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On the Sources of Entrepreneurial Talent
Tacit vs. codified knowledge
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Abstract

There is wide consensus that entrepreneurial talent lies in the ability to discover and exploit market opportunities by taking the relevant risky decisions. By determining the nature of the discovery and exploitation processes, institutions and technology play an essential role in shaping entrepreneurial opportunities and the nature of entrepreneurial talent. Building on these premises, the aim of our research work is to investigate the sources of entrepreneurial talent in Italy. In addition to the standard controls, various indices of occupational opportunities are used in order to determine how tacit and codified knowledge determine the returns on different occupational choices in different environments. The data are drawn from the Italian Survey of Household Income and Wealth (SHIW), a large-scale household survey conducted biannually by the Bank of Italy. The original data-set has been integrated with a wide variety of environmental variables drawn from different data sources describing the social, technological and institutional context of the entrepreneurial activity. Our empirical analysis supports the conclusion that the choice to become an entrepreneur in Italy is strongly and positively affected by a privileged access to tacit knowledge, thus confirming previous analyses on the role of social learning (e.g. Guiso and Schivardi, 2005). On the other hand, our results suggest that the returns on codified knowledge in entrepreneurial activities may increase in more creative environments. Indeed, a further aim of the paper is, hopefully, to offer more general insights into the nature of technological opportunities and talent which go beyond the Italian case.

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1. Introduction

There is wide consensus that entrepreneurial talent is the ability to discover and exploit market opportunities. The main factors affecting this ability are a variety of innate traits, such as creativity, imagination, alertness, persistence and the skills acquired through formal education, on-the-job experience, and social learning (Guiso and Schivardi, 2005). Discovery and successful development of ideas are separate but interlinked features of entrepreneurship requiring, in different proportions, the exploitation of such innate and acquired cognitive skills. Indeed, it is uncertainty that offers scope to entrepreneurs as resource allocation machines, empowered with a market equilibrating function: in deterministic contexts, there would be no need for entrepreneurship since prices would do a better job in driving the allocation process (Kirzner, 1973). Hence, building on Knight (1965), entrepreneurial talent consists of those cognitive and non-cognitive skills necessary to narrow down the subjective uncertainty surrounding the discovery and the exploitation of market opportunities.

Institutions and technology play an essential role in forming entrepreneurial opportunities, in shaping the sources of uncertainty and, thereby, the type of skills required of entrepreneurs, i.e. the nature of entrepreneurial talent. The essential role of institutions in entrepreneurial selection has been clearly stated by Baumol - “[…]holding that entrepreneurs are always with us and always play some substantial role.[…] How the entrepreneurs act at a given time and place depends heavily on the rules of the game –the reward structure of the economy- that happen to prevail. Thus the central hypothesis here is that it is the set of rules and not the supply of entrepreneurs or the nature of their objectives that undergoes significant changes from one period to another and helps to dictate the ultimate effect on the economy via the allocation of entrepreneurial resources” (Baumol, 1990 p. 894).

This is confirmed by data suggesting that the prevailing economic, political, and legal institutions affect both the numbers of individuals who choose to become entrepreneurs (Torrini, 2002) and their characteristics (Blanchflower, 1998).

As far as the numerical aspect is concerned, the cross-country empirical evidence on the impact of institutions\(^1\) on the rate of self-employment - actually an unsatisfactory measure of entrepreneurship - is quite strong (Torrini, 2002). Such evidence shows that institutions are more important than technology (i.e., technological specialization and/or industry composition) in fostering or restricting entrepreneurship and that the interactions between institutions and occupational choices may be complex and non linear\(^2\).

If we assume that the skills required of successful entrepreneurs are context-specific, then there is no point in questioning about the general characteristics of entrepreneurs and entrepreneurial models. Conversely, most of the empirical papers about the characteristics of entrepreneurs do not control for the latter factors.

Of course, it follows that international comparisons of entrepreneurship are legitimate and useful to the extent that they either recognize the impact of such technological and institutional factors or aim to assess it. For instance, self-employment rates cannot be considered a good proxy of entrepreneurship in the economy: for a given distribution of innate entrepreneurial talent, technological and institutional factors provide structural influences on the rate of entrepreneurship in a society and on the selection processes into entrepreneurial activities. That is to say, countries displaying the same self-employment rates, might be endowed with very

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1 The size of the public sector, the extent of labour and product market regulation, the tax burden, the government-policy environment, the contract enforcement, etc.
2 This is the case of the impact of the corporate tax.
different amounts and qualities of entrepreneurial skills devoted to innovation and business ventures (or, on the other hand, they might not).

The distinction between discovery and exploitation goes to the roots of the debate on what entrepreneurial talent really is, and brings us back to the distinction between entrepreneurial and managerial talent. Indeed, to the extent that entrepreneurs can delegate managers in order to carry out the exploitation process, entrepreneurial talent can be identified with the ability to discover opportunities. On the other hand, as long as imperfect information and the size of the firm limit the feasibility of delegation, the managerial skills required to exploit market opportunities represent an important part of entrepreneurial talent.

Building on these premises, our research aims is to assess the sources of entrepreneurial talent in Italy. We take into account for the role that variables like educational qualifications, family background, the ability to acquire information from various sources, and a range of environmental factors play in determining entrepreneurial talent and opportunities.

The choice to focus on a model of entrepreneurial selection instead of testing factors explaining entrepreneurial performance (e.g. profits, TFP), stems from the poor reliability of data on entrepreneurial income and productivity. In order to eliminate the distortions induced by the inclusion of professionals, we considered only occupations that can be directly related to the Schumpeterian idea of entrepreneurship and innovative activity.

The data are drawn from the Italian Survey of Household Income and Wealth (SHIW), a large-scale household survey conducted biannually by the Bank of Italy. The survey collects detailed information on Italian household demographic characteristics, consumption, income and balance sheet items. The original data-set has been integrated with a wide set of variables drawn from different data sources describing the social and institutional environment of the entrepreneurial activity and aiming to capture entrepreneurial opportunities. In particular, in addition to standard indexes of economic and social infrastructure at the local level, we include a measure of creativity developed by Florida (2005).

It will be seen from the occupational choices that, in Italy, both institutional and technological factors have shaped entrepreneurial opportunities requiring, tacit knowledge embedded in social networks and in the cultural background of families in order to be discovered and exploited. Hence, well-educated people lacking privileged access to tacit knowledge and, in particular, an appropriate family background, could find themselves up against a considerable barrier to entrepreneurship and occupational mobility.

