rather path-dependent so that changes are relatively small. The main factors determining the level of regional start-ups are innovation, the entrepreneurial climate and unemployment.

Andersson and Koster (2011), starting from the findings of Fritsch and Mueller (2007), analyse the persistence of start-up rates across Swedish regions and the sources of such persistence. They find that start-up rates are influenced by regional characteristics, such as income, educational level and population density. The spatial differences in start-up rates are persistent over time due to the fact that these factors have a local dimension and change slowly. This means that the differences in start-up rates across regions can be linked to persistent heterogeneity across regions.

There are several reasons for this mechanism of path-dependence: a high level of start-up activities generates new entrepreneurial opportunities, the entrepreneurial climate created by high levels of start-up rates in a region for several periods produce an imitative effect which stimulate potential entrepreneurs to start new firms, the start-up rate in a region tends to be positively related to the share of employees working in small firms (Audretsch & Fritsch, 1994). The small firms have the role of 'seedbed' for entrepreneurship. A theoretical explanation for this empirical evidence could be that working in a small firm tends to provide employees with a much more relevant experience for starting a new business (Wagner, 2004).

Several studies have investigated the dynamics and territorial variations of entrepreneurial rates in Italy. These studies refers to the '80 and the '90.

For the '80, Garofoli (1991) showed a situation of stagnation in the Southern area and a high entrepreneurial dynamic in the North-Eastern and Central regions. Vivarelli (1994) analyses the period 1985-90 to evaluate the entrepreneurial dynamics in Italy and finds that firm demographic profile reflects the division of Italy in three parts. The raise in the number of firms and the increasing importance of the small business sector are consistent with the importance of the industrial district model based on productive decentralization, and firms' flexibility.

Santarelli and Sterlacchini (1993) introduced elements of the self-employment models (the salaries of employees), which is the most used by scholars for the interpretation of the processes of firm creation in Italy. Foti and Vivarelli (1994) estimate an empirical model of entrepreneurial rates for the Italian provinces in the period 1985-88 using as independent variables profits, salaries of employees and layoffs. Consistent with the self-employment approach, the birth rate is defined as the relationship between new businesses and population. They find that expected profits are only one of the determinants of business creation and should be considered together with the specific conditions of the local labour market (i.e. unemployment).

The conclusions of these empirical analyses are not unique: the explanation models of this complex phenomenon are influenced by the chosen period, the manner in which the variables are defined and measured and the econometric methodology.

In this sense there is still a need to identify the determinants of formation of new businesses and the factors affecting territorial differences. Moreover, there is a lack of analysis of such factors during the last decade, which was characterized by a decline of the traditional model of firm formation in industrial districts and the growing importance of knowledge based ventures.

Moreover, there are also some methodological questions that need to be addressed. The most important one is associated with the acknowledged persistence of differences in entrepreneurial rates across territories and the role of path-dependence in influencing such persistence.

### **3. Data and methodology**

#### *Dependent variables*

For the empirical analysis, we consider the creation of new firms in Italy from 2001 to 2009 using the Movimprese database provided by the Chambers of Commerce. Researchers that investigated new firm formation in Italy used two different sources of data: the Movimprese database (provided by Chambers of Commerce) and the INPS database of new firms (provided by National Institute for Pensions).

The key difference between the two sources is that the INPS database detects only companies with at least one employee, while the Chambers of Commerce covers all new firms. The Movimprese database provides the stock of companies (registered and active), the new registrations, the cancellations and changes, by province and sector of activity (NACE classification at 2-digit). Firms are also classified by legal form (joint stock companies, partnerships, sole proprietorships and other forms).

The main advantage of the Movimprese database, compared to the INPS database, is that it provides comprehensive coverage of business demographic, since the new legislation on the Register of Companies (Law 580/1993 and DPR 581/1995) extended the registration to all entrepreneurs in all sectors.

At the same time, this source has some limitations: the main problem is that new registrations comprise "spurious" births, i.e. registration of firms that do not correspond to the actual start of a new business. The latter cases may refer to: a) the transfer of the firm in a different province; b) the change of the legal form from a sole proprietorship to a company (joint stock company or partnership); c) the merger of firms; d) the change of ownership in a sole proprietorship. Garofoli (1994), on the basis of surveys of some provinces of Lombardy and Emilia Romagna regions, estimates that these spurious births are about 25-30% of new registrations. The second aspect of possible "bias" in the Movimprese database comes from the fact that formal registration does not always coincide

with the actual start of the activity; however, almost all new firms start their activity within a few months from registration.

We choose to use the Movimprese database to conduct the empirical analysis for several reasons. The first is that Movimprese remains the most comprehensive source of information on the stock of active firms and new entrants. The second is that there is no reason to suppose that the percentage of 'spurious' births will significantly change between years and provinces; as such it can be considered as a systematic bias that is not going to affect the patterns observed through time and space. The third is that the phenomena that we classified as spurious births (changes in legal forms, transfers in another province, mergers of firms) can be partly considered as evidence of entrepreneurial dynamics.

The first step has been to define entrepreneurial rates. From a theoretical point of view, the approaches adopted to compare birth rates across regions is to normalize the numbers of new firms to a variable capturing the size of the territory. There are three variables frequently used for this normalisation: the number of workers (the labour-market approach), the population (the population approach), the stock of firms (the ecological approach).

The labour market approach standardizes the number of new firms to the size of labour force (new firms/workforce). The labour market approach has a particular theoretical appeal, in that it is based on the theory of entrepreneurial choice proposed by Evans and Jovanovic (1989), among others. The average number of employees per establishment varies considerably across regions. For this reason, compared to the labour market approach, the ecological approach would result in relatively higher birth rates in regions where the establishment size is relatively high and lower in regions where the mean size is relatively low.

