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*Sabrina Di Addario**
*Daniela Vuri***

***** Bank of Italy
** University of Rome "Tor Vergata"

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Sabrina Di Addario* Daniela Vuri†‡

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Abstract

We analyze empirically the effects of urban agglomeration on Italian college graduates' work possibilities as entrepreneurs three years after graduation. We find that each 100,000 inhabitant-increase in the size of the individual's province of work reduces the chances of being an entrepreneur by 0.2 percent. This result is robust to controlling for regional fixed effects and to instrumenting urbanization with three different sets of instruments. However, a positive urbanization externality emerges after taking into account urban amenities and dis-amenities, and, above all, provinces' competition and cost of labor. In this case, every 100,000 inhabitant-increase raises the chance of entrepreneurship by 2.4 percent. Finally, as long as they succeed in entering the largest markets, young entrepreneurs are able to reap-off the benefits of urbanization externalities: every 100,000-inhabitant increase in the province's population raises entrepreneurs' net hourly income by 0.2 percent.

JEL classification: R12, J24, J21.

Keywords: Labor market transitions; Urbanization.

*Corresponding author. Bank of Italy. E-mail address: sabrina.diaddario@bancaditalia.it

†Tor Vergata University of Rome. E-mail address: daniela.vuri@uniroma2.it.

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1 Introduction

The literature on agglomeration has mainly studied the impact of urbanization economies (i.e., the externalities arising from the level of cities' economic activities as a whole but external to specific industries)[1] on firms rather than on entrepreneurs. According to the theory, urbanization externalities encourage firm location in the largest cities, where productivity is highest (see, for instance, Ciccone and Hall (1996), Ciccone (2002) and Moomaw, 1983), the expected quality of employer-employee match is best (Helsley and Strange (1990), Kim, 1990), search costs per worker are lowest (Wheeler, 2001), and learning, the diffusion of technological spillovers and the acquisition of entrepreneurial capabilities are fastest (see Guiso and Schivardi (2007) and Rosenthal and Strange (2004) for a review of the literature). However, after a certain threshold congestion dis-externalities prevail over agglomeration economies.[2] Firms might be selected into the largest cities on the basis of their order of arrival (e.g., Helsley and Strange, 1990), productivity (like in Behrens and Robert-Nicoud, 2008), Darwinian selection (Melitz and Ottaviano, 2008), the extent they benefit from forward-backward linkages (Baldwin and Okubo, 2006), or simply their sector (Henderson (1983), LaFountain, 2005).[3]

In contrast to the majority of the agglomeration literature, we estimate market size effects on entrepreneurs rather than firms or employees.[4] In particular, we examine whether urbanization (proxied by the level of population in the province of work) increases the probability of being an entrepreneur and/or creates urban differentials in the returns to entrepreneurship. While firm type (e.g., sector, size, etc.) is certainly a determinant of location, as some sectors depend more than others on scale, urban amenities[5] and local endowment of natural resources, entrepreneur's characteristics (e.g., ability, education, experience, age) may also matter.

[1] As opposed to localization economies, internal to each industry (Henderson, 1983).

[2] Agglomeration externalities can be due to various factors: a finer labor division between firms of the same industry; a greater vicinity to input suppliers or final consumers; a lower mismatch between the professional skills required by firms and those offered by workers; the existence of intellectual or technological spillovers, favoring innovation (for a review of this literature see Duranton and Puga, 2004). In the largest cities the rate of innovation might be enhanced also by the more intense firm competition (see Porter, 1990) or by the greater demand of final goods.

[3] Henderson (1983) finds that, except for the resource-bound sectors, US manufacturing firms concentrate in towns of about 5 million inhabitants, while societies in the business service sector, finance, insurance or real estate peak at cities of $8-9$ million inhabitants. According to LaFountain (2005), firms in the textiles, paper, chemicals, petroleum, and electronic (industrial machinery, equipment, food and fabricated metals) sectors tend to locate especially close to their input suppliers (customers); on the contrary, the apparel and miscellaneous manufacturing firms benefit particularly from being close to workers employed in a variety of different industries.

[4] Exceptions are: de Blasio and Di Addario (2005), who study entrepreneurship chances in Italian Industrial Districts; Nocke (2006), analyzing the relationship between market size and entrepreneurial talent; Rosenthal and Strange (2008a), examining the effect of agglomeration on hours worked (though the authors do not distinguish between employees and self-employed workers, both included in their sample); Rosenthal and Strange (2008d), who study commuting pattern differentials between self-employed women and self-employed men. When using individual data the majority of the papers focuses on employees, analyzing in particular the large-city differentials in wages.

[5] In Henderson (1994), the profit minimum critical level determining whether firms locate in a specific city depends on local scale, the presence of productive amenities, and the city's entrepreneurial supply function. However, the author finds that empirically amenities do not affect US cities' industrial composition, while a 10-percent increase in urban population raises the number of auto component (farm machinery) firms by 17.5 percent (23.6 percent).

To this extent we use a unique dataset provided by the Italian National Institute of Statistics (ISTAT), examining the college-to-work transitions three years after graduation. One of the advantages of using this data source is that it provides a homogeneous sample of individuals facing similar work choices (subordinate employment versus self-employment), i.e. college graduates at the same stage of the life-cycle. Note that focusing on people's work choices at the beginning of one's career does not necessarily hamper generalization, because in Italy initial decisions are rarely reverted over the life-cycle.[6] Another advantage of our dataset is that its characteristics reduce the the likelihood that our urbanization estimates are biased by sorting into the largest cities for two main reasons. First, it enables us to measure ability quite precisely, in contrast to the other empirical papers proxying it with education (e.g., Poschke, 2008). Indeed, our ability variables (namely, college graduation mark, a dummy for graduating with honors and a dummy for timely graduation) do not suffer from measurement error because they have been doubled checked with universities' administrative records. Controlling for an exact measure of ability lowers the probability that the largest markets are endowed with individuals less capable of becoming entrepreneurs for unobserved reasons. Second, we focus on Italy, a country with very limited mobility of labor, which reduces the likelihood that entrepreneurs with unobserved characteristics correlated to both province size and work choices move into the largest cities. Indeed, according to ISTAT (ISTAT, 2003) in Italy more than 80 percent of individuals (with alive parents) lives in the same municipality as their mothers' or fathers', about 7 percent of the people resides in a municipality within 16 kms. from their parents', and only 8.2 percent of the citizens lives abroad or at a distance greater than 50 kms. Besides cultural reasons, the strong family ties in Italy[7] are partly due to the lack of a good welfare system, leaving parental care largely to offsprings and child care to grandparents. However, entrepreneurs have further reasons to live close to their place of origin, as they might be willing to exploit the local family networks (personal contacts and customer base). Michelacci and Silva (2007), for instance, show both that in Italy and the US entrepreneurs are more likely to obtain bank credit when the firm is local and that the probability of working in the province of birth is higher for entrepreneurs (whether or not start-ups) than for employees. This result is in line with Blanchflower (2000), who finds that in most OECD countries self-employed workers are less willing to move from their neighborhood, town or region than employees. In particular, Italy is the OECD country among the 23 analyzed in the paper with the least willing-to-move self-employed individuals. In Italy mobility is surprisingly limited also among students, who are generally one of

[6] Data from the Bank of Italys 2004 Survey of Household Income and Wealth show that just 12 percent of the employed individuals have worked both as employees and as self-employed during their life. In contrast, 76 percent (12 percent) of the workers performed just pay-roll (self-employed) jobs.

[7] According to Alesina et al. (2009), in some countries family ties are weaker than in others for cultural reasons. In the nations with strong family ties, geographical labor mobility is low because living close to the family increases people's utility and strong family ties provide benefits only to individuals living close to their relatives (see also Alesina and Giuliano, 2007). Moreover, people prefer highly regulated markets (for instance, job security is the work characteristic most valued by individuals), which, in turn, further diminishes labor mobility.

the most mobile segment of the population, even in the areas endowed with low-quality universities (e.g., the South). Indeed, according to Brunello and Cappellari (2008) almost three quarters of the Southern students graduates in the South, but just 8 percent (20 percent) of them moves the North (Center), in spite of the fact that individuals graduating in a Northern faculty earn higher employment-weighted wages than those graduating in a Southern faculty.[8]

Contrary to the predictions of the literature on agglomeration, we find that, other things being equal, three years after graduation college graduates are more likely to start an activity of their own in a small town than in a large city. In particular, each 100,000-inhabitant increase in the province's population level *reduces* the probability of being an entrepreneur by about 0.2 percent. The market size penalty persists after instrumenting urbanization with three different sets of instrumental variables. We then investigate whether our finding can be explained by the presence of urban amenities or dis-amenities, large cities' more intense competition, and higher cost of labor. Our results indicate that after controlling jointly for all these province characteristics (especially for competition and cost of labor) the largest markets do benefit from urbanization externalities: each 100,000 inhabitant-increase *raises* the chance of entrepreneurship three years after graduation by 2.4 percent. Moreover, we find that returns to entrepreneurship *increase* with market size (after controlling for self-selection into the largest markets), in line with the predictions of the literature: each 100,000-inhabitant increase in province's population size raises young entrepreneurs' net hourly earnings by 0.2 percent.

Our results are compatible with the hypothesis that agglomeration externalities increase productivity in the largest markets, since entrepreneurs earn relatively more there than in the smallest towns.

The paper is organized as follows. The next section describes the data and provides descriptive statistics. Section 3 presents the econometric results and the robustness checks. Section 4 tests alternative hypotheses which might explain our results; the last one concludes.

2 The data

The main data source of this paper is the Survey on the Early Career of College Graduates (SECCG, "Indagine sull'inserimento professionale dei laureati") conducted by ISTAT every three years.[9] Among the Italian surveys currently available, SECCG offers the most detailed information on

[8] The authors ascribe the low student mobility to North-South cost differentials (university fees, rents, etc.), rather than to the existence of financial constraints. According to Makovec (2006), Southerners graduating in the North earn 25 percent more than those who stay and 6 percent more than those who move to the North after graduation.

[9] In the first semester ISTAT extracts a random sample (stratified on the basis of gender, faculty and university chosen) from the universe of the individuals graduating from college in that year. In the second semester ISTAT interviews the sampled individuals – about 16 percent of the total – by phone (except for the 1998 wave, in which questionnaires were sent by mail). All answers are doubled-checked with each college graduate's personal data provided by the universities. For the 2004 survey, in particular, interviewers could verify the answers during the interview (with the CATI technique).

recently graduated individuals' demographic characteristics, college attended, ability, family background, current employment and income. The survey also collects information on the province of work, enabling us to compute the impact of urbanization on the probability of transition from university into entrepreneurship. In particular, we analyze the individuals graduated in 1995, 1998 and 2001, and interviewed, respectively, in 1998, 2001 and 2004.