Conversely, codified knowledge acquired through education, appears to be more productive in other occupations, e.g. public sector or private sector employee, professional activities. The evidence of the highly significant negative role of education in entrepreneurial selection is very strong in comparison with the majority

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3 One major feature of this debate is the distinction between managerial and entrepreneurial functions. In fact, among the various attempts to clarify this essential point, the view that entrepreneurs pursue allocative efficiency whereas managers, given resources and allocative targets, are responsible for technical efficiency seems the most appropriate, although it lacks clear operative content: "Given an arrangement which calculations, experience or judgment indicate to constitute a reasonable approximation to the current optimum, it is a manager's task to see that this arrangement is in fact instituted to a reasonable degree of approximation. The entrepreneur (whether or not he in fact doubles as a manager) has a different function. It is his job to locate new ideas and to put them into effect. He must lead, perhaps even inspire; he cannot allow things to get rut and for him today's practice is never good enough for tomorrow. In short, he is the Schumpeterian innovator and some more. He is the individual who exercises what in the business literature is called 'leadership'. And it is he who is virtually absent from the received theory of the firm" (Baumol, 1968, p. 65).
of international studies showing that education has either a positive impact (Blanchflower, 1998) or a statistically non-significant effect on occupational choices\footnote{The data seems to show that the relationship between the probability to become self-employed and educational attainment is U-shaped: it increases for individuals with, respectively, low and high educational attainments. We believe that the latter result is due to the presence of professionals in self-employment data and to the fact that in most countries access to professions like that of a lawyer, accountant etc. requires at least a B.A. degree.}. Our hypotheses and findings are in line with Shane’s (2000) evidence on the effects of prior information and with Guiso and Schivardi’s results (2005) on the role of social learning as a source of entrepreneurial talent. In particular, the Guiso and Schivardi argue that endogenous learning could be a more convincing explanation for clusters of firms than heterogeneous entry costs.

In fact, the aim of this paper is to provide more than a simply descriptive picture, offering some general insights into how one should model and analyse the role of acquired cognitive skills in entrepreneurial selection and performance in order to account for the context-dependent nature of entrepreneurial talent.

The paper is organized as follows. Section 2 deals with the roots of entrepreneurship and discusses the specific role of education in entrepreneurial human capital. Section 3 examines the main institutional and technological factors behind occupational choices. Section 4 presents the results of our empirical analysis of the connections between educational attainment, social environment and occupational choice in Italy, with a special emphasis on entrepreneurial selection. Finally, section 5 draws the main conclusions and offers some suggestions for future research.

2. The roots of entrepreneurship

Occupational choices and the decision to become an entrepreneur are driven by intrinsic and extrinsic motivations. At the micro level, a number of models have been proposed to represent the individual choice to become an entrepreneur rather than an employee. The large number of empirical studies and papers considering the impact of extrinsic motivations contrast with the paucity of those that also take into account the role of intrinsic motivations\footnote{Empirical evidence suggests that non-pecuniary, intrinsic rewards of self-employment could be substantial (Hamilton, 2000).}.

In his seminal paper, Lucas (1978) traces the roots of this choice to personal characteristics of individuals: each member of the workforce is endowed with a specific entrepreneurial talent which varies from one individual to another. In equilibrium, the talent level required to become entrepreneurs determines the distinction between wage-earners and the entrepreneurs who hires them.

Kanbur (1979) also stresses the importance of risk aversion, while Kihlstrom and Laffont (1979) add to these factors the possibility to gain access to the capital required to start the firm, although focusing on risk aversion as the main root of entrepreneurship.

Entrepreneurial talent has in most cases been modelled as depending on a generic “human capital variable” including highly assorted concepts like on-the-job knowledge and accumulated experience, educational qualification, family background, optimism, risk aversion and the extension of social networks involving individuals. Besides some notable exceptions, the multidimensional nature of entrepreneurial talent has generally been undervalued and the distinction between tacit and codified source of cognitive abilities unduly stressed.
The point of departure of our research work is acknowledgement of the multidimensionality of entrepreneurial talent, and the need to carry out a more in-depth analysis of the influence that institutions and technology exert on entrepreneurial opportunities and the choice to become an entrepreneur.

The general result emerging from the empirical evidence on the characteristics of self-employment in different countries (Blanchflower and Oswald 1998; Cowling, 2000), is that country-specific factors shape the nature of entrepreneurial talent. Puri an Robinson’s study (2007) provides evidence on the positive impact of a measure of optimism on the choice to become self-employed. In Parker (2004) are summarized a great number of studies where age, labour market experience, marital status, the fact of having self-employed parent and earnings differential have the most robust positive associations with the probability of being or becoming an entrepreneur.

Building on the latter evidence, our view is that entrepreneurial talent is made up of those cognitive abilities required - within different institutional and technological environments - to discover and exploit market opportunities and to narrow down subjective uncertainty.

We argue that entrepreneurs’ cognitive abilities are either innate or acquired and stem from tacit knowledge, i.e. access to idiosyncratic knowledge, or codified knowledge, i.e., education, training. Why is this distinction important? Codified knowledge is systematic and formal describable and transformable into standardized processes, and hence not primarily personal, individual experience, but it can be used and distributed through time and space. However, tacit knowledge is on the contrary an individual asset, based on personal experience and interaction and it reflects the potential and capabilities of human capital in an economic area.

Hence, experience and education are the basic components of an individual’s human capital.

Codified knowledge acquired through education helps people better to understand the general rules which govern the world they live in. Moreover, education enhances the ability to acquire and use codified information about specific aspects of working and non-working life. Hence, appropriately explored data on educational attainment should reveal an important component of the acquired cognitive abilities possessed by individuals.

The link between education and entrepreneurial choices is quite complex and is affected by technological and institutional factors. The incentives to individuals to (i) acquire and (ii) allocate education among different occupations is related to both how firms shape demand for skills and by how institutions influence returns to education in different occupations, and, in particular, in those occupations requiring the type of education that is most profitable to entrepreneurs. Moreover, institutions affect the source of uncertainty and the allocation of risks among different economic activities and, therefore, the risk premium on educational returns required in different occupations (Kanbur, 1978). For instance, an enforced entry regulation can reduce entry and income risk and so create rents for incumbents in some occupations (thereby, increasing returns to education); conversely, entry regulations that, owing to bribery, are not enforced, may simply affect the type of entrepreneurial selection, with zero or even positive effects on entry (Klapper, Leaven, and Rajan, 2004).