Audretsch and Fritsch (1994) find that the two different methods for measuring entry produce disparate results. The ecological approach produces a positive relationship between unemployment and start-up activity, while the labour market approach points to a negative impact of unemployment on the start-up of new firms. This generates some contradictions: while a number of studies have found that entry tends to be promoted in those situations with a high degree of unemployment, others have found that a low rate of unemployment is most conducive to the entry of new businesses due to the fact that this reflects the high growth of economic environment. Similarly ambiguous results have emerged when identifying the impact of wage rates on entry: some studies show that entry is promoted by high wage rates (Audretsch & Fritsch, 1994; Douglas & Shepherd, 2002).

For the Italian case Garofoli (1994) and Audretsch and Vivarelli (1995) use employed people as denominator of the entrepreneurial rate, assuming that new entrepreneurs come from the ranks of those who are already employed. However, in this way the areas with lower rates of employment will have higher values of entrepreneurial rates. Theoretically, the use of this indicator is not fully consistent with the model of self-employment that is based on the assumption that people have to



choice between the condition of employment, unemployment or entrepreneurship. The use of the work force as a normalizing variable for new firms is justified by the fact that it excludes people who have said that are not interested (or be unable) to perform a job. In Italy, the 'discouraging effect' in the search for job opportunities is more important in less developed regions, where the work force (employed and unemployed) represents a share of population in working age lower than the rest of the country. As a result, the use of the work force would reduce the gap between the southern areas and other areas, thus hindering the territorial differences in the lack of local opportunities for employment, which can be an explanation of the territorial differences in entrepreneurial rates.

To avoid the above mentioned problems we chose as denominator for the new firms the number of people in working age, regardless of whether they are occupied or not. Using the adult population as normalizing variable, we calculated the entrepreneurial rate defined as the total number of new firms (registrations) in a year on the adult population at the beginning of the year. By adult population we mean people ranging from 18 to 64 years old. We excluded from total registrations those in the agriculture, given the high level of spurious registrations in this sector; moreover, the percentage of new registrations in agriculture is quite low and do not affect the empirical results.

We use as territorial unit the province. The Italian territory is split into 103 provinces with the average population per province about 600,000 people. The province encompasses the local labor system (i.e. the territory within which people commute for working reasons) which in theory would be the best territorial unit when considering the occupation choices of people. However, the province is the smallest territorial unit for which we dispose of information about new firms; it is also the territorial units for which a large number of other economic and social statistics are available. Given the small average size of provinces in Italy, this territorial unit appears to be an appropriate territorial level to characterize the business environment of firms and to study the phenomenon of new firm formation.

### *Independent variables*

For the econometric estimates we use several independent variables. Some of them are referred to structural characteristics of the provinces and for this reason are time-invariant (this is the case of the social capital index). Other variables vary by province and year.

As explained in the Introduction, independent variables can be organized according to different approaches explaining entrepreneurial rates. In our empirical analysis we consider variables referring to different theoretical approaches to verify which of them provide a better explanation of the observed patterns.

The first group of variables refers to the local milieu of provinces in terms of broad economic structure and social characteristics. Within this group we consider the following variables.

- **Social capital**, defined as a standardized index of four indicators: newspaper reading, blood donation, political polls participation and participation in sporting associations (Cartocci, 2007). We standardize the variable so that the range is between 0 (minimum value) and 1 (maximum value). The social capital variable was determined by using indicators referring to the period 1999-2003.
- **Industry density index**, used as a proxy of agglomeration economies and defined as the number active firms per Km<sup>2</sup> of the province.
- **Bank indicators** that should capture the possibility of entrepreneurs to finance new businesses (Alessandrini, Presbitero, & Zazzaro, 2010). This possibility are supposed to raise with the presence of local banks (as opposed to branches of national or international banks) and with the number of branches available in the local system. As a result we use the following variables:
  - Distance 1 – distance of bank branches, considering the operative location but not the governance, i.e. the belonging of the local branch to a national or international group;
  - Distance 2 - distance of bank branches, considering the belonging of local branches to groups located outside the province;
  - Number of bank branches per thousands of adult population.

The second group of variables refers to the labour market approach. We use the estimates of ISTAT on employees in the Italian LLS (local labour systems) available from 2004 to 2010. ISTAT gives an evaluation of the number of employees in 685 local labour systems; the latter are classified in four classes of LLS (without specialization, non-manufacturing, made in Italy, other manufacturing) and six sub classes (without specialization, urban system, non-manufacturing, textile and clothing system, other made in Italy system, other manufacturing). Instead of using the total number of employees, we take advantage of this classification of LLS to characterize the industrial structure of provinces. To do so we consider the share of employees in four types of LLS: urban system; non-manufacturing; manufacturing without specialization; manufacturing 'made in Italy'.

The 'made in Italy' manufacturing LLS are characterized by the presence of small firms organized in industrial districts. This indicator is positively associated with the percentage of employees in small firms and with a low average size of firms; for this reason we expect a positive relation with entrepreneurial rates.

ISTAT provides information also about value added by province and sector from 2004 to 2009. In the estimates we use the yearly variation of valued added at constant prices. This indicator is a

proxy of business opportunities and demand evolution in the province. Table 1 provides a synthesis of the variables used in the empirical estimates and the ways they are calculated.

