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## Opening the black box of entrepreneurship: The Italian case in a historical perspective

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The main objective of this paper is to shed light on the Italian entrepreneurship between the beginning of the second industrial revolution and the end of the twentieth century. It is based on a new dataset concerning the profiles of 386 entrepreneurs. The results are twofold: first, by proposing an empirically based taxonomy of Italian entrepreneurs not exclusively founded on intuitions and qualitative judgements, the article provides valuable interpretative elements; second, the article puts forward some hypotheses about the relationship between entrepreneurship and Italian economic growth. In particular a cluster analysis singles out five different entrepreneurial typologies characterised by a widespread tendency to search for new markets, yet a scarce attitude towards innovation. Further it is suggested that the evolution of the institutional context slowed down the development of the entrepreneurial abilities and virtues necessary to grow.

**Keywords:** history of entrepreneurship; Italian capitalism

### 1. Introduction

Western economies' recent troubles did not lessen the renewed interest towards entrepreneurship that followed the fresh, unexpected flowering of the 'new entrepreneurial economy' stimulated by the ICT revolution:<sup>1</sup> by lowering transaction costs and uncertainty, this bunch of technologies re-launched market coordination at the expense of the visible hand.<sup>2</sup> Because of the essentially technological matrix of these changes, attention has been increasingly focusing upon the role played by innovation in determining entrepreneurship and, more generally, on the relationship between the latter and economic growth, therefore revitalising and implementing Schumpeter's original intuitions.<sup>3</sup> A new sentiment seems to emerge also in those economic approaches aiming at an ideal-type market economy where the entrepreneurial role was not even considered.<sup>4</sup>

According to William Baumol,<sup>5</sup> only a microeconomic approach is likely to cope with these questions by setting the Schumpeterian entrepreneur in the right position within the economic analysis. But do the innovative capabilities exhaust the traits of the entrepreneur? Probably not. In the economic literature there are at least two other main concepts which influenced the fine-tuning of his character: the first is an ancient one, risk

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and arbitrage, more recently developed both in the neoclassical and the neo-Austrian schools;<sup>6</sup> the second is coordination, with reference of course to factors of production, which seems also to have inspired Alfred Marshall when he defines organisation as the fourth factor of production.<sup>7</sup>

As difficult as it can appear at the analytical level, a promising approach would be to merge these different research perspectives by defining entrepreneurship in terms of its ability to exploit opportunities from time to time arising in the market. Entrepreneurial opportunities refer to those situations where new products, processes, markets, material resources and organisational structures – in practice the ‘new’ production functions already evoked by Schumpeter – can be introduced into the market and sold at a price greater than their cost. Because of information asymmetries and different cognitive capabilities, only some individuals are able to detect these opportunities, whilst the nature of the opportunity (sector, demand, etc.) and specific attributes (context, motivation, personality, etc.) explain why only a few succeed in exploiting them.<sup>8</sup>

The second largely debated theme concerns the role of the entrepreneur in economic growth and particularly when and how the statement ‘more entrepreneurship is equal to more growth’ works.<sup>9</sup> On the one side, the association between growth and the single successful entrepreneur, therefore aligned with the ‘first’ Schumpeter, keeps on being appealing, as shown by the title – ‘Global Heroes’ – of the recent special issue of *The Economist*.<sup>10</sup> On the other a number of solid empirical studies have shown the impact of breeding grounds of entrepreneurship, either self-employment or the grey zone which stands between this and the mid-/top-level firms.<sup>11</sup> But does this mean that just the presence of an entrepreneurial class is the necessary and sufficient condition to attain economic growth? Baumol’s recent remarks can add clarity. In distinguishing between *innovative* and *replicative* entrepreneurs, he maintains that only the first would foster ‘Good capitalism’ as contrasted to ‘Bad capitalism’ – that is the almost static capitalism stemming from the excessive interaction between state and monopoly capitalists.<sup>12</sup> Lately the same author – adding to his by now classical 1991 contribution – has proposed a further useful distinction: between *redistributive* and *productive* entrepreneurs, whose respective influence depends primarily on the institutional and normative context. Obviously the ones who implemented the productive capacity during the industrialisation process are the latter, while the first best expressed themselves in the preindustrial period.<sup>13</sup>

The role played by entrepreneurship in economic growth has been increasingly evaluated in historical perspective,<sup>14</sup> emphasising the role played by institutional and cultural factors,<sup>15</sup> by innovation<sup>16</sup> and by choices of investment.<sup>17</sup>

Turning to the Italian case, the issue of entrepreneurship has long been rather overlooked primarily because of the scarcity of historical material, particularly of analytical type.<sup>18</sup> Until the late 1970s, in fact, Italian historiography focused mostly on the ‘macro-level’ topics such as economic growth and development, structural change, backwardness, North–South dualism and so on.<sup>19</sup> The second reason was the ambiguous attitude toward the figure and the role of the entrepreneur running throughout the country’s economic and social history.<sup>20</sup>

There was however a major exception – the 1980 path-breaking contribution by Franco Amatori, whose title explicitly referred to ‘entrepreneurial typologies’ of Italian industrial history.<sup>21</sup> He suggested a very simple scheme, that outlines an enduring threefold structural character of the country’s entrepreneurship: ‘private’, ‘supported’ and ‘public’ entrepreneurs. Later contributions largely built upon Amatori’s 1980 contribution, often dwelling on sector, individual or group initiatives.<sup>22</sup> In recent times

new insights into the categories of entrepreneurial networks, family entrepreneurs and/or outward looking entrepreneurs have been added.<sup>23</sup> Negligible progress so far has been made in disclosing the relationship between entrepreneurship and economic growth, even though Marco Doria in his studies tried to single out the contribution of different sectors and categories of entrepreneurs to Italy's economic change and Andrea Colli came out with a new protagonist of the recent industrialisation of the country, the middle-size firms of the called 'fourth capitalism'.<sup>24</sup>

Recently Amatori updated his previous essay on the basis of the ample literature of the last 30 years.<sup>25</sup> He reformulated his statements, better defining the first two abovementioned typologies (private and supported),<sup>26</sup> and, in order to cope with the different phases of Italian capitalism, new ones were added: the 'Real Schumpeterian' entrepreneur of the two decades after World War II, able to move along the mass production trajectory, associated with the golden age; the 'criminal' entrepreneur most clearly surfaced after the deep crisis of the 1970s, the 'ephemeral condottieri' of the 1980s, whose success was short-lived as consequence of the anarchic (that is unregulated) nature of Italian capitalism and 'the entrepreneur who took the state' – Silvio Berlusconi.

Yet the methodological approach did not change. In a nutshell we can say that Amatori's typologies, although proposing an interesting frame of Italian capitalism, mix up many variables and use different schemes. For the period prior to World War II, the focus is on the attitude towards the market whilst the simple dichotomy state/market is given a strong explanatory power. For the following phase, Amatori proposes a flowering of typologies identified on the basis of different interpretative lenses such as forms of enterprises, institutional context, fluctuations of economic cycle and so on.

The aim of this paper is to shed further light on Italian entrepreneurship going beyond Amatori's (and followers') typologies. To us it seems that the most useful way to investigate Italian entrepreneurship is to proceed through an interrelation between theory and analysis, between deductive and inductive methods so that hypothesis and generalisations produced by the first could then be verified, corrected and adapted through field investigation. Based on an original collection of empirical data, our research is oriented by suggestions coming from the conceptual elaborations stimulated by the renewed interest in entrepreneurship. Its primary objective is a taxonomy of the country's entrepreneurship which, being empirically supported, could catch its basic tendencies and go well behind schemes and typologies so far produced by historiography. We believe that the construction of lengthy diachronic taxonomies must follow a homogenous framework implying the same theoretically based explanatory variables.