As far as education is concerned, the most recent contribution offering support to the context-dependent nature of entrepreneurial talent is a meta-analysis by van (der) Sluis, van Praag and Vijverberg (2004) showing that (a) entrepreneurial selection is not significantly affected by education, (b) performance i.e. returns on education for entrepreneurs vary substantially across countries and (c) returns on education for entrepreneurs may or may not be higher than returns to education for employees.
The above conjectures have clear implications for the level and type of human capital required of entrepreneurs in connection with the complexity of the competitive environment and the organization of the firm and provide an explanation of why analytical skills acquired through vocational curricula as well as tertiary education are positively associated with entrepreneurial performance (van Praag and Cramer, 2001).

2.1. Subjective characteristics.

People like what they are able to enjoy and work decisions follows this law. The empirical evidence on the effects of cognitive and non-cognitive abilities on an individual life is impressive; in particular, the list of characteristics and socioeconomic outcomes of an individual that are correlated with the standard measurement tests of cognitive abilities is remarkably long (Kuncel, Hezlet and Ones, 2004; Schmidt, 2002): abilities such as analytical style, memory, reaction time, reading, creativity (craftwork, musical ability), health and fitness, interests (breadth and depth of interest, sports participation), moral (delinquency, lie scores, racial prejudice, values), occupational status and income, perceptual (ability to perceive brief stimuli, field-independence, myopia), personality (achievement motivation, altruism, dogmatism), practical skills (practical knowledge, social skills). Indeed, they are all characteristics that may be expected to affect the intrinsic and extrinsic reward of different occupational choices and, therefore, the incentive to make them.

Psychology and neuroscience provides us with strong evidence that most cognitive and non-cognitive skills are acquired up to the 20s, an age bracket below which the prefrontal cortex is malleable. As such, these abilities do not depend only on genes but are determined by education and the experiences, children are exposed to in the environment they inhabit in (Cunha and Heckman, 2007).

Building on these premises, acquired cognitive and non-cognitive abilities should be considered a basic ingredient of entrepreneurial talent and occupational choices. In this paper, we distinguish two main sources of abilities: tacit and codified knowledge.

a) Tacit knowledge: family background.

Families are a major source of tacit knowledge generating the sort of cognitive and non-cognitive abilities required to discover and exploit entrepreneurial opportunities: individuals whose parents are entrepreneurs are more familiar with entrepreneurial decision making, and in particular, with the process of taking risky decisions. They are continuously exposed to the experience of selecting and processing those information necessary to take decisions, and so, develop more confidence about the effective outcomes of their decisions and actions. Of course, this may result in overconfidence and in excessive optimism in entry decisions (Fraser and Greene, 2006). The empirical evidence on the effects of the family background on occupational choices is quite clear, and suggests that being in a family of entrepreneurs enhances entrepreneurial talent and can make the difference.

b) Codified knowledge: education.
Education is the most important source of codified knowledge fuelling cognitive and non-cognitive abilities. Measures of educational attainment are invariably included in empirical studies on self-employment and entrepreneurship. Unfortunately, if one aspires to draw general conclusions that may stimulate theoretical reasoning, the evidence on its effects on entrepreneurial selection and performance is not very encouraging (van Sluis, van Praag and Vijverberg, 2004). Nevertheless, such a lack of systematic effects is, in itself, a useful indication, suggesting that education, as a component of entrepreneurial human capital, is context-dependent and captures only part of a person’s capability and skills.

This amounts to saying two reasonable things. First, the level of schooling needed for successful discovery and exploitation of business opportunities depends on the technological characteristics of the economic environment e.g. technological opportunities and the appropriability of innovations. Second, returns to education in different occupations vary from country to country, depending on how institutional factors shape the functioning of markets. Hence, the key to explain such observed international differences, lies in analysis of how the latter factors affect the returns to education as entrepreneurs vis à vis the returns to education as non-entrepreneurs.

Education or, in general, codified knowledge, enhances entrepreneurial skills in many ways. Its main contribution is to foster those planning and coordination abilities i.e. managerial ability, which are needed in the exploitation of market opportunities; by so doing, codified knowledge helps to compress uncertainty surrounding a given business venture. Moreover, the enhancement of managerial ability helps to reduce subjective uncertainty about one’s entrepreneurial talent (van Praag and Cramer, 2001).

The role of education as a source of codified knowledge for entrepreneurs is to be compared with the contribution of tacit knowledge generated through accumulated experience. The usual contention is that previous working experience is more important in determining entrepreneurial talent than education. Indeed, in the discovery stage, education may well be irrelevant or less important than experience. But, as far as the exploitation stage is concerned, this conclusion is not convincing, at least when business ventures are highly innovative and/or when they entail setting up complex organizations, large financial investments and detailed business plans, i.e. when the feasibility of managerial delegation is limited.

2.2. Environmental opportunities

There is a wide range of factors that can create an environment favourable to entrepreneurial activities and could then impact the decision of those individuals endowed with appropriate talent to become entrepreneurs. The list includes wealth, entrepreneurial atmosphere and culture, innovative opportunities.

a) Wealth: per capita disposable income.

The consumers’ willingness to pay for new goods is constrained by their income; therefore, per capita income is an index that can measure the absorption capacity and the dynamism of local markets as well the potential demand for variety.

b) Entrepreneurial atmosphere and culture: entrepreneurial density.

The density of firms (which we measure as the number of firms per 100 inhabitants) can give indirect insights regarding positive/negative spatial proximity and cultural affinity impact on the decision to start own business. In addition, it is a rough measure of the local pressure on business resources.

