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Is too small always bad? the role of place attachment in harnessing location advantages

Amato Stefano[1] · **Shahab Zare**[2] · **Lattanzi Nicola**[3]

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Abstract
Despite the economic significance of micro-enterprises, the empirical evidence on the contextual factors unlocking their growth potential is somewhat scant. This study pitches into this stream of research by linking micro-enterprises, agglomeration economies, and place attachment literature. Specifically, this research explores whether micro-enterprises benefit the most from the location in agglomerations and from having a local manager in charge of the business capturing the connections to the immediate surroundings. By drawing on secondary data from Italian manufacturing companies, our findings show that micro-enterprises are less productive than the larger ones and that having a local manager further exacerbates the productivity gap. However, the influence of place attachment on productivity reverts to positive when micro-enterprises dwell in agglomerated areas, where they are better positioned to capitalize on localization economies. Our study unveils the ambivalent effect of place attachment on productivity, allowing micro-enterprises mainly to achieve higher productivity gains from agglomerations. Theoretical contributions to contextualizing entrepreneurship research and micro-enterprises growth as well as policy and managerial implications are discussed.

Keywords Micro-enterprises · Productivity · Agglomeration economies · Place attachment · Manufacturing · Italy

✉ Amato Stefano
stefano_amato@outlook.com

Shahab Zare
shahabeddin.zarebidaki@unimib.it

Lattanzi Nicola
nicola.lattanzi@imtlucca.it

[1] Department of Economics and Management, University of Trento, Trento, Italy

[2] Department of Economics, Management and Statistics, University of Milano Bicocca, Milano, Italy

[3] Laboratory for the Analysis of CompleX Economic Systems, IMT School for Advanced Studies Lucca, Lucca, Italy

Introduction

Small and medium-sized enterprises (SMEs) account for the majority of businesses worldwide, playing a vital role in shaping a country's economy as drivers of employment, innovation, and economic growth (Ardic et al., 2011). Hence, it is not surprising that SMEs have been a phenomenon of particular interest to the research community and policymakers (OECD, 2019) for decades. Yet, the copious research to date has largely overlooked micro-enterprises as an important subset of SMEs with fewer than 10 employees, falling under the general umbrella of SMEs (Gherhes et al., 2016; Perren, 1999). Despite the economic significance of micro-enterprises, amounting to 70–95% of firms and a sizeable proportion of jobs created in the OECD countries (OECD, 2019), the empirical evidence on micro-enterprises more generally and their growth more specifically, remains somewhat scant (Gherhes et al., 2020; Omri & Ayadi-Frikha, 2014; Munoz et al., 2015).

The micro-enterprise is a simple structure centered on the owner-manager (Kelliher & Reinl, 2009), whose success is contingent upon the owner-manager's goals, capabilities, and opportunities (Morrison et al., 2003). The one-person centered organizational structure results in a paternalistic management style, intrinsic flexibility, and informal culture (Gherhes et al., 2016). However, key internal resources constraints represent the main factor of vulnerability for micro-enterprises (Kelliher & Reinl, 2009), which heightens the importance of external environment for their survival and development (Phillipson et al., 2004). As recent empirical evidence shows, micro-enterprises growth is highly context-dependent, particularly influenced by the characteristics of their local operating context (Gherhes et al., 2020). For instance, by compounding their inherent weaknesses related to the limited size (Kelliher et al., 2018), location in peripheral areas can pose "additional costs" for micro-enterprises, stymieing their growth (Gherhes et al., 2020). A related issue concerns the features of the local operating context that can unlock their potential for growth, reflected in productivity gains. Although empirical research proves productivity to be a crucial determinant of enterprise growth in general (Ipinnaiye et al., 2017; Anton, 2019), micro-enterprises have been somewhat overlooked in this debate. Therefore, this study has a twofold objective. First, to explore the varying influence of location on the productivity of micro-enterprises vis-à-vis larger ones. Specifically, the spatial agglomeration of the economic activity may lead to externalities (or localization economies) influencing productivity (Parr, 2002), albeit unevenly depending on the size (Raspe & van Oort, 2011). Second, to explore whether and to what extent close ties between enterprises and their local *milieu* matter for productivity. As enterprises do not exist in a vacuum devoid of connections with their location (Oinas, 1997; Dicken & Malmberg, 2001), close place connections in agglomerated areas may be source of productivity gains.

To explore the productivity-size-location nexus, this study mixes arguments coming from the research into micro-enterprises and agglomeration economies, and place attachment theory. Place attachment denotes the human bonds to places (Hidalgo & Hernandez, 2001; Raymond et al., 2010) - as spatially-bounded repositories within which meaningful interpersonal (Manzo, 2005), community, and cultural relationships take place (Williams, 2014; Trentelman, 2009). Place attachment also permeates the firm insofar as owner-manager's hometown coincides with enterprise's location, with both the owner-manager and the enterprise sharing the same place imbued with an economic value (Smith, 2016). Specifically, three main hypothesis are tested. First, micro-enterprises benefit the most from the location in agglomerated areas, whereby externalities compensate for internal resource constraints (Raspe & van Oort, 2011), leading to higher productivity levels. Second, the authors hypothesize that place attachment - which stems from having a local manager in charge of the business - allows enterprises regardless the size to better leverage the channels through which localization economies take place, namely labor market pooling, the availability of specialized suppliers, and knowledge spillovers (Audretsch & Feldman, 2004). The final hypothesis is that place attachment in agglomerations is particularly beneficial in terms of productivity gains for micro-enterprises, which compared to larger firms, profit the most from close place connections in favorable local contexts.

The hypotheses are tested on a dataset of 97,657 Italian manufacturing firms. Italy represents a fascinating setting for this study for three main reasons. First, micro-enterprises play a more important role in Italy than elsewhere in European providing, in the non-financial business economy, 44.8% of employment - compared to the EU average of 29.7% - and accounting for the 28.4% of value added - compared to the EU average of 20.8% (European Commission, 2019). Second, the productivity of Italian micro-enterprises is not only below the SMEs average but also that of euro-area counterparts (European Commission, 2019). The highly polarized productive system is regarded as one of the main factors behind Italy's long-lasting decline in productivity (Bugamelli et al., 2018). Third, Italy represents the 8th biggest world economy and has the second largest manufacturing base in Europe (after Germany). Noteworthy are the so-called 4 "Fs" of Made In Italy, that is, the sectors of the Italian manufacturing excellence around Fashion, Food, Factory automation, and Furniture and design (Romano & Traù, 2019). The Italian manufacturing system is based mainly on the district model - local production systems of interconnected SMEs and communities of people - which accounts for more than 65% of total employees in the manufacturing sector (Becattini et al., 2014; Istat, 2015).

The findings reveal that location in agglomerated areas is positively related to enterprise productivity, while place attachment has an adverse effect. Micro-enterprises display a productivity gap compared to larger ones, which is exacerbated when they are led by local managers. However, place-attached enterprises in agglomerated areas achieve higher productivity gains than those without place attachment. When the effect of agglomerations on productivity is also considered, contrary to our expectations, this study finds that micro-enterprises do not profit more from the location in agglomerated areas than larger enterprises. Instead, it is only when they are run by local managers that location in agglomerations unlocks their potential resulting in comparatively higher productivity differentials. Hence, micro-enterprises benefit the most from localization economies as long as they are attached to the place where both the enterprise and the manager are based.

This study makes several contributions. First, this study contributes to the debate on contextualizing entrepreneurship research (Welter, 2011). Specifically, it advances the understanding of how local conditions shape the growth potential of micro-enterprises (Gherhes et al., 2020), a largely neglected type of enterprise. The findings reveal that being in the "right place" - such as agglomerated areas - is not enough for micro-enterprises to thrive, but is also contingent on the close connections to their location. Second, this research advances the firm's heterogeneity discourse in agglomeration studies (Hervas-Oliver et al., 2018). In particular, this study shows the importance of place attachment alone and combined with the enterprise size in exploiting externalities. The findings indicate "that geographic proximity is not the only channel for tapping into agglomeration benefits" (Wang et al., 2020, p. 619), which are unevenly distributed between micro and larger enterprises and depend on the place attachment where they occur. Third, the study has policy implications. While the findings support cluster initiatives aimed at enhancing performance and, hence, regional economic growth (Van Oort et al., 2012), the small size of enterprises is not *per se* an issue. For micro-enterprises located in agglomerated areas, place attachment offsets the disadvantages associated with their reduced scale. Finally, this study also has managerial implications for the location choices of both new ventures and existing firms. Close place connections may help in harnessing location advantages, particularly for micro-enterprises.

The rest of this paper is organized as follows. In section two, by linking micro-enterprises, agglomeration economies, and place attachment literature, the hypothesis are developed. The third section describes the data, variables, and the empirical econometric model. The fourth section shows the empirical results. The conclusions are drawn in the fifth and final section.

Theoretical background and hypotheses

Location, agglomeration economies and productivity

While internal (Arrighetti & Lasagni, 2013) and industry (Czarnitzki & Thorwarth, 2012) characteristics are generally regarded as the main determinant of an enterprise's competitiveness, location also matters (Aiello et al., 2014). Because of agglomeration forces (Abdel Fattah et al., 2020), location impinges upon growth and competitive advantage through its effect on productivity (Porter, 2000). Agglomeration economies (or externalities) can be defined loosely as the benefits an enterprise draws from being located close to other economic agents (Rosenthal & Strange, 2004; Van Oort et al., 2012). The locution "external" means that, "agglomeration economies are beyond the control of the individual enterprise and are dependent on the existence and actions of other firms" (Parr 2002, p. 157). In contrast, agglomeration economies are internal to the geographical area where economic activity is concentrated (Capello, 2015) and subject to the distance-decay effect (Rosenthal & Strange, 2004) in such a way that these benefits vanish as the distance between enterprises increases (Audretsch & Feldman, 2004; Wang et al., 2020).

The first conceptualization of agglomeration economies is traced back to Marshall (1890), with the pioneering work *The Principle of Economics* at the foundation of the Marshall-Arrow-Romer (MAR) externalities or simply localization economies. They derive from the co-location of independent enterprises in the same industry (Parr, 2002) and are typically related to the specialization of the local area (Galliano et al., 2015). Three main sources of localization economies are associated with the geographical concentration of similar enterprises at a given location. First, the access to a pool of specialized workers, with industry-specific skills which decreases the costs of turnover for specialized workers and labour bottlenecks or shortages for employers, respectively (Parr, 2002; Wang et al., 2020). Second, the availability of nearby dedicated suppliers of intermediate goods and specialized services facilitates the negotiation, reduces transportation costs, and, overall, transaction costs (Parr, 2002). Third, and more importantly, geographical proximity enables face-to-face interaction and, hence, the exchange of ideas, knowledge and information among individuals and enterprises with the result that, "once created by one firm may spill-over to other firms" (Van der Panne 2004, p. 594). Knowledge spillovers are spatially-bounded in the location (Galliano et al., 2015), and the existence of a common technological base allows firms to communicate, understand and absorb the knowledge circulating freely in the local *milieu* successfully (Boschma, 2005; Eriksson, 2011).