Finally, our taxonomy will hopefully contribute to answering some big questions concerning the nature of Italian capitalism: to what extent Italy's winding road to growth and its prolonged backwardness are to be explained by a structural absence of those Schumpeterian (and Kirznerian) virtues – innovative capacity and risk-taking – which were at the basis of the Anglo-American or German success? How much of the ancient creativity and talent, universally recognised as the essential elements of the Renaissance success, survive in contemporary Italy, to act as substitutive factors of those frailties?

In other words, what we want to explain is the relationship between entrepreneurship and growth in Italy over the past 150 years. Was this relationship really crucial? Were Italian entrepreneurs dynamic and effective enough?

This essay is organised as follows: section 2 describes the sources utilised in this study, while section 3 gives some details on the descriptive statistics which provide the main characteristics of the entrepreneurs. In section 4 the descriptive approach is refined by introducing the statistical techniques – multiple correspondence analysis and cluster

analysis – which produce the entrepreneurial typologies presented in section 5. A few concluding remarks are offered in section 6.

## 2. The source

The main source of this research is a compilation of entrepreneurial biographies prepared for an ongoing Bibliographical Dictionary of Italian Entrepreneurs (BDIE): the choice of the entries was made on the basis of the evaluation of their relevance for national or local history by the team of researchers who implemented the project.<sup>27</sup> The entire project was designed to be representative of all of Italian entrepreneurial history by geographical areas, by sectors, and by typologies (women included). Unfortunately, for budgetary reasons, the BDIE had to stop at the letter N: it has so far processed about 600 ‘gross’ entries. Such a number however includes figures who might stand out for political more than entrepreneurial reasons or who acted primarily as managers. From a practical point of view this means that such a rough estimate has to be cleaned up from spurious entries, but at the same time is increased by the variable number of characters that have been considered in the dynastic biographies which referred not to a single entrepreneur, but to an entrepreneurial family.

Moreover, to give more historical substance to the evolution of the country’s entrepreneurship, the data set has been divided into two subsections – before and after 1870, the year that conventionally has been referred to as the divide of the Second Industrial Revolution. Our hypothesis is that all the entrepreneurs active before that date could not have felt the influence of that great wave of innovations or of the effervescent and dynamic climate around it.<sup>28</sup> As a consequence individuals born before 1850 have been eliminated from the sample, thus further reduced to 462 entrepreneurs. Following the same logic, our examination ends at the cohort born in 1950. Finally as the aim of the research is not just the detection and classification of those who fulfil the entrepreneurial function, but rather of the ‘pure entrepreneurs’ (much in the tradition of the ‘first’ Schumpeter), 76 managers, identified as such by a specific cluster, have been isolated: therefore 386 is the final number of biographies used in this study.

These biographies were classified according to a great number of variables (Table 1), chosen on the basis of the suggestions coming both from history and theory. The following aspects have been considered: demographic variables (such as gender, dates and location of birth and death, age at which the entrepreneurial activity began), background (social class, family relations), human capital formation (level and field of education, travel and training abroad), networks (affiliation, involvement in politics). Moreover, following theoretical suggestions, we took into consideration the propensity to innovate, with the fundamental distinction between *productive* innovations – process and product – and *redistributive* innovations – new sales and/or production markets – method of company acquisition, the macro sector of activity.

Finally, in order to evaluate entrepreneurial success, other variables have been examined: for instance, the innovation levels, the rate of growth of the firm as well as the invention and the life of a successful brand.

## 3. The data

As mentioned before, the sample covers a large period of the Italian economy: all individuals were born in a time span of 100 years, that is between 1851 (10 years before the unification of the country) and 1952 (the beginning of the ‘economic miracle’). As we

Table 1. Descriptive statistics.

Variables		Number	%
Date of birth	Between 1851 and 1870	111	28.8
	Between 1871 and 1890	98	25.4
	Between 1891 and 1910	126	32.6
	After 1910	51	13.2
Gender	Male	377	97.7
	Female	9	2.3
Area of birth	North East	109	28.2
	North West	124	32.1
	Centre	83	21.5
	South	61	15.8
	Abroad	9	2.3
Social class	Lower (farmer)	50	13.0
	Middle (small entrepreneur, merchant, craftsman)	224	58.0
	Upper (big entrepreneur, freelance, nobility)	112	29.0
Father's main activity*	Farmer	9	3.0
	Labourer	16	5.3
	Manager	8	2.6
	Technician	3	1.0
	Craftsman	36	11.8
	Entrepreneur	156	51.3
	Independent worker	19	6.3
	Employee	8	2.6
	Merchant	49	16.1
	Illiterate	1	0.3
Education level	Primary education	67	17.4
	Middle school	80	20.7
	High school	140	36.3
	Degree/higher degree	98	25.4
Field of degree	<i>Law/economics/art</i>	36	37.9
	Laws	20	21.1
	Economics	10	10.5
	Other arts	6	6.3

Table 1 – *continued*

Variables		Number	%
	<i>Sciences</i>	59	62.1
	Engineering	40	42.1
	Chemistry/pharmacology	7	7.4
	Other sciences	12	12.6
Education abroad	Yes	50	13.0
	No	336	87.0
Experience abroad	Yes	118	30.6
	No	268	69.4
Experiences (education or training) abroad	Yes	126	32.6
	No	260	67.4
Method of company acquisition	Founder	206	53.4
	Inherited	153	39.6
	Purchased	27	7.0
Age of starting activity**	11–20	62	16.5
	21–30	202	53.9
	31–40	89	23.7
	41–50	20	5.3
	> 50	2	0.5
Typology of the first activity***	Farmer	4	1.1
	Labourer	50	13.2
	Manager	49	12.9
	Technician	39	10.3
	Craftsman	24	6.3
	Entrepreneur	132	34.8
	Independent worker	23	6.1
	Employee	27	7.1
	Merchant	31	8.2
Family relationships	Yes	247	64.0
	No	139	36.0
Relations with the partner family	Yes	45	11.7
	No	341	88.3
Indirect involvement in politics	Yes	97	25.1

	No	289	74.9
Direct involvement in politics	Yes	100	25.9
	No	286	74.1
Indirect or direct involvement in politics	Yes	156	40.4
	No	230	59.6
Level of involvement in politics	Local level	61	61.0
	National level	26	26.0
	International level	4	4.0
	Local and national level	9	9.0
Knighthood	Yes	137	35.5
	No	249	64.5
Affiliation to employers' associations	Yes	132	34.2
	No	254	65.8
Public financial support	Yes	38	9.8
	No	348	90.2
Relations with banks	Yes	103	26.7
	No	283	73.3
Participation in other companies' board of directors	Yes	118	30.6
	No	268	69.4
Starting macro sector	Agriculture, fishing & mining	27	7.0
	Financial service	6	1.6
	Industry	295	76.4
	Service	58	15.0
Main macro sector of activity	Agriculture, fishing & mining	24	6.2
	Financial service	8	2.1
	Industry	311	80.6
	Service	43	11.1
Main macro sector mobility	Macro sector mobility	29	7.5
	No macro sector mobility	357	92.5
Main sector mobility	Sector mobility	49	12.7
	No sector mobility	337	87.3
Product innovation	Yes	153	39.6
	No	233	60.4
Product innovation level	No innovation	233	60.4
	Low innovation	56	14.5



Table 1 – *continued*

Variables		Number	%
	Moderate innovation	61	15.8
	High innovation	36	9.3
Process innovation	Yes	134	34.7
	No	252	65.3
Process innovation level	No innovation	252	65.3
	Low innovation	59	15.3
	Moderate innovation	48	12.4
	High innovation	27	7.0
New sales markets	Yes	277	71.8
	No	109	28.2
Geographical area new sales markets	No new sale market	109	28.2
	Only Italy	89	23.1
	Abroad	188	48.7
New markets of production	Yes	142	36.8
	No	244	63.2
Geographical area new production markets	No new product market	244	63.2
	Only Italy	80	20.7
	Abroad	62	16.1
New raw material	Yes	41	10.6
	No	345	89.4
New organisational models	Yes	84	21.8
	No	302	78.2
Level of innovation	No innovation (score = 0)	48	12.4
	Low innovation level (score = 1)	89	23.1
	Medium innovation level (score = 2–3)	192	49.7
	High innovation level (score = 4–6)	57	14.8

\*82 missing values; \*\*11 missing values; \*\*\*7 missing values.