The stock of entrepreneurial activity within a location is an essential piece of potentially accessible knowledge and could be indicative of local informal relations and interactions. Hence it can act as a social network in
promoting or discouraging entrepreneurial activities (by providing information, personal experiences, access to social resources, dynamic interactions, etc). Guiso and Schivardi (2005) have provided strong evidence on the role played by the number of firms, representing a source of learning opportunities, in boosting entrepreneurship and the accumulation of entrepreneurial abilities.

c) Innovative opportunities: creativity.
Following Glaeser and Marè (2001) and Lee, et al. (2004) we argue that there exist connections among regions and cities social characteristics, human capital and the level of entrepreneurship. Florida and Tinagli (2005) developed a series of indicators to compare cities and regions such as: the Creative class index, which measures the percentage of people employed in a wide range of creative occupations including science, engineering, arts, culture and business fields, as well as the concept of talent; the Innovation index, measured as patents granted per capita; the Talent index measured as the percentage of people with a higher degree or above, the Gay index, etc. and finally the Creativity index. The latter is a composite measure based on the previous index. Table 1 sets out the index used in our analysis. Florida (2002) shows that there are significantly positive links between the Creativity Index and the concentration of high-technology industry. Creativity and diversity are kinds of social infrastructure supportive to innovative dynamism and entrepreneurial vitality; hence locations with higher scores on this indicators are expected to be both more attractive to “talented” and “educated” people and also to offer advantages in terms of the availability of new ideas, exchanges and information flows, business opportunities. Furthermore, Lee et al. (2004) have analysed the effect of regional characteristics on new firm formation arguing that the diversity and creativity of a region work together to increase regional ability to generate entrepreneurial activities.

Table 1 –The Creativity Index (Florida and Tinaglia, 2005)

<table>
<thead>
<tr>
<th>Talent</th>
<th>Creative class index</th>
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<tbody>
<tr>
<td></td>
<td>Human capital index</td>
</tr>
<tr>
<td></td>
<td>Number of researchers index</td>
</tr>
<tr>
<td>Technology</td>
<td>High-tech index</td>
</tr>
<tr>
<td></td>
<td>Innovation index</td>
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<tr>
<td></td>
<td>High-tech connectivity index</td>
</tr>
<tr>
<td>Tolerance</td>
<td>Diversity index</td>
</tr>
<tr>
<td></td>
<td>Integration index</td>
</tr>
<tr>
<td></td>
<td>Gay-tolerance index</td>
</tr>
</tbody>
</table>

d) Occupational opportunities: the unemployment rate
The unemployment rate should capture the subjective perception of the existence of outside options in occupational choices. On the other hand, the usual contention that entrepreneurship is a residual option, so that the probability to become entrepreneurs should increase with the unemployment rate, finds no empirical support (Blanchflower, 1998). The available evidence suggests that context-specific cultural and institutional factors may affect the impact of unemployment in entrepreneurial choices.

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6 The authors used the Longitudinal Establishment and Enterprise Microdata and Metropolitan Statistical Areas Data (1994-98).
e) Socioeconomic infrastructure

We expect that the local availability of socioeconomic infrastructures positively affects the productivity of entrepreneurial talent and the probability to become entrepreneurs.

3. Some facts and a prioris regarding what makes entrepreneurial talent in Italy.

The aim of this section is to sketch those major facts and features of the Italian economy that may help to identify the country-specific sources of entrepreneurial talent.

There are a few interlinked facts and features characterizing the Italian economy, regarding the self-employment rate, the size distribution of firms and their technological and international performance, whose relationship with entrepreneurial selection can be explained in the light of the claimed context-dependent nature of entrepreneurial talent.

As far as technology is concerned, science and technology indicators suggest that the involvement and performance of the Italian economy in R&D and science intensive sectors is quite weak (OECD, 2005). The Italian shares of GDP devoted to R&D activities by the private sector and the government are among the smallest within the advanced OECD countries. Data on educational achievement confirms this picture of a country specialised in the production of unskilled-labour-intensive goods.

Indeed, these elements together provide consistent overall profile of a country lagging behind in terms of those entrepreneurial skills required to compete in technologically and organizationally complex environments.

On the other hand, the entrepreneurs have proved particularly good at generating those local industry networks and clusters necessary to overcome the size constraints. Within this picture, one can distinguish the role that technological and institutional factors have played in entrepreneurial selection.

As far as institutions are concerned, Italy is historically characterized by both high degrees of product and labour market regulation, a high tax and social contribution wedge and a large public sector, and, on the other hand, slack law enforcement. All together, these elements might be taken to account for Italy’s large shadow economy. Such strict regulations, lacking complete enforcement, do not seem to have affected the number of firms but rather the rate of entry into entrepreneurial activities and the type of entrepreneurs selected (Klapper, Leaven, and Rajan, 2004; Torrini, 2002).

Summing up, as far as entrepreneurship is concerned, the main stylized facts about the Italian economy we wish to stress here are: 1) the high rate of self-employment (27.5% in 2003), almost twice the EU15 average; 2) the small average size of firms: micro and small firms are over-represented in the Italian economy, vis à vis the European counterparts; 3) the international specialisation of Italian firms in low and medium technology industries; 4) the low degree of firms’ foreign involvement through direct investments (with respect to firms’ export propensity); 5) finally, when firms enter, they are not particularly small in size: the trouble is that they do not grow afterwards.

Building on our premises, these stylized facts lead us to make the following a priori assumptions: a) on average, Italian entrepreneurs are good at discovering opportunities but not so good at exploiting the; b) codified knowledge and education have a weak role in entrepreneurial talent, selection and performance; c) owing to the comparatively low returns to education in entrepreneurial activities, the better educated individuals prefer to
become employees or professionals; d) tacit knowledge stemming from human capital, required to discover and exploit market opportunities - as shaped by technology and institutions – offers ample returns to entrepreneurs.

In conclusion, we argue that, so far, the institutions and technology have exerted a large positive impact on the elasticity of entrepreneurial talent to tacit knowledge in Italy, whereas they have had a small - positive effect on the elasticity of talent to codified knowledge.

We would therefore expect that education, as the main source of codified knowledge, plays a negative role in the choice to become an entrepreneur in Italy and that other variables which influence the acquisition of tacit knowledge, such as a privileged access to local knowledge and appropriate family background, exert a positive impact on it.

5. Entrepreneurial choice in Italy.

The first methodological challenge is to identify entrepreneurs in the database. Self-employed individuals are a broad category mostly made up of by members of the arts and professions and only residually including different kinds of entrepreneurs. In our analyses we assumed that, within the area of self-employment, entrepreneurs include all those individuals in charge of taking entrepreneurial decisions. Namely, owners, active shareholders and partners, owner or members of family businesses (table 2). We exclude professionals in private practice (lawyers, doctors, accountants, engineers, etc.) because we think that, in Italy, owing to cultural factors, the nature of the service they provide, the entry requirements into the profession and its regulation, they cannot be considered entrepreneurs.