Following the discussion in the previous section, we test the following hypotheses:

Hp1: the increase of unemployment positively influence the level of new firm formation

Hp2: high activity rates are negatively correlated to the propensity of setting up new firms

Hp3: GDP growth rates are positively correlated to the propensity of setting up new firms

Hp4: the level of social capital is positively related with the set-up of new firms

Hp5: the higher bank index, the greater the activation of new firms is

Hp6: the presence in a province of LLS in manufacturing sectors is positively related to the set-up of new firms in the manufacturing sector

Hp8: the population density is positively related with the set-up of new firms.

### *Econometric methodology*

We use both pooled OLS estimates and fixed effects estimates.

## **4. New firm formation in Italian provinces 2001-2009**

Figure 1 shows the tendency in new firm formation and cessation in Italy from 1995. It is possible to identify three drops: the first in 1997-98, the second in 2003 and the last one in 2008-2009 for the recent economic crisis. The last economic crisis is characterized not only for the slowdown of new firm formation but also for the significant increase in cessations; in 2008-2009 the balance between the two indicators is almost zero. The first step of analysis is to investigate the trend of entrepreneurial rates from 2001 to 2009 (Table 2).

With the exception of 2003, the rates of new firm formation for the whole economy (except agriculture) and for manufacturing and services remained rather stable from 2001 to 2007.<sup>1</sup> The sharply declined in 2009. On the contrary, in the manufacturing sector there was a steady decline during the beginning of the decade.

The value added presents a positive trend until 2007, with the only exception of a slight decline in 2003. It is worthwhile noting that entrepreneurial rates are strongly influenced by the decline of valued added; in fact we observe two major drops of new firm formation in 2003 and in 2008-2009 (**Error! Reference source not found.**).

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<sup>1</sup> We excluded agriculture because of changes in the administrative procedure of firm registrations in this sector. For this reason variations in this sector do not always correspond to effective entrepreneurial dynamics. Moreover, according to ISTAT (Italian Statistics Agency) agricultural activities in the period considered represented less than 3% of Italian GDP.

We calculated the dispersion of entrepreneurial rates by years and provinces from central trend by using the coefficient of variation, i.e. the ratio of the standard deviation to the mean.

Table 3 shows the dispersion of entrepreneurial rates in Italian provinces in the period 2001-2009. As expected, the coefficient of variations is lower when considering the total than when considering the manufacturing sector. Given the uneven distribution of manufacturing activities in the Italian provinces, this is evidence that the formation of new firms in manufacturing activities is more dependent than in other sectors from the presence of established firms in the same sector. The territorial dispersion in entrepreneurial rates shows a tendency to increase during the period of observation. This increase is stronger for the manufacturing sector. The minimum values fall considerably and it means that in some provinces the drop in manufacturing is radical.

The yearly dispersion of entrepreneurial rates by province is much lower than the territorial dispersion: the yearly dispersion is less than half the territorial dispersion for total rates and less than one fourth for the manufacturing rates. This phenomenon has been noted also for other countries (Andersson & Koster, 2011; Fritsch & Mueller, 2007).

Following the descriptive analysis by Andersson & Koster (2011) and Fritsch & Mueller (2007) we provide some graphical illustrations of the yearly persistence of entrepreneurial rates in Italian provinces (Figure 3). The 2 figures show that the distribution of start-up rates by provinces remains the same over time. Moreover, there is a positive relationship between start-up rate in period  $t-1$  and period  $t$ , but even between start-up rate in period  $t-8$  and  $t$ .

As expected the persistence in start-up rates is very high from year to year (Figure 3 left) and reduces for longer periods (Figure 3 right). This is confirmed by the correlation matrix of entrepreneurial rates by years (Table 5).

Figure 4 shows that the distribution of start-up rates by provinces has the same shape in 2001 and 2009.

The curve shows the decline in Italian start-up rates but the shape of the curve remains intact. This indicates that the decline in start-up rates corresponds to a decline among different locations at cumulative level, but the distribution of start-up rates among provinces remains. After the analysis of persistence, we try to investigate in the following the factors that link this one to the path dependence processes: we expect that the persistence is the result of a path dependence that affects the new firm formation in different provinces.

## **5. Factors affecting territorial differences in new firm formation**

Given the strong territorial persistence of entrepreneurial rates, it is specifically important to analyse the factors that affect the variation in new firm formation over time. To this aim, we consider several variables affecting the entrepreneurial dynamics. Following the discussion in section 1 we consider to sets of variables. Time invariant (or structural variables), i.e. variables that

are supposed to change very slowly over time, and variables that may be subject to significant change in the short term. Among the first set we consider the economic structure of the province, captured by the presence of industrial districts, the share of manufacturing employees, the industry density and the index of social capital. Within the second set of variables we consider the variation of GDP, the activity rate, the unemployment rate and banking indicators.

Where:

$i = 1 \dots 103$  provinces

$t = 1-6$  years 2004-2009

$er_{t-i} (i=1 \dots 3)$  = entrepreneurial rates in time  $t-i$

$x'_{it}$  = matrix of time variant factors

$y'_i$  = time invariant province characteristics

In the estimates we consider the years 2004-2009, due to the use of lagged variables and the fact that data about value added and employees in LLS are not available for 2001, 2002 and 2003.

The first step is testing the hypotheses through a pooled OLS regression.

Table 6 shows that the main hypotheses of the model are confirmed: most of the coefficients have the expected sign.

Specifically, the worsening of unemployment rate from year  $t-1$  to year  $t$  is not significant in explaining the probability to start a new business, with the exception of third estimation for  $erm$ . The unemployment is significant considering the total entrepreneurial rate but with unexpected sign. A negative relationship is possible as it is often argued that high unemployment reduces the incentives to enter self-employment for two considerations. First, when macroeconomic conditions are unfavourable and unemployment is high, people are less likely to enter self-employment knowing that the business has a higher probability of failure. Second, during periods of high unemployment, the supply of paid employment opportunities are less frequent (Blanchflower, Oswald, & Stutzer, 2001). Acs et al. (1994) note that high unemployment can affect self-employment both positively (high unemployment reduces the average alternative opportunity cost of entering self-employment) and negatively (high unemployment indicates a depressed economy in which the revenues that entrants into self-employment might expect are low).