A great deal of empirical evidence shows the positive effect of localization economies on outcomes, such as survival (Van Oort et al., 2012; Renski, 2011), the probability to engage in (Hervas-Oliver et al., 2018) or the intensity of innovation (Galliano et al., 2015), and productivity (Henderson, 2003; Baldwin et al., 2008). With specific regard to the Italian context, location in highly specialized areas was found to positively influence the level of an enterprise's productivity but not its growth, which seems to depend more on the degree of diversity of the local area than specialization (Fazio & Maltese, 2015). While localization economies are positive, their effect on a enterprise's productivity vanishes with the physical distance between enterprises (Cainelli & Lupi, 2010), suggesting the benefits arising from clustering are greater the closer enterprises are to each other. Hence, the baseline proposition is as follows:

P: *Localization economies positively affect enterprise productivity*

However, the above proposition does not consider which enterprises benefit the most from localization economies. The smaller ones, for instance, may take more advantage from co-location, whereby the external environment compensates for the lack of internal resources (Raspe & van Oort, 2011). The above proposition is also "place-less" because it disregards the manager's connections with the enterprise's local *milieu*. Specifically, as enterprises benefit from the location in agglomerated areas, managers' bonds with the municipality where the enterprise is based may explain its ability to exploit localization economies better. Next, the study draws on place attachment arguments to disentangle whether and, if so to what extent managers' place connections are a source of either positive or negative outcomes.

From space to place: the role of place attachment

As in other fields of human endeavor, economic activity also occurs in spatial contexts that are not inert and aseptic containers of things and subjects. Instead, they are settings “that are produced and maintained through an array of social and cultural mechanisms that ascribe meanings or value to them” (Sampson & Goodrich, 2009, p. 903), that is, places. Besides being invested with meaning and value - what the place means for the individual - two additional traits distinguish the place from space: a geographic location, with places as unique spots in the universe with human-imposed boundaries (e.g., from neighborhoods to nations); and, physicality, with places having a material form (Gieryn, 2000) arena for social processes (Trentelman, 2009). Ultimately, places emerge like repositories within which interpersonal, community, and cultural relationships take place (Hidalgo & Hernandez, 2001; Raymond et al., 2010).

As a result of long-term interactions and experiences with a particular setting, individuals develop a deep sense of connection with the place; this is known as place attachment (Manzo, 2005). The construct consists of several dimensions, each dealing with a particular type of place-people bond (Raymond et al., 2010). First, the affective or emotional connections to a place whereby it becomes a means for people to distinguish themselves from others, hence contributing to the formation of individual identity (Place identity) (Lewicka, 2008). Second, functional attachment based on the place’s ability to satisfy people’s needs or allow them to achieve their goals (Place dependence) (Boley et al., 2021). Third, the connection with some part of the non-human natural environment (Natural bonding) (Raymond et al., 2010). And, finally, the feeling of belonging to or membership of a community, as well as the emotional bonds based on shared history, interests or concerns (Social bonding) (Hidalgo & Hernandez, 2001; Raymond et al., 2010).

As to “where” place attachment occurs, it is generally conceived as a localized phenomenon with neighborhoods and cities as the spatial levels wherever attachment is more felt (Hidalgo & Hernandez, 2001). This is because the physical proximity between individuals, enabled by the small size of such localities, can potentially foster the temporal continuity of social relationships with and for the place (Banini, 2017). Shared knowledge, memories, experiences, and practices make localities a site of collective significance and common social actions (Hinojosa et al., 2016; Banini, 2017). Regarding “how” place attachment develops, length of residence (Manzo, 2005), social ties in the place of residence, such as family and friendship connections (Hidalgo & Hernandez, 2001), and physical features like the local history creating a sense of continuity with the past (Lewicka, 2008) are associated with the development of place attachment. Besides these, the people-place bond is further “strengthened and reinforced when a person works in a place or with the resources of a place” (Low, 1992, p. 167), which accounts for the economic dimension of place attachment stemming from the co-location of home and workplace (Kalantaridis & Bika, 2006; Cheshire et al., 2013).

Given this, place attachment may turn out to be an influential and economically-important trait whenever the person is involved in the management of an enterprise. Based on the premise that enterprise boundaries are permeable to external socio-economic dynamics (Oinas, 1997), a manager's place bonds are deemed to heighten further the interplay between how the enterprise is run and its immediate surroundings (Smith, 2016), thereby conditioning decision-making (Wen et al., 2021) and outcomes (Baù et al., 2019). This might be the case when the manager's hometown coincides with the location of the enterprise (Ren et al., 2021; Baù et al., 2019). As a result of the co-location of home and work, the manager's ties with the local *milieu* may impinge, by extension, on the enterprise's anchorage in the place (Cheshire et al., 2013). If so, place eventually becomes not a mere site of production and consumption but, rather, an area of meaningful social life where personal events mingle with those of the enterprise run (Kalantaridis & Bika, 2006; Muñoz & Kimmitt, 2019). The question, therefore, is whether the manager's hometown-enterprise's headquarters co-location enables the enterprise in a position to extract more value from the immediate surroundings: in other words whether it is a source of competitive advantage.

Place attachment may offer the enterprise a fulcrum for leveraging tangible and intangible resources (e.g., knowledge and information) and identifying business opportunities (Muñoz & Kimmitt, 2019). These are available within a localized network of relationships (Hess, 2004) and accessible through the manager's informal contacts and personal acquaintances (Muñoz & Kimmitt, 2019). Shared values, and the understanding of place-specific practices regulate the interactions in the local *milieu* (Uzzi, 1997; McKeever et al., 2015), which, in turn, "facilitates contacts, improves bargaining capacity, and attracts and maintains favorable conditions for the firm" (Pallares-Barbera et al., 2004, p. 648). Further, while the fact of belonging to the same social group enables the manager to rely on the support of the local community (Steiner & Atterton, 2015), place identity and familiarity with the immediate surroundings is associated with greater perceived self-efficacy, enhancing proactivity and risk-taking (Ren et al., 2021). In this vein, empirical evidence shows that the co-location of the manager's hometown and the enterprise's headquarters is positively related with firm innovation (Ren et al., 2021) and, ultimately, financial outcomes (Baù et al., 2019).

However, it is worth noting that connections to places can also incorporate negative and ambivalent feelings (Manzo, 2005), affecting firm decision-making (Lahdesmaki & Suutari, 2012). Moreover, place bonds risk getting stuck into inefficiencies or sub-optimality. This is due to norms, habits, and cultural practices prevailing in the local *milieu* (Barnes et al., 2004) and managerial schemes "that have been successful in the past, but which have been redundant over time" (Boschma, 2005, p. 64). A lock-in effect associated with enduring routines and conservatism, which obstructs awareness of new market opportunities, technological solutions, and alternative courses of action has been noted (Boschma, 2005). Overall, the chance of getting locked-in impairing the enterprise's efficiency, is exacerbated as it is socially tied to and culturally permeated by its location (Knoben & Oerlemans, 2008; Kalantaridis & Bika, 2006).

Based on the above opposing arguments, the co-location of a manager's hometown and the enterprise can influence enterprise efficiency either positively or negatively. Hence, two conflicting hypothesis are posited:

Hypothesis 1a: *A local manager in charge of the business positively affects productivity*.

Hypothesis 1b: *A local manager in charge of the business negatively affects productivity*.

Place attachment and localization economies

Following on from the premise that a manager's place connections can embed the enterprise in the local *milieu* (Pallares-Barbera et al., 2004; Kalantaridis & Bika, 2006), a key issue is whether place attachment accounts for the uneven distribution of agglomeration economies of co-located enterprises (Hervas-Oliver et al., 2018; Van Oort et al., 2012). Put differently, one wonders whether and if so to what extent a manager's hometown and enterprise's co-location - by affecting the channels through which localization economies take place (e.g., labour market pooling, the availability of specialized suppliers, and knowledge spillovers) - confers enterprises with advantages, leading to higher productivity levels.

The concentration of economic activity in spatially-bounded areas carries the advantages of sharing a local labor market that allows, for co-located enterprises, access to a workforce pool with industry-specific skills and the avoidance of labor shortages or bottlenecks, and, for workers, various job opportunities (Duranton et al., 2015). As the enterprise and workers are likely to be better matches in terms of expertise and experience (Andini et al., 2013), efficiency may be hampered by substantial enterprise's informational asymmetry about individual productivity (Adams et al., 2000). In such contexts, local managers may mobilize personal ties, originating outside the organizational boundaries, in professional and acquaintance networks to acquire additional information about applicants' difficult-to-measure attributes, such as work attitude, trainability, and commitment (Di Stasio & Gërxhani, 2015). In general, informal recruitment by local managers allows the enterprise to alleviate informational asymmetry in local labor markets (Dariel et al., 2021), hence softening enterprise's labor searching and matching costs (Andini et al., 2013) and securing the best human resources available from the local *milieu* (Adams et al., 2000). Indeed, labour mobility stands out as a critical mechanism for transferring spatially sticky and locally-embedded tacit knowledge among nearby enterprises (Eriksson, 2011) besides informal interactions with other actors in the immediate surroundings (Kesidou & Romijn, 2008). Thus, by leveraging place connections in the search for personnel (Kalantaridis & Bika, 2006), local managers can assist the enterprise in strengthening its knowledge base (Eriksson, 2011), by capitalizing on the advantages of co-location (Duranton et al., 2015).

Enterprises also benefit from thick-market externalities from a local network of dedicated suppliers providing intermediate goods and access to specialized services (Duranton et al., 2015). Because of the geographic concentration, input–output linkages take place in a comparatively friction-less manner, unlike in the case of spatial dispersion (Parr, 2002). However, while neighboring enterprises may have equal access to the localized network of suppliers (Van der Panne, 2004), a manager's place attachment may account for the benefits to enterprises attainable from input–output linkages in agglomerated areas (Lambooy, 2010). Economic activity does not occur in a vacuum but, rather, in a spatially bounded community and institutional setting (Kalantaridis & Bika, 2006) where socially embedded ties among actors involved in economic exchanges are likely to emerge (Hess, 2004). The feeling of belonging to the locality and similarity with local actors may complement the geographical closeness (Capello, 2019), reducing uncertainty, coordination problems, and transaction costs (Boschma, 2005). It might be the that local manager-led enterprises imbue trade relationships with the three main ingredients of embedded ties. First, trust which substitutes for formal monitoring devices governing the exchanges (Chetty & Agndal, 2008) and reduces the risk of opportunistic behaviour (Boschma, 2005). Second, the mutual transfer of fine-grained and tacit information that, as opposed to price and quantity data typifying pure market ties, increases effective inter-firm coordination (Uzzi, 1999). Finally, joint problem-solving arrangements in the form of negotiation and mutual adjustment routines that resolve problems flexibly and increase learning, innovation, and efficiency (Uzzi, 1997).