<table>
<thead>
<tr>
<th>Table 2. Aggregated categories of workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
</tr>
<tr>
<td>Self-employed</td>
</tr>
<tr>
<td>Employers</td>
</tr>
<tr>
<td>Not employed</td>
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</tbody>
</table>

We assume that when choosing their occupations individuals compare expected utilities contingent on occupations (Kanbur, 1979) in the form:

\[ EU_{iu} = EU_i(X_i,TK_i,CK_i,w) \]  

\[ (1) \]  

7 We believe that the latter evidence may help explaining why Italy shows a business ownership rate considerably higher than would be expected given its per capita GDP (Carree and Thurik, 2002).
which is the expected utility of individual “$i$” as an employee and

$$EU_{ix} = EU_{i}(\theta(X_i, TK_i, CK_i; \pi)$$ (2)

which is the expected utility of individual “$i$” as an entrepreneur (employers), where $TK$ and $CK$ are the individual endowments of, respectively, tacit and codified knowledge, $\theta$ stems for entrepreneurial talent, $w$ and $\pi$ are the extrinsic rewards of different occupational choices and $X$ is a vector of individual characteristics.

Without loss of generality, let us suppose that $\theta$ is a CES aggregation of $CK$ and $TK$, where codified knowledge is determined by education ($E$) and tacit knowledge is generated by experience ($EX$), social capital ($SC$), and family background ($FB$) i.e. having or not at least a parent who is (was) an entrepreneur:

$$\theta = [m_{CK} CK^\sigma + m_{TK} TK^\sigma]^{1/\sigma}$$ (3)

where $0 < m_{CK}(CK; I, T) < 1$, $0 < m_{TK}(TK; I, T) < 1$ and $\eta = 1/(1-\sigma) \in [0, \infty]$ is the elasticity of substitution between codified and tacit knowledge; where for $\eta = 1/(1-\sigma) = 0$ we have a Leontief, fixed coefficients technology and for $\eta = 1/(1-\sigma) = \infty$ $TK$ and $CK$ are perfect substitutes. We assume that talent depends on how respectively $CK$ and $TK$ match the institutional ($I$) and technological ($T$) opportunities available within the economic environment people’s live: $m_{CK}$, $m_{TK}$ are the two matching functions, increasing and monotonic in their arguments. All individuals for whom entrepreneurial talent is such that:

$$EU_{iw} \geq EU_{ix}$$ (5)

become employees and the other individuals choose to start a business. That is to say, there is a minimum effective talent level $\theta^*$ above which the expected intrinsic and extrinsic rewards, i.e. the expected utility of being entrepreneurs, motivate such a choice$^8$. Hence, leaving aside intrinsic rewards, the elasticities of effective talent and profits with respect to the factors entering $TK$ and $CK$, vis à vis the elasticities of wage with respect to the same variables, are crucial to determining the role played by tacit and codified knowledge in entrepreneurial selection. And, of course, the overall elasticity of expected utilities contingent on occupations will depend on the direct impact of each sources of knowledge on $CK$ and $TK$ and on the indirect impact of the latter on the matching between talent and opportunities.

On these premises, in this section, the choice to become an entrepreneur (employer) instead of being an employee is analyzed running a simple probit regression. Firstly, we used the SHIW dataset of the Bank of Italy (Ferrante and Sabatini, 2006) enriched with new explanatory variables on environmental opportunities drawn from Florida (2005). In addition, we included socio-economic indicators drawn from the Istituto Tagliacarne database.

$^8$ In fact, the empirical evidence shows that the non-pecuniary benefits of entrepreneurship may be substantial (Hamilton, 2000). Nevertheless, measurement issues and data availability severely constraint empirical research on the role of intrinsic motivations in occupational choices.
Secondly, we tested the effect of different combinations of stimuli on the likelihood of becoming entrepreneur within the context of a data mining process carried out by means of a series of probit models grounded on our theoretical hypotheses. The analysis takes into account only the two groups of entrepreneurs and employees, thereby neglecting the other careers shaping the broader category of self-employed workers. The variables considered in the analysis are as follows:

**Subjective characteristics**

a) Educational attainment (three categories: primary, secondary and tertiary education), this variable is considered as the basic proxy for the measurement of workers’ endowment of codified knowledge.

b) Sex: a dummy for sex (0 male, 1 female)

**Family background**

c) Parental work status, as measured through people’s responses to the question “Which was the employment status of your parents when they were your present age?” Responses where recoded in order to assign a value of 1 if the head of household was an entrepreneur and of 0 if he was not. This variable aims to capture two of the possible factors of entrepreneurship we mentioned within the survey presented in sections 2 and 3: firstly, the entrepreneurial activity of parents may act as a source of tacit knowledge enriching individual skills and so entrepreneurial ability. Secondly, it could reduce risk aversion or risk tolerance, since undertaking an entrepreneurial career may be perceived as a less risky choice when parents are entrepreneurs (Fraser and Green, 2006). An alternative explanation is that people inherit taste.

d) Index of creativity

e) Unemployment rate

**Environmental opportunities (at province of residence level)**

d) Index of creativity

c) Unemployment rate

**Social capital**

a) Entrepreneurial density

**Interactions**

f) Index of creativity multiplied by educational attainment

g) Unemployment rate multiplied by educational attainment

Let \(x_1\) be the educational attainment, \(x_2\) sex, \(x_3\) parental work status (father occupation), \(x_4\) entrepreneurial density, \(x_5\) unemployment rate, \(x_6\) creativity index, \(x_7\) creativity index*educational attainment (years of schooling), and \(x_8\) unemployment rate*educational attainment. The dependent variable \(Y\) is the probability to become an entrepreneur. It takes on a value of 1 if the worker is an entrepreneur and zero in all the other cases. The probit model can be expressed as follows:
\[ P(Y = 1|X = x) = \Phi(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8). \]  

(1)

Parameters estimates are reported in Table 4.

![Table 3 - Descriptive Statistics](image)

![Table 4. Parameters estimates](image)

Surprisingly, from the first econometric exercises it resulted that the availability of socioeconomic infrastructures does not play any role in occupational choices in Italy, so we excluded them from the final model.