To compute the urbanization variable, we merge our data set with the Census' population size, by year of interview and province of work (the finest disaggregation available in the survey; Figure 1). Our sample is distributed in all the 103 Italian provinces for what it regards the place of birth, work and residence, and in 61 provinces with respect to the place of study.[10] We complement the data base with other variables at the provincial level drawn from various sources, described in the Appendix.

Our sample, consisting of 33,740 college graduates, has been obtained after excluding: the more-than-35 year-old individuals, foreigners, Italians working abroad, the agricultural-sector workers, and the non-employed people. Moreover, we exclude the individuals who were already employed in the current job before graduating because we intend to focus on work choices after graduation and the former might be a selected sample of the working population.

Seventeen percent of our sampled individuals is an entrepreneur (Table 1). In addition to the individuals strictly identifying themselves as such, our definition of entrepreneur includes professionals and excludes the members of a family business, similarly to Michelacci and Silva (2007). Indeed, like entrepreneurs, the members of the arts and professions take decisions independently and are risk-bearing, since they are personally liable for their business activity. Conversely, family business members are often not involved in decision making and do not necessarily share the risk with the firm owner. Our definition excludes managers, consultants, free lance workers and craftsmen.[11] Unlike Michelacci and Silva, we do not have information on managers and we exclude craftsmen because in Italy, where the pressure of taxation and employees' contributions is high, the recorded information on this type of self-employment category might be measured with error because of its greater facility to evade taxes. Indeed, according to Torrini (2002), Italy's share of self-employment in total employment is 13 percent points higher than it would be expected in a country with its level of income.[12]

To analyze the large-small market differences in our variables' distribution, we provide the descriptive statistics for the total sample, the individuals working in the 10-percent-largest Italian

[10] Note that not all the Italian provinces are endowed with a university: in 1995 only 43 out of 103 had at least one college, in 1998 the number raised to 58, and in 2001 it stabilized at 59.

[11] We also exclude the so-called co.co.co (free-lance workers) because they generally perform the same tasks as employees, in spite of the fact that they are considered self-employed by ISTAT (since they have no guarantees as payroll employees).

[12] Indeed, Italy's share of self-employment in total employment, which is inversely correlated to the degree of a country's economic development, is the second highest in Europe (Torrini, 2002).

provinces,[13] and those employed in the rest of the country (Table 1). In line with the literature, human capital-intensity grows with city size: the share of individuals whose parents have a secondary education or a college degree is significantly higher in the largest than in the least populated provinces, while the share of parents with a primary or middle school attainment is significantly lower. Nevertheless, the share of college graduates who hold a Ph.D. does not vary across provinces of different size. The largest cities seem to be also endowed with the most able people, since on average they host a greater share of college graduates with both honors and higher final grades, and a higher percentage of individuals graduated on time. However, they also exhibit a higher share of self-employed men's offsprings, suggesting that intergenerational persistence grows with city size. Cities differ also with respect to the type of school attended: large city-students tend to choose more frequently lyceums, while the small-town residents attend more often the vocational, surveyor, and teacher schools. The smallest provinces exhibit just a slightly higher share of women and older people than the largest ones, while there are no statistically significant differences in the number of siblings.

Surprisingly, a substantially larger share of entrepreneurs works in the least populated areas (19 percent against 15 percent in the largest markets; see Figures 1 and 2), while there is no statistical difference in the spatial distribution of the other categories of self-employed workers (i.e., craftsmen, members of a family business, active shareholders, consultants and free lance workers). Conversely, in large cities 70 percent of the employed individuals works as an employee (against 65 percent in a small town). Finally, earnings are significantly higher in the largest cities than elsewhere (at the 1 percent statistical significance level).

As expected, the provincial-level variables showing a statistically significant higher differential between the top 10th percentile of the population distribution and the rest of the country are those regarding urban dis-amenities (i.e., house prices) and competition (share of self-employed workers in the province's individual sector). In contrast, but in line with literature, the share of local banks is negatively correlated to the size of the market (40 percent is located in the smallest markets, against 25 percent in the largest provinces).

Table 2, presenting the descriptive statistics for the sub-sample of entrepreneurs, confirms almost all the previous findings: city size is positively correlated with human capital, intergenerational persistence, earnings, and ability (even though cities of different size do not statistically differ in the percentage of entrepreneurs who graduated on time).

[13] More precisely, the provinces in top 10th percentile of the population distribution (i.e., having more than 933, 860 inhabitants) are: Milan, Rome, Naples, Turin, Bari, Palermo, Brescia, Salerno, Catania, Bergamo, and Florence.

3 Results

3.1 Chances of being entrepreneur

The descriptive statistics show that the percentage of recently graduated entrepreneurs is 4 percent lower in the largest cities than in the rest of the country, in contrast to the predictions of the agglomeration theory. In this section we are going to test empirically whether this result holds after controlling for individual characteristics. In particular, we estimate the impact of population size on the likelihood of being an entrepreneur three years after graduation with a probit model.[14] Using repeated cross-sectional data, we estimate the following equation on the sample of employed individuals:

$$Prob(Entrepr_{ijt} = 1) = \alpha + \Sigma\beta X_{ijt} + \delta Pop_{jt} + \gamma RFE_j + \lambda t + u_{ijt}, \quad (1)$$

where $Entrepr_{ijt}$ is a dummy variable equal to one if the individual i working in province j and interviewed at time t is an entrepreneur; Pop is the province of work's population level (our urbanization variable), X the personal observable characteristics, t the year-of-interview dummies, and RFE the region specific fixed effects (Piedmont is the benchmark), similarly to Ciccone (2002). To ensure that our results are not driven by area-specificities different from urbanization. we include regional dummies, capturing the effect of local taxes, natural advantages or the presence of amenities (see Rosenthal and Strange, 2003).

The first column of Table 3 shows our basic specification, including sex, age, education, civil status and number of siblings as individual characteristics. In the second column ((3.2)) we add the secondary school and faculty-group attended,[15] because some types of training are better suited for entrepreneurship than others. In column (3.3) we include the effect of intergenerational persistence with two dummy variables equal to one if the individual's father and/or mother are/were self-employed. We also add a proxy of family networks (equal to one if the individual found a job through relatives or friends), which might easy access to entrepreneurship through personal and business contacts or customer base (see Blanchflower, 2000). In the same specification we also control for parents' education level. In column (3.4) we add a few proxies for ability (grade obtained at college, a dummy for graduating with honors, and a variable equal to one if the student graduated on time) and two variables denoting whether the individual was working – occasionally or continuously – while studying. Finally, in specification (3.5) we add individual's work experience (number of

[14] We always correct standard errors for the possibility that the residuals are inter-dependent at the provincial level (33,740 observations distributed in three time periods over 103 provinces provides our estimations with enough degrees of freedom; see Card, 2001).

[15] The former include: schools for surveyors, vocational schools and teachers' training schools ('liceo' is the benchmark); the latter, chemistry-pharmaceutical, biology and geology, medicine, science, engineering, architecture, agriculture, political and social science, law, humanities, foreign languages, teaching, psychology (economics and statistics is the omitted faculty).

months worked) and sector of employment,[16] as some industries require a larger amount of initial capital than others.[17]

Results indicate that urbanization is significantly negative at the 1 percent statistical level in all specifications. Indeed, each $100,000$ inhabitant-increase in the province of work's population level lowers the chances of being entrepreneur by 0.2-0.3 percent. This result is stable across all the columns ((3.1)-(3.5)).

When analyzing the other covariates, we find that women are 6-7 percent less likely to become entrepreneurs. In contrast, being married increases the chances of becoming entrepreneur by about 1 percent, while having a Ph.D. degree or a higher number of siblings does not have any effect.[18] Increasing the age of the average individual (i.e., 29.6 years old; Table 1) raises the probability of becoming an entrepreneur by $0.1 - 0.7$ percent. Having attended the science or chemistry faculties lowers the likelihood of starting an activity of one's own, while attending the majority of the remaining colleges (e.g., engineering, architecture, agriculture, law; results available on request) and vocational schools (specialized in industrial subjects) increases it. Most importantly, we find evidence of intergenerational persistence. Indeed, family background favors entrepreneurship (similarly to Silva, 2006), while ability at school does not. In particular, having a self-employed father increases the probability of becoming entrepreneur by $6 - 9$ percent, while having a self-employed mother raises it by about 4 percent (though the latter is not always significant). As expected, the family network proxy increases the chances of entrepreneurship by $6 - 8$ percent. In contrast, final grade at college and the honors dummy are non-significant, while having graduated on time is positive and significant.[19] Probably, being able to organize one's self so as to graduate on time is a quality better reflecting the capabilities required for working as an entrepreneur (e.g., being efficient, well organized, etc.) than school grade, especially in the light of the fact that in Italy most people graduate with a certain delay (just 15 percent of the sampled individuals graduated on

[16] In particular, the sector breakdown is the following: distribution services, hotels and restaurants; transport, travel and communication services; financial services; professional services (legal and architectural services, consultancies, market research, public opinion polling services, real estate services, rental/leasing services, advertising and research and development); computer and related services; educational services; health related and social services; public administration; other public, social and personal services (including trade unions, manufacturers' and political associations); chemicals, drugs and pharmaceuticals; engineering industry, machinery and equipment; construction. The omitted category is other industries.

[17] Indeed, Rajan and Zingales (1998) show that sectors like Drugs and Pharmaceuticals or Plastics need a larger initial scale than industries like Tobacco, Pottery or Leather. The authors rank sectors also with respect to companies' age and find that industries like Ship or Machinery are much more dependent on external funding if the company is young (less than 10 years old).

[18] This result is not surprising, since three years after graduation just 0.2 percent of the sampled individuals completed a Ph.D.

[19] Note that using the same survey, Bagues, Sylos Labini, and Zinovyeva (2008) show that the individuals who graduate in faculties providing higher marks on average tend to have a worse performance in terms of both employment and wages than those graduating in faculties that on average provide lower marks. The authors find that the large variation of grades across colleges reflect more differences in grading standards than differences in students' quality. To avoid measurement error we tested an alternative specification whereby we normalized grades obtained by individuals with the average mark of the college and faculty group (e.g., scientific, chemical-pharmaceutical, economic-statistic, etc.). Results (available upon request) are very similar to those reported in Table 3.

time; Table 1). The sectors favoring entrepreneurship are mainly in the servicing industry, possibly because they require a lower endowment of initial capital, while engineering industry, machinery and equipment is the sector where it is more difficult to become an entrepreneur.