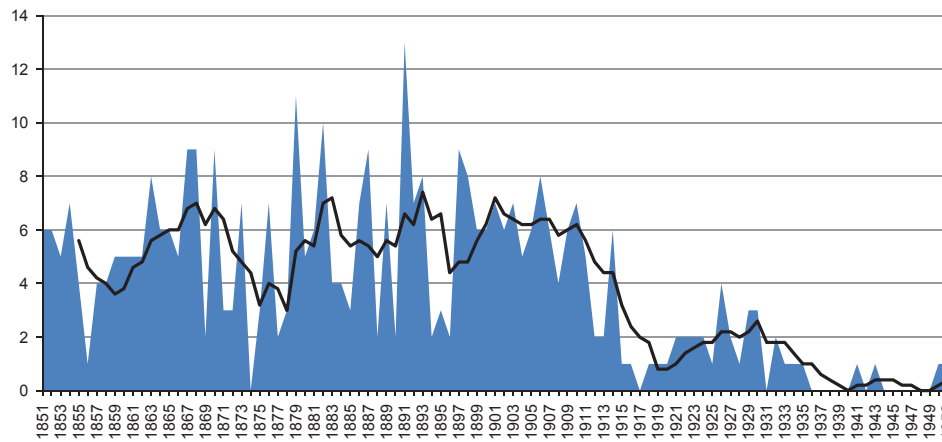


Figure 1. Individuals by year of birth.

can see in Figure 1, the dates of birth of the entrepreneurs of the sample are well distributed amongst the various decades up to the 1910s, less so after World War I.

To make the journey through the sample easier, we present descriptive statistics of the 386 entrepreneurs (Table 1). First of all we can notice that, concerning gender, the number of females within the sample is negligible: there are only nine women (2.3% of the total). This however should not be surprising considering the social, cultural and institutional backwardness of the country. A majority of our sample of entrepreneurs originates from the North-West region (124, about 32% of the total), an area which, as known, was the forerunner of Italian industrialisation; more than 28% (109 entrepreneurs) were from the North-East, the region which was to become one of the most important of post-1970 Italian capitalism. The regions of Central Italy are represented by 83 entrepreneurs (21.5% of the total). The South and the Islands (61 individuals corresponding to 15.8% of the total) are at the bottom, whilst a small number (9 and 2.3%) of entrepreneurs were born outside Italy.<sup>29</sup>

As far as the social class of origin is concerned, we found that the greatest number of entrepreneurs (224, 58% of the total) came from the middle class; a fair number (112, 29%) from the upper class and just 50 (13%) from the lower classes. These figures, by the way, compare well with those of entrepreneurs from different countries, England, Scotland, France and Spain: there the high/medium socioeconomic background ranged between 26% and 36% and the low between 13.4% and 16.0%.<sup>30</sup> A further specification concerning the origin of Italian entrepreneurs is related to the profession of their fathers. In this respect independent activities such as entrepreneur (51.3%), merchant (16.1%), craftsman (11.8%) and independent worker (6.3%) largely prevail.

Education emerges as probably the most interesting and crucial variable, particularly if the general low level of education of the country is considered. In fact, a large share of entrepreneurs shows a high level of formal education: 98 (25.4%) had a university degree (*laurea*) and four of them also a post-graduate degree, whereas 140 (36.3%) possessed a high-school certificate. Moreover, 80 (20.7%) had a middle school certificate. Conversely only one entrepreneur was illiterate, whereas 67 (17.4%) had attended just primary school. Amongst the entrepreneurs with a university degree, we found a clear preference for the techno-scientific curricula: 62.1% against 21.1% for law, 10.5% business studies and just 6.3% humanities. Interestingly, often the process of human capital formation did not stop with formal education. A good number of entrepreneurs (126 out of 386, about a third of the total)

had training experience abroad, mostly in more industrialised countries. Since the 1880s this had become quite a familiar tradition among young Italian entrepreneurs, particularly (but not exclusively) in the case of wealthy and/or already consolidated entrepreneurial dynasties. With regard to education, Italian entrepreneurs show some difference from those of the four abovementioned countries,<sup>31</sup> even though the data are probably not fully comparable because of the strong polarisation of some of those values – no studies plus unknown versus university studies – namely for Scotland, France and Spain. On the whole, the most interesting aspect emerging especially from the English and the Italian cases is the relevance of secondary schools. In the case of England the share of entrepreneurs with secondary school education (apprenticeship included<sup>32</sup>), amounted to 47.2% of the sample,<sup>33</sup> a figure that falls in between the values registered for Italy, i.e. 36.3%, if only senior high school is considered and 57% if the junior high school figure is added.

A fundamental question of the theory of entrepreneurship is how the entrepreneurial activity began: in other words, whether the entrepreneur created the new activity from scratch, or whether he inherited the activity or acquired it from someone else. Our evidence does not offer a neat answer. At an aggregate level the beginnings of entrepreneurship can be divided almost equally into two classes: the first group of 206 individuals (53.4%) were founders of a new firm,<sup>34</sup> the second of 180 (46.6%) acquired the firm: 153 (39.6%) by inheritance, 27 (7%) by purchase. It is worth noting that most of the entrepreneurs started their activity very early: 264 (70.4%) began their activity before the age of 30 and only 22 (5.8%) after the age of 40. The first working activity might be indicative of their future entrepreneurial destiny. If we take into account the two larger categories we realise that 132 (34.8%) began as entrepreneurs – 31 (8.2%) as merchants, 24 (6.3%) as artisans and 23 (6.1%) as independent workers. Moreover, it has to be pointed out that 49 (12.9%) moves from managerial positions to entrepreneurial activities.

It is well known that another central feature of the historical and theoretical debate on entrepreneurship is the role of family. Our survey offers some interesting evidence on this point. Let us first consider whether the entrepreneur had working relations with his own family, a much debated issue in the literature on family business.<sup>35</sup> Out of 386 entrepreneurs 247 (64%) maintained working relations with members of their families; much fewer (only 45, 11.7%) however with members of the spouse's family. Further information can help an understanding of the social and cultural milieu of the sample: political commitment, affiliations and honorary awards. About a quarter of the individuals in the sample (100) were directly involved in politics: more than 60% had commitments at the local level and 26% at the national level. With regards to affiliations, about a third (132, that is 34.2%) belonged to entrepreneurial associations, while a good number (137, 35.5%) saw their entrepreneurial activity rewarded with appointment to the knighthood (*Cavaliere del lavoro*). Moreover, we can see that 118 entrepreneurs (30.6% of the total) were members of the board of directors of other companies. Quite few (38 individuals and 9.8%) were able to draw on direct financial support from the state. The family business which characterises the sample seems to be consistent with the extensive preference for self-financing showed by the data concerning the bank–firm relationship: 283 (73.3%) entrepreneurs did not have clear links with the banking system.