Location in agglomerated areas provides the enterprise with the chance to tap freely into a spatially bounded flow of knowledge and information (Van der Panne, 2004). Circulating in dense territorialized networks of relationships (Lambooy, 2010), this knowledge is mostly tacit, in other words highly contextualized, difficult to codify, and often only serendipitously recognized (Audretsch & Feldman, 2004). Face-to-face interactions and frequent contacts are critical for knowledge spillovers in agglomerations (Breschi & Lissoni, 2001). To this end, while geographical proximity enables informal interactions (Kesidou & Romijn, 2008), trust-based and reciprocal relationships among local actors facilitate the exchange of knowledge and information for their mutual benefit (Boschma, 2005). In such knowledge-rich contexts, personal networks built up over time mingle with work ones (Chetty & Agndal, 2008), as the manager's home place and enterprise are co-located (Ren et al., 2021). As a result of frequent participation in social gatherings throughout working life (Chetty & Agndal, 2008), repeated interactions form the basis for recognition and trustworthiness among people within the same place (Ottati, 2002), prompting the willingness to share business know-how and information during day-to-day interactions (Malmberg & Maskell, 2006). Further, in agglomerated areas, people and enterprises are bound together by a common set of technological knowledge, expertise, and similar experiences related to a given industry (Bathelt et al., 2004) within a shared set of cultural habits and values (Boschma, 2005). Hence, by the simple fact of coming from the same place as the firm, local managers are uniquely positioned to understand and capitalize on a rich repository of knowledge and information flowing in the local *milieu* (Ottati, 2002; Bathelt et al., 2004).

Based on the above-mentioned theoretical reasoning, this study infers that enterprises with a local manager are better positioned to take advantage of localization economies. Hence, the following hypothesis is formulated:

Hypothesis 2: *A local manager in charge of the business is a source of productivity advantages in agglomerated areas.*

Micro-enterprises and place attachment in agglomerations

Micro-enterprises arise as intrinsically different firms regarding their organizational characteristics, management practices, and relationships with their immediate surroundings (Nichter & Goldmark, 2009). Specifically, the size, greater organizational flexibility, informal communications, and person-centered culture differentiate micro-enterprises from larger ones (Kelliher & Reinl, 2009). In micro-enterprises, the decision-making process is centered on the owner-manager (Nichter & Goldmark, 2009), who juggles operational and managerial roles simultaneously, resulting in less complexity and requiring less coordination and communication mechanisms (Liberman et al., 2010). Despite the ability to respond and adapt to external changes more rapidly (Kelliher & Reinl, 2009), the size of micro-enterprises is typically associated with a productivity gap compared to larger firms (Hall et al., 2009), while resource constraints further restrict growth and competitiveness (Kelliher & Reinl, 2009). Moreover, operating mainly at the local level (Kalantaridis & Bika, 2006), they rely heavily on localized resources and business opportunities (Thapa, 2015; Gherhes et al., 2020).

When it comes to productivity, economies of scale, reduced transaction costs due to vertical integration, and credit availability are the main reasons why small firms in general and micro-enterprises in particular are less efficient than larger ones (Doi, 1992; Tybout, 2000; Yang & Chen, 2009; Krasniqi, 2010; Fonseca et al., 2022). Empirical evidence shows larger firms are likely to perform better since they combine human resources more effectively and use more sophisticated inputs (Sheppard, 2020; Taymaz, 2005). Moreover, larger firms are able to adopt a stronger position in formalizing agreements with customers and suppliers, which protects them against potential losses (Alvarez & Crespi, 2003). Another reason is the differentiation of goods and services that helps larger firms. To compete with the standard products launched by their larger competitors, smaller enterprises must incur higher costs (Doi, 1992). This will result in additional marketing, branding, and business model adjustment expenditures, thus compelling small enterprises to run up extra costs to counteract these drawbacks or to contend with the tactics of large firms (Doi, 1992; Garcia-Martinez et al., 2023).

Thus, due to the limited size and dependence upon the immediate surroundings, location factors play a more prominent role for micro-enterprises than for larger ones (Nichter & Goldmark, 2009; Gherhes et al., 2020). As pointed out by Yi and Wang (2012, p. 781), “firms can offset competitive disadvantages by locating in the right locations”. It may well be that agglomeration in spatially bounded areas may compensate for the lack of internal resources and capabilities (Chun & Mun, 2012). By clustering and networking in agglomerated areas, micro-enterprises tap into knowledge spillovers unveiling technological and market opportunities more easily than larger enterprises (Liberman et al., 2010). For instance, it has been shown that incoming knowledge spillovers have a greater effect on smaller enterprises in establishing external R&D linkages (Chun & Mun, 2012) and decisions to start exporting (Yi & Wang, 2012), leading to greater efficiency gains (Keller & Yeaple, 2009; Raspe & van Oort, 2011).

Based on the above-mentioned arguments and previous empirical evidence, it is inferred that micro-enterprises profit more from localization economies. Hence, the following hypothesis is formulated:

Hypothesis 3: *The positive effect of localization economies on productivity is higher for micro-enterprises than for larger firms*.

In micro-enterprises, the manager usually bears responsibility for all the organizational decision-making, hence playing a pivotal role in the firm (Nichter & Goldmark, 2009). In fact, the distinction between the individual and organizational sphere becomes blurred (Kelliher & Reinl, 2009), with managers' attributes permeating the enterprise (Masakure et al., 2009), which becomes an extension of the manager him(her)self (Kelliher & Reinl, 2009). While in larger enterprises the interplay with the immediate surroundings can be mediated by organizational layers (Liberman et al., 2010), in the case of micro-enterprises, the manager and, in turn, the organization is fully exposed to and dependent on the daily economic and social dynamics occurring in the local *milieu* (Pallares-Barbera et al., 2004; Gherhes et al., 2020). The conditioning effect of the immediate surroundings on micro-enterprises and, thus, the opportunity to derive more value from the locality may vary, depending on the manager's place attachment due to the individual hometown-enterprise headquarters co-location (Smith, 2016; Kalantaridis & Bika, 2006). The family and community-based ties of local managers can be mobilized to access crucial resources for the enterprise, otherwise hardly accessible (Honig, 1998). Personal connections, built up and maintained over time in social and business gatherings (Liberman et al., 2010), ease the deployment of localized inputs (Thapa, 2015), credit (Lyon, 2000), knowledge and information (Honig, 1998), and psychological aid from the local community that help the managers "to weather emotional stress and to keep their business afloat" (Thapa 2015, p. 11). Trustworthiness and reputation, also magnified by the overlap of personal and organizational identity, are deemed to confer to micro-enterprises led by local managers better bargaining power and more favorable conditions (Lyon, 2000).

Based on the above-mentioned theoretical reasoning, it is conjectured that mostly micro-enterprises benefit from the manager hometown-enterprise headquarters co-location, as managers' place connections allow them to exploit the external environment more effectively. Therefore, the following hypothesis is formulated:

Hypothesis 4: *Micro-enterprises take more advantage from a local manager in charge of the business than larger firms*.

Place connections may play a pivotal role when micro-enterprises are located in agglomerated areas. In that case, manager hometown-enterprise headquarters co-location may affect the channels through which localization economies occur singularly. First, labor market pooling fits well with micro-enterprises given their marked dependence upon the local *milieu* for their workforce (Thapa, 2015) and their preference for more flexible and less costly informal recruitment practices (Carroll et al., 1999). Managers of micro-enterprises may mobilize their contacts in local professional and personal networks to search for personnel (Kalantaridis & Bika, 2006). The extensive use of trusted methods such as word of mouth eases the search for workers (Kotey & Slade, 2005), while supplementary information from manager's acquaintances on workforce attributes facilitates the screening of potential applicants available in the local *milieu* (Di Stasio & Gërxhani, 2015), thereby enhancing the overall efficiency of the micro-enterprises recruitment process. Second, manager hometown-enterprise headquarters co-location may uniquely benefit from input–output linkages to micro-enterprises. The history of interactions in trading with neighboring suppliers and customers (Nichter & Goldmark, 2009), which often take place informally and in social gatherings (Weijland, 1999), instill trade relationships with trustworthiness and stability (Uzzi, 1999). As person-centered businesses, micro-enterprises are deemed to profit from trust-based ties in terms of reduced transaction costs (Chetty & Agndal, 2008) and improved capabilities (e.g., opportunities for learning and innovation, and technology transfer) stemming from input–output linkages (Nichter & Goldmark, 2009). Finally, micro-enterprises led by local managers may be in a unique position to leverage and benefit notably from knowledge spillovers (Liberman et al., 2010). As a result of the involvement in the locality's various social and economic spheres (Bathelt et al., 2004), local managers of micro-enterprises may serendipitously receive ready-to-use information about novelties, innovation, and market opportunities (Kesidou & Romijn, 2008). However, because of the firm's internal resource scarcity, local managers also deliberately scan the immediate surroundings in the search for information (Yi & Wang, 2012) available through face-to-face interactions (Kesidou & Romijn, 2008). Thus, close ties arising from the manager's local roots may ultimately ease the transfer of knowledge and information benefiting the enterprise (Córcoles-Muñoz et al., 2020).

Based on the above theoretical reasoning, it is inferred that micro-enterprises with local managers benefit from the location in agglomerated areas. In such areas, place attachment allows managers to capitalize on localization economies and this compensates for micro-enterprises' limited resource. Hence, the following hypothesis is formulated:

Hypothesis 5: *Micro-enterprises led by local managers benefit more from localization economies in terms of productivity gains than larger firms.*

Methodology

Data

The empirical analysis has been carried out using secondary data obtained from several sources. First, financial data and information on the ownership and management of firms are drawn from Aida - Bureau Van Dijk (BvD) dataset.[1] Second,

[1] Aida - BvD is a comprehensive dataset that collects information on limited companies located in Italy. A complete set of economic and financial variables - with up to ten years of history - such as revenues, costs, number of employees, tangible and intangible assets, legal status, sector of activity, and location are provided.

patent information is obtained from Orbis Intellectual Property.[2] Third, information on affiliation to the so-called "contratto di rete" (Network agreement) was retrieved from the Italian Chamber of Commerce and Industry (ICCI)[3] Fourth, information on foreign sales is drawn from an unique database coming from the Italian National Institute of Statistics (Istat).[4] Finally, publicly available municipality-level information is retrieved once again from Istat. This study focuses on 97,657 active firms located in Italy for the year 2019 operating in the manufacturing sector (NACE Rev.2 codes at two-digit 10-33).[5] Tables 7, 8, 9, and 10 in the appendix shows the sample distribution by region, industry, technological intensity, and size, respectively. Lombardy accounts for the majority of firms in the sample (26.11 %), followed by Veneto (13.98 %), and Emilia-Romagna (11.10 %). Firms are mostly in the Fabricated metal products (22.86 %), Machinery and equipment n.e.c. (11.25 %), and Food products (9.02 %) industries. Low-tech and Medium-low tech firms together account for more than 75 % of firms in the sample, with the small and medium-sized enterprises (SMEs) representing more than 98 % of the enterprises in the data.