Finally, we also tested whether parental capital or personal abilities play a specific role in the largest markets, by interacting population size with both the proxies of intergenerational persistence and ability. The only significant interaction is the one with the graduated-mother dummy, but its impact on the chances of becoming an entrepreneur in the largest markets is negligible (results not reported but available upon request). In both specifications the coefficient of the urbanization variable remains stable, at the 1 percent statistical significance level. Thus, we take specification (3.5) as our benchmark.

3.2 The potential endogeneity problem

Our estimates of urbanization are unbiased and consistent only under the hypothesis that we have not omitted any variable correlated to the province's population level. Conversely, if individuals' composition across markets of different size varied along unobservable dimensions that affected the probability of being an entrepreneur, previous section's agglomeration estimates would be biased and inconsistent. In particular, the negative urbanization effect could be due (entirely or in part) to a higher large-city endowment of people less capable of becoming entrepreneurs for unobservable reasons.[20] These unobserved characteristics should be such as to offset the positive effect due to the largest markets' higher intensity of measured ability (see Section 2), which we are able to measure quite accurately and without measurement error (as mentioned in the Introduction). Thus, the largest cities should be endowed with a higher number of people more able at school, better able to organize their time so as to graduate on time, but less entrepreneurial - which we find quite unlikely.[21]

Nevertheless, in this section we deal directly with the potential endogeneity problem by instrumenting urbanization. To enhance the credibility of our estimates we diversify our instruments, using three different sets of variables (Murray, 2006). Thus, we first instrument urbanization with pre-World War II population size (in 1921), similarly to Ciccone and Hall (1996), Rice, Patacchini and Venables (2006), Combes, Duranton, Gobillon and Roux (2008) and Guiso and Schivardi (forthcoming). Indeed, while the population distribution has been stable over time (see Black and Henderson (1999) for the US), its 1921 pattern should have no direct effect on current entrepreneurship chances besides the indirect effect through current population size. Second, following Ciccone (2002), who instruments employment density in NUTS 3-regions (corresponding to

[20] Note that according to the literature (e.g., Nocke, 2006), it should be the reverse: the more able entrepreneurs self-select into the largest cities.

[21] Note that according the literature (e.g., Calvo and Wellisz (1980), or Le, 1999) managerial ability is determined by the level of education, which in our sample is the same for all individuals.

Italian provinces) with their total land surface, we use province's area. The validity of this instrument relies on the fact that the provincial borders reflect historically predetermined administrative criteria rather than local economic conditions. Thus, province's area is not a determinant of current employment choices, while being positively correlated to the level of the resident population. Third, we use five geological variables: seismic hazard, the portion of the province's area covered by marsh, that covered by forests, the share of the province's land destined to agriculture, and the degree of terrain irregularity (i.e., the difference between the average maximum and minimum altitude of the province). To the best of our knowledge, there are few papers in the literature instrumenting agglomeration with soil-type characteristics (Rosenthal and Strange (2008b); Combes, Duranton, Gobillon and Roux (2008); and Di Addario and Patacchini, 2008), although the nature of soil is found to be a good predictor of the population spatial distribution (since people in the past used to settle in the areas with lower risk of earthquakes, far from marshes, with land suitable for building). In contrast, nowadays these characteristics are not anymore determinants of industrial development and should therefore be little correlated to the choice of becoming an entrepreneur.

Results are reported in Table 4. In column (4.1) we instrument urbanization with population size in 1921,[22] in the following specification ((4.2)) we include the province's total land area, and, finally, in column (4.3) we add the five geological variables. The first row of Table 4 shows the IV estimates of the urbanization effect. Strikingly, we obtain the same result across the columns, similar to those obtained in Table 3. This suggests that there might not be an endogeneity problem. In particular, a 100,000-inhabitant increase in the province's population reduces the probability of being an entrepreneur by 0.2 percent (significant at 1 percent).

Table 4 reports also the first-stage results of the instruments used. Population size in 1921 is always positive and significant at the 1 percent level across all the columns, as expected. Contrary to expectations, land area is negative and significant in column (4.2), although the coefficient is almost negligible in size. However, in column (4.3) the coefficient becomes significantly positive, probably because the third specification includes controls for the actual habitability of land area. Indeed, soil characteristics are all significantly negative, except for seismic hazard and the amount of land covered by marsh, which are non-significant (column 4.3).

Pseudo R-squared statistics, measures of instrument relevance and tests of over-identifying restrictions are reported at the bottom of Table 4. The partial R-squared statistics, measuring the correlation between population size and the instruments after partialling out the effect of the other exogenous variables, has very high values (above 0.92) across all the columns. The first-stage F-statistic of the excluded instruments, a diagnostic tool to evaluate the seriousness of the finite-sample bias and instrument weakness (Bound, Jaeger and Baker, 1995), always rejects the null

[22] Alternatively, we also used population at the time of Italy's unification (1861), with no different results (available upon request). Since this variable is not available for 15 out of 103 provinces, we prefer reporting the findings corresponding to population in 1921, because its use does not create any selection problem.

hypothesis that our instruments are jointly equal to zero. Since in the second and third columns the number of instruments is greater than that of the instrumented variables, we perform an over-identification test. The Hansen-Sargan test can never reject the over-identifying restriction null hypothesis at any reasonable level. Since the 2SLS and the probit estimation coefficients are very similar in size and the Hausman test can never reject the null hypothesis of no difference between them (results not reported but available upon request), we will refer to Table 3's column (3.5) as our benchmark specification in what follows.

4 Potential explanations of the negative urbanization effect

4.1 Rivalry, congestion, urban amenities, cost of labor and outside options

We have showed that the probability that a college graduate becomes an entrepreneur three years after graduation decreases with city size. This result is robust to controlling for a wide variety of individual characteristics and regional fixed effects, and to correcting for the potential endogeneity of urbanization. The lack of endogeneity is not too surprising in the light of the fact that we are able to control for personal ability quite precisely and in the light of the fact that labor mobility is particularly low in Italy, especially among the self-employed individuals (see the Introduction). In this section we test alternative hypotheses that could potentially explain the negative urbanization effect. In particular, we test whether a few city characteristics (described in the Appendix) affect the individual's choice of becoming entrepreneur differently in the largest and in the smallest markets. To investigate this possibility, we add the city characteristics described below and their interactions with population size to our benchmark specification (reported in column (3.5)). Results are shown in Table 6.

Thus, we first test whether the negative urbanization differential can be explained by the largest markets' more intense competition (see Combes et al., 2009), which might particularly discourage young people at the beginning of their career (see Table 1). Indeed, competition might lower firms' price-cost margins, requiring a level of efficiency that entrepreneurs often acquire only through experience. We measure rivalry with the share of self-employed workers in the individual sector in the province's self-employed total workers (column (6.1)). As expected, the more intense is competition the less likely are college graduates to become entrepreneurs. Moreover, the greater rivalry found in the large cities (see Table 5 for the correlations) explains entirely the negative urbanization effect: population matters only when associated to competition. In particular, living in the largest markets enhances the negative competition effect by 0.5 percent, but does not have an impact on the probability of being an entrepreneur *per se*.

In the second specification ((6.2)) we test whether young college graduates are particularly discouraged from starting their own activities in the largest cities because land is most expensive (see Table 5), raising firms' fixed setup costs. If there are credit market imperfections, fewer

young entrepreneurs might be able to finance the extra initial investment necessary to cover the higher fixed costs in the largest markets. In the quality-of-life-framework (Roback, 1982) firms prefer locating in the most amenity-intensive markets as long as their utility from productive urban amenities (e.g., availability of infrastructures like airports, better-quality services, specialized schools, etc.) exceeds the dis-utility from congestion.[23] Congestion may discourage more young than experienced entrepreneurs, as, for instance, saturated local markets might reduce received prices (Henderson, 1994), increasing the difficulties of starting-up. We measure urban dis-amenities with house prices per square meter (column (6.2)). However, house prices are non-significant and their introduction does not eliminate the negative urbanization effect: adding $100,000$ inhabitants to the province of work's population level lowers the probability of being entrepreneur by 0.14 percent.

Third, we test whether young college graduates are encouraged to start their activities in the smallest towns because these are endowed with the amenities entrepreneurs most care for. For instance, entrepreneurs might prefer locating in the towns with a stronger culture of entrepreneurship (Glaeser, 2007), a higher social capital or a larger presence of local banks. In Italy, the most entrepreneurial areas, richer of social capital and civic endowment, coincide to a large extent with the municipalities ("comuni") that in the Middle Ages become republics (as opposed to the Southern monarchical regions), which are, indeed, small- and medium-sized (Putnam, 1993).[24] Thus, in column (6.3) we include four proxies of social capital *á* la Putnam (1993): number of associations per $100,000$ inhabitants, tradition of political autonomy, collective action propensity, and amount of donated blood, which are all negatively correlated to province population size. We also add an index of welfare (inversely related to city size), meant to capture the fact that entrepreneurs might prefer small towns because they offer a better quality of life. In this specification we also control for the share of local banks' counters in total banks' counters, which is highest in the smallest towns (see Table 5). Indeed, accessing external financing might be particularly difficult for young entrepreneurs (in spite of being at a stage of the life cycle when they need to rely more on it), as banks judge their activity very risky (see Blanchflower and Oswald, 1998). We expect this variable to have a positive direct effect on entrepreneurship, because local banks are thought of facilitating local entrepreneurs' start-up financing, as they tend to both have local owners and to be specialized in providing credit locally (Farabullini and Gobbi, 2000). Column (6.3) shows that the only significant (and positive) amenity variable is the propensity to collective action, while the others are non-significant. However, the introduction of urban amenities does not eliminate

[23] However, entrepreneurs would unambiguously prefer locating in low-amenities places, where land prices are lower, if large-city amenities were unproductive (e.g., higher number of cinemas and theaters, greater variety of shopping centers, wider offer of sport venues, etc.). In this case, only employees would prefer living in large cities.

[24] As the author suggests, the current economic development of Italian regions depends more on the civic endowment built in the Middle Ages than on their initial economic conditions, and causality runs from civics to economics rather than the reverse.

the negative urbanization effect: a 100,000 inhabitant-increase in city size reduces the chances of entrepreneurship by 0.38 percent.