The coefficients of the model are all very significant and their signs are those expected. They confirm our hypothesis on the role of tacit, as opposed to codified knowledge, in entrepreneurial selection in Italy. Firstly, entrepreneurial choice is positively and strongly affected by tacit knowledge acquired within the family: people
whose parents are (or have been) entrepreneurs are more likely to become entrepreneurs, too. Building on Cuhna and Heckman (2007) we believe that the main channel through which families affect their children early in life is through the acquisition of cognitive and non-cognitive skills and information. The alternative explanation that people inherit taste for self-employment cannot be rejected but, in our view, is less convincing. Of course, one can still rename acquired skills and call them tastes. As suggested by our empirical results the family background is a crucial source of encoded knowledge and entry into entrepreneurial activity thus seem to be conditioned by social inheritance. This can be a critical element because it can alter the perception of attitudes towards and motivations regarding entrepreneurial activities and it may prove either helpful or a serious barrier to self-employment decisions. Furthermore, the positive effect of family background may be evaluated as support for starting up (advice, influence on the expected utility from self-employment, financial availability). Conversely, the coefficient of codified knowledge – as measured by educational attainment – has a negative sign. In particular, the choice to become an entrepreneur is very unlikely for highly educated individuals. It should be pointed out that the conventional educational attainment measure, in our exercise, does not offer any explanation of the different distribution of entrepreneurial activities across nations or regions. The empirical evidence on the relationship between education level and self-employment shows contrasting results. Using Eurobarometer data Grilo and Irigoyen (2006) find a U-shaped relationship between level of education and self-employment while Blanchflower (2004) reports that education is positively correlated with self-employment in the United States, but negatively in Europe. Delmar and Davidsson (2000) and Davidsson and Honig (2003) argue that there is a clear effect of education on the choice to become an entrepreneur, although with different impact. In a comparative study across 14 OECD countries (Uhlaneper al., 2002), it emerges that a higher level of education is correlated with a low rate of self-employment. Thirdly, the coefficient of entrepreneurial density, to be interpreted as a proxy for privileged access to local tacit knowledge, has a positive sign. This result seems to suggest, that agglomeration of entrepreneurial activity and geographical proximity positively influence the cost of accessing and coordinating dispersed sources of knowledge and, as Guiso and Schivardi (2005) argue, the learning opportunities. Fourthly, the effect of the unemployment rate and of its interaction with education are very significant and would suggest that, living in a province with a relatively high unemployment rate reduces the incentive to become entrepreneurs for less educated individuals whereas it increases the attractiveness of entrepreneurship for the more educated people. So, the choice to become entrepreneurs appear to be a residual option only for the more educated individuals, thus strengthening the evidence provided by the direct impact of education. However, our result does not support the view that there is an “unemployment push” into self-employment. The strong negative impact of the index of creativity on the probability of becoming an entrepreneur seems to suggest that, living in a more creative environment increases relatively more the occupational opportunities for employees or knowledge-based professionals. Our finding suggests that a set of “quality of place” characteristics is not equally successful in boosting entrepreneurial activities. Moreover, the positive sign of the interaction between the creativity index and educational attainment supports the conclusion that the entrepreneurial activities.

Puri and Robinson’s paper (2007), on the role of optimism in entrepreneurship, lends support to our conclusion: it argues that optimism is not correlated with the family background of entrepreneurs.
opportunities of a more creative environment are better exploited by the more educated individuals and privileged access to tacit knowledge ceases to be a barrier to entrepreneurship. This supports the conclusion that the returns to codified knowledge vis à vis the returns to tacit knowledge increase with environmental creativity. Finally, we can draw some preliminary and exploratory conjectures about the general features of the talent function $\theta$. Our estimations support the view that, in Italy, there is a weak matching between codified knowledge, i.e. education and entrepreneurial opportunities as shaped by technology and institutions; conversely, there seems to be a strong matching between tacit knowledge and the latter opportunities. But, whereas $CK$ is mostly a choice variable $TK$, to a large extent is not: indeed, one cannot choose her/his family or social background$^{10}$. Suppose, for example that $\eta \rightarrow 0$ such that $\theta = \min\{CK, TK\}$ (see figure 1). All those individuals endowed with $TK < TK_{\text{min}}$ would be excluded from entrepreneurial activities.

Figure 1 CK and TK are complements

![Figure 1 CK and TK are complements](image)

Our results suggest also that the extent of matching between $CK$ and entrepreneurial opportunities increases in more creative environments i.e. in environments characterized by a larger value of $ICI$, and that, in the latter case, barriers due to a low endowment of $TK$ may be less relevant in entrepreneurial entry and selection. To this regard, useful information can be obtained by splitting the sample according to the professional status (“entrepreneurs” and “others”) and to the value of $ICI$ (below and above the mean) and, then, by calculating the descriptive statistics for the variables entering into our definition of $CK$ and $TK$ (i.e. mean potential labour market experience ($EX$), mean schooling years ($E$), mean share of entrepreneurs whose parents is (was) an entrepreneur ($FB$), mean entrepreneurial density ($SC$); Table 4-5). For instance, the mean ratio $EX/E$ is 34% larger for entrepreneurs (Table 4a) and the mean ratio $FB/E$ is 31% larger in less creative environments (Table 6).

<table>
<thead>
<tr>
<th>Table 4 Descriptive Statistics (Professional status)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Entrepreneurs)</td>
</tr>
<tr>
<td>$N$</td>
</tr>
<tr>
<td>Schooling</td>
</tr>
<tr>
<td>Potential labour market experience</td>
</tr>
</tbody>
</table>

$^{10}$ Indeed, people can move around and go to places endowed with more social capital but access to it may be limited for immigrants.
Table 5 Descriptive Statistics (ICI)

<table>
<thead>
<tr>
<th></th>
<th>(ICI ≥ 0.376)</th>
<th>(ICI &lt; 0.376)</th>
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</thead>
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<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Schooling</td>
<td>4770</td>
<td>9.1801</td>
</tr>
<tr>
<td>Potential labour market experience</td>
<td>4770</td>
<td>38.8317</td>
</tr>
<tr>
<td>Family background = entrepreneurs</td>
<td>4770</td>
<td>.1482</td>
</tr>
<tr>
<td>Entrepreneurial density</td>
<td>4770</td>
<td>9.06</td>
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<tr>
<td>Valid N (listwise)</td>
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<td></td>
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</table>

Table 6

<table>
<thead>
<tr>
<th></th>
<th>% difference in the mean ratios</th>
<th>% difference in the mean ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Entrepreneurs – Others)</td>
<td>(ICI&lt;0.376 - ICI≥0.376)</td>
</tr>
<tr>
<td>(EX/E)</td>
<td>34%</td>
<td>13%</td>
</tr>
<tr>
<td>(FB/E)</td>
<td>159%</td>
<td>31%</td>
</tr>
<tr>
<td>(SC/E)</td>
<td>17%</td>
<td>8%</td>
</tr>
</tbody>
</table>

6. Summary and conclusions.

Entrepreneurial discovery and exploitation consists in finding either more efficient ways of satisfying given consumers’ wants or new goods to satisfy latent consumers’ needs. Appropriate cognitive and non-cognitive abilities are required to discover and to exploit such entrepreneurial opportunities.