The increasing of GDP from year  $t-1$  to year  $t$  affects positively the entrepreneurial dynamics, with the exception of entrepreneurial dynamics in manufacturing sectors.

The social capital is not significant for explaining the total entrepreneurial rate and the entrepreneurial rate in service and manufacturing and it presents the unexpected sign. It becomes significant when we consider the entrepreneurial rates in manufacturing.

The presence of industrial districts and a high share of employees in made in Italy LLS are significant in explaining the entrepreneurial rates in manufacturing. Even the presence of local banks becomes significant.

In general, the variables referring to the labour market lose their significance when explaining the start-up rates in the manufacturing sector, while the variables linked with the economic structure of provinces became quite relevant.

The estimates using a fixed effect model confirm the previous results with the exception of the population density variable, that becomes significant but with the opposite sign; moreover, it becomes non-significant in explaining the entrepreneurial rates in the manufacturing sector.

## **6. Discussion**

The main aim of this paper is to analyse the factors affecting the territorial differences in entrepreneurial rates in Italy.

The first result is that the territorial differences of entrepreneurial rates shows a strong persistence over time: provinces with high entry-rates in the past are most likely to have high level of start-up activity in the future. This is true most of all for the new firms in manufacturing sectors where the factors linked to the social and economic context are important and stable over time. The provinces of North-Eastern and Central regions are a strong tradition in manufacturing and characterized by the relevant presence of small firms organized in specialized clusters (industrial districts). Besides the structural differences between provinces, the persistence observed in entrepreneurial rates can be explained as a result of path dependence processes in entrepreneurial dynamics: the entrepreneurial rate decreases in Italy in the period considered but in the province with high level of manufacturing firms the fall is less relevant.

The results using a pooled OLS model are in general accordance with expectations. The unemployment rate positively influences the probability to start a new business when considering the total entrepreneurial rate; however, it is not significant for the manufacturing sector. An increase of GDP positively affects the overall entrepreneurial dynamics, while entrepreneurial rates in the manufacturing sector is mostly affected by the economic structure of the province.

The regression results of panel estimations with time invariant variables confirm the above mentioned results with the exception of agglomeration effects: the probability to start a new business is negatively linked with the population density.

The main result of the empirical analysis is that socio-demographic factors show a higher relevance in explaining territorial differences in entrepreneurial rates. This is valid for the total entrepreneurial rate as well as for explaining new firm formation in manufacturing sectors.

## References

- Acs, Z. J., & Audretsch, D. B. (1989). Entrepreneurial Strategy and the Presence of Small Firms. *Small Business Economics*, 1, 193–213.
- Alessandrini, P., Presbitero, A. F., & Zazzaro, A. (2010). Bank size or distance: what hampers innovation adoption by SMEs? *Journal of Economic Geography*, 10(December 2009), 845–881. doi:10.1093/jeg/lbp055
- Andersson, M., & Koster, S. (2011). Sources of persistence in regional start-up rates—evidence from Sweden. *Journal of Economic Geography*, 11(1), 179–201. doi:10.1093/jeg/lbp069
- Audretsch, D. B., & Fritsch, M. (1994). On the Measurement of Entry Rates. *Empirica*, 21, 105–113.
- Audretsch, D. B., & Vivarelli, M. (1996). Firms size and R&D spillovers: Evidence from Italy. *Small Business Economics*, 8(3), 225–237. doi:10.3406/rei.1994.1520
- Bagnasco, A. (1977). *Tre Italie. La problematica territoriale nello sviluppo italiano*. Bologna: IL Mulino.
- Bellandi, M., De Propriis, L., & Becattini, G. (2009). *A handbook of Industrial Districts*. Cheltenham: Edward Elgar Publishing.
- Blanchflower, D. G., Oswald, A., & Stutzer, A. (2001). Latent entrepreneurship across nations. *European Economic Review*, 45(4-6), 680–691.
- Bonte, W., Falck, O., & Heblich, S. (2009). The impact of regional age structure on entrepreneurship. *Economic geography*, 83(3), 269–287.
- Cartocci, R. (2007). *Mappe del tesoro. Atlante del capitale sociale in Italia*. Il Mulino.
- Douglas, E. J., & Shepherd, D. A. (2002). Self-Employment as a Career Choice: Attitudes, Entrepreneurial Intentions, and Utility Maximization. *Entrepreneurship: Theory and Practice*, 26(3), 81–91.
- European Commission. (2010). *European Innovation Scoreboard 2009*. PRO INNO Europe.
- Evans, D. S., & Jovanovic, B. (1989). An Estimated Model of Entrepreneurial Choice under Liquidity Constraints. *Journal of Political Economy*, 97(4), 808–827.
- Foti, A., & Vivarelli, M. (1994). An econometric test of the self-employment model: The case of Italy. *Small Business Economics*, 6(2), 81–93. doi:10.1007/BF01065181
- Fritsch, M., & Mueller, P. (2007). The persistence of regional new business formation-activity over time – assessing the potential of policy promotion programs. *Journal of Evolutionary Economics*, 17(3), 299–315. doi:10.1007/s00191-007-0056-6
- Garofoli, G. (1991). The Italian model of spatial development in the 1970s and 1980s in Benko G., Dunford M. (ed.s), *Industrial Change and Regional Development: The Transformation of new Industrial Spaces*, 85–101.
- Kelley, D J, Bosma, N., & Amorós, J. E. (2011). *Global Entrepreneurship Monitor (GEM) 2010 Annual Global Report*. Global Entrepreneurship Research Association GERA (pp. 1–85). Global Entrepreneurship Research Association.
- Kelley, Donna J, Bosma, N., & Amoròs, J. E. (2011). *Global Entrepreneurship Monitor. 2010 Global Report*.
- Marshall, A. (1920). *Principles of Economics*. London: MacMillan and Co.
- OECD. (2003). *Turning Science into Business. Patenting and Licensing at Public Research Organizations*. Paris.
- OECD. (2010). *SME's, entrepreneurship and Innovation*. Paris: OECD.
- Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., Lopez-Garcia, P., et al. (2005). Global Entrepreneurship Monitor: Data Collection Design and Implementation 1998–2003. *Small Business Economics*, 24(3), 205–231.
- Reynolds, P. D. (2010). New Firm Creation: A Global Assessment of National, Contextual, and Individual Factors. *Foundations and Trends® in Entrepreneurship*, 6(5-6), 315–496. doi:10.1561/03000000034
- Santarelli, E., & Sterlacchini, A. (1993). Profili e determinanti settoriali della formazione di nuove imprese nell'industria italiana. *Rivista di Politica Economica*, 83(5), 33–68.
- Wagner, J. (2004). Are Young and Small Firms Hothouses for Nascent Entrepreneurs? Evidence from German Micro Data. *IZA, IZA Discus*(989).