Fourth, we test whether young college graduates are discouraged from starting an activity of their own in the largest markets because, on average, they have to pay a higher cost of labor. To test this hypothesis, we add provinces' average wages for employees, and we find that market size matters only when associated to the large-city higher cost of labor, but it does not have an impact on the probability of being an entrepreneur when considered on its own (column (6.4)).

Finally, in the last specification ((6.5)) we include all the provincial variables reported in columns (6.1)-(6.4).[25] In this case, the urbanization effect becomes positive and significant. Thus, once we take into account the province characteristics that might have an impact on entrepreneurship through market size (especially competition and labor costs), we do find a positive urbanization externality on the probability of being an entrepreneur. In particular, each 100,000 inhabitant-increase in the province of work raises the chance of entrepreneurship three years after graduation by 2.4 percent.

4.2 Returns to entrepreneurship

In this section we test whether there are urban differentials in the returns to entrepreneurship. Indeed, the descriptive statistics reported in Table 2 support the hypothesis of a positive correlation between earnings from entrepreneurship and province's population level, since, on average entrepreneurs earn about 3.8 percent more in the most populated areas than in the smallest towns (Table 2; see Figures 1 and 3). We now examine whether this is still the case after controlling for individuals' characteristics. In particular, we estimate a standard Mincerian earning function (Mincer, 1958) by regressing the logarithm of entrepreneurs' hourly earnings on the individual characteristics used in Table 3. Results, shown in Table 7, indicate that, once we take into account individual characteristics, young educated entrepreneurs' earnings do not vary with city size.

However, OLS estimates might be biased because they do not take into account the potential self-selection of workers into entrepreneurship (see van der Sluis, van Praag and Vijverberg, 2008). In particular, self-selection would bias our agglomeration estimates if there were omitted variables affecting both the probability of observing an entrepreneur and her/his earning equation. Thus, we estimate the earning regression through a Heckman selection correction model (results shown in Table 8). The selection variables used to identify the first stage entrepreneurship-chance equation

[25] We also tested whether large cities do not favor entrepreneurship because they offer a wider variety of outside options (e.g., working as employees in the public sector, in large firms, etc.), or, conversely, whether the least populated markets, where the offer of jobs in the public sector is more limited, provide a higher incentive for entrepreneurship "out of necessity". According to Poschke (2008), for instance, a large part of entrepreneurs (10 percent in the US) becomes such more because of lack of suitable alternatives than in order to pursue an opportunity (see also Lazear, 2005). Thus, to test whether in the largest market the difference between earnings from entrepreneurship and wages is not sufficient to cover the risk of starting a business activity, we also controlled for the log of the ratio between the province's average employee wages and the province's average earnings from entrepreneurship, with no significant results (available upon request).

are the two intergenerational dummies (equal to one if the father/mother are self-employed, zero otherwise), because in Italy there is a high intergenerational transmission of parental occupation, especially the father's (see Section 3.1). Indeed, the first stage results, reported at the bottom of Table 8, show that the effect of father occupation on the probability of selection into entrepreneurship is always positive and significant at the 1 percent statistical level and is rather large in size (the probability of being entrepreneur is $27-46$ percent higher for the offsprings of self-employed men). Moreover, we find a significant correlation (ρ) between the error terms of the selection (i.e., the probability of being entrepreneur) and the earnings equations in all specifications (at least at the 10 percent statistical level), confirming that self-selection is an issue in this context.

Results show that, once we correct for self-selection, the urbanization effect is significantly positive, in line with the predictions of the literature and with our descriptive statistics. In particular, each $100,000$ inhabitant-increase in population size increases entrepreneurs' earnings by 0.2 percent (at the $5-10$ percent statistical significance level).

Other studies on Italian employees find that college graduates are less able than the least educated workers to reap-off the benefits from agglomeration externalities (whether urban or industrial). For instance, Di Addario and Patacchini (2008) obtain that employees with at least a university degree earn $0.4-0.5$ percent less each $100,000$-inhabitant increase in the population of the local labor market of residence, in spite overall average wages raise by 0.1 percent. Similarly, according to de Blasio and Di Addario (2005) college graduates' earnings from salaried work are $9-14$ percent lower in industrial districts (i.e., the local labor markets with a strong agglomeration of small- and medium-sized manufacturing firms) than elsewhere in the country. Conversely, the employees with elementary education or less earn a premium over their counterparts outside industrial districts.

Our results indicate that contrary to employees, the urbanization externality benefits do accrue entrepreneurs, at least the extent to that they succeed in opening an activity in the largest markets.

5 Conclusions

In this paper we analyze empirically the effects of *urbanization* economies on the probability that Italian young college graduates become entrepreneurs (as opposed to employees or other self-employed workers). To this aim we analyze the information contained in the Survey on the Early Career of College Graduates in 1998, 2001 and 2004, interviewing individuals three years after college graduation. We find that each $100,000$-inhabitant increase in the population level of individuals' province of work lowers the probability of being an entrepreneur three years after graduation by 0.2 percent. This result is robust to controlling for regional fixed effects and to instrumenting urbanization with three different sets of instruments. However, after controlling for urban amenities and dis-amenities (i.e., housing costs), and, above all, for province's competition and cost of

labor we are able to find the presence of a positive urbanization externality. In particular, every 100,000 inhabitant-increase raises the chance of entrepreneurship three years after graduation by 2.4 percent.

We also test whether there are large-city differentials in returns to entrepreneurship and we find that every 100,000-inhabitant increase in the province's population *raises* entrepreneurs' net hourly income by 0.2 percent. Thus, young entrepreneurs are able to reap-off the benefits from urbanization externalities, as long as they succeed in entering the largest markets.

Our results are policy-relevant. In 1995, for instance, the Italian Parliament passed a bill (L. 95/95) providing subsidies to the young entrepreneurs (below 35 years old) residing in the least developed regions of Italy (i.e., the South), in the rural areas or in zones in industrial decline (the European Commission's objective 1, 2 and 5b).[26] This paper has shown that young entrepreneurs are discouraged from starting their activity in the largest markets, despite they would gain a monetary premium there. It would thus be advisable to encourage the location of start-up firms in the largest rather than in the smallest markets, in order to enable young entrepreneurs, who presumably face greater difficulties than more experienced firm-owners, to benefit from urbanization externalities.[27]

References

Alesina, Alberto, Yann Algan, Pierre Cahuc and Paola Giuliano. 2009. "Family Values and the Regulation of Labor, " mimeo.

Alesina, Alberto, and Paola Giuliano. 2007. "The Power of the Family, " NBER WP No. 13051.

Arrighetti, A., Lasagni A. and Serravalli G. 2001. "Capitale sociale, associazionismo economico e istituzioni: indicatori statistici di sintesi, " Working Paper No. 4/2001, Universita' di Parma, Serie: Economia e Politica economica.

Bagues Manuel F., Sylos Labini Mauro, and Natalia Zinovyeva. 2008. "Differential Grading Standards and University Fundings: Evidence from Italy," Working Paper No. 2008-07, FEDEA.

Baldwin, Richard E., and Toshihiro Okubo. 2006. "Heterogeneous Firms, Agglomeration and Economic Geography: Spatial Selection and Sorting" *Journal of Economic Geography*, 6, 323–346.

[26] Of course, young entrepreneurs can still apply for subsidies provided by other laws (e.g., L. 215/92, L. 236/93, L. 608/95, L. 608/96, L. 135/97 and L. 448/98) tailored for specific groups (i.e., women, small firms, etc.). The Law 95/95, specifically designed for young entrepreneurs, was previously financed in 1986 (L. 44/86), but was then circumscribed only to the South (though in 1994 it was extended to some of the least developed areas in the North). This bill provides both monetary and non-monetary incentives to locate in the most disadvantaged areas (i.e., subsidies or tax breaks, as well as technical assistance, tutoring and tailored training courses). Note that often governments see entrepreneurship as a way out of poverty or underdevelopment (Blanchflower, 2000).

[27] For other empirical evidence on the existence of agglomeration externalities in Italy see, for instance, Cingano and Schivardi (2004), who find that city-size raises local total factor productivity, and Guiso and Schivardi (forthcoming), who show that entrepreneurial incidence raises average TFP.

Behrens, Kristian, and Frederic Robert-Nicoud 2008. "Survival of the Fittest in Cities: Agglomeration, Selection, and Polarization," Discussion Paper No. 7018, CEPR.

Blanchflower, David G. 2000. "Self-employment in OECD Countries," *Labour Economics*, 7, 471–505.

Blanchflower, David G., and Andrew J. Oswald. 1998. "What Makes an Entrepreneur?," *Labour Economics*, 7, 471–505.

Black, Duncan, and Vernon I. Henderson. 1999. "Spatial Evolution of Population and Industry in the United States," *American Economic Review Papers and Proceedings*, 89, 321–327.

Bound, J., D. Jaeger, R. Baker. 1995. "Problems with Instrumental Variables Estimation when the Correlation between the Instruments and the Endogenous Explanatory Variables is Weak." *Journal of American Statistical Association* 90 (430):443-50.

Brunello, Giorgio, and Lorenzo Cappellari. 2008. "The Labour Market Effects of *Alma Mater*: Evidence from Italy," *Economics of Education Review*, 27, 564–574.

Calvo, G. and S. Wellisz. 1980. "Technology, Entrepreneurs and Firm Size," *Quarterly Journal of Economics*, 95, 663–678.

Card, David. 2001. "Estimating the Return to Schooling: Progress on some Persistent Econometric Problems," *Econometrica*, 69, 1127–1160.

Ciccone, Antonio. 2002. "Agglomeration Effects in Europe," *European Economic Review*, 46, 213–227.

Ciccone, Antonio, and Robert E. Hall. 1996. "Productivity and the Density of Economic Activity," *American Economic Review*, 78, 89–107.

Cingano, Federico, and Schivardi Fabiano. 2004. "Identifying the Source of Local Productivity Growth," *Journal of the European Economic Association*, 2, 720–742.

Combes, Pierre-Philippe, Gilles Duranton, Laurent Gobillon and Roux. 2008. "Estimating Agglomeration Economies with History, Geology, and Worker Effects," mimeo.

