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Abstract

This paper investigates whether a particular type of historical entrepreneurship is conducive to the persistence of start-ups in high-technology sectors in Italian provinces. We argue that the historical propensity of entrepreneurship towards change may be an aspect of local culture capable of stimulating innovative entrepreneurship. In particular, we focus on the share of entrepreneurs using motive power (our proxy of historical openness to technological change) and on the share of female entrepreneurs and female employees (our proxy of historical openness to social change) as predictors of entrepreneurship rates in high-tech sectors today. We also argue that entrepreneurship needs to build on the regional knowledge base to sustain the birth and persistence of innovative start-ups. We find that the local presence of universities positively moderates the impact of openness to change in HTM entrepreneurship.

KEYWORDS: innovative start-ups; regional cultures of entrepreneurship; historical regional knowledge

JEL classification L26, O33, R12

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1. Introduction

There is widespread evidence that local entrepreneurship is the aggregate result of a process in which the personal initiative interacts with pre-existing conditions (institutions and resources) that trigger or hinder it (Acs et al. 2018; Bosma et al. 2018; Stam and Van de Ven 2021). Recent research has documented marked persistence patterns of regional levels of entrepreneurial activity over time in European countries and the US (for a review of the literature, see Fritsch and Storey 2014; Fritsch and Wyrwich 2023). In the case of Italian provinces, Cosci et al. (2022) found that the current start-up rate in high-tech sectors was related to the historical share of entrepreneurs who used motive power, a proxy for the historical use of advanced technologies. In this paper we expand the previous studies by investigating the historical conditions fostering the birth of pioneers, i.e. "first movers" or "early adopters" of new technologies. We argue that a historical culture open to technological and social change, matched with a local knowledge base, are preconditions for sustaining innovative entrepreneurship over time.

The openness to change trait measures the personal and collective tendency to be open to exploring new things and the extent to which a territory can deal with changes in the environment. An entrepreneurial culture historically open to change may drive the development of an innovative local production system. "We have always done this way" is the most dangerous phrase in the language, according to Grace Murray Hopper, a pioneering computer scientist and recipient of the Presidential Medal of Freedom.[4] We argue that the historical propensity of entrepreneurship towards change may be an aspect of local culture still capable of influencing regional economic development today. If local entrepreneurial culture is a path-dependent phenomenon and a local culture open to change fostered the birth of pioneers in the past, it may still affect local entrepreneurship.

We focus on the effect of historical openness to technological and social change on local entrepreneurship in high-tech sectors in Italy. Italy is an interesting case study. The invention of the internal combustion engine in the 19th century marked a decisive transition in many production sectors: human and animal power was replaced by mechanical power generated by combustion. In Italy, in some regions, entrepreneurs adopted new technologies; in others, they continued to produce with old technologies for a long time.[5] We exploit data from

[4] See "Computerworld", January 1976, 26 p.9.

[5] Just to mention an emblematic case: if we look at the industrial development of the Italian province with the largest share of companies that used motive power in 1927, the province of Varese, we find the history of a compelling adventure that has continued, between successes and difficulties, for more than two centuries. The word used to define its historical development is "speed" (see Macchione 2007), not only and not so much for the presence of specific productions - such as, for example, engines, bicycles,

the 1927 census, a complete survey of the industrial and commercial life of Italy containing detailed data about the number of establishments, entrepreneurs and employees, and about the use of motive power. Entrepreneurs using motive power in that period were those able to use advanced production technologies, and their distribution across Italian provinces may be considered as a proxy of the historical propensity of entrepreneurs to be open to technological change.

In order to capture the openness to social change, we exploit historical data on the share of female employment and the share of female entrepreneurship in 1927. We argue that women's increased involvement in the economy was one of the most significant social changes during the past century. In Italy, the 1938 law (Decree n. 898) introduced a maximum quota of women who could be hired in the public administration or in a company equal to 10%. Women were not allowed to perform all professions: if some were explicitly prohibited, many were "not recommended". The female percentage of employees and entrepreneurs in each province in 1927 can therefore be considered good indicators of the historical local propensity to accept social change (and/or to resist forces adverse to social change): the Decree n. 898 of 1938 had not yet come into force, but a general cultural orientation hindering social change was in the "air".

We also argue that the combination of an entrepreneurial culture open to change with the regional knowledge base may be crucial for the development of an innovative local production system. Fritsch and Wyrwich (2018) found that the interaction of an entrepreneurial tradition with the historical knowledge base has an enduring effect on the formation of innovative new businesses in Germany. Fritsch et al. (2019) found a negative relationship between the geographical distance to a technical university that already existed before 1900 and today's innovation activity. Del Monte and Pennacchio (2020) found that the historical knowledge base is strongly related to the current level of innovative start-ups in Italy. All these analyses use the establishment of universities as proxies of the local knowledge base. We analyse the effect of the interaction of our proxies of historical provincial openness to technological change (i.e. the historical shares of entrepreneurs using motive power in manufacturing sectors) and social change (i.e. female employment and entrepreneurship rates) with the historical presence of universities on current high and medium-high technology manufacturing (HTM) sectors' start-up rates in Italy. Our results support the hypothesis of the existence of a positive joint effect of a historical local culture open to change and the historical knowledge base on nowadays entrepreneurship rates in HTM. The historical presence of universities seems to have conditioned subsequent local industrial

motorcycles, bodywork, railway construction, naval construction, airplanes and helicopters, up to space research - but above all for the presence of an entrepreneurial culture able to accelerate technological development.

entrepreneurship particularly in those regions where a context open to social change fostered the birth of pioneers, i.e. of the first elements of what became a persistent local innovative entrepreneurial culture.

This paper adds to the entrepreneurship literature in several ways. First, it contributes to the literature on the historical persistence of entrepreneurship (Fritsch 2004; Fritsch and Mueller, 2007; Fritsch and Storey 2014; Fritsch and Kublina 2019; Fritsch and Wyrwich 2023) by showing that where novelty is essential (high-tech sectors) what is persistent is not the simple presence of entrepreneurship but the existence of a local culture favouring openness and innovation. Secondly, it contributes to the literature on the role of universities in regional development (Del Monte and Pennacchio 2020) and on the role of geographical proximity for collaborations between academia and the business sector (D'Este et al. 2013; Crescenzi et al. 2017) by investigating whether the historical local presence of universities, combined with a specific type of entrepreneurship open to change, can foster and sustain the birth of innovative start-ups. Overall, to the best of our knowledge, this is the first paper analysing the joint effect of historical local openness to change and knowledge conditions for fostering and sustaining entrepreneurship in high-tech sectors, a driving force for local long-run growth.

The remainder of this paper is organised as follows. The next section outlines the conceptual framework from which we derive our research questions. Section 3 presents the empirical analysis and Section 4 provides our concluding remarks.

2. Conceptual framework and research hypotheses

As stated in the Introduction, several empirical studies documented that the cross-regional attitude towards entrepreneurship is shaped significantly by historical conditions. Building on these studies, our analysis focuses on the historical conditions fostering the development of HTM entrepreneurship.

According to a first approach, regional variations in entrepreneurship may be explained by individual behaviour and characteristics (Obschonka et al. 2013) and, in this context, by intergenerational transmission (Laspita et al. 2012) and openness to experience and tolerance of risks (Caliendo et al. 2014). Openness has been identified as one of the main features of the reference profile of an entrepreneurial personality structure (see Fritsch et al. 2019). The current regional culture of entrepreneurship depends on the local cultural heritage

(Fritsch and Wyrwich, 2023). Therefore, we may assume that "historical" openness to experience and tolerance of risks may also be important. Consistently with these observations, Cosci et al. (2022) found the current start-up rate in high-tech sectors in Italy to depend significantly on the historical share of entrepreneurs who used motive power, a proxy for openness to technological change.