Table 1 – List of variables (t= year, 2001-2009; p=province, 1-103)

VARIABLE	DESCRIPTION OF VARIABLE
REG <sub>tp</sub>	Stock of firms at the end of the year
ACT <sub>tp</sub>	Stock of active firms at the end of the year
ER <sub>tp</sub>	Entrepreneurial rate: new firms (except agriculture)/population from 18 to 64 years old
ERM <sub>tp</sub>	Entrepreneurial rate in manufacturing sector: new manufacturing firms/population from 18 to 64 years old
ERMS <sub>tp</sub>	Entrepreneurial rate: new firms (excluded agriculture and construction)/population from 18 to 64 years old
SSC <sub>p</sub>	Social capital (based on indicators referring to 1999-2003); standardized values.
DIS1 <sub>tp</sub>	Distance of bank branches, considering the operative location but not the governance, i.e. the belonging of the local branch to a national or international group
DIS2 <sub>tp</sub>	Distance of bank branches, considering the belonging of local branches to groups located outside the province
SPOR_POP <sub>tp</sub>	Bank branches per thousands of adult population
SPOR <sub>tp</sub>	Number of bank branches
VATOT <sub>tp</sub>	Total value added
VAIM <sub>tp</sub>	Value added in manufacturing
VAS <sub>tp</sub>	Value added in service
VAPP <sub>tp</sub>	Pro-capite value added
DVATOT <sub>tp</sub>	Yearly variation of value added
DVAM <sub>tp</sub>	Yearly variation of manufacturing value added
DVAS <sub>tp</sub>	Yearly variation of service value added
POP <sub>tp</sub>	Population
POPAD <sub>tp</sub>	Adult population (ranging from 18 to 64 years old)
ADTOT <sub>tp</sub>	Adult population / population
FL <sub>tp</sub>	Work force = employees + people seeking employment (t= 2004-2009)
SE <sub>tp</sub>	Seeking employment (t= 2004-2009)
EMP <sub>tp</sub>	Employees (t= 2004-2009)
AR <sub>tp</sub>	Activity rate: work force /population >15 years old (t= 2004-2009)
UR <sub>tp</sub>	Unemployment rate: people seeking employment/work force (t= 2004-2009)
EMPR <sub>tp</sub>	Employment rate: employees/population >15 (t= 2004-2009)
NLLSD <sub>p</sub>	Number of local labour systems (LLS) characterized as industrial districts (year=2005)
QLLSA <sub>p</sub>	Share of employees in LLS without specialization on total employees (year=2005)
QLLSBA <sub>p</sub>	Share of employees in LLS urban system (not manufacturing) on total employees (year=2005)
QLLSBB <sub>p</sub>	Share of employees in LLS not manufacturing on total employees (year=2005)
QLLSC <sub>p</sub>	Share of employees in LLS made in Italy on total employees (year=2005)
SUP <sub>tp</sub>	Province size in km <sup>2</sup>
DEN <sub>tp</sub>	Industry density index (number of active firms / Km <sup>2</sup> )

Table 2 - Entrepreneurial rates in Italy, 2001-2009 (percentage values)

YEAR	ER	ERMS	ERM
2001	1,173	0,865	0,101
2002	1,159	0,851	0,097
2003	1,082	0,790	0,086
2004	1,167	0,858	0,086
2005	1,147	0,850	0,085
2006	1,151	0,839	0,088
2007	1,166	0,847	0,088
2008	1,092	0,798	0,084
2009	1,025	0,771	0,078

Source: InfoCamere, Movimprese, several years

Table 3 – Territorial dispersion of entrepreneurial rates by years (coefficient of variation)

Year	ER	ERMS	ERM
2001	0,161	0,168	0,527
2002	0,153	0,168	0,530
2003	0,165	0,180	0,520
2004	0,163	0,170	0,511
2005	0,176	0,186	0,706
2006	0,182	0,196	0,842
2007	0,190	0,194	0,825
2008	0,179	0,191	0,853
2009	0,181	0,199	0,974