Combes, Pierre-Philippe, Gilles Duranton, Laurent Gobillon, Diego Puga and Roux. 2009. "The Productivity Advantages of Large Cities: Distinguishing Agglomeration from Firm Selection," mimeo.

de Blasio, Guido, and Sabrina Di Addario. 2005. "Do Workers Benefit from Industrial Agglomeration?," *Journal of Regional Science*, 45, 797–827.

Di Addario, Sabrina, and Eleonora Patacchini. 2008. "Wages and the City. Evidence from Italy ," *Labour Economics*, 15, 1040–1061.

Duranton, Gilles, and Diego Puga. 2004. "Micro-Foundations of Urban Agglomeration Economies," in J.V. Henderson and J.F. Thisse (eds.), *Handbook of Urban and Regional Economics*, Amsterdam and New York: North Holland.

Farabullini, Fabio and Giorgio, Gobbi. 2000. "Le banche nei sistemi locali di produzione," in L.F. Signorini (ed.), *Lo sviulppo locale*, Roma: Meridiana.

Glaeser, Edward L. 2007. "Entrepreneurship and the City," Discussion Paper No. 2140, HIER.

Gruppo di Lavoro MPS. 2004. *Redazione della mappa di pericolosita' sismica prevista dall'Ordinanza PCM 3274 del 20 marzo 2003. Rapporto Conclusivo per il Dipartimento della Protezione Civile*, INGV, Milano–Roma.

Guiso, Luigi, and Fabiano Schivardi. Forthcoming. "What Determines Entrepreneurial Clusters?," *Journal of the European Economic Association.*

Guiso, Luigi, and Fabiano Schivardi. 2007. "Spillovers in Industrial Districts," *The Economic Journal*, 117, 68–93.

Helsley, Robert W., and William C. Strange. 1990. "Matching and Agglomeration Economies in a System of Cities," *Regional Science and Urban Economics*, 20, 189–212.

Henderson, I. Vernon. 1994. "Where Does an Industry Locate?," *Journal of Urban Economics*, 35, 83–104.

Henderson, I. Vernon. 1983. "Industrial Bases and City Sizes, " *The American Economic Review*, 73, 164–168.

ISTAT. 2003. *Parentela e reti di solidarieta'. Indagine multiscopo sulle famiglie.* Rome, Istat.

Kim, Sunwoong. 1990. "Labor Heterogeneity, Wage Bargaining, and Agglomeration Economies," *Journal of Urban Economics*, 28, 160–177.

LaFountain, Courtney. 2005. "Where Do Firms Locate? Testing Competing Models of Agglomeration," *Journal of Urban Economics*, 58, 338–366.

Lazear, Edward, P. 2005. "Entrepreneurship," *Journal of Labor Economics*, 23, 649–680.

Le, A. 1999. "Empirical Studies of Self-Employment," *Journal of Economic Surveys*, 13, 381–416.

Makovec, Mattia. 2006. "Does it Pay to Study far from Home? Explaining the Returns to Geographic Mobility of Italian College Graduates," mimeo.

Melitz, Marc, and Gianmarco Ottaviano. 2008. "Market Size, Trade and Productivity" *Review of Economic Studies*, 75, 295–316.

Michelacci, Claudio, and Olmo Silva. 2007. "Why so Many Local Entrepreneurs?," *Review of Economics and Statistics*, 89, 615–633.

Mincer, Jacob. 1958. "Investment in Human Capital and Personal Income Distribution, " *Journal of Political Economy*, 66, 281–302.

Moomaw, Ronald L. 1983. "Is Population Scale a Worthless Surrogate for Business Agglomeration Economies?," *Regional Science and Urban Economics*, 15, 525–545.

Murray, Michael P. 2006. "Avoiding Invalid Instruments and Copying with Weak Instruments," *Journal of Economic Perspectives*, 20, 111–132.

Nocke, Volker. 2006. "A Gap for Me: Entrepreneurs and Entry" *Journal of European Economic Association*, 4, 929–956.

Poschke, Markus. 2008. "Who Becomes an Entrepreneur? Labor Market Prospects and Occupational Choice," Discussion Paper No. 3816, IZA.

Porter, Michael. 1990. *The Competitive Advantage of Nations*, New York: The Free Press.

Putnam, Robert D. 1993. *Making Democracy Work*, Princeton: Princeton University Press.

Rajan, Rahuram, and Luigi Zingales. 1998. "Financial Dependence and Growth," *American Economic Review*, 88, 559–586.

Rice, Patricia, Tony Venables and Eleonora Patacchini. 2006. "Spatial Determinants of Productivity: Analysis for the Regions of Great Britain," *Regional Science and Urban Economics*, 36, 727–752.

Roback, Jennifer. 1982. "Wages, Rents and the Quality of Life," *Journal of Political Economy*, 90, 1257–1278.

Rosenthal, Stuart S., and William C. Strange. 2008a. "Agglomeration and Hours Worked," *Review of Economics and Statistics*, 90, 105–118.

Rosenthal, Stuart S., and William C. Strange. 2008b. "The Attenuation of Human Capital Spillovers," *Journal of Urban Economics*, 64, 373–389.

Rosenthal, Stuart S., and William C. Strange. 2008c. "Small Establishments/Big Effects: Agglomeration, Industrial Organization and Entrepreneurship," mimeo.

Rosenthal, Stuart S., and William C. Strange. 2008d. "Female Entrepreneurship, Agglomeration and a New Spatial Mismatch," mimeo.

Rosenthal, Stuart S., and William C. Strange. 2004. "Evidence on the Nature and Sources of Agglomeration Economies," in J.V. Henderson and J.F. Thisse (eds.), *Handbook of Urban and Regional Economics*, vol. 4, Amsterdam: Elsevier, 2119–2172.

Rosenthal, Stuart S., and William C. Strange. 2003. "Geography, Industrial Organization, and Agglomeration," *Review of Economics and Statistics*, 85, 377–393.

Silva, Olmo. 2006. "The Jack-of-All-Trades Entrepreneur: Innate Talent or Acquired Skill?, " Discussion Paper No. 2264, IZA.

Torrini, Roberto. 2002. "La diffusione del lavoro autonomo nei paesi industrializzati: alla ricerca di una spiegazione per l'anomalia italiana," mimeo.

van der Sluis, Justin, Mirjam van Praag and Wim Vijverberg. 2008. "Education and Entrepreneurship Selection and Performance: a Review of the Empirical Literature," *Journal of Economic Surveys*, 22, 795–841.

Wheeler, Christopher H. 2001. "Search, Sorting, and Urban Agglomeration," *Journal of Labor Economics*, 19, 879–899.

Appendix

Data sources of the provincial level variables

Share of self-employed workers in the individual's sector in province's total self-employed workers. Source: ISTAT.

House prices per square meter (in 2004). Source: Consulente Immobiliare. The prices, provided by real estate agents, are those actually paid in transactions. We average the prices collected in the town centers, suburbs and in-between areas to take into account the house location. We also take into account the age of the building by averaging the prices of the recently build and the new houses.

Share of local bank counters in the province's total bank counters (in 2001). Source: the Bank of Italy. Local banks are the banks whose average investment funds amount to less than 9 billion euros.

Tradition of political autonomy. Source: Isl-University of Parma. This is a dummy variable equal to one if the province has a long-standing tradition of political autonomy (zero if the province belonged to the Vatican State or was a monarchy before Italy's foundation).

Propensity to collective action. Source: Arrighetti, Lasagni and Serravalli (2001). This variable has been computed with a principal-component analysis on the basis of the following variables: the share of the craftsmen joining artisan associations in the number of artisan firms put on the register in 1970; the ratio between the number of votes in the 1970 elections for the Artisan Provincial Board and the number of artisans put on the register in 1970; the share of farms selling products to agricultural cooperatives in the number of farms in 1970; the ratio between the people joining buying associations and the number of trade licences in 1965; a dummy variable equal to one if the province has at least one joint-surety association on bank loans joining Artigianfidi that was founded before 1975 (and zero otherwise).

Number of blood sacks donated in the province every 1 million inhabitants (in 1995). Source: AVIS (Italian Voluntary Association for Blood). In four provinces (Genova, Caserta, Avellino and Caltanissetta) the value is set to zero because they do not host AVIS.

Number of associations per $100,000$ *inhabitants* (in 1985). Source: Isl-University of Parma.

Welfare index. Source: Il Sole 24 Ore. The index, named Gross Domestic Welfare, is a combination of 8 variables at the provincial level: value added per inhabitant at current prices, life

expectation at birth, enrolment rate at college, per-capita expenditure for entertainment, participation to European elections in 2009, tons of CO2 in real value added, number of thefts, burglaries, and murders per 100,000 inhabitants, number of voluntary work associations per 1,000 inhabitants.

Average wages for employees. Source: ISTAT. This variable, obtained from the SECCG, is the average of college graduate earnings (3 years after graduation) at the provincial level.

Population size in 1921. Source: ISTAT.

Province's land area. Source: ISTAT.

Amount of land destined to agriculture. Source: Agenzia Nazionale per la protezione dell'ambiente.

Amount of land covered by marsh. Source: Agenzia Nazionale per la protezione dell'ambiente.

Amount of land covered by forests. Source: Agenzia Nazionale per la protezione dell'ambiente.

Difference between maximum and minimum altitude. Source: Agenzia Nazionale per la protezione dell'ambiente.

Seismic hazard. Source: Istituto Nazionale di Geofisica e Vulcanologia. Seismic hazard is expressed in terms of soil's maximum acceleration and provides a measure of the intensity of a potential earthquake occurring in 50 years with a probability equal to 10 percent. The earthquake intensity is expressed as a fraction of gravity acceleration for each point of the Italian territory (for more details see Gruppo di Lavoro MPS, 2004). To obtain the figure at the provincial level we averaged the values corresponding to all the points falling within a province with the software Market Finder.