However, openness to social change may also play a role in entrepreneurship in HTM by signalling a local inclination towards experimentation and a positive attitude towards progress and by creating the local conditions for creativity and innovation. One of the most important social changes occurring in the second half of the twentieth century was the increase in the participation of women in the labour market. The interaction between gender role expectations, identities, societal, cultural dimensions, and the entrepreneurial environment is complex and understudied (for a literature review, see Bullogh et al. 2022). Claudia Goldin (2006) argues that the "quiet revolution" that transformed women's employment, education and families that started in the late 1970s was preceded by three evolutionary phases. The first phase occurred in the US from the late 19th century to the 1920s. Kavanagh et al. (2021) collected a wide range of data, drawing on various dimensions of social change. Among these dimensions, they included the attitudes toward women in the workforce in the US. The attitudes changed considerably during the 20th century from strong disapproval (82% in 1936) to strong approval (83% in 1996). The process of women's emancipation occurred in most Italian regions much later than in the US and encountered greater resistance. During the fascist period, the process was strongly hindered by measures aimed at limiting women's access to work. In 1923, the Gentile Reform reorganized the school and banned women from the role of principal. In 1926, women were excluded from teaching literature and philosophy. In 1927, there were significant differences in women's employment and entrepreneurship rates across Italian provinces. Provincial differences in women's participation in the labour market decreased substantially in the post-war period (see Figure A1). We may, therefore, assume that provinces where a higher share of women were employed or were entrepreneurs in 1927 were characterised by a higher propensity to social change.

We argue that the "historical" openness to experience and tolerance of risk favours an innovative entrepreneurial culture which is persistent over time. In light of the above considerations, we test the following hypothesis:

Today the entrepreneurship rate in HTM sectors depends on the historical local propensity towards technological and social change

According to a second approach, regional variations in entrepreneurship, particularly in technology-intensive industries, depend on the local knowledge base (Acs et al. 2013; Audretsch and Keilbach 2007; Sternberg, 2022). Evolutionary economic geographers (Boschma and Frenken, 2018), building on evolutionary economics (Nelson and Winter, 1982; Dosi et al., 1988), focus on historical processes to explain uneven growth as the outcome of path-dependent and place-dependent historical processes. Knowledge tends to be sticky by location because it is often tacit, embedded in people, and geographically bounded. Knowledge is a fundamental source of entrepreneurial opportunities (Acs et al. 2009; Audretsch and Keilbach 2007; Audretsch and Lehmann 2005). Among the studies on the relationship between knowledge and entrepreneurship, Qian and Acs (2013) introduced the concept of entrepreneurial absorptive capacity, defined as a critical factor which affects the process of transmitting knowledge spillovers by entrepreneurs. It allows entrepreneurs to understand new knowledge, recognize its value and commercialize it by creating a firm. Knowledge may have different sources, including the educational attainment of the workforce, the presence of private and public research and the work experience of the population. Universities are considered a good proxy for the historical knowledge base because they accumulate a large stock of knowledge over time (Fritsch and Wyrwich 2018; Del Monte and Pennacchio 2020). They foster the development of important networks of formal and informal relationships, which can increase the probability of knowledge spillovers. They also increase the share of the local highly educated population, potentially able to identify new entrepreneurial opportunities (Audretsch and Lehmann 2005; Fritsch and Aamoucke 2017; Fritsch and Wyrwich 2018; Schubert and Kroll 2016).

In light of the above considerations, we test the following hypothesis:

Today the entrepreneurship rate in HTM sectors depends on the historical local presence of universities

The study of regional innovation systems (Iammarino 2005; Verspagen 2006) has highlighted the role of local systemic conditions for knowledge creation and diffusion. Among them, special attention has been devoted to university-industry linkages (Perkmann et al. 2013).[6] Knowledge produced in universities is generally of a fundamental nature, and academic findings rarely have immediate industrial applications. Rather, they expand the theoretical pool of knowledge upon which technical advances of commercial value can be built (Fleming and Sorenson 2004). Entrepreneurship is seen as the main mechanism that ensures both the flow of radical technological change into the economy and the economic exploitation of knowledge (Acs et al. 2009;

[6] See also the literature on the "triple-helix" (academic-industry-government relations) approach (Etzkowitz and Leydesdorff 1999; Etzkowitz et al. 2000).

2013). Caree et al. (2014) find that, in Italian provinces, new business entrants are important in the economic exploitation of academic knowledge and its contribution to economic growth. Historically, the role of universities embraced the two activities of teaching and performing basic research, while only relatively recently they have been complemented by entrepreneurial activities, creating incentives for university research to look for practical applications (Crescenzi et al. 2017). These entrepreneurial activities are more likely to take place in provinces with a historical entrepreneurial culture open to change. Building on Fritsch and Wyrwich (2018), who found a positive impact of an entrepreneurial tradition with the historical knowledge base on the formation of new innovative businesses in Germany, we argue that innovative entrepreneurship today is favoured by the historical complementarity between the presence of an entrepreneurial culture open to change and the local presence of universities. On the one hand, a positive attitude towards change and propensity to experimentation requires the local presence of general knowledge and of a trained workforce in order to give rise to innovative businesses; on the other hand, the historical local presence of universities may not be sufficient to generate innovative entrepreneurship in a context that lacks the necessary propensity to experimentation and change. Based on these considerations, we test the following hypothesis:

The historical local presence of universities positively moderates the effect of a local historical entrepreneurial culture open to technological and/or social change on the development of a persistent local entrepreneurship in HTM sectors

3. Empirical strategy

3.1 Dataset

We utilise a balanced panel dataset constructed by merging various data sources. Italian provinces classified according to the NUTS-3 classification serve as our geographical reference units. Considering multiple administrative changes in Italy over the years, our sample encompasses 95 provinces. The data sources comprise the Italian National Institute of Statistics (ISTAT), the Bank of Italy, and the Business Register of the Chambers of Commerce, the latter providing data on the number of firm births during the 2000s. Historical data are drawn from the 1927 census, a complete survey of the industrial and commercial life of Italy containing detailed data about the number of establishments, entrepreneurs and employees, and about the use of motive power. We also use data from the population census, which is updated every 10 years, and we refer to 1931, which is the closest date to 1927.

A detailed description of all the variables and the summary statistics is reported in Table 1 (correlations among the variables are reported in Table A1).