Source: InfoCamere, Movimprese, several years

Table 4 – Yearly dispersion of entrepreneurial rates by provinces

Province	cv_erm	Province	cv_erm
Agrigento	0,17	Messina	0,14
Alessandria	0,10	Milano	0,08
Ancona	0,11	Modena	0,08
Aosta	0,17	Napoli	0,17
Arezzo	0,29	Novara	0,14
Ascoli Piceno	0,09	Nuoro	0,16
Asti	0,13	Oristano	0,29
Avellino	0,20	Padova	0,07
Bari	0,19	Palermo	0,25
Belluno	0,13	Parma	0,19
Benevento	0,36	Pavia	0,16
Bergamo	0,07	Perugia	0,10
Biella	0,12	Pesaro Urbino	0,10
Bologna	0,13	Pescara	0,13
Bolzano	0,07	Piacenza	0,08
Brescia	0,07	Pisa	0,09
Brindisi	0,22	Pistoia	0,11
Cagliari	0,22	Pordenone	0,10
Caltanissetta	0,33	Potenza	0,26
Campobasso	0,16	Prato	0,24
Caserta	0,21	Ragusa	0,19
Catania	0,47	Ravenna	0,12
Catanzaro	0,36	Reggio Calabria	0,31
Chieti	0,12	Reggio Emilia	0,05
Como	0,09	Rieti	0,26
Cosenza	0,31	Rimini	0,07
Cremona	0,16	Roma	0,19
Crotone	0,24	Rovigo	0,18
Cuneo	0,08	Salerno	0,18
Enna	0,16	Sassari	0,33
Ferrara	0,08	Savona	0,11
Firenze	0,15	Siena	0,14
Foggia	0,10	Siracusa	0,21
Forlì-Cesena	0,05	Sondrio	0,12
Frosinone	0,14	Taranto	0,17
Genova	0,09	Teramo	0,08
Gorizia	0,15	Terni	0,15
Grosseto	0,12	Torino	0,06
Imperia	0,12	Trapani	0,31
Isernia	0,21	Trento	0,15
L'Aquila	0,19	Treviso	0,21
La Spezia	0,13	Trieste	0,13
Latina	0,18	Udine	0,07
Lecce	0,27	Varese	0,07
Lecco	0,12	Venezia	0,05
Livorno	0,09	Verbano-C-O	0,12
Lodi	0,14	Vercelli	0,15
Lucca	0,20	Verona	0,08
Macerata	0,14	Vibo Valentia	0,25
Mantova	0,20	Vicenza	0,10
Massa Carrara	0,09	Viterbo	0,17
Matera	0,19		

Source: InfoCamere, Movimprese, several years

Table 5 - Correlations between start-up rates 2001-2009 across Italian provinces

	er2001	er2002	er2003	er2004	er2005	er2006	er2007	er2008	er2009
er2001	1.0000								
er2002	0.8213	1.0000							
er2003	0.8001	0.8718	1.0000						
er2004	0.7556	0.8870	0.8844	1.0000					
er2005	0.7851	0.8856	0.9014	0.9056	1.0000				
er2006	0.7446	0.8570	0.8711	0.8971	0.9090	1.0000			
er2007	0.6968	0.8146	0.8382	0.8660	0.8900	0.8650	1.0000		
er2008	0.7581	0.8433	0.8682	0.8654	0.9088	0.9313	0.8999	1.0000	
er2009	0.7856	0.8112	0.8220	0.8275	0.8863	0.9121	0.8568	0.9474	1.0000

Table 6 - Correlation matrix

	er	L.er	ur	L.ur	ar	L.ar	dvatot	dis2	ssc	denpop	nssld	qlsa2005	qlsba2005	qlsbb2005	qlsc2005
er	1.0000														
L.er	0.8583	1.0000													
ur	-0.3029	-0.3250	1.0000												
L.ur	-0.2986	-0.3101	0.9479	1.0000											
ar	0.3394	0.3731	-0.8519	-0.8755	1.0000										
L.ar	0.3375	0.3636	-0.8584	-0.8730	0.9811	1.0000									
dvatot	0.2182	0.1183	-0.0928	0.0113	0.0510	-0.0055	1.0000								
dis2	-0.2997	-0.2999	0.6823	0.6833	-0.6983	-0.6965	-0.0794	1.0000							
ssc	0.3029	0.3180	-0.8000	-0.8133	0.8705	0.8692	0.0152	-0.5962	1.0000						
denpop	-0.0099	-0.0099	-0.0014	-0.0044	0.0222	0.0284	-0.0583	-0.0260	-0.0394	1.0000					
nssld	0.1412	0.1455	-0.3438	-0.3504	0.3559	0.3603	-0.0068	-0.3451	0.1960	-0.0915	1.0000				
qlsa2005	-0.1973	-0.2007	0.7087	0.7147	-0.7253	-0.7284	0.0142	0.5821	-0.6828	-0.1652	-0.3475	1.0000			
qlsba2005	0.0972	0.1013	-0.1534	-0.1552	0.2089	0.2061	0.0110	-0.0676	0.3596	0.3043	-0.2408	-0.3316	1.0000		
qlsbb2005	-0.0244	-0.0206	0.1253	0.1296	-0.1268	-0.1273	0.0485	0.0669	-0.1048	-0.1600	-0.2559	0.1176	0.0214	1.0000	
qlsc2005	0.1396	0.1417	-0.4903	-0.4976	0.4918	0.4995	-0.0326	-0.4132	0.3169	-0.0241	0.6503	-0.4972	-0.4327	-0.3380	1.0000

Table 7 – Pooled OLS estimations for er, erms and erm.