Table 1. Summary statistics

	All sample		Largest cities		Rest of the country	
	mean	*st.dev*	*mean*	*st.dev*	*mean*	*st.dev*
employees***	0.67	0.47	0.70	0.46	0.65	0.48
entrepreneurs***	0.17	0.38	0.15	0.35	0.19	0.39
self-employed (except entrepreneurs)	0.16	0.36	0.15	0.36	0.16	0.37
log hourly wages†***	1.87	0.40	1.89	0.38	1.85	0.41
hours worked***	37.17	9.64	37.99	9.14	36.53	9.97
Personal characteristics:						
female***	0.50	0.50	0.49	0.50	0.52	0.50
married*	0.19	0.39	0.19	0.39	0.19	0.39
age***	29.57	2.01	29.45	1.98	29.67	2.03
PhD degree	0.00	0.05	0.00	0.05	0.00	0.05
number of siblings	1.25	0.88	1.25	0.87	1.24	0.89
High school characteristics:						
lyceum ***	0.64	0.48	0.69	0.46	0.61	0.49
teachers' training school***	0.05	0.21	0.04	0.19	0.06	0.23
school for surveyors ***	0.28	0.45	0.25	0.43	0.30	0.46
vocational school**	0.03	0.17	0.03	0.17	0.03	0.18
Type of degree:						
chemistry-pharmaceutical***	0.07	0.25	0.06	0.23	0.08	0.27
biology and geology***	0.05	0.22	0.04	0.19	0.06	0.23
science***	0.06	0.24	0.07	0.25	0.06	0.23
medicine***	0.04	0.20	0.04	0.19	0.05	0.21
engineering***	0.19	0.40	0.22	0.41	0.18	0.38
architecture	0.05	0.22	0.05	0.22	0.05	0.22
agriculture***	0.03	0.16	0.02	0.15	0.03	0.17
economics and statistics***	0.19	0.39	0.20	0.40	0.19	0.39
political and social science ***	0.06	0.24	0.07	0.25	0.05	0.22
law*	0.08	0.27	0.08	0.27	0.08	0.28
humanities***	0.07	0.25	0.06	0.24	0.07	0.25
foreign languages***	0.05	0.22	0.05	0.21	0.06	0.23
teaching***	0.03	0.17	0.02	0.15	0.03	0.18
psychology	0.03	0.16	0.03	0.17	0.03	0.16
Father's education						
primary education***	0.17	0.38	0.14	0.34	0.20	0.40
middle school***	0.24	0.43	0.23	0.42	0.26	0.44
high school***	0.36	0.48	0.37	0.48	0.34	0.47
college degree***	0.22	0.41	0.25	0.43	0.19	0.40
Mother's education						
primary education***	0.23	0.42	0.19	0.39	0.26	0.44
middle school**	0.27	0.45	0.27	0.44	0.28	0.45
high school***	0.35	0.48	0.37	0.48	0.33	0.47
college degree***	0.15	0.35	0.17	0.37	0.13	0.34
Parents' occupational status						
self-employed father***	0.08	0.27	0.08	0.28	0.08	0.26
self-employed mother**	0.01	0.10	0.01	0.10	0.01	0.09
Ability proxies:						
final grade at college*	103.01	7.04	103.08	7.17	102.95	6.94
laude***	0.21	0.40	0.22	0.41	0.20	0.40
graduated on time***	0.15	0.36	0.16	0.36	0.14	0.35
While studying:						
worked occasionally ***	0.51	0.50	0.52	0.50	0.51	0.50
worked continuously***	0.08	0.27	0.08	0.28	0.07	0.26
never worked***	0.41	0.49	0.39	0.49	0.42	0.49
network proxy***	0.68	0.46	0.64	0.48	0.72	0.45
Sector of work						
chemical sector***	0.07	0.25	0.06	0.24	0.07	0.26
machinery***	0.04	0.19	0.06	0.23	0.03	0.16
constructions***	0.07	0.26	0.08	0.27	0.07	0.25
other industrial sectors***	0.18	0.38	0.19	0.39	0.17	0.38
trade and hotels***	0.07	0.26	0.10	0.29	0.05	0.22
transportation, tours, postal services and telecommunications***	0.10	0.30	0.08	0.27	0.11	0.32
credit and insurance***	0.10	0.30	0.08	0.28	0.11	0.31
Sector of work						
other professional and consulting activities***	0.09	0.29	0.08	0.28	0.10	0.29
informatics and similar activities***	0.06	0.23	0.05	0.22	0.06	0.24
education and training**	0.05	0.22	0.05	0.22	0.05	0.23
health and social assistance**	0.07	0.26	0.07	0.25	0.07	0.26
public administration***	0.03	0.16	0.02	0.14	0.03	0.17
other social services	0.08	0.27	0.08	0.27	0.08	0.27
Survey year						
1998***	0.27	0.44	0.25	0.43	0.28	0.45
2001***	0.36	0.48	0.38	0.49	0.35	0.48
2004	0.37	0.48	0.37	0.48	0.37	0.48
Characteristics of the province of work:‡						
population level***	5.57	6.12	18.9	11.19	3.99	2.09
share of self-employed workers in the individual's sector***	0.15	0.02	0.15	0.02	0.18	0.03
house price per square meter*	3896.44	1259.61	3823.01	1226.31	4510.61	1426.21
share of local banks in total counters**	0.39	0.19	0.40	0.19	0.25	0.07
tradition of political autonomy	0.49	0.50	0.49	0.50	0.45	0.52
collective action	-0.01	1.00	0.01	1.02	-0.16	0.89
amount of blood donated	28.39	21.33	29.28	21.60	20.92	18.06
number of associations per 100,000 inhabitants (in 1985)	30.47	20.86	31.61	21.45	20.94	11.89
welfare index	105.046	30.763	89.691	34.329	106.882	29.989
average wage of employee workers by province and year	1.87	0.06	1.87	0.06	1.88	0.04
employee-self-employed earning ratio	1.008	0.019	1.006	0.010	1.008	0.020
TOTAL	33,740		14,806		18,934	

Source: Istat.
Note: Computed on employed individuals. Variables denoted with * (**) [***] indicate statistical significance at the 10 (5) [1] percent level of the difference between columns 3 and 5. † Computed on 30,682 individuals ‡ Provincial characteristics are computed at province level.

Table 2. Summary statistics for entrepreneurs

	All sample		Most populated cities		The rest	
Personal characteristics:	*mean*	*st.dev*	*mean*	*st.dev*	*mean*	*st.dev*
female	0.40	0.49	0.39	0.49	0.40	0.49
married	0.18	0.38	0.18	0.38	0.18	0.39
age***	29.90	2.15	29.77	2.15	29.98	2.15
PhD degree	0.00	0.05	0.00	0.04	0.00	0.05
number of siblings	1.31	0.92	1.31	0.89	1.31	0.93
log hourly earnings***	1.89	0.63	1.93	0.61	1.86	0.62
High school characteristics:						
lyceum***	0.66	0.47	0.70	0.46	0.64	0.48
teachers' training school	0.03	0.17	0.02	0.15	0.03	0.17
school for surveyors ***	0.27	0.44	0.22	0.42	0.29	0.46
vocational school**	0.04	0.21	0.05	0.22	0.04	0.19
Type of degree:						
chemistry-pharmaceutical*	0.02	0.15	0.02	0.13	0.02	0.16
biology and geology***	0.04	0.21	0.03	0.17	0.05	0.22
science	0.01	0.11	0.01	0.11	0.01	0.10
medicine	0.15	0.36	0.15	0.36	0.15	0.35
engineering***	0.17	0.38	0.15	0.36	0.18	0.39
architecture	0.15	0.36	0.16	0.37	0.15	0.35
agriculture	0.05	0.22	0.05	0.21	0.06	0.23
economics and statistics*	0.11	0.31	0.12	0.32	0.10	0.31
political and social science	0.03	0.17	0.03	0.17	0.03	0.16
law	0.18	0.38	0.19	0.39	0.17	0.38
humanities	0.03	0.16	0.03	0.16	0.02	0.15
foreign languages	0.02	0.13	0.02	0.14	0.02	0.13
teaching	0.01	0.09	0.01	0.10	0.01	0.08
psychology*	0.03	0.18	0.04	0.19	0.03	0.17
Father's education						
primary education***	0.16	0.37	0.12	0.32	0.18	0.39
middle school	0.22	0.41	0.21	0.41	0.22	0.42
high school	0.34	0.47	0.33	0.47	0.34	0.47
college degree***	0.28	0.45	0.33	0.47	0.25	0.43
Mother's education						
primary education***	0.21	0.41	0.17	0.37	0.24	0.43
middle school	0.25	0.43	0.25	0.44	0.25	0.43
high school***	0.36	0.48	0.39	0.49	0.34	0.48
college degree***	0.17	0.37	0.19	0.39	0.15	0.36
Parents' occupational status						
self-employed father***	0.14	0.34	0.16	0.36	0.13	0.33
self-employed mother	0.01	0.12	0.02	0.13	0.01	0.11
Ability proxies:						
final grade at college*	102.48	7.16	102.70	7.25	102.34	7.11
laude***	0.20	0.40	0.22	0.42	0.18	0.38
graduated on time	0.18	0.39	0.19	0.39	0.18	0.38
While studying:						
worked occasionally ***	0.46	0.50	0.48	0.50	0.44	0.50
worked continuously***	0.07	0.26	0.09	0.29	0.07	0.25
never worked***	0.47	0.50	0.43	0.49	0.49	0.50
network proxy***	0.82	0.38	0.79	0.41	0.83	0.37
Sector of work						
chemical sector	0.03	0.18	0.03	0.18	0.03	0.18
machinery	0.01	0.09	0.01	0.10	0.01	0.08
constructions	0.03	0.16	0.02	0.15	0.03	0.16
other industrial sectors	0.50	0.50	0.51	0.50	0.50	0.50
trade and hotels	0.03	0.16	0.03	0.17	0.03	0.16
transportation, tours, post. services and telec.	0.02	0.15	0.03	0.16	0.02	0.14
credit and insurance	0.20	0.40	0.19	0.39	0.20	0.40
other professional and consulting activities	0.06	0.24	0.06	0.24	0.06	0.23
informatics and similar activities	0.03	0.17	0.03	0.17	0.03	0.17
education and training	0.01	0.09	0.01	0.09	0.01	0.10
health and social assistance	0.01	0.10	0.01	0.10	0.01	0.11
public administration**	0.05	0.22	0.04	0.21	0.06	0.23
other social services	0.02	0.15	0.03	0.16	0.02	0.15
TOTAL	5,731		2,151		3,580	

Source: Istat. Note: Computed on entrepreneurs. Variables denoted with * (**) [***] indicate statistical significance at the 10 (5) [1] percent level of the difference between columns 2 and 3.