Variables

Dependent variable

The dependent variable is labor productivity (*Productivity*) which has been widely used to investigate the effects of spatial externalities on firm outcomes (Fazio &

[2] Orbis Intellectual Property links global patent data to companies and corporate groups. Specifically, 115 million patents are related to information on about 300 million companies so that an extensive patent portfolio for a given company is provided. In order to match the information contained in Aida-BvD and that contained in Orbis Intellectual Property, the BvD ID number - which uniquely identifies each company - has been used.

[3] Network agreement consists of a legal instrument through which participants realize aggregations and mutual cooperation, whilst maintaining their autonomy and legal identity. Introduced in the Italian legal system with the Law no. 33 of 9 April 2009, the "contratto di rete" can be stipulated by entrepreneurs regardless of their respective nature (i.e., individual businesses, companies and public entrepreneurs, also non-commercial) as a type of collaboration the aim of which is to realize shared projects and objectives, and increase innovation and competitiveness. Contratto di rete-Aida - Bureau Van Dijk (BvD) information is matched by means of firms' VAT number. For more information, please refer to: http://contrattidirete.registroimprese.it/reti/.

[4] Information about firm's exports stem from the Intrastat System. It consists of a set of procedures - based on firms' declarations - that ensure the fulfillment of two key functions. First, the fiscal control of intra-community trade in goods and services carried out by national operators with the rest of the European community. And, second, statistics on the exchange of goods carried out by national operators with the rest of the European community. We matched the information contained in both Aida-BvD and Orbis Intellectual Property with those provided by Istat using VAT number, which identifies companies.

[5] NACE represents the European standard classification of productive economic activities. In 2002, a major revision of NACE was launched with the regulation establishing NACE Rev. 2 adopted in December 2006. It includes provisions for the implementation of NACE Rev. 2 and coordinated transition from NACE Rev. 1.1 to NACE Rev. 2 in various statistical domains. NACE Rev. 2 is to be used, in general, for statistics referring to economic activities performed from 1 January 2008 onwards. For more information please refer to: https://ec.europa.eu/eurostat/web/nace.

Maltese, 2015; Raspe & van Oort, 2011). It is measured as the natural logarithm of a firm's value-added per employee (Van Oort et al., 2012). Value added is the difference between the firm's revenues and the cost of intermediate goods and services needed in the production process. Hence, value-added includes salaries, amortizations, interest repayments, taxes, and profits. Firms' value added (*Value Added*) has been used as an alternative dependent variable for a robustness check (Owoo & Naude, 2017).

Explanatory variables

Following the OECD micro-enterprises definition (OECD, 2019), a dummy variable *Micro* was created, coded '1' if the firm employs up to 9 persons, and '0' otherwise. As robustness check, this study employed the European Commission definition of micro-enterprises $Micro^{EC}$, in line with the EU recommendation 2003/361, which combines the staff headcount with the turnover (less than €2 m). This study relies on the location quotient (LQ) to capture the localization economies (Hervas-Oliver et al., 2018; Galliano et al., 2015). Following previous studies (Baù et al., 2019; Boix & Trullén, 2007), the LQ was defined at the municipality level as follows:

$$LQ_j = \frac{L_{sj}/L_j}{L_s/L}$$

where L_{sj} is the number of jobs in industry s in the locality j; L_j is the total number of jobs in municipality j; L_s is the number of jobs in the industry s; and L is the total number of jobs in the country. A $LQ_j > 1$ suggests that the industry s is over-represented in the municipality j relative to the country as a whole, which indicates a relative specialization of the municipality j. As robustness check, it was employed an alternative measure of location quotient expressed in terms of establishments counts LQ_j^{ESt} instead of the number of jobs (Renski, 2011).

Following the study of Ren et al. (2021), close place connections are captured by using the manager's hometown and enterprise co-location, that is, whether a local manager is in charge of the business. Accordingly, a dummy variable (*HH_CO*) was created, which takes value '1' if managers' hometown is in the same municipality as the enterprise headquarter, and '0' otherwise.

Control variables

This study controls for a set of enterprise-level and municipality-level characteristics potentially influencing enterprise's productivity. Since the size is typically associated with increasing returns to scale (Van Oort et al., 2012), the size (*Size)* expressed as the total number of employees taken in logarithm was controlled for (Raspe & van Oort, 2011). The age of the firm (*Age*), expressed as the years since its foundation, was controlled for (Raspe & van Oort, 2011). To account for the intangible capital as key component of the knowledge of the enterprise and driver of labour productivity (Marrocu et al., 2012), the value of intangible fixed assets per employee (*Intangibles*) was controlled for.[6] To account for innovation capabilities, a dichotomous variable (*Patent*) was created, coded '1' if the firm has applied for a patent, and '0' otherwise. The ratio between equity and total assets (*Leverage*) accounts for the financial structure. As exporting enterprises are found to be more productive than non-exporters (Fryges & Wagner, 2008), the international scope was controlled for. In so doing, a dummy variable (*Exporter*) was created, coded '1' if the firm sells abroad, and '0' otherwise. To account for enterprise's liquidity, the ratio of cash and cash equivalents on total assets (*Liquidity*) was included. The enterprise's affiliation to the "contratto di rete", which allows participants to realize aggregations and mutual cooperation, whilst maintaining their autonomy and legal identity, was also controlled for. Hence, a dummy variable (*Network agreement*), was introduced, coded '1' if the enterprise signed the aforementioned contract, and '0' otherwise. Since family firms are found to be less productive than non-family firms (Barth et al., 2005), the firm's family status was taken into account. Accordingly, a dummy variable named *Family firm* was created, coded '1' if two conditions are met: the firms reports a global ultimate owner (GUO)[7] with "one or more named individuals of families" and the GUO is also manager; and '0' otherwise. To control whether the enterprises's labor productivity is affected by unobserved heterogeneity across industries, industry dummies were included and aggregated according to the Eurostat's taxonomy: namely low-tech, medium-low, medium-high, and high-technology (*Industry-Tech)*.

At the municipality level, it was controlled whether the locality is regarded as an 'inner area' characterized by poor physical accessibility and distance from the main service centers (i.e., education, health, and mobility), potentially being a source of location disadvantages (Masakure et al., 2009). Based on the latest census, a dummy variable (*Inner*) was created, coded '1' if the municipality falls into the categories of an intermediate area, a remote area, and an ultra-remote area, '0' otherwise (Pagliacci et al., 2020). To account for urban density, which may result in either agglomeration benefits (Van Oort et al., 2012) or agglomeration diseconomies in the form of congestion costs (e.g., prolonged transportation time and pollution, among others) (Duranton & Puga, 2004), the municipality's

[6] The intangible fixed assets are those that by definition lack materiality. Their evaluation and budget is regulated by the OIC (Italian accounting standards) n° 24 issued by the "Organismo Italiano di Contabilità". Intangible fixed assets are shown in section BI of the assets side of the balance sheet and are comprised of the following items: BI1) start-up costs; BI2) R &D and advertising expenditures; BI3) costs incurred for either the acquisition or development and license of patents; BI4) concessions, licenses and trademarks; BI5) goodwill; BI6) assets under constructions and payments on accounts; and, BI7) others. For more information, please refer to: https://www.fondazioneoic.eu/wp-content/uploads/downloads/2015/01/OIC-24-Immobilizzazioni-immateriali.pdf.

[7] A global ultimate owner (GUO) is the individual or entity at the top of the corporate ownership structure, that is the shareholder with the highest direct or total percentage of ownership and, as such, able to exert a control over the company. Aida-BvD identifies the following types of GUO: Bank, Financial company, Insurance company, Industrial company, Mutual and pension fund, Foundation & Research Institute, Public authorities, States, Governments, Individuals or families, Employees-managers-directors, Self-ownership, Private equity, Public, Unnamed private shareholders, Other unnamed shareholders aggregated.

resident population-total area square kilometers ratio (*Density*) was controlled for. It was controlled whether the firm's municipality is part of an industrial district. Following the latest census information, a dummy variable (*District*) was included, coded '1' if the municipality is classified as district and '0' otherwise (Becattini et al., 2014). The Jacobian externalities, stemming from the diversity of the local setting, which is deemed to facilitate access to a diversified workforce and complementary knowledge (Van der Panne, 2004), were taken into account. Following previous studies (Hervas-Oliver et al., 2018), the Jacobian externalities are captured using the inverse of the Hirschman-Herfindhal Index (*HHI*) as follows:

$$HHI_j = \log\left[\frac{1}{\sum_{s=1}^{S}(F_{s,j}/F_j)^2}\right]$$

where F is the number of establishments in industry s in the locality j.

Finally, Italy's north–south divide was controlled for. Accordingly, a dummy variable (*South*) was introduced, which is coded '1' if the enterprise is located in the south of Italy, '0' otherwise (Aiello et al., 2014).[8]

Table 1 summarized the variables employed in the study. Figure 1 displays the model which outlines the relationship between the explanatory variables and the response variable.

Econometric specification

Given the hierarchical structure of the data, with units (enterprises) that are nested in groups (locations), this study relies on multilevel or hierarchical modeling. In a multilevel setting, variables at different levels are not simply add-ons to the same single-level equation but modeled simultaneously (Snijders & Bosker, 2011). As pointed out by Van Oort et al. (2012), there are two main advantages associated with multilevel models. First, multilevel models offer a natural way to assess contextuality. In a multilevel approach, the investigation of agglomerations on enterprise performance assumes that enterprises operating in the same locality are likely to be more similar - due to cluster-specific factors - than those operating in differing locations (Aiello et al., 2014).[9] Second, multilevel analysis allows the incorporation of unobserved heterogeneity into the model by including random intercepts and random slopes, hence allowing relationships to vary across locations through the inclusion of random

[8] This study relies on the NUTS 1 classification to identify Italy's southern regions. Accordingly, Abruzzo, Molise, Campania, Apulia, Basilicata, Calabria as well as the islands, Sardinia and Sicily were included.

[9] Because of this similarity, the assumption of independence of errors would be violated, inflating the significance of the two-level coefficients (Raspe & van Oort, 2011). That is because tests are made on the number of level-one observations instead of level-two groups. The multilevel approach overcomes this issue, thereby ensuring more efficient estimates (Aiello et al., 2014).