Different technological and institutional environments require codified and tacit knowledge in varying proportions. For instance, the need for codified knowledge as source of entrepreneurial talent is comparatively high in technologically and organizationally complex environments, and in environments that change rapidly.

The reason for this is that codified knowledge is more general than non-codified knowledge, thus providing potential and actual entrepreneurs with more adaptable mental models and instruments to select and process those data required to take decisions. Moreover, the competences acquired through codified knowledge are essential when time is a very scarce resource and the environment is changing rapidly, so that information previously generated rapidly becomes obsolescent. Conversely, tacit knowledge is more useful in slowly changing environments where developed behavioural routines need not be frequently adapted and the skills to deal with uncertainty stem mainly from the ability to manage the social dimension of individual actions. In such a case, privileged access to local knowledge, due to the specificity of experience and of social networks, can become a strong competitive advantage.

In large populations, the distribution of innate cognitive abilities is the same, and they depend on factors that change only over a very long time span and are not in the domain of economic analysis. Hence, geographical
and temporal variations in the stock of entrepreneurial talent that might be relevant to economics are mostly due to abilities acquired through formal education, experience and access to local knowledge.

The importance of these sources of cognitive abilities reflects the complexity of the data to be processed and of the technological and social environment in which firms are embedded. The faster technology and the competitive environment change, the faster the value of specific knowledge acquired through experience decays while that of codified knowledge, acquired through formal education and training, increases: "The comparative advantage of schooling rises relative to that of learning from experience as technology becomes more complex and as a consequence of increases in specialization." (Schultz, 1990, p. 98).

In the last fifteen years or so, the increasingly organizational complexity of markets, due to globalization, the ICT revolution and deregulation, appear to have raised the amount of managerial skills required of entrepreneurs, with the consequence that managerial abilities became an essential input in the exploitation of market opportunities.

Our analysis shows that, in Italy, entrepreneurial selection has so far been strongly based on having a privileged access to tacit knowledge. Conversely, more educated individuals endowed with codified knowledge have fewer chances to become entrepreneurs, unless they live in very creative social and economic environments. If one assumes that innate entrepreneurial talent is normally distributed within the population, such a privileged access to tacit knowledge could be a barrier to entry into entrepreneurship for some individuals, thus limiting entrepreneurial experimentation and distorting the process of selection of new entrepreneurial talents.

Our analysis provides a consistent overall profile of a country lagging behind in terms of those entrepreneurial cognitive abilities required to compete in high-tech sectors where entrepreneurial ventures are intensive of codified knowledge (Gambardella and Giarratana, 2004).

There is now broad consensus that entrepreneurial human capital play a central role in economic growth in advanced countries and that the availability of a high quality of entrepreneurial skills has a strong influence on the potential of development, growth and innovation (Michelacci, 2003). One might wonder whether the Italian entrepreneurial model of firms selection, relying on networking and social learning, is still sustainable to face the new competition coming from the East and the ICT revolution. In view of Italy’s poor productivity and GDP performance in the last ten years or so, the crucial questions are whether market and institutional failures concerning the functioning of the labour market and the selection of entrepreneurs and firms (Redding, 1996; Iygun and Owen, 1998), should be blamed for this state of affairs.

Leaving aside the Italian case, our analysis suggest that theoretical and empirical analyses on entrepreneurship should account for the context-dependent nature of entrepreneurial talent and, specifically, should consider the role of technological and institutional factors in entrepreneurial selection and performance.

**References**


Baumol W.J. (2004), Education for innovation: entrepreneurial breakthrough vs. incremental corporate innovation, NBER WP n.10578.


Gambardella A. and Giarratana M. (2004), Chandlerian firms vs. entrepreneurship, W.P. SSRN.


Guiso L. and Schivardi F. (2005), Learning to be an Entrepreneur, CEPR Discussion Paper n. 5290.


Table A1. Educational qualification of different types of workers in 2004 (percentage values)