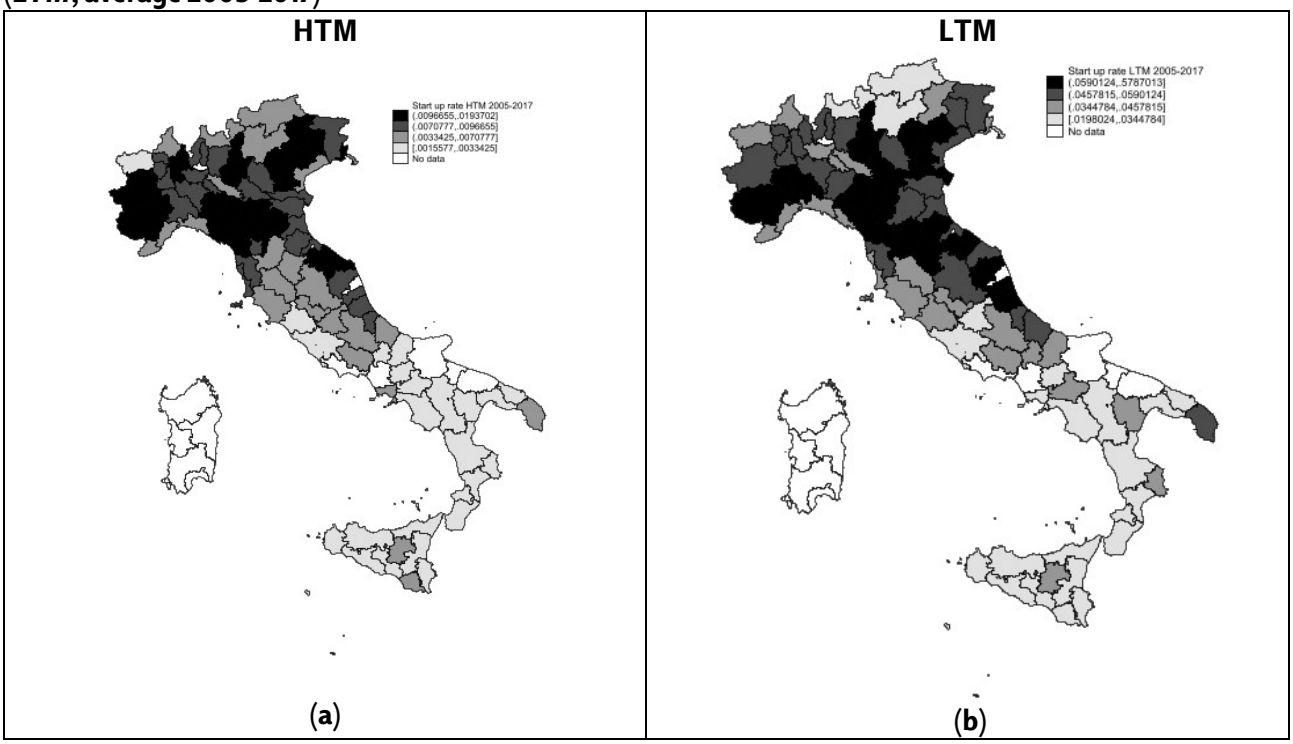
Table 1 Summary statistics

Variables	Definition and sources	Obs.	Mean	S.D.	Min	Max
Dependent variables						
HTM	Number of start-ups in High and medium-high Technology Manufacturing sectors divided by active population (per 1,000) (2005-2017) (ISTAT and Business Register)	1235	0.001	0.008	0.000	0.043
LTM	Number of start-ups in Low and medium-low Technology Manufacturing sectors divided by active population (per 1,000) (2005-2017) (ISTAT and Business Register)	1235	0.060	0.056	0.010	0.711
Independent variable						
Histmpower	Number of entrepreneurs using motive power over total entrepreneurs in industry in 1927 (ISTAT)	1235	0.200	0.097	0.02003	0.4175
Histuniv	Dummy=1 if in the province there was a university in 1927 (provincial) (ISTAT)	1235	0.232	0.422	0	1
Histfementr	Number of female entrepreneurs over total entrepreneurs in 1927 (ISTAT)	1235	0.236	0.059	0.105	0.376
Histfemale	Number of female workers over total workers in 1927 (ISTAT)	1235	0.245	0.088	0.099	0.471
Control variables						
Histentr	Number of entrepreneurs in industry in 1927 over population in 1931 (ISTAT)	1235	0.020	0.005	0.009	0.033
Histva	Value added per capita in 1931 (lire) (Italian Union of Chambers of Commerce)	1235	3,059.611	720.834	1,874.000	4,993.000
Histpop	Population in 1931 (ISTAT)	1235	482,016.420	357,963.410	133,739.980	2,068,246.100
Histpopdens	Number of inhabitants per square kilometre in 1921 (ISTAT)	1235	153.206	106.378	32.100	632.200
Histilliteracy	Share of illiterate people on total people six years-old and over in 1931 (ISTAT)	1235	0.213	0.154	0.020	0.500
Histcred	Number of firms of the credit sector over total firms in 1927 (ISTAT)	1235	0.010	0.005	0.002	0.026
Histlarge	Number of large firms (over 250 employees) over total firms of the credit sector over total firms in 1927 (ISTAT)	1235	0.001	0.001	0.000	0.008
Histfood	Number of entrepreneurs in the food sector over total entrepreneurs in industry in 1927 (ISTAT)	1235	0.136	0.045	0.069	0.308
Histsteel	Number of entrepreneurs in the steel sector over total entrepreneurs in industry in 1927 (ISTAT)	1235	0.027	0.044	0	0.026
Histtextiles	Number of entrepreneurs in the textile sector over total entrepreneurs in industry in 1927 (ISTAT)	1235	0.011	0.014	0	0.065
Histclothes	Number of entrepreneurs in the clothes sector over total entrepreneurs in industry in 1927 (ISTAT)	1235	0.256	0.041	0.116	0.340
Va	Value added per capita (in millions of euro) (ISTAT) (2004-2017)	1235	23,058.943	5,867.5119	12,463.000	44,219.000
Pop	Population 15-64 year olds (2005-2017) (in 000)	1235	369940.260	429,499.920	55,365.000	2,844,500
Popdens	Number of inhabitants per square kilometre (ISTAT) (2004-2017)	1235	253.936	341.084	36.600	2,652,730.000
R&D	R&D expenditure as a percentage of the GDP (regional) (ISTAT) (2005-2017)	1235	1.159	0.398	0.280	2.190
Tertiary	Share of persons employed with tertiary degree (ISTAT) (2005-2017)	1235	0.170	0.039	0.070	0.320
Nw	Dummy: 1= North-West	1235	0.242	0.428	0.000	1.000
Ne	Dummy: 1= North-East	1235	0.242	0.427	0.000	1.000
So	Dummy: 1= Southern	1235	0.305	0.460	0.000	1.000

3.2 Dependent variable

As a dependent variable, we consider the start-up rate at the provincial level for the period 2005–2017, in HTM sectors (*HTM*).[7] Figure 1 shows the start-up rate in the HTM and LTM sectors.[8] We can see that the Northern part of the country (especially the Northwest and the Northern Adriatic) and part of the Centre are characterised by high levels of both variables. In contrast, the remaining Central provinces are characterised by medium levels and most southern provinces by low levels. However, the quantile map also shows a significant heterogeneity within the macro-regions.