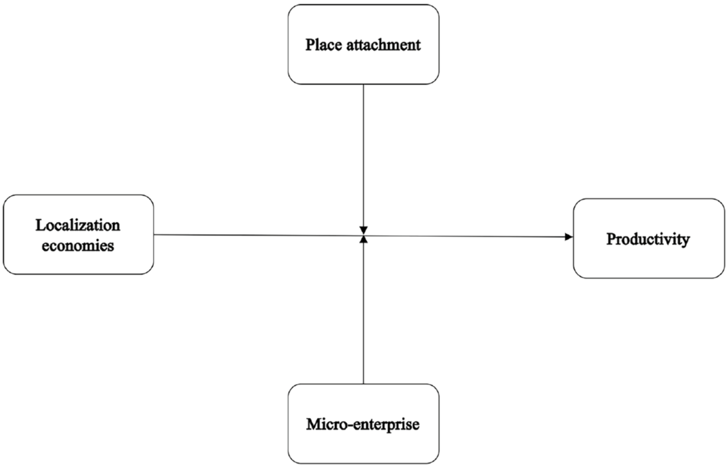

Fig. 1 Model

coefficients. Indeed, while traditional regression models are designed to model the mean, multilevel models center on modeling variances explicitly (Van Oort et al., 2012). By controlling for the spatial dependence, multilevel modeling also allows us to overcome the ecological and atomistic fallacies (Raspe & van Oort, 2011).[10]

The dependent variable Y refers to enterprises i and depends on a set X of variables measured at enterprise level and on a set Z of variables defined at local level j. The variable Y may be predicted simply by considering X as explanatory variables:

$$\mathrm{Y}_{ij} = \beta_{0j} + \beta_{1j}\, \mathrm{X}_{ij} + \epsilon_{ij} \tag{1}$$

where β_{0j} is the intercept, β_{1j} are the slope coefficients, and ϵ_{ij} is a random error term which is assumed to have a normal distribution with mean zero and variance σ^2_{ϵ}. In Eq. (1), the variation of the regression parameters β_j vary across level-two groups:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}\, \mathrm{Z}_j + \mu_{0j} \tag{2}$$

and

$$\beta_{1j} = \gamma_{10} \tag{3}$$

In so doing, β_{0j} differs across locations and depends on Z_j. The random error term defined at local level μ_{0j}, capturing the variability in the intercept across locations, is assumed to have a multivariate normal distribution with an expected value of zero and variances $\sigma^2_{\mu_0}$, and independent from ϵ_{ij}. The fixed component γ_{00} is a weighted

[10] The ecological fallacy is a formal fallacy occurring when an inference is made about an individual based on aggregate data for a group. Since in the data aggregation details of individual-level information may be missed or concealed, the result obtained at an aggregate level may not be confirmed after replicating the analysis on an individual basis. In contrast, the atomistic fallacy represents the bias of drawing inferences regarding variability across groups based on individual level data (Raspe & van Oort, 2011).

Table 1 Variables description

Variable	Description	Source
Dependent variable		
Productivity	Value added per employee taken in logarithm	Aida-BvD
Productivity[a]	Value added in absolute value taken in logarithm	Aida-BvD
Independent variables		
LQ	Location quotient expressed as number of jobs in industry i and municipality j	Aida-BvD
LQ^{EST}[a]	Location quotient expressed as establishment units in industry i and locality j	Aida-BvD
HH_CO	Dummy variable coded '1' if the manager's hometown is in the same municipality as the enterprise's headquarters, and '0' otherwise	Aida-BvD
Micro	Dummy variable coded '1' if the enterprise employs up to 9 persons, and '0' otherwise	Aida-BvD
$Micro^{EC}$[a]	Dummy variable coded '1' if the enterprise employs up to 9 persons and the turnover is up to €2 m, and '0' otherwise	Aida-BvD
Control variables		
Size	Number of total employees taken in logarithm	Aida-BvD
Age	Number of years since its establishment	Aida-BvD
Intangibles	Intangibles fixed assets per employee	Aida-BvD
Patent	Dummy variable coded "1", if the enterprise i has filed a patent, "0" otherwise	Orbis-IP
Leverage	Shareholder equity on total assets	Aida-BvD
Liquidity	Cash and cash equivalents-total assets ratio	Aida-BvD
Exporter	Dummy variable coded "1", if the enterprise i sells abroad, "0" otherwise	Istat
Network agreement	Dummy variable coded "1", if the enterprise i is part of a network, "0" otherwise	ICCI
Industry_Tech	Categorical variable: 1) low-tech; 2) medium-low tech; 3) medium-high tech; 4) high-tech	Aida-BvD
Family firm	Dummy variable coded "1", if the enterprise i is family-owned and managed, "0" otherwise	Aida-BvD
Inner	Dummy variable coded '1' if the municipality is an intermediate area, remote area, and ultra-remote area, '0' otherwise	Istat
Density	Resident population-total area square kilometers ratio of the municipality	Istat

Table 1 (continued)

Variable	Description	Source
District	Dummy varaiable coded '1' if the municipality is part of an industrial district, '0' otherwise	Istat
HHI	Inverse of the Hirschman-Herfindhal Index taken in logarithm	Aida-BvD
South	Dummy varaiable coded '1' if the enterprise *i* is located in the South of Italy, '0' otherwise	Aida-BvD

[a] Robustness check

average of the intercept across all locations (overall mean) and γ denotes the fixed level-two parameters.

By combining Eq. (1) with Eqs. (2) and (3), the following two-level mixed model is obtained:

$$\mathrm{Y}_{ij} = \gamma_{00} + \gamma_{10}\,\mathrm{X}_{ij} + \gamma_{01}\,\mathrm{Z}_j + (\mu_{0j} + \epsilon_{ij}) \tag{4}$$

The segment $\gamma_{00} + \gamma_{10}\,\mathrm{X}_{ij} + \gamma_{01}\,\mathrm{Z}_j$ in Eq. (4) is the fixed (or deterministic) part of the model, while the random (or stochastic) part is in brackets.

Equation (4) allows the identification of errors resulting from differences across firms or locations. For this purpose, an "empty model", that is a model without covariates is required:

$$\mathrm{Y}_{ij} = \gamma_{00} + \mu_{0j} + \epsilon_{ij} \tag{5}$$

this allows us to decompose the variance of Y into two independent components: the variance of lowest level errors $\epsilon_{ij}(\sigma^2_\epsilon)$, the so-called within-group variance, and the variance of the highest level errors $\mu_{0j}(\sigma^2_{\mu_0})$, the so-called between-group variance. The proportion of total variance explained by each level is given by the intra-class correlation (ICC):

$$ICC = \frac{\sigma^2_{\mu_0}}{\sigma^2_{\mu_0} + \sigma^2_\epsilon} \tag{6}$$

In line with Eq. (4), the following model is estimated:

$$\begin{aligned}\mathrm{Y}_{ij} = {} & \gamma_{00} + \beta_1 \mathrm{LQ}_{jt-1} + \beta_2 \mathrm{HH\_CO}_{ij} + \beta_3 \mathrm{Micro}_{ijt-1} + \lambda\,\mathrm{C}_{ijt-1} \\ & + \sum_{f=1}^{k} \delta_f\,\mathrm{W}_{fijt-1} + \sum_{h=1}^{v} \zeta_h\,\mathrm{Z}_{hjt-1} + \sum_{p=1}^{q} \eta_p\,\mathrm{S}_{pijt-1} + \xi\,\mathrm{South}_{it-1} + \mu_{0j} + \epsilon_{ij}\end{aligned} \tag{7}$$

where Y is the labor productivity of the *i-th* enterprise operating in location j; β_1, β_2 and β_3 represent the direct effect of the variables of interest on the response variable; C is a matrix containing all two-way and three-way interaction terms for the three main regressors; λ is the corresponding coefficients. W is a set of enterprise-level control variables and δ the corresponding coefficients. Z represents a set of local-level control variables and ζ the related coefficients. S is a set of industrial dummies and η the corresponding coefficients; finally, *South* is the regional dummy and ξ the associated coefficient. To lessen endogeneity concerns, both the independent variables and the enterprise-level control variables are lagged by one period.[11]

While the sign and significance of the coefficients of the variables *LQ* and *HH_CO* are related to the baseline proposition and Hypothesis 1*a*, and 1*b*, respectively, Hypothesis 2, 3, 4 and 5 are tested with the following interaction terms: $LQ \times HH\_CO$ $LQ \times Micro$, $Micro \times HH\_CO$, and $LQ \times HH\_CO \times Micro$.

[11] Information on the manager hometown-enterprise co-location is available only for 2019.

Table 2 Descriptive statistics

Variable	Obs	Mean	Std. Dev	Min	Median	Max
Productivity^{L}	*97,657*	3.841	0.671	−4.71	3.87	11.393
LQ	*97,657*	3.734	6.85	0.002	1.439	117.277
HH_CO	*97,657*	0.232	0.422	0	0	1
Micro	*97,657*	0.495	0.499	0	0	1
Size^{L}	*97,657*	2.302	1.239	0	2.303	10.396
Age	*97,657*	21.028	16.247	1	18	154
Intangibles^{W}	*97,657*	5.892	15.515	0	0.77	115.22
Patent	*97,657*	0.021	0.142	0	0	1
Leverage	*97,657*	0.292	0.303	−46.473	0.253	1
Liquidity	*97,657*	0.122	0.148	0	0.064	1
Exporter	*97,657*	0.391	0.488	0	0	1
Network agreement	*97,657*	0.024	0.154	0	0	1
Industry_Tech	*97,657*	1.9	0.829	1	2	4
Family firm	*97,657*	0.418	0.493	0	0	1
Inner	*97,657*	0.158	0.365	0	0	1
Density^{L}	*97,657*	6.344	1.263	0.415	6.299	9.411
District	*97,657*	0.379	0.485	0	0	1
HHI^{L}	*97,657*	4.302	2.02	0	4.141	16.197
South	*97,657*	0.18	0.385	0	0	1

^{L}Expressed in natural logarithm. ^{W}Winsor at 1 and 99% tail

Empirical results

Descriptive statistics and univariate results

Table 2 shows the descriptive statistics. In more than 23% of the enterprises, the manager's hometown is in the same municipality as the enterprise's headquarter. Almost half of the enterprises in the sample are micro-enterprises with an average age of 21 years. While only a tiny proportion of the enterprises, equal to 2%, filed a patent, almost 40% of them sell abroad. Family firms account for nearly 42% of the total enterprises. Regarding the enterprises's territorial distribution, almost 16% and 38% of the firms are located in inner areas and municipalities belonging of industrial districts. Finally, 18% of the enterprises are located in southern Italy.