Another interesting point to be clarified is the one concerning the start-up sectors of the various business initiatives. Industry firms were the clear majority (76.4%), followed at a distance by services (15%), agricultural (7%) and so on. Not very different values are shown by the evidence concerning the macro sectors in which the core activity of the sample of firms specialised after their start-ups. The industry sector is again clearly at the top (80.6%), followed by services (11.1%) and agriculture (6.2%). Such an outcome is

consistent with the one related to the sector mobility of the firms in the sample, or, in other words, the versatility of the entrepreneurs, a proxy sometimes used to evaluate their success.<sup>36</sup> In fact, as far as macro-sectoral mobility is concerned, only 7.5% abandoned their initial area of activity to move into a new one. This is true even if we consider the mobility within macro sectors (e.g. from textiles to the food industry): in fact, only 12.7% of the entrepreneurs changed their activity.

An important part of our database is devoted to innovation which is considered one of the key factors of the entrepreneurial success. In order to follow Schumpeterian suggestions, we have selected six different kinds of innovative capacity. The first two are the traditional proxies: innovation product and innovation process; then we picked the entrepreneur's ability to innovate with regard to sales and production markets within and outside the country. Finally we considered the introduction of new raw materials in the process of production and of new organisational models in the firm. The results obtained are quite surprising: if we consider as an innovative entrepreneur the individual who has at least one positive answer to the six variables related to innovation, we have 338 individuals (87.6%). Yet this outcome is probably too optimistic with regard to Italian entrepreneurship. Therefore the modality innovation deserves some further specification. For instance, if we take into consideration each variable, about 40% of the sample introduced product innovations and 34.7% process innovations. The capacity to move towards new sales markets concerns 71.8% of the entire sample, but much less (48.7%) outside Italy. As for the new markets of production, a phenomenon not very common in the past, we have positive answers for 36.8% of the total. The introduction of new raw materials concerns only 10.6% of the total and the use of new organisational models about 22%. Finally, we have aggregated all the answers and attributed one point to each positive one; thus we obtained a score between 0 (all negative answers) and 6 (all positive answers). In this way we have obtained a more reliable proxy of innovation, which allows us to distinguish among 'no innovation' (12.4% of the total), 'low level' (23.1%), 'medium level' (49.7%) and 'high innovation' (14.8%).

#### 4. The multivariate analysis

The methodology used to analyse our sample is based on two different techniques very well known in statistics,<sup>37</sup> yet not very familiar to scholars in economic and/or business history. These techniques are Multiple Correspondence Analysis (MCA) and Cluster Analysis (CA).<sup>38</sup> As to MCA, no assumption about the underlying distribution of the data are needed and it can be applied to both categorical and quantitative variables. It is worth noting that, in our analysis, clustering is performed on the MCA coordinates thus rendering the input variables not dependent on the original variables scale. In order to obtain results (taxonomies) with a really explicative value, these techniques, even though essentially quantitative, entail a previous reflection on the criteria for choosing the variables. In fact, the MCA requires choices concerning both the explicative variables (either active or supplementary) and the number of dimensions which are crucial in determining future solutions. In other words, to reduce the problem of the number of variables to be considered in the dendograms as well as increase the interpretative capacity of the CA, it is frequently suggested that a preliminary MCA should be completed. In this way the observed variables are substituted by a reduced number of variables utilised as inputs in the cluster analysis.

Ten active variables have been selected for the MCA, while other variables have been used as supplementary (illustrative) ones. The former are fundamental to individuate the

Table 2. List of active variables used for the MCA.

Active variables
Social class
Education level
Experiences (education or training) abroad
Method of company acquisition
Indirect involvement in politics
Affiliation to employers' association
Main macro sector of activity
Product-process innovation level
Geographical area new sales markets
Growth in size

latent dimensions (see [Table 2](#)), the latter are mainly related to the status and personal characteristics of the entrepreneur or do not offer a primary contribution to the explanation: therefore we will not dwell on them.

Seventeen eigenvalues were identified by the MCA, each of them can account for a very small proportion of inertia because of the high number of categories involved in the analysis. That is the reason why the proportion of inertia each eigenvalue accounts for was calculated using the correction of Benzecri, which takes into account the number of categories involved.<sup>39</sup> Thanks to this correction, the first three eigenvalues add up to about 94% of the inertia: this means, in other words, that three latent dimensions have been individuated, each defined by two opposing quadrants contrasting the values assumed by the significant active variables. These have been selected every time they explain a proportion of inertia higher than the average inertia – that is when the contribution of each variable is higher than the total of inertia (100) divided by the number of active variables (10). The items of the active variables are associated with a dimension when the item contributes greatly to the inertia of the considered dimension and the values of the squared cosine, which represent the quality of the graphical representation, are around 0.20 (see [Table 3](#)).

On the basis of the corrections suggested by Benzecri,<sup>40</sup> the first dimension turns out to explain 67% of the inertia and is characterised as follows: it is mainly associated with the extreme values of the active variable 'social class', that is low class and high class, as shown in the column 'contribution' of [Table 3\(a\)](#). Moreover, other active variables concerning 'education level' (graduate and post-graduate versus illiterate and primary school), 'method of company acquisition' (founder versus inheritance), 'indirect involvement in politics' (yes versus none), 'employer association' (yes versus none) are considered. We have called this dimension 'Status' because it shows the relevance of a bunch of variables related to the social condition of entrepreneurs.

The second dimension, shown in [Table 3\(b\)](#), explains more than 20% of the inertia and is clearly linked to the Schumpeterian attitude in its broadest meaning. It is characterised by the extreme values registered by the active variable 'geographical area of new sales markets', that is abroad versus Italy or none, as shown in the column 'contribution' of [Table 3b](#). Moreover, it is linked to the capacity (incapacity) to grow at national or international level, to the propensity to innovate (high versus low) in both products and processes and to the capacity to have (not to have) experience abroad. Therefore we have labelled this dimension 'Innovation and openness'.

Table 3(a). Dimension I – Status.

Quadrant I			
Active variables	Categories	Contributions	Squared cosine
Indirect involvement in politics	None	3.87	0.33
Education level	Illiterate/primary	12.02	0.32
Affiliation to employers' association	None	4.97	0.31
Method of company acquisition	Founder	6.37	0.30
Social class	Lower class	7.82	0.19
Main macro sector of activity	Industry	0.91	0.10
Experience (education or training) abroad	None	1.37	0.09
Quadrant II			
Active variables	Categories	Contributions	Squared cosine
Main macro sector of activity	Agriculture, fishing & mining	3.10	0.07
Experience (education or training) abroad	Yes	2.83	0.09
Education level	Degree/higher degree	6.05	0.18
Method of company acquisition	Inherited/purchased	7.29	0.30
Affiliation to employers' association	Yes	9.56	0.31
Indirect involvement in politics	Yes	11.52	0.33
Social class	Upper	11.35	0.35

Table 3(b). Dimension II – Innovation and openness.

Quadrant I			
Active variables	Categories	Contributions	Squared cosine
Geographical area new sales markets	Abroad	16.72	0.54
Growth in size	National–international	6.24	0.46
Product-process innovation level	High	11.59	0.22
Experience (education or training) abroad	Yes	8.10	0.20
Social class	Upper	2.22	0.05
Main macro sector of activity	Industry	0.46	0.04
Product-process innovation level	Moderate	0.94	0.02
Quadrant II			
Active variables	Categories	Contributions	Squared cosine
Product-process innovation level	Low	1.16	0.02
Main macro sector of activity	Agriculture, fishing & mining	2.41	0.04
Education level	Illiterate/primary	2.37	0.05
Product-process innovation level	None	2.79	0.09
Experience (education or training) abroad	None	3.93	0.20
Growth in size	No/local	21.75	0.46
Geographical area new sales markets	No/Italy	15.87	0.54

Table 3(c). Dimension III – Bourgeois spirits.