Figure 1 (a) Start-up rate in HTM sectors (*HTM*, average 2005-2017) and (b) Start-up rate in LTM sectors (*LTM*, average 2005-2017)



3.3 Independent variables

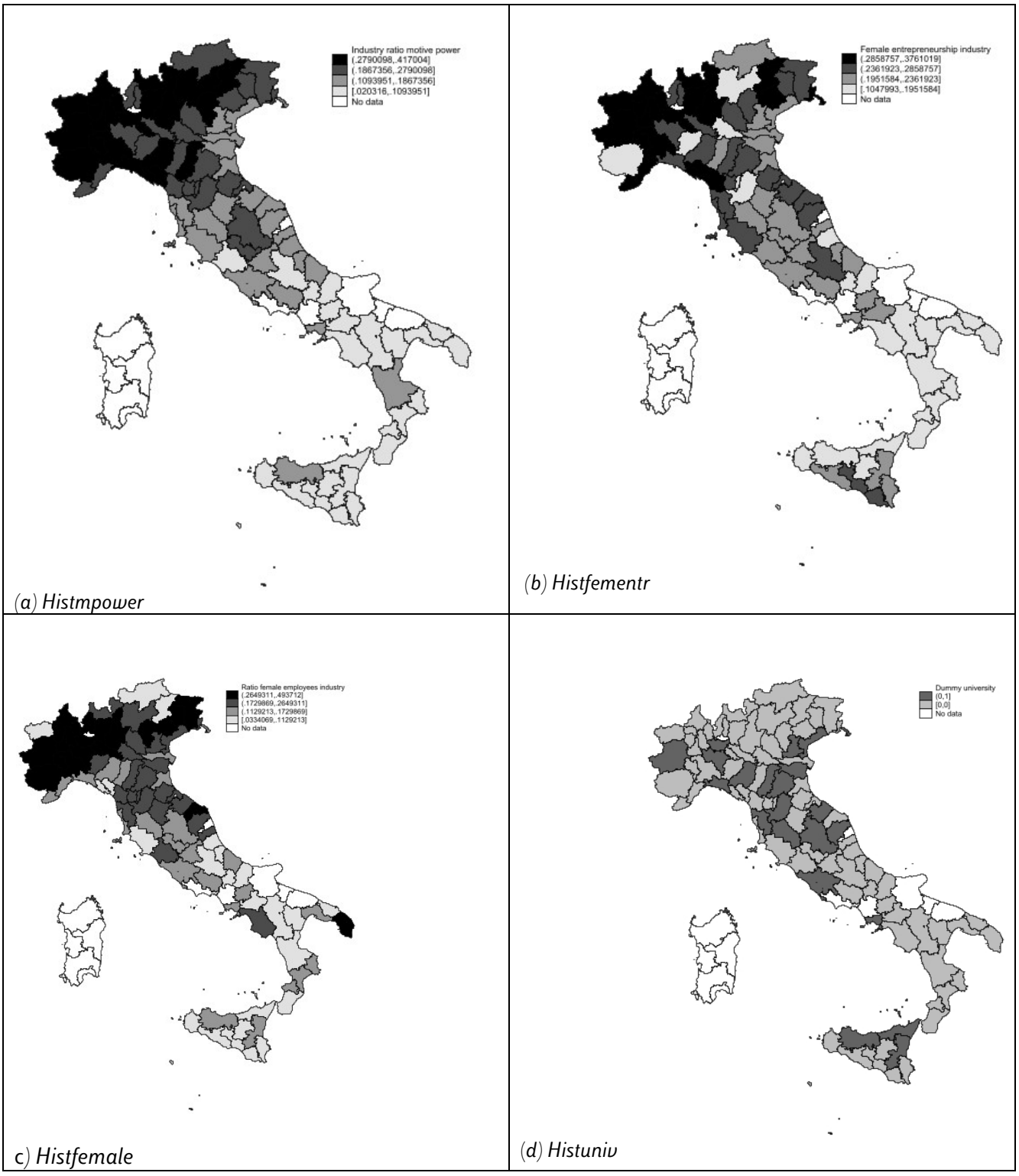
Figure 2 shows the geographical distribution of our four main independent variables. The shares of industrial entrepreneurs who used motive power (*Histmpower*), of female entrepreneurs (*Histfementr*) and of female employment (*Histfemale*) in 1927 (see Figure 2 (a) (b) and (c)) and the provincial knowledge base (see Figure 2 (d)), proxied by a dummy for provinces with a long tradition of academic institutions *Histuniv* (i.e. having a

[7] For the analysis of the technology intensity of the manufacturing sectors, we consider the classification adopted by Eurostat (see https://ec.europa.eu/eurostat/cache/metadata/Annexes/htec_esms_an3.pdf/).

[8] Low and medium-low Technology Manufacturing sectors.

university in 1927), were all lower in the southern area of the country. All the quantile maps also show a significant heterogeneity within the macro-regions.

Fig. 2 (a) Entrepreneurs using motive power ratio in 1927 (*Histmpower*), (b) Female entrepreneurship share in 1927 (*Histfementr*), (c) Female employment share in 1927 (*Histfemale*) and (d) Historical presence of universities (*Histuniv*)



(a) *Histmpower*

(b) *Histfementr*

c) *Histfemale*

(d) *Histuniv*

In particular, we may notice that the provinces characterised by a higher share of entrepreneurs using motive power in 1927 are concentrated in the Northwest and in the Northern part of the Centre, while the female share of employment and entrepreneurship is also high in some regions of the Centre and of the South. The geographical distribution of these variables may depend significantly on the historical sectoral composition of the provincial industrial production.

Also, most of the Italian universities founded before 1927 are located in the North (Bologna, Parma, Modena, Padua, Pavia, Ferrara, the two universities of Turin and of the Politecnico of Turin, Genoa, Milan, Trieste and Venice) and in the Centre (Siena, the two universities of Macerata and Camerino, Rome, Perugia, Florence, Pisa and Urbino). However, we find some universities also in the South (see Figure 2 (d)): in Sicily there are 3 universities: the university of Catania, founded in 1434, the university of Messina, founded in 1548, and the university Palermo, founded in 1806; three universities are located in the province of Naples (the universities Federico II, founded in 1224, Orientale, founded in 1732, and Suor Orsola Benincasa, founded in 1864).

3.4 Control variables

To avoid omitted variable bias, we include a set of control variables that refer to the current and previous periods. Regarding the current period, we first include value added per capita (*Va*) and population aged 15-64 (*Pop*) to control for the level of local economic development and the spread of potential entrepreneurs. We also control for agglomeration effects, human capital endowment, and regional knowledge by including population density (*Popdens*), the share of employees with a tertiary degree (*Tertiary*), and research and development expenditures as a percentage of GDP (*R&D*).

In line with Cosci et al. (2022), we consider historical control variables likely to have affected past local entrepreneurship culture and, therefore, the current start-up rates. First, we included the provincial entrepreneurship rate in 1927 (*Histentr*) to control for provincial persistence in entrepreneurship. We also included the value added per capita in 1931 (*Histva*), the population in 1931 (*Histpop*), the population density in 1921 (*Histpopdens*), and the share of illiterate people out of the total people aged six years and over in 1931 (*Histilliteracy*).

We control for historical differences in the financial system's development and in the provincial industrial structure by including in the estimates variables measuring the historical share of firms in the financial sector (*Histcred*) and the presence of large firms (*Histlarge*) in 1927. Finally, to control for differences in the

geographical location, we include macro-regional dummies, namely Northwest (*Nw*), Northeast (*Ne*) and South (*So*), with Centre (*Ce*) as the reference category, and over time by introducing year dummies. As a robustness check, since our proxies of openness to change (*Histmpower, Histfementr* and *Histfemale*) might also represent proxies of the historical strength of the sectors characterized by a relatively high share of firms using motive power or linked to the traditional 'gender' roles of women, we also control for the provincial sectoral composition. We therefore included in our estimates also the provincial share of firms in steel, food, textile and clothing (*Histsteel, Histfood*, *Histtextile* and *Histclothing*, respectively).