Variable	ER		ERMS		ERM	
	Model 5	Model 6	Model 5	Model 6	Model 5	Model 6
<b>er L1.</b>	.878888*** (26.03)	.8806225*** (26.15)	.6390973*** (15.76)	.6471477*** (15.89)	.2085635*** (4.19)	.2135056*** (4.92)
<b>ur</b>	-.0062265* (-1.87)	-.0059495* (-1.86)	-.002248 (-0.73)	-.0006533 (-0.25)	-.0016244 (-1.09)	-.0000828 (-0.06)
<b>L.ur</b>	.0036331 (1.06)	.0036986 (1.07)	.0014828 (0.45)	.0013322 (0.46)	.0012241 (0.81)	.0033629* (2.26)
<b>dvatot</b>	.0077704*** (5.09)	.0078006*** (5.09)	.0037503** (3.49)	.0037787*** (3.76)	-.000798 (-1.19)	-.0006664 (-1.14)
<b>dis2</b>	-.0005342 (-0.11)	-.0009403 (-0.17)	.003036 (0.72)	.0018331 (0.42)	.0034377 (1.48)	.0059522* (2.35)
<b>scc</b>	-.0098026 (-0.36)	-.0226272 (-0.81)	-.0114672 (-0.46)	-.1010162*** (-4.14)	.0161618 (1.62)	.0430384*** (4.00)
<b>denpop</b>	.0000126 (1.59)	5.69e-06 (0.66)	.0000965*** (8.09)	.0000577*** (5.13)	.0000146* (2.10)	.0000161** (2.80)
<b>nllsd</b>	.0004301 (0.20)	-.0003732 (-0.13)	.0027847 (1.50)	.0016217 (0.58)	.0044341*** (4.17)	-.0043822* (-1.76)
<b>qllsa2005</b>		-.0215899 (-0.61)		-.1263278*** (-4.96)		-.0346089** (-3.36)
<b>qllsba2005</b>		.0011328 (0.06)		.0348998* (1.95)		-.0361851*** (-3.99)
<b>qllsbb2005</b>		-.0518361 (-1.21)		-.1513145*** (-4.31)		-.031309* (-1.97)
<b>qllsc2005</b>		-.0056492 (-0.28)		-.0318607 (-1.54)		.0634877*** (3.89)
<b>N of obs</b>	515	515	515	515	515	515
<b>Wald chi2(7)</b>	0.8119	0.8129	0.7288	0.7637	0.4154	0.5352
<b>Prob &gt; chi2</b>	0.000	0.000				
<b>F (2, 615)</b>	220.78	170.26	74.81	95.04	36.01	29.23

Regressions include a constant

\*\*\*= significant at 1%; \*\*= significant at 5%; \*= significant at 10%

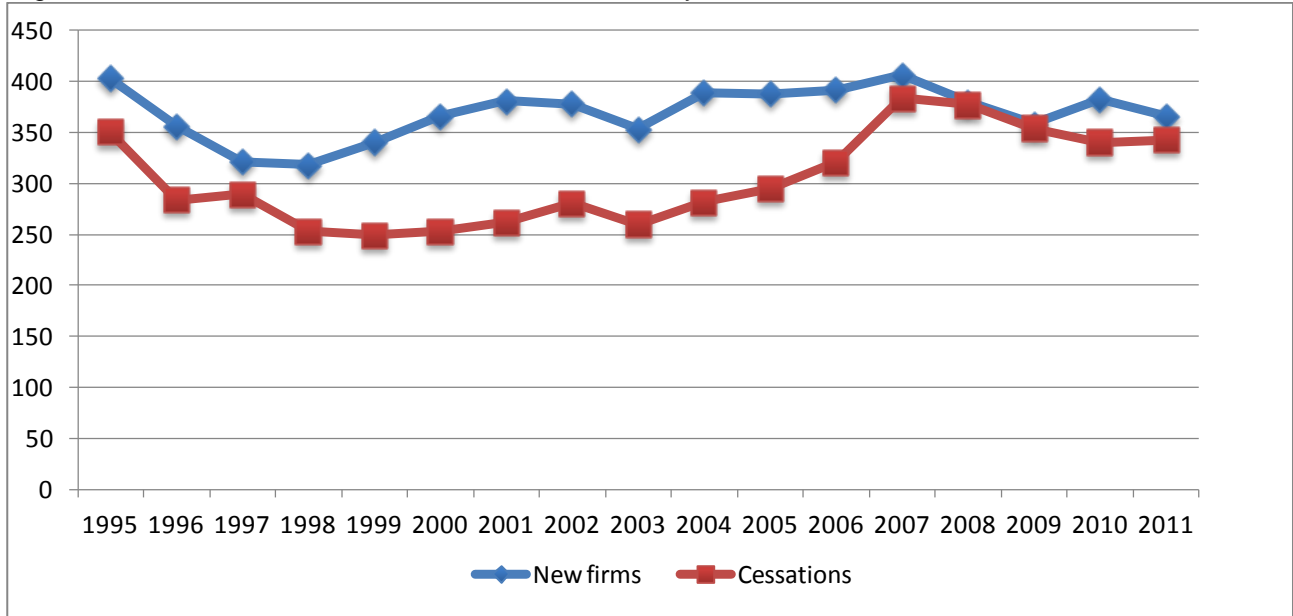
Table 8 - Estimates results using fixed effects model (t values in parenthesis calculated with robust standard errors)