Quadrant I			
Active variables	Categories	Contributions	Squared cosine
Education level	Middle school	14.02	0.24
Main macro sector of activity	Services	14.73	0.23
Social class	Medium	4.40	0.14
Affiliation to employers' association	None	3.36	0.14
Main macro sector of activity	Financial services	6.81	0.10
Method of company acquisition	Inherited/purchased	3.51	0.09
Indirect involvement in politics	None	0.98	0.05
Quadrant II			
Active variables	Categories	Contributions	Squared cosine
Indirect involvement in politics	Yes	2.92	0.05
Method of company acquisition	Founder	3.07	0.09
Education level	Illiterate/primary	6.70	0.11
Main macro sector of activity	Industry	1.75	0.12
Affiliation to employers' association	Yes	6.46	0.14
Education level	Degree/higher degree	8.75	0.16
Social class	Lower	11.34	0.18

The third dimension, shown in [Table 3\(c\)](#), explains just 7% of the inertia. Despite its low contribution to variance, this factor has to be taken into consideration because of a few aspects which appear useful in grasping the character of the Italian entrepreneurship. Actually, it is characterised by the categories of the active variable 'educational level': the middle school level is active on one side while graduate and post-graduate plus illiterate and primary school are on the other. 'Social class' is another active variable and it distinguishes between medium class versus low class. The same has to be said of the participation (non-participation) in proprietary associations as well as of the sector of activity (services versus industry). Consequently, we thought that the term 'Bourgeois spirit' could give an idea of its nature.

### 5. The cluster analysis

On the whole, the cluster analysis offers quite an irregular picture of Italian entrepreneurship as it does not show a homogenous diffusion of those virtues and attitudes which both theory and history deem necessary to improve the growth potentialities of a country. In fact the differences revealed by the CA have led to the recognition of five clusters (see [Figures 2 and 3](#)): such a clustering was obtained by using the Ward's method implemented with the Reciprocal Nearest Neighbours (RNN) algorithm. Moreover, the pseudo-F statistic has confirmed the choice of a suitable number of clusters. In this way five entrepreneurial typologies have been identified:

- (1) 'First generation entrepreneurs' (FGE), made up 64 cases, that is 16.6% of the entire sample;
- (2) 'Schumpeterian entrepreneurs' (SE), 83 cases, 21.5%;
- (3) 'Traditional entrepreneurs' (TE), 94 cases, 24.3%;
- (4) 'Internationalised traditional entrepreneurs' (ITE), 67 cases, 17.4%;
- (5) 'Well-established entrepreneurs' (WEE), 78 cases, 20.2%.



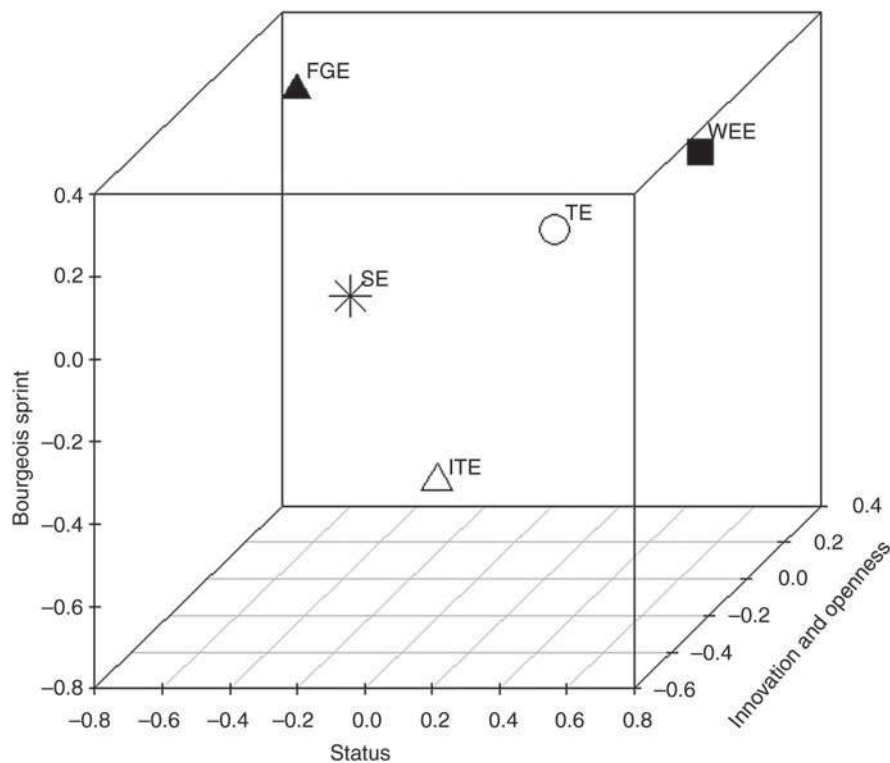


Figure 2. Five clusters in three dimensions.

Each cluster, formed by significant groupings of responses, is identified by the objective characteristics of the individuals involved. All items in each cluster had been selected according to their value within the cluster, as compared to their value in the global population (total), as well as to the percentage of those in the cluster with a certain modality of all individuals having that modality in the sample. While only few hints in the text will be devoted to the latter series of values, in [Table 4](#) data concerning the shares of the most relevant modalities for each cluster (columns I–V) and for the entire sample (Total) are detailed.

The tag of the first cluster – First-generation entrepreneurs – is likely to symbolise at best the features of the founders of new enterprises in a backward local environment, such as the one which characterises large areas of Italy for most of its economic history. All of its members (100%) are of course new founders: this compares with the 53.4% share of the same modality within the entire sample while the cluster's share of all the founders corresponds to about one-third. Most of them (98.4%) operate in the industry sector, whilst this has a global value of 80.6%. As for social origin, 54.7% come from the lower class against a value of 13% for the entire population, whereas the cluster contains almost three-quarters of the individuals labelled by the same modality; further evidence is offered by two even more specific social categories: 'spouse's high class' and 'Father's high level of education' for which both the values are zero. Three-quarters show a low (or nil) level of formal education, a modality which in the sample accounts for less than 18%. Many other indicators give support to the 'self-made' man characterisation of the components of this cluster: the fair percentage (39.1%) of those in the cluster who began as apprentices

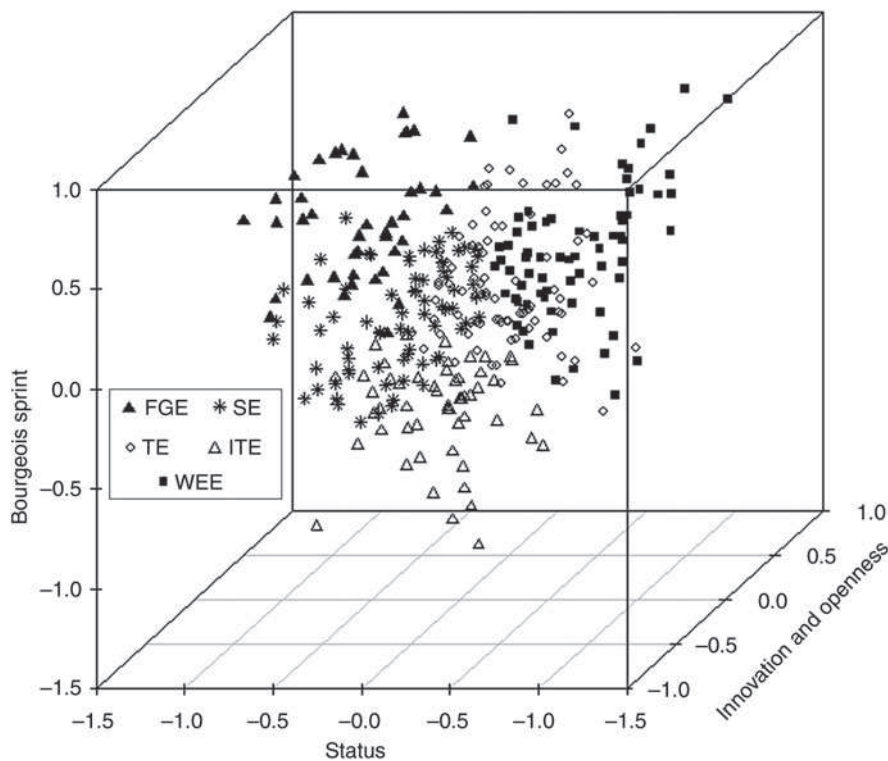


Figure 3. Entrepreneurs of the five clusters in three dimensions.