Table 3 displays the means between micro and larger enterprises. Micro-enterprises are, on average, less productive than the larger ones. In almost 25% of micro-enterprises, the manager's hometown coincides with the firm's location versus the 22% in the case of the larger ones. Micro-enterprises are, on average, younger, less innovative and less export-oriented than their larger counterparts. The percentage of family-owned and managed enterprises is higher in the case of micro-enterprises (47% versus 36% for large enterprises). Finally, the share of enterprises located in inner areas and the south of Italy is higher for micro-enterprises.

Table 3 Test of means

Variable	Non-micro	Micro-enterprises	Test for difference of means	
			Difference of means	t-statistics
Productivity^L	4.009	3.670	0.338	81.559***
HH_CO	0.217	0.248	−0.031	−11.448***
Age	25.485	16.480	9.005	90.135***
Intangibles^W	6.066	5.715	0.350	3.528***
Patent	0.037	0.004	0.033	36.449***
Leverage	0.310	0.272	0.038	19.546***
Liquidity	0.111	0.134	−0.022	−23.750***
Exporter	0.535	0.245	0.29	97.192***
Network agreement	0.037	0.011	0.027	27.22***
Industry_Tech	1.949	1.851	0.098	18.509***
Family firm	0.364	0.474	−0.11	35.086***
Inner	0.153	0.163	−0.01	−4.328***
District	0.409	0.349	0.059	19.135***
South	0.137	0.225	−0.088	−36.045***
Observations	*49,317*	*48,340*		

^{L}Expressed in natural logarithm. ^{W}Winsor at 1 and 99% tail

Level of statistical significance * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Table 4 shows the correlation matrix. While there is no association between productivity and the location quotient, size, age, intangibles, patents, and export orientation are positively associated with productivity. The opposite is true for the manager hometown-firm headquarters co-location and micro-enterprises. Likewise, the association between family firm status and productivity is negative and statistically significant. Again Table 4 displays the variance inflation factor (VIF), which reveals that multicollinearity is not an issue in the data, given that all VIF coefficients are far below the tolerance value of 10 (O'brien, 2007).

Regression results

Results are displayed in Tables 5 and 6. Table 6 refers to OLS estimates of Eq. 7 reported only for comparative purposes. Each model of Table 5 relates to the different specifications of Eq. 7. The estimates are differentiated between the fixed part and the random part of the model. Model 1 refers to the empty model, as specified in Eq. 5, that allows us to evaluate how much of the variability in productivity might be attributable to unobserved factors operating at each level, firm, and location. Model 2 includes only the enterprise-level control variables, while Model 3 includes the location-level control variables as well. Model 4 includes the explanatory variables as indicated in Eq. 7, while Models 5–8 the interaction terms.

Table 4 Correlation matrix

Variables	VIF	Productivity	LQ	HH_CO	Micro	Size	Age	Intangibles	Patent	Leverage	Liquidity
Productivity	-	1									
LQ	1.30	0.002	1								
HH_CO	1.04	−0.059*	−0.015*	1							
Micro	2.54	−0.233*	−0.039*	0.021*	1						
Size	2.87	0.286*	0.118*	−0.030*	−0.779*	1					
Age	1.22	0.266*	0.055*	−0.002	−0.094*	0.336*	1				
Intangibles	1.01	0.128*	−0.003	0.002	−0.000	0.012*	−0.023*	1			
Patent	1.08	0.115*	0.010*	0.001	−0.068*	0.219*	0.082*	0.114*	1		
Leverage	1.13	0.087*	0.001	−0.008*	−0.003	0.066*	−0.000	−0.010*	0.000	1	
Liquidity	1.10	0.058*	−0.043*	0.007*	0.097*	−0.102*	−0.076*	−0.116*	−0.012*	0.001	1
Export	1.18	0.264*	0.088*	−0.040*	−0.119*	0.347*	0.235*	0.081*	0.123*	0.002	−0.044*
Network agreem	1.02	0.050*	0.027*	−0.005	−0.050*	0.110*	0.066*	0.024*	0.051*	0.000	−0.028*
Industry_Tech	1.10	0.207*	−0.201*	−0.043*	−0.004	0.082*	0.064*	0.060*	0.097*	0.003	0.044*
Family firm	1.04	−0.094*	−0.028*	0.030*	0.054*	−0.137*	−0.146*	−0.032*	−0.032*	−0.003	0.031*
Inner	1.28	−0.059*	0.135*	−0.009*	−0.004	−0.021*	−0.037*	−0.031*	−0.018*	0.001	−0.016*
Density	1.37	0.037*	−0.193*	0.097*	0.012*	−0.009*	−0.010*	0.051*	0.016*	−0.006*	0.037*
District	1.11	0.072*	0.086*	−0.083*	−0.007*	0.063*	0.038*	−0.027*	0.013*	0.002	−0.015*
HHI	1.26	0.014*	−0.414*	0.063*	0.030*	−0.019*	0.008*	0.071*	0.019*	−0.003	0.002
South	1.19	−0.234*	0.041*	0.148*	0.007*	−0.142*	−0.170*	−0.034*	−0.053*	−0.005	0.002

Table 4 (continued)

Variables	VIF	Export	Network agreem	Industry_Tech	Family firm	Inner	Density	District	HHI	South
Export	1.18	1								
Network agreem	1.02	0.075*	1							
Industry_Tech	1.10	0.098*	0.013*	1						
Family firm	1.04	−0.058*	−0.022*	−0.022*	1					
Inner	1.28	−0.041*	−0.041*	0.008*	−0.065*	−0.005*	1			
Density	1.37	−0.003	−0.026*	0.073*	0.010*	−0.454*	1			
District	1.11	0.128*	0.003	−0.032*	0.010*	−0.003	−0.160*	1		
HHI	1.26	−0.003	−0.009*	0.097*	−0.008*	−0.197*	0.301*	−0.084*	1	
South	1.19	−0.182*	−0.001	−0.138*	0.008*	0.169*	−0.060*	−0.266*	−0.037*	1

Number of observations: *97,657*

Mean VIF=1.32

Level of statistical significance * $p < 0.05$

Table 5 Multilevel results

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)
Fixed part								
Size		0.084***	0.082***	0.054***	0.054***	0.054***	0.053***	0.053***
		(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Age		0.005***	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Intangibles		0.005***	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Patent		0.085***	0.086***	0.105***	0.106***	0.105***	0.105***	0.105***
		(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Leverage		0.336***	0.334***	0.335***	0.336***	0.336***	0.336***	0.337***
		(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Liquidity		0.340***	0.332***	0.332***	0.332***	0.332***	0.333***	0.332***
		(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Export		0.188***	0.178***	0.174***	0.174***	0.174***	0.173***	0.173***
		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Network agreement		0.070***	0.081***	0.080***	0.080***	0.080***	0.080***	0.080***
		(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Family firm		−0.050***	−0.054***	−0.052***	−0.052***	−0.052***	−0.052***	−0.052***
		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Inner			−0.025***	−0.028***	−0.028***	−0.028***	−0.029***	−0.028***
			(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Density			0.002	0.005*	0.005*	0.005*	0.005*	0.005*
			(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
District			0.030***	0.031***	0.030***	0.030***	0.031***	0.031***

Table 5 (continued)

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)
			(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
HHI			0.001	0.006***	0.006***	0.006***	0.006***	0.006***
			(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
South			−0.233***	−0.232***	−0.232***	−0.232***	−0.232***	−0.232***
			(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
LQ				0.004***	0.003***	0.003***	0.003***	0.004***
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
HH_CO				−0.023***	−0.034***	−0.034***	−0.002	0.013*
				(0.005)	(0.005)	(0.005)	(0.007)	(0.008)
Micro				−0.083***	−0.083***	−0.083***	−0.070***	−0.065***
				(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
LQ×HH_CO					0.003***	0.003***	0.003***	−0.001
					(0.001)	(0.001)	(0.001)	(0.001)
LQ×Micro						0.000	0.000	−0.001**
						(0.001)	(0.001)	(0.001)
HH_CO×Micro							−0.059***	−0.087***
							(0.009)	(0.010)
LQ×HH_CO×Micro								0.008***
								(0.001)
Constant	3.808***	3.170***	3.225***	3.274***	3.276***	3.276***	3.271***	3.268***
	(0.005)	(0.006)	(0.018)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Random part								
Variance (Location)	0.054	0.017	0.008	0.008	0.008	0.008	0.008	0.008
Variance (Firm)	0.407	0.336	0.336	0.335	0.335	0.335	0.335	0.335

Table 5 (continued)

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)
Intra-class correlation (ICC)								
Location	0.118	0.049	0.024	0.024	0.024	0.024	0.024	0.024
Firm	0.882	0.95	0.975	0.975	0.975	0.975	0.975	0.975
Log likelihood	−96.938.123	−86.701.728	−90.089.899	−85.937.737	−85.929.146	−85.929.134	−85.907.198	−85.891.605
LR test	-	20472.79***	1203.36***	324.63***	17.18***	0.02	43.87***	31.19***
LR test vs. linear model	5314.85***	1588.85***	696.59***	677.26***	681.29***	681.31***	679.75***	674.74***
Industry	N	Y	Y	Y	Y	Y	Y	Y
Groups	5,553	5,553	5,553	5,553	5,553	5,553	5,553	5,553
Observations	*97,657*	*97,657*	*97,657*	*97,657*	*97,657*	*97,657*	*97,657*	*97,657*

Standard errors in parentheses

Level of statistical significance * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Table 6 OLS results

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)
Size	0.088***	0.084***	0.056***	0.056***	0.057***	0.056***	0.056***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Age	0.006***	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Intangibles	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Patent	0.090***	0.087***	0.107***	0.107***	0.107***	0.106***	0.106***
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Leverage	0.341***	0.339***	0.340***	0.341***	0.341***	0.341***	0.342***
	(0.079)	(0.080)	(0.080)	(0.079)	(0.079)	(0.079)	(0.078)
Liquidity	0.342***	0.326***	0.326***	0.326***	0.326***	0.327***	0.326***
	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.045)
Export	0.203***	0.181***	0.177***	0.177***	0.177***	0.177***	0.176***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Network agreement	0.057***	0.080***	0.079***	0.079***	0.079***	0.079***	0.078***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Family firm	−0.046***	−0.053***	−0.051***	−0.051***	−0.051***	−0.051***	−0.051***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Inner		−0.007	−0.008	−0.008	−0.008	−0.009	−0.008
		(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Density		0.009*	0.012**	0.012**	0.012**	0.012**	0.012**
		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
District		0.025***	0.024***	0.023***	0.023***	0.023***	0.023***
		(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)

Table 6 (continued)