3.5 Econometric specification

In order to test our first two hypotheses, in equation (1), we relate our proxies for openness to technological change (Histmotivepower), openness to social change (*Histfementr and Histfemale*) and our proxy for local knowledge (*Histuniv*) to the entrepreneurship rate in HTM sectors (*Startuprate*).

$$Startuprate_{i,t} = = a + b_0\ Histmotivepower_{i,1927} + b_1\ Histfementr_{i,1927} + b_2\ Histfemale_{i,1927} + b_3 Histuniv_{i,1927} + b_4 Controls_{i,t-1} + u_i + e_{it} \quad (1)$$

In order to test our third hypothesis, we then test whether there is evidence of complementarity between openness to change and local knowledge by estimating equations (2), (3) and (4):

$$Startuprate_{i,t} = = a + b_0\ Histmotivepower_{i,1927} + b_1\ Histfementr_{i,1927} + b_2\ Histfemale_{i,1927} + b_3 Histuniv_{i,1927} + b_4 (Histuniv_{i,1927}) * (Histmpower_{i,1927}) + b_5 Controls_{i,t-1} + u_i + e_{it} \quad (2)$$

$$Startuprate_{i,t} = = a + b_0\ Histmotivepower_{i,1927} + b_1\ Histfementr_{i,1927} + b_2\ Histfemale_{i,1927} + b_3 Histuniv_{i,1927} + b_4 (Histuniv_{i,1927}) * (Histfementr_{i,1927}) + b_5 Controls_{i,t-1} + u_i + e_{it} \quad (3)$$

$$Startuprate_{i,t} = = a + b_0\ Histmotivepower_{i,1927} + b_1\ Histfementr_{i,1927} + b_2\ Histfemale_{i,1927} + b_3 Histuniv_{i,1927} + b_4 (Histuniv_{i,1927}) * (Histfemale_{i,1927}) + b_5 Controls_{i,t-1} + u_i + e_{it} \quad (4)$$

The dependent variable *Start-up rate* is the provincial start-up rate for 2005–2017 in *HTM sectors*. Independent variables are *Histmpower* (our proxy for openness to technological change), *Histfementr* and *Histfemale* (our proxies for openness to social change) and *Histuniv* (our proxy for the provincial knowledge base).

Since the main variable of interest and some control variables are measured in a single year, equations (1), (2), (3) and (4) cannot be estimated using the fixed effects procedure. We therefore use a random effects procedure, which exploits the variability of the time-varying dependent and independent variables. Given that estimating a random effects panel model does not allow us to address the issue of unobserved heterogeneity, we use a correlated random effects (CRE) model, in which the group means of the variables that vary within groups are added to the regressors, capturing the correlation between unobserved heterogeneity and the covariates, i.e. the so-called Mundlak correction (Mundlak 1978). By including the means of time-varying variables, the Mundlak correction helps to control for time-invariant characteristics of the entities, thereby providing more reliable estimates of the coefficients of interest. This correction is widely used in panel data analysis to improve the accuracy of regression estimates and ensure robust inference. We also estimated the random effects (RE) model (see Table A3 in the Appendix).

3.6 Results

Table 2 (col.1) reports the estimation results of equation (1) using the CRE model for HTM sectors. Consistently with Cosci et al. (2022), we find that the presence in the province of a high share of entrepreneurs using motive power in 1927 (*Histmpower*) positively predicts entrepreneurship in HTM sectors today. When we look at our proxies of openness to social change, we find that the historical female employment (*Histfemale*) is significantly related to current start-up rates in HTM sectors, while the historical female entrepreneurship (*Histfementr*) is not significant.[9] These results give partial support to our first hypothesis: historical openness to technological change and to social change (when measured by the share of female employment) positively affect entrepreneurship in HTM today. Interestingly, the local presence of universities (*Histuniv*) is not significant when we estimate equation (1), i.e. when we do not introduce in our regressions any moderating effect, in contrast with our second hypothesis.

However, when we look at Table 2 columns 2, 3 and 4, reporting the results of the estimation of equations (2), (3) and (4), we find a positive and significant effect of the variable *Histuniv,* i.e. the variable *Histuniv* is significantly related to the variable HTM in all the models in which it also interacts with proxies of openness to change. Moreover, we find a significant positive effect of the interactions between the variable *Histuniv* and the variables *Histmpower, Histfementr* and *Histfemale* on modern entrepreneurship in HTM sectors. These results suggest a complementarity between the local historical knowledge base and the local presence of

[9] Results reported in Table A2 show that when equation 1 is estimated introducing the start-up rate in LTM sectors as dependent variable, our proxies of openness to social change are never significant. We find, like in Cosci et. al (2022), that LTM current start up rates significantly depend on *Histentr,* i.e. on past provincial entrepreneurship rates.

entrepreneurship open to change for sustaining persistent rates of HTM entrepreneurship, giving support to our third hypothesis.

These results show that the presence of a historical entrepreneurial culture open to technological and social change is important to stimulate and sustain entrepreneurship in HTM sectors, especially in those Italian provinces where the historical presence of universities fostered the development of the local knowledge base. At the same time, neglecting the joint effect of the local presence of universities and the local culture open to technological and social change would lead to underestimating the role of universities in long-term entrepreneurship. Although we do not measure historical industry-university collaborations, this result suggests the existence of local synergies between entrepreneurs open to change and local knowledge in line with the literature pointing to the role of geographical proximity for university-industry relationships (D'Este et al. 2013; Crescenzi et al. 2017): Italian provinces where the historical presence of universities met a historical culture open to change generated persistent rates of entrepreneurship in high and medium-high technology sectors, a major driving force for growth and structural change.

When we look at control variables, we do not find persistence in entrepreneurship rates in HTM sectors. The variable *Histentr* is not significantly related to current start-up rates in HTM sectors, consistent with the results of Cosci et al. (2022). This result may be due to the fact that many high-tech sectors (such as electronics, chemical and pharmaceutical sectors) did not exist in 1927. We also find that the current HTM entrepreneurship rate is influenced negatively by past per capita income (*Histva*) and positively by current per capita income (*VA*). These two results might suggest that we now have higher start-up rates in HTM sectors in those provinces that were characterised by a faster per capita income convergence process in the last century. Among current control variables, we find, as expected, a significant positive effect of the level of R&D expenditure (*R&D*) and of the share of persons employed with a tertiary degree (*Tertiary*). Results reported in columns 3 and 4 show a significant effect of historical population density (*Histpopdens*) on current HTM entrepreneurship rates. This result is consistent with the economic literature that puts urban regions at the centre of the processes of innovation and entrepreneurship (see Florida et al. 2017, Duranton and Puga, 2001).