(versus 18.7% for the entire population), the almost complete absence of any sort of experience abroad (90.6% versus 67.4% of the global sample), the very limited participation in employers' associations (10.9% versus 34.2%), the very low level of involvement, even indirect, in politics (about 6.3% versus 25.1%). Finally the cluster shows the lowest percentage of entrepreneurs who do not have direct connections with a bank (12.5% versus about 27% of the entire sample). Among the most representative entrepreneurs of this cluster a number of humbly born protagonists of the post-World War II Italian economic boom should be emphasised, such as for instance, Giovanni Borghi (a pioneer and the founder of the white goods industry in Italy), Cesare Cassina (among the leaders of Italian furnishing design) and Gioacchino Alemagna (confectionery, especially *panettone*).

The entrepreneurs in the second cluster have been called 'Schumpeterian' because their peculiar prevailing modalities roughly refer to the characteristics attributed by Schumpeter to his innovative entrepreneur. In fact the most negative modality, that is 'No innovation', which records a global value of 12.4%, has a zero value in the cluster, meaning that in one way or another all the elements included were interested in some form of innovation. Besides, the lowest level of innovation assumes a negligible value (8.4% versus 23.1% of the total). Conversely, 45.8% of the cluster is at the highest level of innovation – which adds up at least four out of the six categories of innovation mentioned above – against a global value of 14.8%, while almost three-quarters of the entire modality is included in this cluster. More specifically, greater values than the sample are

Table 4. The five clusters (%).

Variables	I (FGE)	II (SE)	III (TE)	IV (ITE)	V (WEE)	Total
<i>Entrepreneurs in the sample</i>	16.6	21.5	24.4	17.4	20.2	100.0
South (area of birth)	9.4	7.2	24.5	20.9	14.1	15.8
Lower social class	54.7	8.4	7.4	–	1.3	13.0
Middle class	43.8	56.6	77.7	77.6	30.8	58.0
Upper class	1.6	34.9	14.9	22.4	67.9	29.0
Illiterate/primary education	75.0	8.4	12.8	1.5	–	17.6
Secondary education	21.9	53.0	70.2	95.5	41.0	57.0
Degree/higher degree	3.1	38.6	17.0	3.0	59.0	25.4
Education abroad	–	19.3	4.3	13.4	26.9	13.0
Experience abroad	9.4	56.6	10.6	35.8	50.0	32.6
Apprenticeship	39.1	22.9	11.7	4.5	17.9	18.7
Founder	100.0	69.9	39.4	38.8	26.9	53.4
Inherited/purchased	–	30.1	60.6	61.2	73.1	46.6
Indirect involvement in politics	6.3	14.5	16.0	14.9	71.8	25.1
Direct involvement in politics	18.8	12.0	26.6	26.9	44.9	25.9
Knighthood	25.0	34.9	31.9	32.8	51.3	35.5
Affiliation to employers' association	10.9	31.3	30.9	9.0	82.1	34.2
Relations with banks	12.5	22.9	22.3	34.3	41.0	26.7
Industry	98.4	97.6	78.7	56.7	70.5	80.6
Services	–	–	12.8	32.8	11.5	11.1
No product-process innovation	39.1	10.8	58.5	61.2	64.1	46.6
High product-process innovation	9.4	42.2	1.1	4.5	3.8	12.4
No innovation	7.8	–	18.1	4.5	29.5	12.4
Low innovation level	15.6	8.4	33.0	29.9	26.9	23.1
Medium innovation level	64.1	45.8	45.7	56.7	41.0	49.7
High innovation level	12.5	45.8	3.2	9.0	2.6	14.8
National or international growth	81.3	97.6	51.1	94.0	71.8	77.7
No new sales markets	25.0	3.6	44.7	9.0	53.8	28.2
New sales markets abroad	42.2	91.6	7.4	85.1	26.9	48.7

registered by the categories 'High level innovation in process and product' (42.2% vs. 12.4%, that is three-quarters of the entire sample), 'New sales markets abroad' (91.6% vs. 48.7%), growth in size at national and/or international level (97.6% vs. 77.7%), as well as 'Experience abroad' (56.6% vs. 32.6%). Here too the largely prevailing sector of activity is 'Industry' (97.6%) in comparison with 80.6% of the entire sample. Further distinctive elements concern the 'Level of education' modalities which register a high level of university graduates and postgraduates (38.6% versus a global 25.4%) and conversely only 8.4% of 'Low education' versus 17.6%. Also very low is the level of involvement in politics as compared to the modality values in the sample, both direct (12% vs. 25.9%) and indirect (14.5% vs. 25.1%). The largest part of these entrepreneurs is more or less directly connected with the innovations of the Second Industrial Revolution: for instance Giovanni Agnelli, the founder of FIAT, the company which was to become one of the protagonists of the world market in automobiles, but also Ettore Bugatti in the same sector, together with Carlo Guzzi in motorcycles and Giovanni Caproni in aircraft production, and also Ercole Marelli (one of the pioneers of the electro-mechanic industry), Roberto Lepetit (one of the founders of the pharmaceutical industry in Italy) and Riccardo Gualino (a pioneer in artificial fibres and film production). Yet representatives of the more traditional industries – food and beverages, textiles and apparel – were not missing: among them

founders of firms which would become worldwide symbols of the 'made in Italy' tradition, such as Piero Barilla (pasta), Giulio Ferrari (who gave the name to most famous Italian sparkling wine), Enrico Coveri and Aldo Gucci (world renowned brands in clothing and fashion).

The third and fourth clusters share a few common aspects, first the one concerning the sectors of activity. In fact these entrepreneurs were active mostly in 'traditional sectors', those more distant from the technological frontier: food and beverages, textiles, apparel, printing, large-scale retailing, pottery, glass, jewellery, furnishings and fittings. The main difference between the two clusters is that the first one, 'Traditional entrepreneurs', includes individuals active primarily on the local or, at most, on the national market, the latter, 'Internationalised traditional entrepreneurs' were individuals active outside the country. Among the most significant variables of the third cluster is the method of company acquisition: almost 61% of its members acquired their firm through 'Inheritance' against a global value of 46.6% and a cluster share in the sample of less than one-third. Yet what perhaps appears as the most interesting aspect is the low propensity to innovate as well as to grow: the cluster registers fairly high values of the modalities 'No innovation' (18.1% vs. 12.4%) and 'Low innovation' (33% vs. 23%). Conversely the modality high 'Innovation level product and process' shows lower values: just 1.1% versus a global 12.4%. With respect to the sample, this cluster offers a lower propensity to expand into national and/or international markets (51.1% vs. 77.7%). What is impressive is the scarce propensity to be open towards the external environment: the searching of new markets abroad are striking low, 7.4% versus 48.7%, with a cluster share of just 4%; the individuals with experience abroad are very few (only 10.6% vs. 32.6% of the entire sample). On the whole essentially 'middle-class' entrepreneurs are to be found in this group (77.7% vs. 58%, while the cluster's share in such modality is about one-third), with a medium level of formal education (70.2% vs. 57%). Most of the individuals were born in Southern regions (24.5% vs. 15.8%, so that almost two-fifths of the entire sample is included in this cluster): among these, producers of well-known brands of wine and coffee, such as Sebastiano De Corato (a leader of excellence in the southern wine industry), and members of the Lavazza family (a world renowned coffee brand). However the cluster also includes outstanding figures of the publishing and communications world, who for linguistic reasons were mainly concentrated on internal market, such as Giulio Einaudi (the founder of the most prestigious Italian publishing house) and Mario Cecchi Gori (a film producer).