<table>
<thead>
<tr>
<th>Category</th>
<th>None</th>
<th>Elementary school</th>
<th>Middle school</th>
<th>Professional secondary school</th>
<th>High school</th>
<th>Associate's degree</th>
<th>Bachelor's degree</th>
<th>Postgraduate qualification</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory worker</td>
<td>1.12</td>
<td>13.89</td>
<td>53.84</td>
<td>11.01</td>
<td>19.06</td>
<td>0.22</td>
<td>0.82</td>
<td>0.04</td>
<td>100.00</td>
</tr>
<tr>
<td>White-collar worker</td>
<td>0.04</td>
<td>1.56</td>
<td>18.65</td>
<td>8.19</td>
<td>58.74</td>
<td>2.00</td>
<td>10.64</td>
<td>0.18</td>
<td>100.00</td>
</tr>
<tr>
<td>School teacher</td>
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<td>0.00</td>
<td>0.68</td>
<td>1.36</td>
<td>42.27</td>
<td>2.27</td>
<td>53.18</td>
<td>0.23</td>
<td>100.00</td>
</tr>
<tr>
<td>Junior manager/Cadre</td>
<td>0.00</td>
<td>0.00</td>
<td>6.69</td>
<td>3.34</td>
<td>55.52</td>
<td>2.01</td>
<td>31.44</td>
<td>1.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Manager, senior official, principal, headmaster, university teacher, magistrate</td>
<td>0.00</td>
<td>0.00</td>
<td>1.48</td>
<td>1.48</td>
<td>28.89</td>
<td>0.74</td>
<td>62.96</td>
<td>4.44</td>
<td>100.00</td>
</tr>
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<td>Member of the arts or professions</td>
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<td>0.32</td>
<td>6.39</td>
<td>3.51</td>
<td>35.78</td>
<td>2.24</td>
<td>49.52</td>
<td>2.24</td>
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<tr>
<td>Sole proprietor</td>
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<td>41.78</td>
<td>2.05</td>
<td>11.64</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Free-lance</td>
<td>0.00</td>
<td>15.49</td>
<td>46.97</td>
<td>8.42</td>
<td>26.77</td>
<td>0.84</td>
<td>1.52</td>
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<td>100.00</td>
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<tr>
<td>Owner or member of a family business</td>
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<td>19.48</td>
<td>39.83</td>
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<td>0.43</td>
<td>4.33</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Active shareholder, partner</td>
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<td>4.29</td>
<td>36.43</td>
<td>6.43</td>
<td>45.71</td>
<td>0.71</td>
<td>6.43</td>
<td>0.00</td>
<td>100.00</td>
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<td>First-job seeker</td>
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<td>3.76</td>
<td>34.21</td>
<td>4.75</td>
<td>36.66</td>
<td>1.80</td>
<td>18.49</td>
<td>0.16</td>
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<td>48.27</td>
<td>8.44</td>
<td>18.83</td>
<td>0.22</td>
<td>3.03</td>
<td>0.00</td>
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</tr>
<tr>
<td>Homemaker</td>
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<td>36.37</td>
<td>4.42</td>
<td>14.46</td>
<td>0.27</td>
<td>1.77</td>
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<td>100.00</td>
</tr>
<tr>
<td>Well-off</td>
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<td>26.32</td>
<td>15.79</td>
<td>10.53</td>
<td>31.58</td>
<td>5.26</td>
<td>5.26</td>
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</tr>
<tr>
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<td>20.18</td>
<td>4.52</td>
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<td>4.47</td>
<td>0.07</td>
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<tr>
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<td>54.30</td>
<td>15.06</td>
<td>1.15</td>
<td>3.37</td>
<td>0.00</td>
<td>0.44</td>
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<td>100.00</td>
</tr>
<tr>
<td>Student (from primary school up)</td>
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<td>19.75</td>
<td>31.80</td>
<td>0.91</td>
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<td>0.45</td>
<td>1.82</td>
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<td>Conscripted soldier</td>
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<td>31.58</td>
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<td>5.26</td>
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<td>Contingent worker (Co-co-co)</td>
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<td>6.93</td>
<td>19.80</td>
<td>8.91</td>
<td>38.61</td>
<td>1.98</td>
<td>23.76</td>
<td>0.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: authors’ elaboration on Bank of Italy’s (2006) data.
Table A2. Professional choice of workers holding different qualifications in 2004.

<table>
<thead>
<tr>
<th>Professional choice</th>
<th>None</th>
<th>Elementary school</th>
<th>Middle school</th>
<th>Professional secondary school</th>
<th>High school</th>
<th>Associate’s degree</th>
<th>Bachelor’s degree</th>
<th>Postgraduate qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory worker</td>
<td>1.17</td>
<td>7.58</td>
<td>24.56</td>
<td>28.41</td>
<td>10.77</td>
<td>4.38</td>
<td>1.66</td>
<td>3.57</td>
</tr>
<tr>
<td>White-collar worker</td>
<td>0.04</td>
<td>0.71</td>
<td>7.16</td>
<td>17.78</td>
<td>27.92</td>
<td>32.85</td>
<td>18.00</td>
<td>14.29</td>
</tr>
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<td>0.00</td>
<td>0.00</td>
<td>0.05</td>
<td>0.58</td>
<td>3.93</td>
<td>7.30</td>
<td>17.62</td>
<td>3.57</td>
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<td>Junior manager/Cadre</td>
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<td>0.00</td>
<td>0.34</td>
<td>0.97</td>
<td>3.51</td>
<td>4.38</td>
<td>7.08</td>
<td>10.71</td>
</tr>
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<td>Manager, senior official, principal, headmaster, university teacher, magistrate</td>
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<td>0.03</td>
<td>0.19</td>
<td>0.83</td>
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<td>2.37</td>
<td>5.11</td>
<td>11.67</td>
<td>25.00</td>
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<tr>
<td>Sole proprietor</td>
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<td>0.20</td>
<td>0.70</td>
<td>1.26</td>
<td>1.29</td>
<td>2.19</td>
<td>1.28</td>
<td>0.00</td>
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<td>3.65</td>
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<td>0.92</td>
<td>1.57</td>
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<td>0.75</td>
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<td>Active shareholder, partner</td>
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<td>0.87</td>
<td>0.87</td>
<td>1.35</td>
<td>0.73</td>
<td>0.68</td>
<td>0.00</td>
</tr>
<tr>
<td>First-job seeker</td>
<td>0.04</td>
<td>0.47</td>
<td>3.57</td>
<td>2.80</td>
<td>4.74</td>
<td>8.03</td>
<td>8.51</td>
<td>3.57</td>
</tr>
<tr>
<td>Unemployed</td>
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<td>1.80</td>
<td>3.81</td>
<td>3.77</td>
<td>1.84</td>
<td>0.73</td>
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</tr>
<tr>
<td>Homemaker</td>
<td>6.52</td>
<td>19.26</td>
<td>16.16</td>
<td>11.11</td>
<td>7.95</td>
<td>5.11</td>
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<tr>
<td>Well-off</td>
<td>0.04</td>
<td>0.10</td>
<td>0.05</td>
<td>0.19</td>
<td>0.13</td>
<td>0.73</td>
<td>0.08</td>
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<td>40.94</td>
<td>14.72</td>
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<td>11.66</td>
<td>10.22</td>
<td>14.38</td>
<td>10.71</td>
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<tr>
<td>Non-job pensioner</td>
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<td>2.90</td>
<td>1.26</td>
<td>0.80</td>
<td>0.00</td>
<td>0.38</td>
<td>0.00</td>
</tr>
<tr>
<td>Student (from primary school up)</td>
<td>29.90</td>
<td>13.31</td>
<td>17.94</td>
<td>2.90</td>
<td>15.30</td>
<td>10.95</td>
<td>4.52</td>
<td>7.14</td>
</tr>
<tr>
<td>Conscripted soldier</td>
<td>0.00</td>
<td>0.02</td>
<td>0.10</td>
<td>0.29</td>
<td>0.17</td>
<td>0.73</td>
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<td>0.00</td>
</tr>
<tr>
<td>Contingent worker (Co-co-co)</td>
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<td>0.34</td>
<td>0.87</td>
<td>0.83</td>
<td>1.46</td>
<td>1.81</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Source: authors’ elaboration on Bank of Italy’s (2006) data