Table 3: Urbanization effects on the probability of being entrepreneur (marginal effects)

	3.1	3.2	3.3	3.4	3.5
population level	-0.0026***	-0.0022***	-0.0023***	-0.0019***	-0.0020***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
female	-0.0660***	-0.0608***	-0.0587***	-0.0576***	-0.0575***
	(0.0062)	(0.0034)	(0.0034)	(0.0033)	(0.0031)
married	0.0031	0.0123**	0.0125**	0.0128**	0.0149***
	(0.0057)	(0.0050)	(0.0051)	(0.0050)	(0.0045)
age	-0.0701***	-0.0471**	-0.0393**	-0.0352*	-0.0293*
	(0.0213)	(0.0199)	(0.0198)	(0.0189)	(0.0153)
age squared	0.0013***	0.0008**	0.0007**	0.0007**	0.0005**
	(0.0004)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
PhD degree	-0.0067	-0.0387	-0.0356	-0.0384	-0.013
	(0.0402)	(0.0305)	(0.0314)	(0.0297)	(0.0300)
number of siblings	0.0013	-0.0003	-0.0011	0.003	0.0015
	(0.0023)	(0.0022)	(0.0023)	(0.0022)	(0.0022)
High school characteristics: lyceum omitted					
teachers' training school		-0.0399***	-0.0326***	-0.0333***	-0.0166*
		(0.0101)	(0.0108)	(0.0107)	(0.0100)
school for surveyors		-0.007	0.004	0.0019	-0.003
		(0.0049)	(0.0048)	(0.0049)	(0.0044)
vocational school		0.0111	0.0239**	0.0197*	0.0209**
		(0.0104)	(0.0113)	(0.0114)	(0.0105)
Father's education: primary education omitted					
middle school			0.0067	0.0067	0.0106*
			(0.0069)	(0.0067)	(0.0064)
high school			0.0052	0.0037	0.0072
			(0.0077)	(0.0076)	(0.0070)
college degree			0.0248**	0.0212**	0.0150*
			(0.0107)	(0.0097)	(0.0088)
Mother's education: primary education omitted					
middle school			0.0074	0.0052	0.005
			(0.0058)	(0.0057)	(0.0054)
high school			0.0146**	0.0134**	0.0100*
			(0.0066)	(0.0065)	(0.0055)
college degree			0.0085	0.009	0.0073
			(0.0085)	(0.0084)	(0.0081)
Parents' occupational status					
self-employed father			0.0932***	0.0859***	0.0558***
			(0.0073)	(0.0074)	(0.0069)
self-employed mother			0.0376**	0.0368*	0.0194
			(0.0187)	(0.0191)	(0.0158)
Ability proxies:					
final grade at college				0.0098	-0.0007
				(0.0074)	(0.0061)
final grade at college squared				-0.0001	0.0000
				(0.0000)	(0.0000)
laude				0.005	0.0026
				(0.0056)	(0.0050)
graduated on time				0.0133***	0.0118***
				(0.0051)	(0.0046)
While studying: never worked omitted					
worked occasionally				-0.0180***	-0.0165***
				(0.0039)	(0.0035)
worked continuously				-0.0064	-0.0093*
				(0.0064)	(0.0056)
network proxy				0.0763***	0.0560***
				(0.0063)	(0.0038)
Survey year	YES	YES	YES	YES	YES
Type of degree	YES	YES	YES	YES	YES
Sector of work	NO	NO	NO	NO	YES

Source: Istat. Note: White-robust standard errors adjusted for clustering at the provincial level are reported in parentheses. We control for region-fixed effects in all specifications. 33,740 observations

Table 4: IV Estimates of the urbanization effects on the probability of being entrepreneur

	4.1	**4.2**	**4.3**
population level	-0.0022***	-0.0022***	-0.0022***
	(0.0002)	(0.0002)	(0.0002)
Instruments			
population in 1921	2.6213***	2.6823***	1.8974***
	(0.1025)	(0.0924)	0.1380
land area		-0.0000***	0.0002***
		(0.0000)	(0.0000)
land destined to agriculture			-0.0000***
			(0.0000)
land covered by marsh			0.0000
			(0.0000)
alt diff			-0.0006**
			(0.0003)
land covered by forests			-0.0000***)
			(0.0000)
seismic hazard			-12.5133
			(7.7922)
Partial R-squared of excluded instruments:	0.9212	0.9288	0.9680
Test of excluded instruments (F-test):	653.16	422.27	686.06
Over-identification test (P-value)	-	0.3274	0.6467

Source: Istat. Note: White-robust standard errors adjusted for clustering at the provincial level are reported in parentheses. We control for the covariates reported in Table 3 in all specifications. 33,740 observations

Table 5: Correlation coefficients between population level and provincial variables at provincial level

	population level	share of self-emp. workers in the indiv.'s sector	house price per square meter	share of local banks in total counters	trad. of pol. autonomy	collective action	amount blood	n. associations	index welfare	avg. log wage of dependent workers
population level	1									
share of self-emp. workers in the individual's sector	0.5827	1								
house price per square meter	0.2	0.3492	1							
share of local banks in total counters	-0.2954	-0.1363	-0.0155	1						
tradition of political autonomy	-0.0376	0.1001	-0.0133	0.1963	1					
collective action	-0.081	0.1047	0.0632	0.1475	0.3722	1				
amount of blood donated	-0.026	0.0659	-0.066	-0.0069	0.2016	0.459	1			
n. associations per 100,000 inhabitants (in 1985)	-0.1287	-0.0646	0.0049	0.4549	0.3109	0.3604	0.1523	1		
index welfare	-0.1648	0.0899	0.0647	0.3399	0.4521	0.493	0.3794	0.3862	1	
avg. log wage of dependent workers by province and year	0.0327	-0.1972	-0.0637	-0.0383	0.0029	0.1287	0.2843	0.1303	-0.0367	1

Table 6: Urbanization effects on the probability of being entrepreneur: testing alternative hypotheses

	6.1	6.2	6.3	6.4	6.5
population level	-0.0006	-0.0014**	-0.0038**	0.0148	0.0242**
	(0.0005)	(0.0006)	(0.0017)	(0.0095)	(0.0114)
share of self-employed workers in the individual's sector	-0.1552***				-0.1517**
	(0.0602)				(0.0602)
pop. level*share of self-employed workers in the individual's sector	-0.0050**				-0.0051**
	(0.0023)				(0.0024)
house price per square meter		0.0000			0.0000
		(0.0000)			(0.0000)
pop. level*house price per square meter		0.0000			0.0000
		(0.0000)			(0.0000)
share of local banks in total counters			0.0224		0.0248
			(0.0222)		(0.0253)
pop. level*share of local banks in total counters			0.0034		0.0039
			(0.0044)		(0.0051)
tradition of political autonomy			-0.0022		-0.0047
			(0.0081)		(0.0106)
pop. level*tradition of political autonomy			0.0015		0.0022
			(0.0010)		(0.0017)
collective action propensity			0.0176***		0.0203***
			(0.0055)		(0.0062)
pop. level*collective action propensity			-0.0011		-0.0016*
			(0.0008)		(0.0009)
amount of donated blood			0.0002		0.0000
			(0.0002)		(0.0002)
pop. level*amount of donated blood			0.0000		0.0000
			(0.0000)		(0.0000)
number of associations per 100,000 inhabitants (in 1985)			0.0003		0.0001
			(0.0003)		(0.0003)
pop. level*number of associations per 100,000 inhabitants (in 1985)			-0.0001		0.0000
			(0.0001)		(0.0001)
welfare index			-0.0002		-0.0003
			(0.0002)		(0.0002)
pop. level* welfare index			0.0000		0.0000
			(0.0000)		(0.0000)
log average wages of employees by province and year				0.0441	0.0858*
				(0.0351)	(0.0438)
pop. level*log average wage of employees by province and year				-0.0088*	-0.0164**
				(0.0050)	(0.0066)

Source: Istat. Note: White-robust standard errors adjusted for clustering at the provincial level are reported in parentheses. We control for region-fixed effects in all specifications. 33,740 observations

Table 7: Urbanization effects on log hourly earnings from entrepreneurship

	7.1	7.2	7.3	7.4	7.5
population level	0.0008	0.0012	0.0009	0.0005	0.0006
	(0.0008)	(0.0008)	(0.0009)	(0.0009)	(0.0009)
female	-0.0977***	-0.0857***	-0.0835***	-0.0855***	-0.0871***
	(0.0169)	(0.0163)	(0.0161)	(0.0157)	(0.0164)
married	0.0745***	0.0654***	0.0653***	0.0623***	0.0555**
	(0.0238)	(0.0216)	(0.0216)	(0.0215)	(0.0215)
age	-0.4371***	-0.1891*	-0.1691*	-0.1213	-0.1298
	(0.0985)	(0.1017)	(0.1000)	(0.1034)	(0.1007)
age squared	0.0070***	0.0030*	0.0027*	0.002	0.0021
	(0.0016)	(0.0017)	(0.0016)	(0.0017)	(0.0016)
PhD degree	0.3402***	0.3293***	0.3394***	0.3327***	0.2723***
	(0.0790)	(0.0963)	(0.0941)	(0.0912)	(0.0938)
number of siblings	0.0043	-0.0009	-0.0006	-0.003	-0.0031
	(0.0119)	(0.0112)	(0.0114)	(0.0109)	(0.0109)
High school characteristics: lyceum omitted					
teachers' training school			0.0419	0.0404	0.0368
			(0.0554)	(0.0557)	(0.0561)
school for surveyors			0.0046	0.005	0.0093
			(0.0221)	(0.0217)	(0.0209)
vocational school			-0.0119	-0.0098	-0.0157
			(0.0472)	(0.0474)	(0.0475)
Father's education: primary education omitted					
middle school			0.0404	0.0405	0.0401
			(0.0307)	(0.0308)	(0.0301)
high school			0.0252	0.0285	0.0293
			(0.0337)	(0.0338)	(0.0337)
college degree			0.0672*	0.0724**	0.0775**
			(0.0353)	(0.0351)	(0.0357)
Mother's education: primary education omitted					
middle school			0.0029	0.003	-0.0026
			(0.0262)	(0.0265)	(0.0269)
high school			0.0288	0.026	0.0222
			(0.0321)	(0.0323)	(0.0332)
college degree			0.0266	0.0229	0.0131
			(0.0391)	(0.0396)	(0.0410)
Ability proxies:					
final grade at college				0.0221	0.0301
				(0.0290)	(0.0293)
final grade at college squared				-0.0001	-0.0001
				(0.0001)	(0.0002)
laude				0.0172	0.0195
				(0.0303)	(0.0303)
graduated on time				0.0234	0.0196
				(0.0292)	(0.0280)
While studying: never worked omitted					
worked occasionally				-0.0019	0.0012
				(0.0185)	(0.0186)
worked continuously				0.0236	0.0348
				(0.0306)	(0.0298)
network proxy				-0.0757***	-0.0799***
				(0.0212)	(0.0202)
months of experience					0.0009
					(0.0007)
Survey year	YES	YES	YES	YES	YES
Type of degree	YES	YES	YES	YES	YES
Sector of work	NO	NO	NO	NO	YES