As already mentioned, the fourth cluster – named 'Internationalised traditional entrepreneurs' – presents several aspects converging with the previous one: these pertain not only to the activity sectors, but also to the social origin (here too four-fifths of the cluster are middle class), the method of company acquisition by inheritance or purchase (again something more than 61%) and the level of formal education, even though in this case the percentage of university graduates is smaller (3% vs. 17% of the previous cluster, or about one-quarter of the entire sample). However the fourth cluster differs from the third mainly in the greater openness toward foreign markets, starting from the modality 'Experience abroad' (35.8% vs. 10.6% of the third cluster). Most significantly, the modality 'New sales markets abroad' registers a notable 85.1%, which contrasts with the 48.7% figure for the entire sample and especially with the very small 7.4% of the preceding cluster. Conversely, the value of the opposite modality 'no new sale markets' is quite negligible: 9% vs. 44.7% of the third cluster and 28.2% of the entire sample. If we add the prevailing tendency of 'Growth in size', neatly oriented toward the largest one (94% vs. 77.7%), the remarkable commercial dynamism of these entrepreneurs cannot be denied. Yet, quite inferior to the sample's average is the attitude towards innovation,

which shows for the modality 'No product and process innovation' a value of 61.2% versus a global 46.6%. One aspect which should not be overlooked is the large presence of 'Services' in the sector of entrepreneurial activity (more than half of the individuals in the sample are in this cluster with a modality share of 32.8% versus 11.1%): among these, maritime international traders and shipping owners such as the members of the Cosulich family (active in ocean shipping lines for more than a century) and Enrico Dell'Acqua (one of the Italian pioneers of the industrial/commercial penetration in South America, better known as Luigi Einaudi's *principe-mercante*). Here too several representative of Southern entrepreneurship can be found, for instance, in the food (Filippo De Cecco, pasta) or liqueur (Paolo Averna) sectors, to which are to be added founders of well-known dynasties all over Italy, such as Sotirios Bulgari in jewellery, Carlo Feltrinelli (lumber and financial services), Danilo Fossati (founder of the Star brand, which has long dominated the Italian market of stock cubes and canned soups) and Giuseppe Bertolli (a well-known olive oil producer).

Finally the fifth cluster – labelled 'Well-established entrepreneurs' – appears quite clearly defined. Its qualifying aspects refer mostly to social status as the entrepreneurs here included are mostly not founders (the 'inheritance' modality scores 73.1% versus a global value of 46.6%) and are well born (almost half the individuals characterised by such a modality are included in the cluster, which scores a 67.9% value versus 29% of the entire sample): moreover they have spouses coming from the same origins (the sample share is almost identical to the one of the previous modality), a high level of education (almost 60% with a university and/or postgraduate degree, against a global value of the sample of 25.4%); it is worth noting that none in the cluster has a level of formal education interrupted at the primary stage: this compares with the 17.6% figure of the entire sample. As significant are the background characteristics: for instance the modalities concerning involvement in politics, either direct (44.9% vs. 25.9%) or – especially – indirect (71.8% vs. 25.1%, more than half of the entire sample), membership of employers' associations (82.1% vs. 34.2%), appointment to the *Cavaliere del lavoro* (knighthood, 51.3% vs. 35.5%) and finally a close relationship with the banking system (41% vs. 26.7%). It is almost superfluous to point out that this cluster includes some of the outstanding personalities of Italian entrepreneurship, such as Giovanni and Umberto Agnelli, Niccolò Antinori (wine), the Bertolli (food) and Lodigiani (building) heirs, the members of the Crespi (cotton and publishing) and Falck (iron and steel) dynasties and so on.

## 6. Conclusions

The main objective of this study was to explain the dynamics of Italian capitalism by analysing one of its structural components, entrepreneurship. To open the black box of entrepreneurship we worked out a taxonomy of Italian entrepreneurs not exclusively based on intuitions and qualitative judgements, but grounded on the interaction between theory and history. To this aim we used a methodology which combines typically quantitative techniques with historical evaluation. The results in our opinion provide valuable interpretation of the economic history of the country while furnishing a fairly sound basis for comparative analysis.

Firstly, the database constructed based on a good number of entrepreneurial biographies points out several original and more or less surprising traits: for instance, the not negligible level of formal education of many in the sample. In fact more than one-quarter of the entrepreneurs could boast a university degree and in addition a further 36.3% had a high school certificate, values contrasting with the well-known backward condition

of the country even though aligned to the general European trend. Not surprising is the information concerning the high percentage of individuals having family working relations, which confirms once more the tendency of Italian capitalism toward family business, an aspect which appears to be indirectly corroborated also by the reluctance to engage in sector mobility singled out by the data.

Secondly, with regard to the taxonomy defined by the cluster analysis, at least two basic elements must be mentioned. One is that the component of entrepreneurship opened to foreign markets – namely innovative (SE) and internationalised entrepreneurs (ITE) – has been a distinguishing trait of the country's economy. The search for new markets, therefore, was not an exclusive condition of the post-World War II period, but a consolidated feature of the entire history of modern Italy whose origins can be traced back to the Renaissance. The other pertains to the aptitude to innovate, which, according to Baumol, discriminates – as mentioned – between replicative and/or redistributive entrepreneurs on the one side and innovative and productive ones on the other. The latter – that is the Schumpeterian component of private entrepreneurship (SE) – seems not to have had as great a role as an intense pace of growth would have required. On the contrary, three-fifths of the appeared less dynamic with regard to their attitude towards technology and growth. This includes the categories of both the traditional entrepreneurs, regardless of their market orientation (TE and ITE) and the well-established ones (WEE). All in all, the picture which emerges is of an Italian entrepreneurship only sporadically virtuous and creative, more often, indeed, clinging to defensive positions. Are such characteristics sufficient to stand an international comparison? In our opinion they are, but unfortunately we do not have at the moment sufficient similar quantitative support for other countries apart from that already mentioned in the paper.<sup>41</sup> However, we know for instance that in Britain trade and finance were more rewarding than modern industrial sectors, at least until the mid-nineteenth century, while a steady Schumpeterian attitude among its entrepreneurs – even throughout the most critical phases of the country's history – fuelled German industrial success.<sup>42</sup>

Does this representation contribute to explain the second issue raised in the introduction – the relationship between entrepreneurship and growth? Yes, in our opinion. For instance, the analysis suggests that notwithstanding the fair level of formal education, the large presence of non-techno-scientific degrees might not have sufficiently stimulated the entrepreneurial search for innovation, whose level, as said, proved too low. For instance, the share of engineering degrees in the total sample was 10% in Italy and 42% in France;<sup>43</sup> besides, the French *Grandes écoles* were institutions of excellence: how much could the same be said of the Italian universities? Moreover, education could be associated with entrepreneurship by considering also that in general entrepreneurs with higher techno-scientific education were in modern, innovative sectors, whilst lower educational levels were in traditional sectors, like those prevailing in Italy. Yet is this sufficient to explain the sluggishness of Italian entrepreneurship? Was it a question of nature or nurture? To offer a fully satisfactory answer to these queries we would need further quantitative research, for instance working out proxies of entrepreneurial success and regressing on them independent variables such as roles, personal characteristics as well as context (institutional) peculiarities. But this will be the aim of our future research. Nevertheless a few remarks can be advanced. On the one hand, one cannot escape from the impression of the aforementioned natural bent and/or of lock-in effects induced by historically remote conditioning causes (the merchant vocation): think for instance of the limited versatility of the entrepreneurs in the sample. On the other hand, the evolution of the institutional context of the country most probably did not help. Even though for the

time being we are not able to produce quantitative evidence on the specific issue, we should remember that while ‘some important continuities in the US economy – legal, financial and communications related – were critical to encouraging entrepreneurial behavior’,<sup>44</sup> the opposite can be said in the case of Italy: the permissiveness and flexibility of the legal structure has frequently been pointed out, particularly with regard to firms’ governance and accountability and to the scarce incentives to innovate.<sup>45</sup> Ultimately one has to reflect upon the role of the state, because its remarkable presence in the Italian economy might have crowded out entrepreneurship. Whether that can be considered an unavoidable intervention to substitute for feeble private initiative is still an open question.