Table 2 - Regression results moderating effects model: dependent variable provincial HTM start-up rate

Dependent variable	(1)	(2)	(3)	(4)
HTM	(CRE)	(CRE)	(CRE)	(CRE)
Histmpower	0.449***	0.440***	0.585***	0.488***
	(0.171)	(0.169)	(0.168)	(0.163)
Histfementr	-0.001	-0.041	-0.286	-0.177
	(0.256)	(0.254)	(0.260)	(0.250)
Histfemale	0.590**	0.651**	0.700***	0.584**
	(0.270)	(0.269)	(0.258)	(0.256)
Histuniv	0.063	0.800*	2.115***	1.889***
	(0.144)	(0.446)	(0.687)	(0.627)
*Histuniv*Histmp*		0.418*		
		(0.240)		
*Histuniv*Histfementr*			1.394***	
			(0.458)	
*Histuniv*Histfemale*				1.221***
				(0.409)
Histentr	0.124	0.110	0.113	0.057
	(0.216)	(0.213)	(0.204)	(0.206)
Histva	-1.459**	-1.474**	-1.467**	-1.322**
	(0.646)	(0.638)	(0.612)	(0.614)
Histpop	-0.123	-0.111	-0.116	-0.114
	(0.136)	(0.135)	(0.129)	(0.129)
Histpopdens	0.330*	0.294	0.316*	0.337*
	(0.200)	(0.198)	(0.189)	(0.189)
Histillitteracy	0.067	0.048	0.125	0.075
	(0.172)	(0.170)	(0.164)	(0.163)
Histcred	-0.156	-0.204	-0.305	-0.264
	(0.250)	(0.248)	(0.241)	(0.240)
Histlargefirm	-0.000	-0.169	-0.019	-0.055
	(0.669)	(0.667)	(0.633)	(0.634)
Va	0.718**	0.717**	0.717**	0.715**
	(0.349)	(0.349)	(0.349)	(0.349)
Pop	-0.255**	-0.290**	-0.259**	-0.290***
	(0.116)	(0.116)	(0.110)	(0.110)
Popdens	0.154	0.192	0.140	0.143
	(0.156)	(0.155)	(0.148)	(0.148)
R&D	0.344**	0.344**	0.344**	0.344**
	(0.137)	(0.137)	(0.137)	(0.137)
Tertiary	0.212*	0.212*	0.212*	0.212*
	(0.119)	(0.119)	(0.119)	(0.119)
Macroregional dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Observations	1,235	1,235	1,235	1,235
Number of provinces	95	95	95	95

Notes: All variables, except the dummies, are in natural logarithms. RE=random effects model; CRE=correlated random effects model. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 3 Regressions results moderating effects model: dependent variable provincial HTM start-up rate

Dependent variable	(1)	(2)	(3)	(4)
HTM	(**CRE**)	(**CRE**)	(**CRE**)	(**CRE**)
Histmpower	0.458**	0.512**	0.675***	0.568***
	(0.211)	(0.214)	(0.219)	(0.210)
Histfementr	-0.051	-0.075	-0.307	-0.183
	(0.265)	(0.264)	(0.271)	(0.263)
Histfemale	0.596**	0.693**	0.764***	0.636**
	(0.293)	(0.299)	(0.288)	(0.284)
Histuniv	0.111	0.744	2.015***	1.690**
	(0.146)	(0.471)	(0.726)	(0.693)
*Histuniv*Histmp*		0.368		
		(0.261)		
*Histuniv*Histfementr*			1.310***	
			(0.490)	
*Histuniv*Histfemale*				1.074**
				(0.461)
Histentr	0.146	0.116	0.113	0.059
	(0.226)	(0.225)	(0.216)	(0.221)
Histva	-1.450**	-1.510**	-1.520**	-1.396**
	(0.656)	(0.653)	(0.629)	(0.635)
Histpop	-0.170	-0.146	-0.145	-0.140
	(0.139)	(0.139)	(0.134)	(0.135)
Histpopdens	0.359*	0.304	0.308	0.325
	(0.204)	(0.207)	(0.197)	(0.198)
Histillitteracy	0.062	0.032	0.104	0.060
	(0.175)	(0.175)	(0.169)	(0.170)
Histcred	-0.220	-0.262	-0.347	-0.295
	(0.255)	(0.255)	(0.249)	(0.249)
Histlargefirm	-0.023	-0.173	-0.027	-0.078
	(0.695)	(0.699)	(0.666)	(0.674)
Histfood	0.132	-0.008	-0.078	-0.075
	(0.256)	(0.273)	(0.257)	(0.263)
Histtextile	-0.077	-0.121	-0.093	-0.055
	(0.268)	(0.268)	(0.257)	(0.260)
Histclothes	-0.044	-0.054	-0.074	-0.057
	(0.139)	(0.139)	(0.134)	(0.135)
Histsteel	0.721**	0.593*	0.484	0.408
	(0.327)	(0.337)	(0.326)	(0.344)
Va	0.719**	0.718**	0.718**	0.716**
	(0.349)	(0.349)	(0.349)	(0.349)
Pop	-0.237**	-0.277**	-0.254**	-0.281**
	(0.116)	(0.119)	(0.112)	(0.114)
Popdens	0.160	0.208	0.167	0.167
	(0.157)	(0.160)	(0.151)	(0.152)
R&D	0.344**	0.344**	0.344**	0.344**
	(0.137)	(0.137)	(0.137)	(0.137)
Tertiary	0.213*	0.212*	0.212*	0.212*
	(0.119)	(0.119)	(0.119)	(0.119)

Macroregional dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Observations	1,235	1,235	1,235	1,235
Number of provinces	95	95	95	95

Notes: All variables, except the dummies, are in natural logarithms. CRE=correlated random effects model. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 3 and Tables A2 and A3 report some robustness checks. First, we want to rule out the possibility that our results are driven by sectoral specificities. We therefore control for the presence of sectors characterised by a relatively high share of firms using motive power, such as the steel industry (*Histsteel*), and by a relatively high share of female employment, such as food, textile and clothing (*Histfood*, *Histtextile* and *Histclothing,* respectively). Results reported in Table 3 confirm our main findings: the historical share of entrepreneurs using motive power and the historical share of female employment positively affect entrepreneurship in HTM sectors today, while the local presence of universities and the local female entrepreneurship rate are significant only when we control for interaction effects.

As a further robustness check, we report results for the entrepreneurship rate in low and medium-low technology sectors. Differently from HTM, we find that for these sectors, what matters for the current start-up rate is the historical entrepreneurship rate, while our measures of openness to technological and social change are not significant (Table A2). This shows different historical determinants of entrepreneurship depending on the level of novelty and risk of the sector: while in sectors where novelty is essential (high-tech sectors) what is persistent is a local culture favouring openness and innovation, in the case of more traditional sectors, we find persistence in simple entrepreneurship rates. These results confirm the findings of Cosci et al. (2022) for Italian regions and of Fritsch and Wyrwich (2016) for German regions, showing that not all types of self-employment are equally important for the long-term persistence of regional entrepreneurship.

As a last robustness check, we look at the results of the random effect model (Table A3). We find that the interaction between the variables *Histuniv* and *Histmpower* is significant also when we control for the sectoral composition of provincial entrepreneurship, when we use the RE model (see Table A3, column 6).

Overall, our results support the hypothesis that entrepreneurship in HTM sectors is fostered by the mix of the propensity of entrepreneurs to change and local conditions favouring knowledge creation (the presence of universities).

4. Conclusion

Local contexts are seen as focal elements to explain the differences in entrepreneurial dynamics. When we look into the black box, analysing the relationship between territorial characteristics and the birth of new firms, we find that history plays an important role. In particular, the current local presence of firms in HTM sectors depends on the historical entrepreneurs' propensity for the exploration of novelty (creating new paths, jumping from existing paths, or revisiting existing ones). Our results suggest that an entrepreneurial culture open to change, rooted in the past, may represent an essential prerequisite for exploiting new ideas produced by the local knowledge base. In particular, the historical presence of universities in Italian provinces has a significant positive effect on current start-up rates in HTM sectors when it interacts with the share of entrepreneurs using motive power, the share of female entrepreneurs and female employment in 1927 (our proxies of openness to technological and social change). This result qualifies the findings of Del Monte and Pennacchio (2020) and adds to the literature studying the local conditions for successful collaboration between universities and entrepreneurs (D'Este et al. 2013; Crescenzi et al. 2017).