Variable	ER		ERMS		ERM	
	Model 4	Model 5	Model 4	Model 5	Model 4	Model 5
<b>ur</b>	-.005482* (-1.73)	-.0050763* (-1.88)	-.0024856 (-0.92)	-.0021389 (-1.19)	-.0008535* (-2.07)	-.0008414* (-2.06)
<b>L.ur</b>	.0022745 (0.67)	.0018122 (0.61)	.0008197 (0.33)	.0004245 (0.21)	.0007032 (1.52)	.0006894 (1.49)
<b>dvatot</b>	.0130964*** (8.14)	.0113645*** (7.06)	.00745*** (10.22)	.0059695*** (8.82)	.0012351*** (7.27)	.0011836*** (6.47)
<b>dis2</b>	-.0345645* (-1.71)	-.0068494 (-0.42)	-.0247596* (-1.69)	-.0010679 (-0.11)	.0013452 (0.48)	.0021693 (0.75)
<b>spor_pop</b>	.0401249 (0.51)	.069705 (1.09)	-.0127479 (-0.19)	.012538 (0.23)	.0439999 (1.25)	.0448795 (1.29)
<b>denpop</b>		-.004423*** (-3.69)		-.0037809*** (-4.04)		-.0001315 (-1.53)
<b>N of obs</b>	515	515	515	515	515	515
F (2, 615)	27.59	27.96	32.06	37.33	29.81	25.24

Regressions include a constant

\*\*\*= significant at 1%, \*\*= significant at 5%, \*= significant at 10%

Figure 1 – New firms formation and cessation in Italy, 1995-2011 – thousands of units\*



\* The total excludes agriculture

Figure 2 - The trend of value added and entrepreneurial rate by sectors from 2001 to 2009

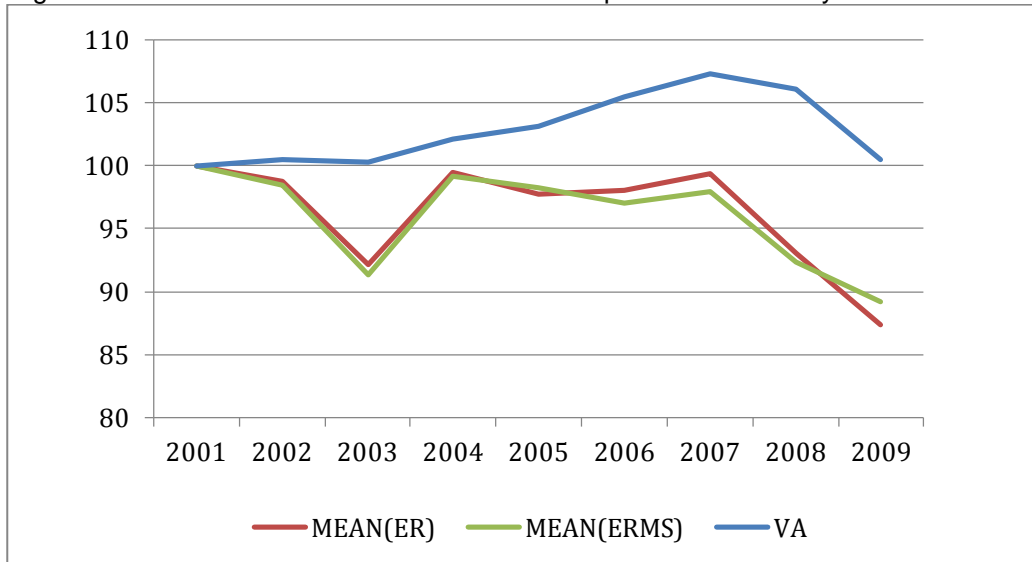


Figure 3 - Relationship between start-up rates  $t+1$  and  $t$  (left) and  $t+8$  and  $t$  (right) across Italian provinces.

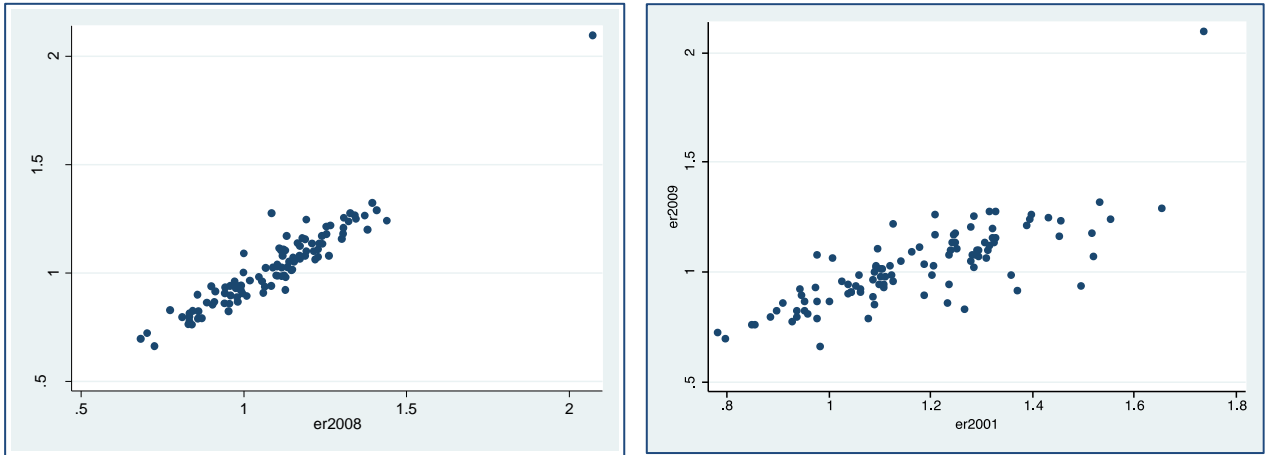


Figure 4 - Kernel density estimates of the distribution of start-up across Italian provinces in 2001 and 2009.