### Acknowledgements

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### Notes

1. Audretsch and Thurik, “What’s New about the New Economy?”; Freeman and Louçã, *As Time Goes By*.
2. Langlois, “The Vanishing Hand.”
3. Baumol, “Entrepreneurship: Productive”; Baumol, *The Microtheory*; Schumpeter, *Business Cycles*; Schumpeter, *The Theory of Economic*.
4. For instance, in a special supplement of *The Economist* devoted to the new entrepreneurial drive, the question if entrepreneurship was becoming mainstream was provokingly and repeatedly asked. See *The Economist*, “Global Heroes.”
5. Baumol, *The Microtheory*.
6. See especially: Kirzner, *Competition and Entrepreneurship*; Kirzner, “Entrepreneurial Discovery.”
7. Marshall, *Principles of Economics*.
8. Casson, *The Entrepreneur*; Shane and Venkataraman, “The Promise of Entrepreneurship.”
9. See for instance Audretsch and Keilbach, “Entrepreneurship, Growth.”
10. *The Economist*, “Global Heroes.”
11. Djankov et al., “Entrepreneurship in China”; Shane, “Explaining Variation in Rates”; Tortella, Quiroga and Moral-Arce, “Nature or Nurture?”
12. Baumol, Litan and Schramm, *Good Capitalism*.
13. Baumol, “The Entrepreneur in History”; Henrekson and Sanandaji, “Institutional Entrepreneurship.”
14. Foreman-Peck, Boccaletti and Nicholas, “Entrepreneurs and business”; Nicholas, “Clogs to Clogs”; Foreman-Peck, “Measuring Historical”; Garcia-Ruiz and Toninelli, “The Determinants of Entrepreneurship”; Landes, Mokyr and Baumol, *The Invention of Enterprise*.
15. Foreman-Peck and Zhou, “Entrepreneurial Culture”; Mokyr, “Entrepreneurship and the Industrial.”
16. Graham, “Entrepreneurship in the United States”; Lamoreaux, “Entrepreneurship in the United States”; Wengenroth, “History of Entrepreneurship.”
17. Casson and Godley, “Entrepreneurship in Britain.”
18. Bigazzi, *La storia d’impresa*. On the contrary such a topic has been long considered in other countries. See for instance Friedman and Tedlow, “Statistical Portraits” and Corley, “Historical Biographies.”

19. Giannetti and Vasta, "The Historiography."
20. Gerschenkron, *Economic Backwardness*; Gramsci, *Il Risorgimento*; Gramsci, *Note sul Machiavelli*.
21. Amatori, "Entrepreneurial Typologies in the History."
22. Amatori and Brioschi, "Le grandi imprese"; Amatori and Colli, *Impresa e industria*.
23. Colli, *The History of Family*; Colli, *Il quarto capitalismo*; Federico and Toninelli, "Business Strategies."
24. Doria, "Gli imprenditori tra vincoli"; Colli, *Il quarto capitalismo*.
25. Amatori, "Entrepreneurial Typologies . . . Reconsiderations."
26. The private one was best represented by the 'Milanese' entrepreneur, open to international markets: Lombard capitalism in fact was fertile ground for foreign entrepreneurs and able to absorb flows of foreign direct investment. The 'supported' typology – the 'Genoan' – was now split in three sub-categories: one which mixed 'patriotism and business', the 'negotiators', able to mediate with politics, and the 'samurai', acting exclusively in the interest of the state.
27. The Dictionary was conceived and edited by Franco Amatori, who supervised a number of researchers throughout Italy, in order to cover all the national territory. Therefore the sample is not fully representative, however it offers a large quantity of valuable information which deserves to be exploited. The entries had been decided on the basis of a set of precise and detailed queries which enabled us to collect the information contained in the database. The project has been widely described in Amatori, "Determinants and Typologies"; Amatori, "Entrepreneurial Typologies . . . Reconsiderations."
28. Italy, even though a latecomer country, was at the forefront with regard to the production and distribution of electricity, as testified by the 1883 inauguration in Milan of the first power plant of continental Europe.
29. Yet it has to be considered that this distribution is not representative of the real geographical allocation of entrepreneurs, as the initial choice of the names to be inserted in the list was purposely biased in order to cover all the national territory.
30. Tortella, Quiroga and Moral-Arce, "A Tale of Four Countries," Table 2c.
31. *ibid.*, Table 2a.
32. Apprenticeship, according to Tortella, Quiroga and Moral-Arce, "Entrepreneurship," 88, frequently 'entailed practical studies in factories or firms and ended up in the acquisition of a title or degree, very frequently in engineering, but often also in other fields such as accounting or actuarial sciences'.
33. *ibid.*, 88.
34. Such a figure corresponds almost exactly to the Scottish one (53.3%), but is lower than the English (60.3%) and French (70.7%) ones. *ibid.*, Table 2b. Yet this figure was higher than the one concerning samples of Spanish (49%) and Valencian (43.8%) entrepreneurs. *Ibid.*, Table 4.2.
35. Colli, *The History of Family*; Howorth, Rose and Hamilton, "Definitions, Diversity and Development."
36. Tortella, Quiroga and Moral-Arce, "Nature or Nurture?"
37. Greenacre, *Correspondence Analysis in Practice*; Greenacre and Blasius, *Correspondence Analysis*.
38. The SPAD version 5 is the software used in the analysis. For these elaborations, the procedures CORMU (Analyse de Correspondances Multiples), RECIP (Classification hiérarchique sur facteurs) and PARTI-DECLA (Coupe de l'Arbre et Description des Classes) were used. The related outputs are available from the authors upon request. Concerning cluster analysis, see Everitt, *Cluster Analysis*.
39. The formula used for the correction of inertia is the following (considering lambda as the proportion of inertia each eigenvalue accounts for and s equal to the number of variables involved):

$$p(\lambda) = \left(\frac{s}{s-1}\right)^2 * \left(\lambda - \frac{1}{s}\right)^2$$

The computing involves only eigenvalues with a proportion of inertia higher than the average inertia.

40. Benzécri, "Sur le calcul."



41. Tortella, Quiroga and Moral-Arce, "Entrepreneurship"; Tortella, Quiroga and Moral-Arce, "A Tale of Four Countries."
42. Mokyr, "Entrepreneurship and the Industrial"; Wengenroth, "History of Entrepreneurship."
43. This figure from Tortella, Quiroga and Moral-Arce, "A Tale of Four Countries." Besides, it has to be remembered that in Italy on the eve of World War I there were 3.8 engineers for every 10,000 inhabitants, while in France the ratio was three times (10.8) higher. Vasta, *Innovazione tecnologica*, Table 5.9.
44. Graham, "Entrepreneurship in the United States," 433.
45. Contributions supporting this hypothesis come from all the social sciences. Among the recent historical studies, see e.g. Giannetti, *Tecnologia e sviluppo*; Toninelli, "Ragioneria, contabilità e storia d'impresa"; Teti, "Imprese, imprenditori e diritto"; Vasta, *Innovazione tecnologica*; Di Martino and Vasta, "Companies' Insolvency."

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