Our results show that local knowledge is important for the development of innovative local production systems, but also that a historical passion for what is new is an important ingredient of the local environment. Italy was unified only in 1870. Until then, its regions were governed by very heterogeneous institutions that were more or less conservative. The Italian industrial system is still characterised today by significant development gaps despite the territorial rebalancing policies carried out since the post-war period. Alongside local realities that compete with the most technologically advanced areas of the planet, we find realities that are still very backwards. The resistance to change that hinders innovation seems to have roots in the past, particularly in the resistance to the women's emancipation process. Today, we face other critical social changes brought about by immigration, and empirical literature has increasingly established a positive relationship between cultural diversity and innovation (see Niebuhr and Peters 2020 and Ozgen 2021). Cultural diversity implies the local presence of varied experiences, behaviours, markets, knowledge and skills, which can lead to the emergence of new ideas. Theoretically, this may be due to a diverse population facilitating new discoveries and evaluating or acting upon opportunities differently (see, e.g. Audretsch et al., 2010). Our work seems to tell us that our innovation capacity for tomorrow will also depend on how open we are today to new social challenges.

This study has focused on Italy, a country with significant territorial differences. Further work could extend the results to other countries to assess their generalizability. Moreover, the transmission mechanisms between the historical levels of women's employment and entrepreneurship and the actual rates of HTM entrepreneurship

could be further investigated by accounting for actual provincial differences in female entrepreneurship and female innovative start-ups.

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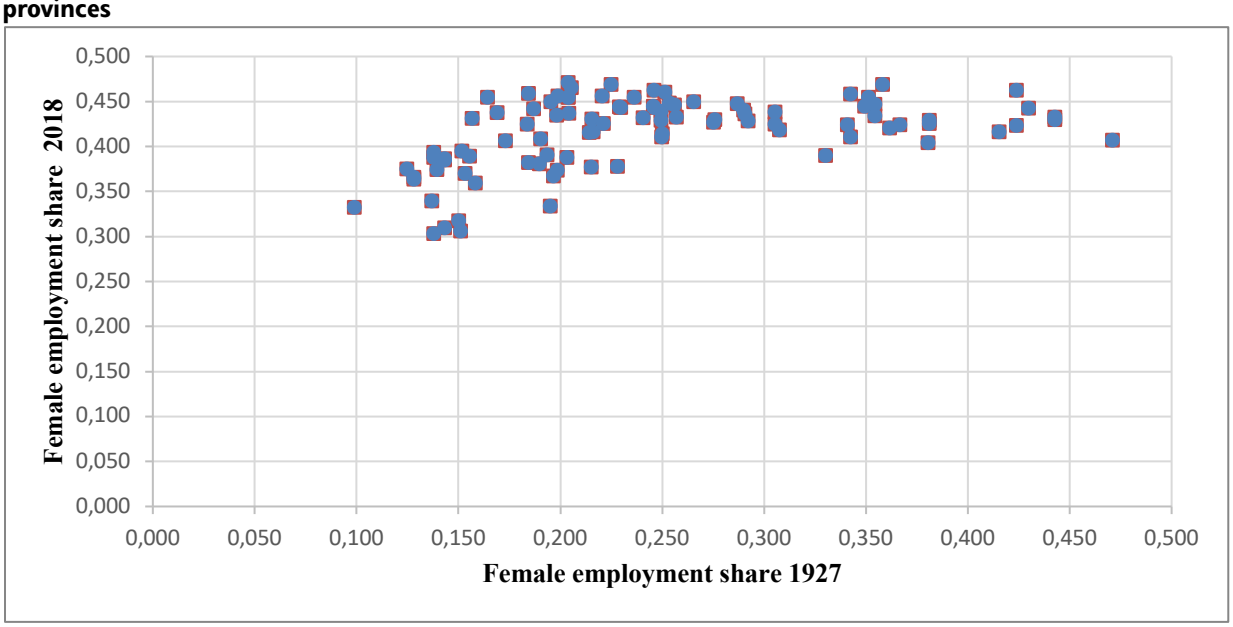
APPENDIX

Figure A1 Historical and current female employment shares (female employed over total employment) in Italian provinces



Source: Our elaborations on ISTAT data (Census 1927) and on Eurostat data (2018)

Table A1: Pairwise correlations

6Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1) *HTM*	1.000																				
(2) *LTM*	0.321	1.000																			
(3) *Histmpower*	0.378	0.142	1.000																		
(4) *Histfementr*	0.314	-0.022	0.626	1.000																	
(5) *Histfemale*	0.274	0.038	0.703	0.521	1.000																
(6) *Histuniv*	0.051	-0.014	0.027	0.034	-0.074	1.000															
(7)) *Histva*	0.278	0.142	0.741	0.566	0.616	0.281	1.000														
(8) *Histpop*	-0.003	0.041	0.203	0.011	0.171	0.388	0.388	1.000													
(9) *Histpopdens*	0.104	0.035	0.250	0.173	0.204	0.323	0.467	0.773	1.000												
(10) *Histillitteracy*	-0.365	-0.122	-0.860	-0.629	-0.748	-0.099	-0.847	-0.165	-0.232	1.000											
(11) *Histcred*	0.001	0.066	0.215	-0.030	0.163	-0.049	0.058	-0.164	-0.236	-0.181	1.000										
(12) *Histlargefirm*	0.168	-0.027	0.530	0.499	0.537	0.017	0.628	0.195	0.312	-0.546	-0.095	1.000									
(13) *Histfood*	0.119	-0.077	0.481	0.324	0.314	-0.311	0.048	-0.127	-0.187	-0.282	0.055	0.172	1.000								
(14) *Histsteel*	0.126	0.023	0.432	0.280	0.580	0.010	0.525	0.291	0.376	-0.459	-0.039	0.463	0.040	1.000							
(15) *Histtextile*	0.090	0.241	0.321	0.098	0.487	-0.015	0.367	0.095	0.186	-0.278	0.127	0.394	-0.105	0.509	1.000						
(16) *Histclothes*	-0.125	0.006	-0.351	-0.194	-0.236	-0.029	-0.187	0.044	-0.037	0.318	0.129	-0.107	-0.478	-0.113	0.083	1.000					
(17) *Va*	0.202	0.167	0.682	0.390	0.498	0.265	0.720	0.233	0.215	-0.761	0.226	0.325	0.083	0.287	0.168	-0.225	1.000				
(18) *Pop*	-0.039	-0.087	0.094	0.005	0.114	0.475	0.309	0.772	0.548	-0.118	-0.143	0.128	-0.165	0.174	0.043	0.031	0.303	1.000			
(19) *Popdens*	0.014	0.063	0.113	0.083	0.117	0.359	0.374	0.686	0.779	-0.144	-0.193	0.263	-0.155	0.276	0.148	-0.025	0.209	0.723	1.000		
(20) *R&D*	0.033	0.012	0.506	0.397	0.460	0.063	0.474	0.145	0.095	-0.556	0.049	0.326	0.151	0.225	0.209	-0.209	0.384	0.109	0.093	1.000	
(21) *Tertiary*	-0.312	-0.177	-0.091	-0.047	-0.196	0.439	0.130	0.220	0.164	0.039	-0.027	0.017	-0.261	-0.008	-0.059	0.116	0.177	0.335	0.241	0.128	1.000