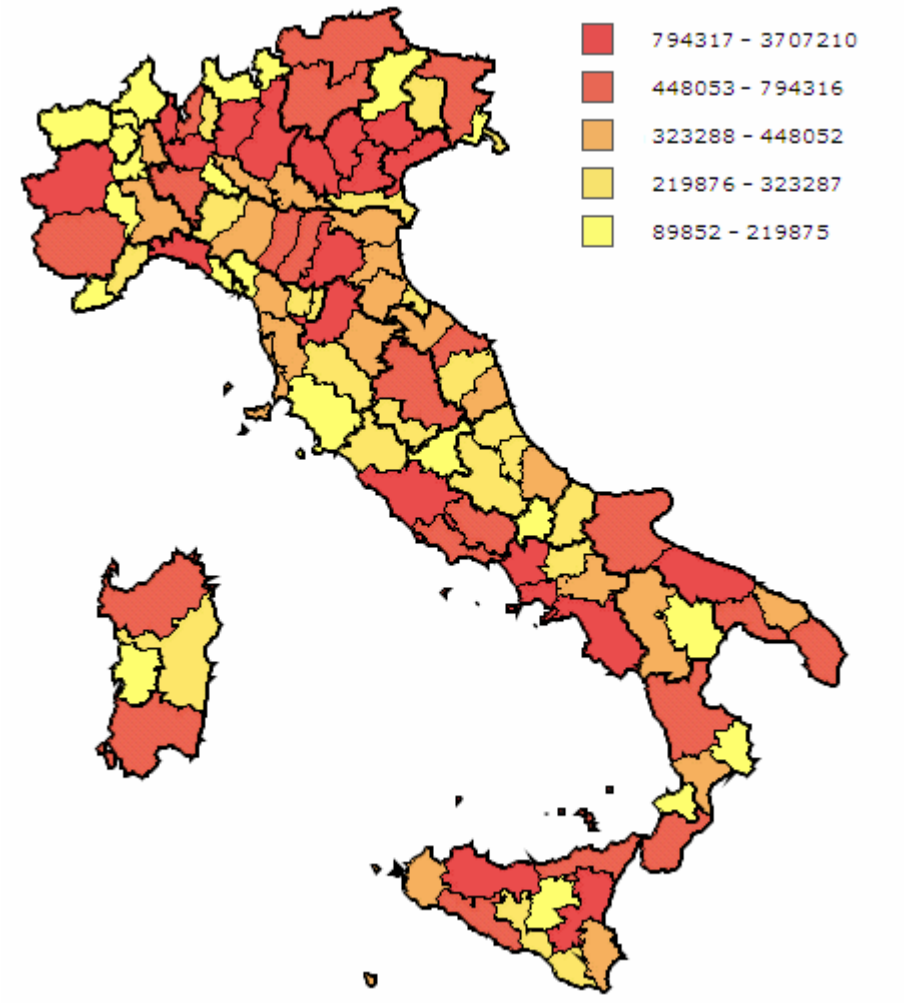
Source: Istat. Note: White-robust standard errors adjusted for clustering at the provincial level are reported in parentheses. We control for region-fixed effects in all specifications. 4,533 observations

Table 8: Heckman estimates of urbanization effects on log hourly earnings from entrepreneurship

	8.1	**8.2**	**8.3**	**8.4**	**8.5**
population level	0.0019*	0.0023**	0.0019*	0.0015	0.0021**
	(0.0010)	(0.0010)	(0.0011)	(0.0010)	(0.0009)
First stage					
self-employed father	0.4554***	0.4027***	0.3625***	0.3445***	0.2690***
	(0.0275)	(0.0309)	(0.0311)	(0.0327)	(0.0354)
self-employed mother	0.1687	0.1407	0.1246	0.1194	0.0523
	(0.0765)	(0.0897)	(0.0907)	(0.0937)	(0.0911)
ρ	*-0.2426***	*-0.2824****	*-0.2312****	*-0.2838****	*-0.3670****
	(0.1188)	*(0.0967)*	*(0.1254)*	*(0.1025)*	*(0.0724)*
Survey year	YES	YES	YES	YES	YES
Type of degree	YES	YES	YES	YES	YES
Sector of work	NO	NO	NO	NO	YES
Uncensored observations	4,533	4,533	4,533	4,533	4,533
Observations	30,682	30,682	30,682	30,682	30,682

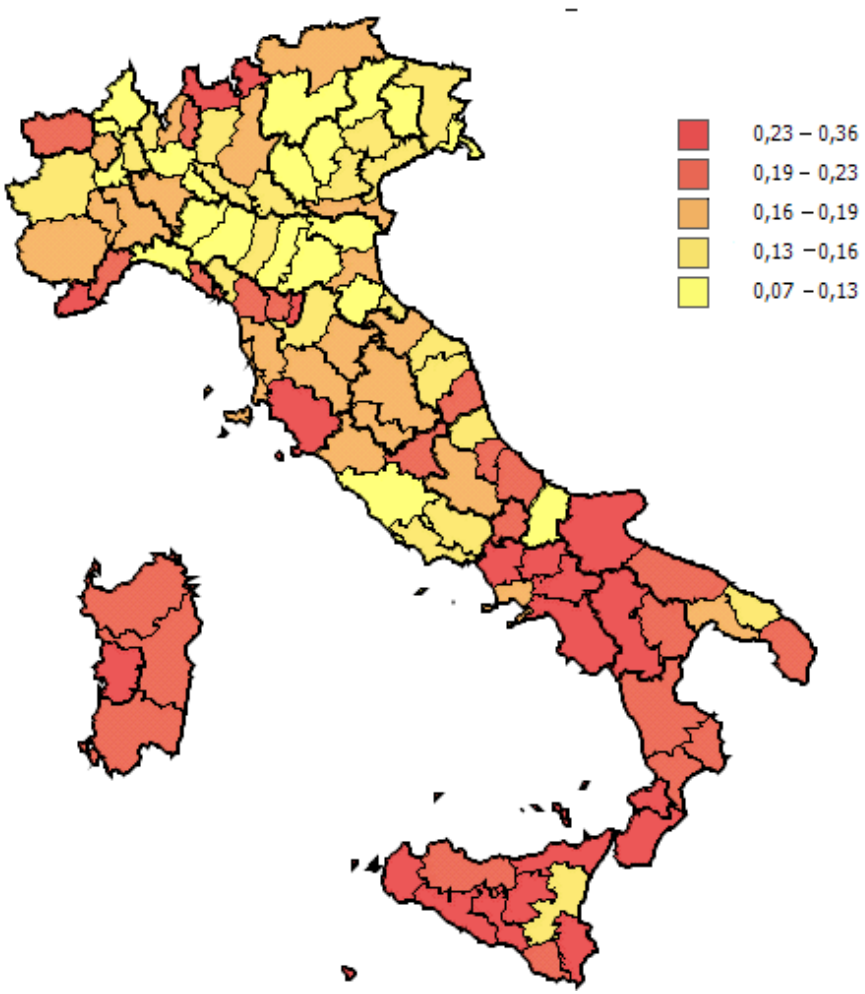
Source: Istat. Note: White-robust standard errors adjusted for clustering at the provincial level are reported in parentheses. We control for the same covariates used in Table 6 and for region-fixed effects in all specifications.

Figure 1: **The distribution of Italian population by province**



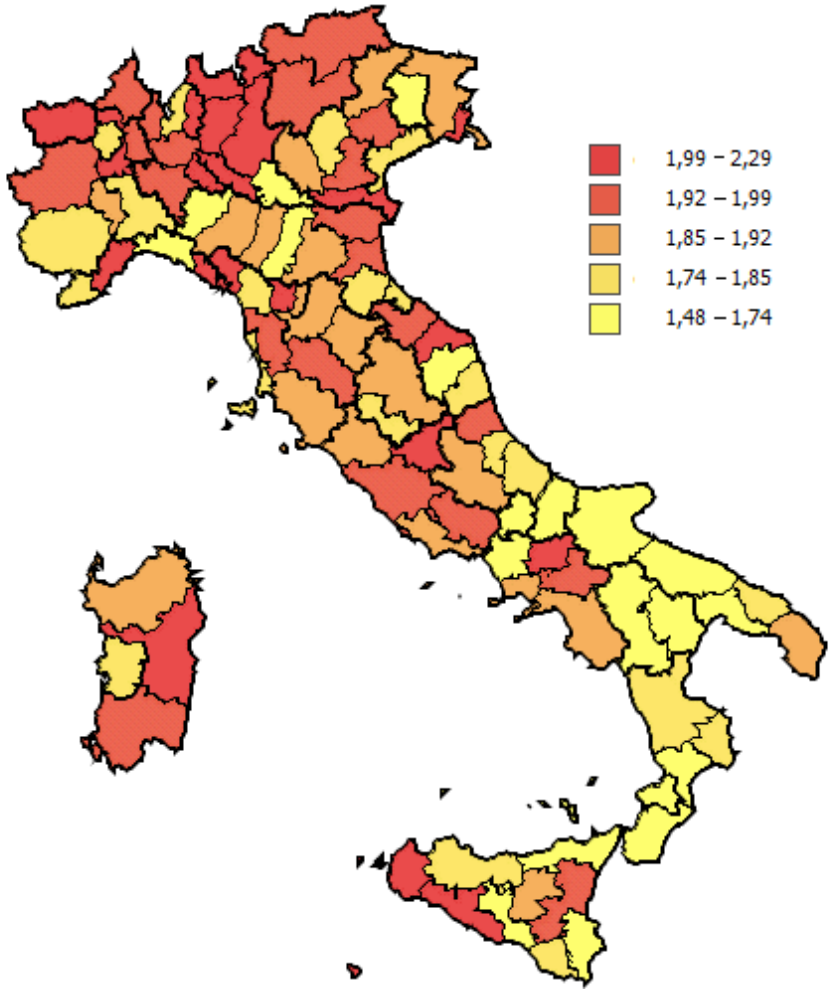
Source: Istat.

Figure 2: **The distribution of Italian young entrepreneurs by province**



Source: Istat.

Figure 3: **The distribution of Italian young entrepreneurs' (log) earnings by province**



Source: Istat.