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)
HHI		−0.000	0.005***	0.005***	0.005***	0.005***	0.005***
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
South		−0.219***	−0.215***	−0.215***	−0.215***	−0.215***	−0.215***
		(0.010)	(0.011)	(0.011)	(0.011)	(0.011)	(0.010)
LQ			0.003***	0.003***	0.003***	0.003***	0.003***
			(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
HH_CO			−0.037***	−0.046***	−0.046***	−0.014	0.003
			(0.008)	(0.009)	(0.009)	(0.010)	(0.010)
Micro			−0.083***	−0.083***	−0.083***	−0.070***	−0.064***
			(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
LQ×HH_CO				0.003**	0.003**	0.002*	−0.002*
				(0.001)	(0.001)	(0.001)	(0.001)
LQ×Micro					0.000	−0.000	−0.002**
					(0.001)	(0.001)	(0.001)
HH_CO×Micro						−0.060***	−0.090***
						(0.012)	(0.012)
LQ×HH_CO×Micro							0.009***
							(0.002)
Constant	3.141***	3.165***	3.224***	3.224***	3.224***	3.220***	3.217***
	(0.014)	(0.034)	(0.036)	(0.036)	(0.036)	(0.036)	(0.036)
Industry	Y	Y	Y	Y	Y	Y	Y
Observations	*97,657*	*97,657*	*97,657*	*97,657*	*97,657*	*97,657*	*97,657*
R^2	0.219	0.236	0.239	0.239	0.239	0.239	0.239

Clustered robust standard errors in parentheses

Level of statistical significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The likelihood-test compares the empty model (Eq. 5) with the standard linear regression. This test is highly significant, hence supporting the use of multilevel modeling. The ICC value (Eq. 6) in Model 1 indicates that nearly 12% of enterprises' productivity is explained by location, while the remaining 88% to enterprise-specific characteristics. Hence, location matters for productivity, though its role is considerably less important than internal attributes.

In Model 2, the enterprise-level control variables are entered in the regression. Enterprise size (*Size*) is positively associated, due to economies of scale, with productivity. The same goes for *Age*, *Intangibles*, and *Patent* that are positively related with productivity. Export-oriented enterprises are more productive than non-exporting enterprises, while belonging to a network agreement increases productivity. Instead, family firm status is associated with a productivity gap. Indeed, the *Family firm* coefficient is negative and statistically significant ($\beta = -0.050$; $p < 0.01$).[12]

When the location-level control variables in Model 3 are included, location in peripheral areas appears to be a disadvantages as shown by the negative sign of the *Inner* coefficient ($\beta = -0.025$; $p < 0.01$), while the density of the municipality (*Density*) is positive but not statistically significant. Looking at the *District* coefficient, location in industrial districts is positively related to productivity ($\beta = 0.030$; $p < 0.01$). Conversely, there is not evidence that the degree of local industrial diversity, as captured by the inverse of *HHI*, is positively associated with enterprise productivity. Location in the southern part of Italy (*South*) is negatively related to productivity ($\beta = -0.232$; $p < 0.01$). It is worth noting that when location-level control variables are accounted for, the variance of location intercepts decreases considerably (from 0.054 to 0.008). This evidence ensures that the selected location factors of enterprise productivity capture a great deal of intercept variability.

The explanatory variables are entered in Model 4. The coefficient of location quotient (*LQ*) is positive and statistically significant ($\beta = 0.004$; $p < 0.01$), suggesting that enterprises benefit, in terms of productivity gains, from the degree of local setting specialization. The coefficient of *HH_CO* tests the competing hypothesis 1a and 1b. The negative sign and statistically significance ($\beta = -0.023$; $p < 0.01$) suggests that the manager's hometown-enterprise co-location adversely affects productivity, thus providing supports for Hypothesis 1b. Micro-enterprises display a productivity 'gap' compared to larger firms, as shown by the negative coefficient of *Micro* ($\beta = -0.083$; $p < 0.01$). When the explanatory variables are accounted for, *Density* turns out to be statistically significant ($\beta = 0.005$; $p < 0.01$), as does the *HHI* coefficient ($\beta = 0.006$; $p < 0.01$),

Model 5 displays the interaction *LQ* × *HH_CO* to test Hypothesis 2. The coefficient is positive and significant at 5% level ($\beta = 0.003$; $p < 0.05$), suggesting that enterprises with a local manager gain more advantage from localization economies. For a more straightforward interpretation of this result, the two-way interaction is plotted in Fig. 2, which shows that enterprises with a local manager achieve higher productivity levels as the degree of local specialization increases. Hence, Hypothesis 2 is supported.

12 High-tech enterprises are more productive than low-tech ones, which are included as baseline category in the regressions.

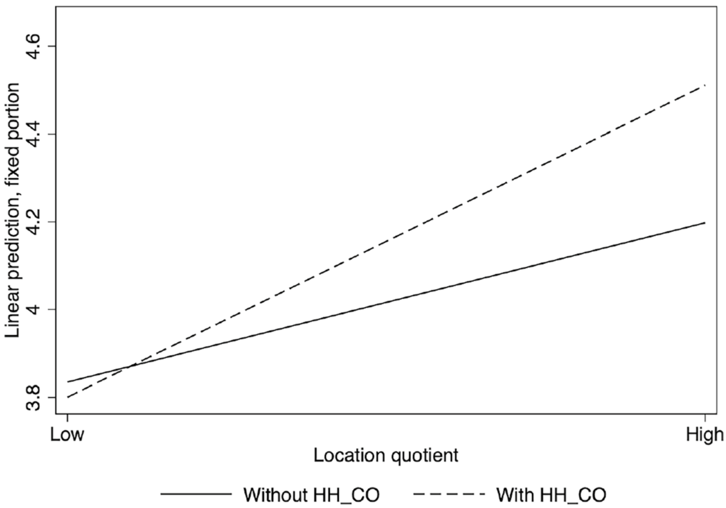

Fig. 2 Predictive margins of the two-way interaction $LQ \times HH\_CO$

Model 6 displays the interaction $LQ \times Micro$ to test Hypothesis 3, conjecturing micro-enterprises would benefit more than larger ones from localization economies. The coefficient of the interaction term is positive but not statistically significant. Therefore, Hypothesis 3 is not supported.

To test Hypothesis 4, the interaction $HH\_CO \times Micro$ is introduced in Model 7. The coefficient of the interaction term is negative and significant at 1% level ($\beta = -0.059$; $p<0.01$), suggesting that the manager's hometown-enterprise co-location further exacerbates the productivity gap in micro-enterprises. For a more straightforward interpretation of this result, Fig. 3 plots the two-way interaction, which shows that, contrary to the expectations, the manager hometown-enterprise headquarters co-location shrinks the productivity of micro-enterprises (the right side of the figure). In contrast, larger enterprises do not differ regarding the manager hometown-enterprise headquarters co-location. Hence, Hypothesis 4 is not supported.

Finally, Model 8 displays the interaction $LQ \times HH\_CO \times Micro$ to test Hypothesis 5. The interaction term coefficient is positive and significant at 1% level ($\beta = 0.008$; $p<0.01$). To interpret this result, Fig. 4 plots the three-way interaction. It is noted that, as both micro and larger enterprises benefit from localization economies, micro-enterprises with a local manager benefit the most from being located in specialized areas. Therefore, Hypothesis 5 is supported, conjecturing that managers' place connections would allow micro-enterprises to derive more value from externalities compensating for the lack of internal resources.

Additional analyses were performed to corroborate the results.[13] First, following previous studies (Renski, 2011), the location quotient (LQ) was computed as establishments counts instead of employees by industry s and location j. Second, the log of value added was employed as alternative dependent variable (Owoo &

[13] Robustness check analysis is provided upon request.

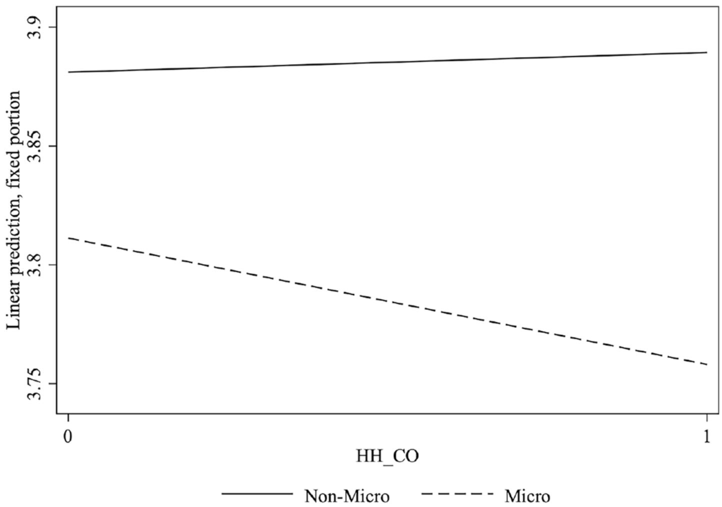

Fig. 3 Predictive margins of the two-way interaction *HH_CO* × *Micro*

Naude, 2017). Third, micro-enterprises in our dataset were identified also based on the European Commission definition. Finally, a sub-sample analysis was carried out by restricting the observations to micro and larger enterprises, respectively. When looking at the micro-enterprises sub-sample, the coefficient of *HH_CO* is negative and statistically significant. By contrast, the two-way interaction *LQ* × *HH_CO* is positive and statistically significant at 1% level, but not for the sub-sample of larger enterprises, whose coefficient is negative and weakly significant $p < 0.10$. In all of the aforementioned cases, the results obtained are substantially in line with those reported in the main analysis.

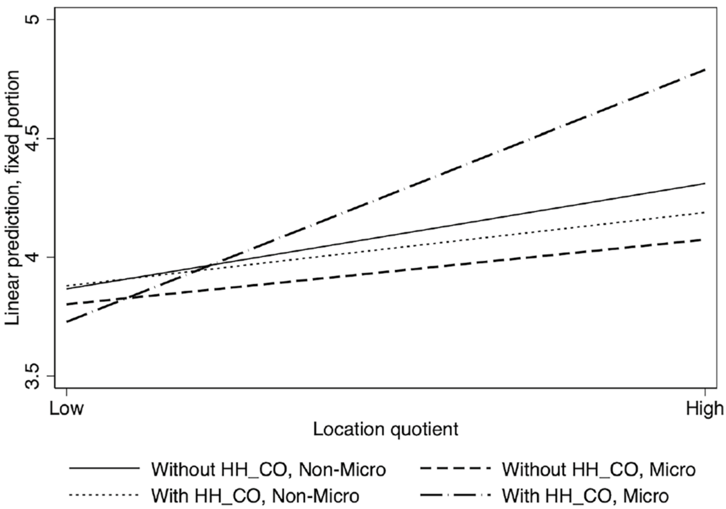

Fig. 4 Predictive margins of the three-way interaction *LQ* × *HH_CO* × *Micro*

Conclusion

Discussion

Micro-enterprises account for the large majority of SMEs and yet, they remain comparatively under-researched. As a result, there is a lack of understanding of the contextual factors influencing their growth potential (Gherhes et al., 2020). Entrepreneurs are embedded in locations that frame resources and opportunities, enabling or constraining entrepreneurial activity (McKeever et al., 2015; Welter, 2011). This is especially true for micro-enterprises whose growth is locally contingent (Gherhes et al., 2020), highly dependent upon the resource endowment of the local operating context, which may substitute for their lack of internal resources (Kelliher & Reinl, 2009). Localization economies, arising from the spatial agglomeration of the entrepreneurial activity, may lead to productivity gains as a crucial determinant of growth (Raspe & van Oort, 2011; Anton, 2019), especially for micro-enterprises. Against this background, place bonds to the location may influence micro-enterprises' ability to harness localization economies (Hervas-Oliver et al., 2018). Specifically, having a local manager in charge of the business ends up embedding the enterprise inextricably in the local context as both the manager and the enterprise share the same relational space (Oinas, 1997), thus conditioning the interplay between the enterprise and the immediate surroundings (Pallares-Barbera et al., 2004), the resources attainable from it (Kalantaridis & Bika, 2006), and ultimately productivity (Van Oort et al., 2012).