Table A.2 Regressions results: dependent variable provincial LTM start-up rate

Dependent variable LTM	(1) (RE)	(2) (CRE)	(3) (RE)	(4) (CRE)
Histmpower	0.409**	0.266*	0.333	0.129
	(0.199)	(0.144)	(0.243)	(0.181)
Histfementr	-0.117	-0.005	-0.061	-0.006
	(0.206)	(0.216)	(0.197)	(0.227)
Histfemale	0.345	0.046	0.246	-0.040
	(0.238)	(0.227)	(0.291)	(0.251)
Histuniv	-0.124	0.029	-0.114	0.051
	(0.117)	(0.121)	(0.120)	(0.125)
Histentr	0.562***	0.672***	0.563***	0.706***
	(0.202)	(0.182)	(0.190)	(0.193)
Histva	-0.553	-0.899*	-0.492	-0.800
	(0.485)	(0.545)	(0.525)	(0.560)
Histpop	0.098	0.093	0.106	0.083
	(0.166)	(0.115)	(0.176)	(0.119)
Histpopdens	-0.229	-0.111	-0.194	-0.052
	(0.228)	(0.165)	(0.230)	(0.170)
Histillitteracy	0.262**	0.229	0.232*	0.230
	(0.132)	(0.145)	(0.125)	(0.150)
Histcred	0.217	0.177	0.173	0.148
	(0.186)	(0.211)	(0.205)	(0.218)
Histlargefirm	-1.125**	-0.442	-1.210**	-0.446
	(0.507)	(0.565)	(0.550)	(0.595)
Histfood			0.169	0.309
			(0.198)	(0.219)
Histtextile			-0.232	-0.116
			(0.186)	(0.230)
Histclothes			0.141	0.080
			(0.141)	(0.119)
Histsteel			0.135	0.256
			(0.265)	(0.280)
Va	0.271**	0.187	0.281**	0.187
	(0.132)	(0.125)	(0.132)	(0.125)
Pop	-0.284*	-0.279***	-0.274*	-0.267***
	(0.158)	(0.097)	(0.161)	(0.098)
Popdens	0.454**	0.440***	0.440**	0.414***
	(0.223)	(0.127)	(0.221)	(0.130)
R&D	0.091**	0.121**	0.093**	0.121**
	(0.046)	(0.049)	(0.047)	(0.049)
Tertiary	0.079	0.098**	0.081*	0.098**
	(0.048)	(0.042)	(0.048)	(0.042)
Macroregional dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Observations	1,235	1,235	1,235	1,235
Number of provinces	95	95	95	95

Notes: All variables, except the dummies, are in natural logarithms. RE=random effects model; CRE=correlated random effects model. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A3 Regressions results moderating effects model: dependent variable provincial HTM start-up rate

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HTM	(RE)	(RE)	(RE)	(RE)	(RE)	(RE)	(RE)	(RE)
Histmpower	0.495***	0.468***	0.611***	0.527***	0.519**	0.551***	0.710***	0.624***
	(0.178)	(0.164)	(0.168)	(0.160)	(0.230)	(0.209)	(0.214)	(0.203)
Histfementr	-0.043	-0.081	-0.311	-0.214	-0.085	-0.107	-0.329	-0.218
	(0.206)	(0.188)	(0.196)	(0.187)	(0.213)	(0.195)	(0.203)	(0.195)
Histfemale	0.643**	0.691***	0.710***	0.615***	0.671**	0.752***	0.791***	0.687**
	(0.258)	(0.247)	(0.245)	(0.238)	(0.293)	(0.275)	(0.277)	(0.272)
Histuniv	0.051	0.834**	2.130***	1.980***	0.085	0.789*	2.045***	1.828***
	(0.136)	(0.364)	(0.508)	(0.611)	(0.131)	(0.409)	(0.525)	(0.691)
*Histuniv*Histmp*		0.446**				0.408*		
		(0.211)				(0.248)		
*Histuniv*Histfementr*			1.416***				1.350***	
			(0.319)				(0.332)	
*Histuniv*Histfemale*				1.292***				1.184***
				(0.399)				(0.461)
Histentr	0.074	0.065	0.085	0.021	0.075	0.048	0.063	-0.003
	(0.189)	(0.189)	(0.187)	(0.188)	(0.185)	(0.196)	(0.194)	(0.202)
Histva	-1.242**	-1.326**	-1.362**	-1.154**	-1.267*	-1.401**	-1.459**	-1.270**
	(0.606)	(0.593)	(0.584)	(0.577)	(0.653)	(0.627)	(0.620)	(0.607)
Histpop	-0.110	-0.104	-0.123	-0.110	-0.150	-0.130	-0.144	-0.127
	(0.117)	(0.111)	(0.111)	(0.110)	(0.118)	(0.111)	(0.107)	(0.109)
Histpopdens	0.253*	0.243*	0.300**	0.290**	0.273*	0.244*	0.285*	0.267*
	(0.151)	(0.147)	(0.150)	(0.145)	(0.150)	(0.145)	(0.148)	(0.144)
Histillitteracy	0.107	0.070	0.121	0.094	0.097	0.049	0.099	0.076
	(0.123)	(0.127)	(0.133)	(0.128)	(0.115)	(0.122)	(0.128)	(0.126)
Histcred	-0.095	-0.162	-0.272	-0.224	-0.177	-0.240	-0.336*	-0.273
	(0.194)	(0.196)	(0.188)	(0.193)	(0.200)	(0.206)	(0.200)	(0.202)
Histlargefirm	-0.183	-0.319	-0.135	-0.206	-0.264	-0.377	-0.189	-0.268
	(0.574)	(0.558)	(0.547)	(0.541)	(0.574)	(0.569)	(0.547)	(0.537)
Histfood					0.094	-0.046	-0.111	-0.127
					(0.199)	(0.212)	(0.198)	(0.197)
Histtextile					-0.103	-0.149	-0.115	-0.073
					(0.182)	(0.193)	(0.186)	(0.189)
Histclothes					-0.024	-0.031	-0.051	-0.040
					(0.148)	(0.149)	(0.137)	(0.137)
Histsteel					0.704**	0.568*	0.466*	0.364
					(0.274)	(0.291)	(0.280)	(0.317)
Va	0.920***	0.867***	0.901***	0.925***	0.909***	0.837**	0.855***	0.877***
	(0.332)	(0.329)	(0.314)	(0.317)	(0.343)	(0.345)	(0.327)	(0.329)
Pop	-0.254***	-0.294***	-0.252***	-0.286***	-0.244***	-0.292***	-0.258***	-0.289***
	(0.096)	(0.086)	(0.086)	(0.081)	(0.091)	(0.085)	(0.082)	(0.081)
Popdens	0.170	0.201*	0.135	0.150	0.180	0.220**	0.163	0.178
	(0.121)	(0.113)	(0.114)	(0.108)	(0.119)	(0.110)	(0.111)	(0.108)
R&D	0.209**	0.201**	0.200**	0.224**	0.212**	0.205**	0.203**	0.225**
	(0.095)	(0.094)	(0.091)	(0.092)	(0.099)	(0.097)	(0.094)	(0.095)
Tertiary	0.202*	0.196*	0.189*	0.198*	0.194*	0.189*	0.182	0.193*
	(0.114)	(0.114)	(0.114)	(0.114)	(0.112)	(0.111)	(0.111)	(0.112)
Macroregional dummies	yes	yes	yes	yes	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes	yes	yes	yes	yes

Observations	1,235	1,235	1,235	1,235	1,235	1,235	1,235	1,235
Number of provinces	95	95	95	95	95	95	95	95

Notes: All variables, except the dummies, are in natural logarithms. RE=random effects model; Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1