Findings from 97,657 Italian manufacturing firms reveal that micro-enterprises are less productive than the larger firms, confirming previous results on the former's productivity 'gap' (Aw, 2002; Li & Rama, 2015; OECD, 2013). It also appears that local managers have a detrimental effect on productivity, a result which is at odds with the work of Baù et al. (2019) who investigated the influence of the local roots on growth in Sweden. This finding can, however, be explained by the lock-in effect potentially associated with conservatism and rigidity, brought about by the strict adhesion to local values, routinized practices, and mental schema, which may obstruct alternative course of actions (Boschma, 2005; Barnes et al., 2004). Conversely, localization economies positively affect enterprise productivity (Baldwin et al., 2008), albeit unevenly. Indeed, the results reveal that local managers-led enterprises take more advantage from localization economies. In such contexts, the managers' place connections are believed to influence, in a uniquely manner, the channels through which localization economies occur (Galliano et al., 2015). First, access to specialized workers whereby the manager's local ties help lessen labor searching and matching costs. Second, input–output linkages whereby the manager's feeling of belonging and similarity imbue economic exchanges with socially embedded ties, reducing transaction costs. Finally, the simple fact of coming from the same place as the enterprise, facilitates the manager's access to and the understanding of highly contextual and tacit knowledge and information available from the local *milieu*, leading to potential productivity gains for the enterprise.

Because of their limited size, micro-enterprises are expected to benefit the most from localization economies, which compensates for the lack of internal resources. However, contrary to the expectations and previous empirical evidence (Raspe & van Oort, 2011; Van Oort et al., 2012), the findings do not provide any evidence for this. When the manager hometown-enterprise co-location is accounted for, the results reveal that local managers have an adverse affect on the productivity of micro-enterprises. Hence, place connections would not seem to assist micro-enterprises in leveraging localized resources, but instead further exacerbate the disadvantages of limited size. However, it is when they are located in agglomerated areas that local managers provides greater benefits to micro-enterprises. The results shows that the productivity differential between micro-enterprises run by local managers and larger enterprises is greater the higher the level of local specialization. For micro-enterprises, as person-centered (Kelliher & Reinl, 2009) and context-dependent businesses (Thapa, 2015; Gherhes et al., 2020), place connections enable them to tap into critical resources available in agglomerated areas. Flexibility, lack of intermediate layers, and personal-organizational identity overlap lubricate the interplay of local manager-led micro-enterprises with their immediate surroundings, and, therefore, the channels of localization economies.

In sum, location matters with localization economies positively related to enterprise productivity. The study shows the ambivalent nature of the enterprise's local roots, allowing them better leverage of the advantages arising from geographical concentration. This is especially true for micro-enterprises led by local managers that are better positioned to capitalize on externalities. Hence, being too small is not always bad. It ultimately depends on the spatial context wherein the enterprise is located and its bonds with local entrepreneurial activity occurs.

Contributions

This study makes several theoretical and practical contributions. First, it contributes to the debate on contextualizing entrepreneurship research (Welter, 2011), which entails acknowledging the environment enabling or constraining entrepreneurial activity and growth (Baker & Welter, 2020). In particular, this research addresses the call of Gherhes et al. (2020) for further studies investigating the role of specific spatial contexts supportive of the growth of micro-enterprises, a largely overlooked type of enterprise. Although location in unfavorable environments, such as peripheral areas, poses an additional layer of constraint on micro-enterprises (Gherhes et al., 2020), location in agglomerations unlocks their growth potential. But to do so, micro-enterprises must be "anchored" to the place, with a local manager who can leverage localized resources and exploit business opportunities. Second, this study contributes to the agglomeration economies research by providing new evidence on the uneven distribution of externalities of co-located enterprises (Hervas-Oliver et al., 2018; Van Oort et al., 2012). As well as investigating who benefits most from localization economies, this study draws attention to the place connections, resulting from the manager hometown-enterprise co-location. The findings reveal that all enterprises benefit from localization economies, but enterprises with a local manager in charge can benefit more than others. In doing so, this study points the need to overcome a "place-less" approach in investigating the agglomeration economies-enterprises link. From a policy perspective, this research shows that the local context matters for enterprise productivity. Specifically, the findings point out that productivity gains are associated with agglomeration in spatially-bounded areas. Hence, cluster policies should be regarded as a lever to boost the competitiveness of enterprises and, indirectly, that of localities and regions (Van Oort et al., 2012; Porter, 2000). However, it is not only the spatial proximity that matters but also the place connections where externalities take place, with the result that place attached enterprises may profit more from agglomerations (Harris et al., 2019). Finally, from a managerial perspective, the findings may provide helpful suggestions regarding the location choices for both new and small enterprises, which may benefit from being situated in agglomerated areas. However, ties with the local *milieu* are paramount to harnessing externalities and coping with key internal resource constraints.

Limitations and future research avenues

This research has several limitations which open the way for future research. First, it is based on cross-sectional data, with the result that causality is difficult to determine. Hence, one extension of this study would be to also consider time in a longitudinal setting. Second, this study did not measure the channels (i.e., labor market pooling, input–output linkages, and knowledge spillovers) through which localization economies occur. Hence, future studies should gauge the mechanisms the local managers of micro-enterprises rely most on when located in agglomerations. Primary data collected through surveys would be beneficial to unveil such mechanisms (Kesidou & Romijn, 2008). Third, because of the availability of geocoded information, multilevel modeling could be extended by including spatial interaction effects, which also account for the spatial dependence emerging from units' geographical proximity (Dong et al., 2015). Fourth, this study explores the agglomeration-performance link using productivity as dependent variable. Future studies could investigate the extent to which agglomeration economies influence different outputs, such as innovation and survival of micro-enterprises, and the moderating effect, if any, of place attachment (Renski, 2011; Van Oort et al., 2012; Hervas-Oliver et al., 2018). Fifth, given that individual place connections are at the foundation of environment-caring actions (Masterson et al., 2017), there is room for future investigation into the environmental sustainability of micro-enterprises and the role of local managers in developing firms' environmental attitudes and behaviors. Finally, qualitative research methods (e.g., case studies, in-depth interviews), may prove extremely useful in shedding further light on place attachment and the influence of location on the growth of micro-enterprises vis-à-vis larger firms.

Appendix

Table 7 Sample distribution by region

Region	Freq.	Percent	Cum.
Abruzzo	1,967	2.01	2.01
Aosta Valley	96	0.10	86.02
Apulia	4,03	4.13	71.80
Basilicata	496	0.51	2.52
Calabria	991	1.01	3.54
Campania	6,058	6.20	9.74
Emilia-Romagna	10,841	11.10	20.84
Friuli-Venezia Giulia	2,305	2.36	23.20
Lazio	4,771	4.89	28.09
Liguria	1,297	1.33	29.42
Lombardy	25,499	26.11	55.53
Marche	4,278	4.38	59.91
Molise	296	0.30	60.21
Piedmont	7,292	7.47	67.68
Sardinia	783	0.80	72.61
Sicily	3,004	3.08	75.68
Tuscany	7,179	7.35	83.03
Trentino-South Tyrol	1,379	1.41	84.44
Umbria	1,442	1.48	85.92
Veneto	13,653	13.98	100
Total	*97,657*	100	

Table 8 Sample distribution by industry

NACE-2-digit code	Freq.	Percent	Cum.
10 Food products	8,807	9.02	9.02
11 Beverage	1,167	1.19	10.21
12 Tobacco products	11	0.01	10.22
13 Textiles	3,329	3.41	13.63
14 Wearing apparel	4,295	4.40	18.03
15 Leather and related products	3,149	3.22	21.26
16 Wood and of products of wood and cork	3,221	3.30	24.55
17 Paper and paper products	1,638	1.68	26.23
18 Printing and reproduction of recorded media	3,074	3.15	29.38
19 Coke and refined petroleum products	179	0.18	29.56
20 Chemicals and chemical products	2,609	2.67	32.23
21 Basic pharmaceutical products and preparations	389	0.40	32.63
22 Rubber and plastic products	4,886	5.00	37.64
23 Other non-metallic mineral products	4,555	4.66	42.30
24 Basic metals	1,553	1.59	43.89
25 Fabricated metal products	22,327	22.86	66.75
26 Computer, electronic and optical products	2,884	2.95	69.71
27 Electrical equipment	3,532	3.62	73.32
28 Machinery and equipment n.e.c	10,989	11.25	84.58
29 Motor vehicles, trailers and semi-trailers	1,195	1.22	85.80
30 Other transport equipment	1,098	1.12	86.92
31 Furniture	3,672	3.76	90.68
32 Other manufacturing	3,342	3.42	94.11
33 Repair and installation of machinery and equipment	5,756	5.89	100
Total	*97,657*	100	

Table 9 Sample distribution by technological intensity

Tech. intensity	NACE-2 digit	Freq.	Percent	Cum.
Low-tech	10 to 18, 31 to 32	35,705	36.56	36.56
Medium-low	19, 22 to 25, 33	39,256	40.20	76.76
Medium-high	20, 27 to 30	19,423	19.89	96.65
High-tech	21, 26	3,273	3.35	100
Total		*97,657*	100	

Manufacturing industry technological intensity aggregation according to Eurostat

Table 10 Sample distribution by size

Category	Headcount	Freq.	Percent	Cum.
Micro	1-9	48,34	49.50	49.50
Small	10-49	39,931	40.89	90.39
Medium	50-249	8,106	8.30	98.69
Large	250+	1,28	1.31	100
Total		*97,657*	100	

Firm's size according to the OECD classification (OECD, 2019)

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