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Uncovering business and spatial dimensions of industrial districts, clusters and learning regions

Sobre innovación en las empresas y territorios de los distritos industriales: una visión con perspectiva

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Editorial

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Editorial

Uncovering business and spatial dimensions of industrial districts, clusters and learning regions

Jose-Luis Hervas-Oliver, Silvia Rita Sedita***

Received: 22 July 2024
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Abstract:
The article analyzes the trajectory of industrial districts in recent decades, outlining the main lines of research and their advances, as well as the key work of Dr. Fiorenza Belussi.

Keywords: Industrial districts; clusters; innovation; regions.
JEL Classification: O1; R1.

Sobre innovación en las empresas y territorios de los distritos industriales: una visión con perspectiva

Resumen:
El artículo analiza la trayectoria de los distritos industriales en las últimas décadas, desgranando las principales líneas de investigación y sus avances, así como el trabajo clave de la Dra. Fiorenza Belussi.

Palabras clave: Distritos industriales; clusters; innovación; regiones.
Clasificación JEL: O1; R1.

1. Introduction and honoring

Research on clusters and industrial districts[1] (clusters/IDs) is approached from a wide variety of sub-lines of enquiry and approaches. Drawing on Becattini's seminal ideas, the MID (Marshallian Industrial District) phenomenon has gathered different scholars researching on SMEs geographically concentrated in a kind of geographically bounded socio-economic complex innovation system (characterized by Becattini, Bellandi, Dei Ottati, Brusco, Belussi, Lazzeretti, Sedita, Hervas-Oliver, Caloffi, Boix, Sforzi, De Propris, Giuliani, Molina, Belso, among many more across Europe and beyond). Different levels of analysis are common, such as the micro-level to explain firm performance or the meso-level to depict collective actions. Scholars from a different array of disciplines, such as management, economic geography, regional studies and innovation studies, among many others, have propelled the topic and enrich the debate from different and complementary perspectives.

As summarized in Hervas-Oliver et al. (2024), in this Special Issue honoring our beloved friend Prof. Dr. Fiorenza Belussi, the core argument of the MID concept is that the innovation capacity of SMEs is

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[1] For the sake of brevity, we use the terms clusters and industrial districts without distinction, albeit recognizing differences.

leveraged by *localization economies* based on (systemic and interactive) social and economic inter-firm and inter-personal intensive interactions. Local advantages, built upon local highly-skilled and specialized labor, suppliers and knowledge spill-overs, support a local and systemic innovation engine based on cooperation and competition, where SMEs can be conjointly competitive by overcoming their intrinsic (assumed) poor capabilities due to their size.

Different topics, such as sustainability (Ponte et al., 2023; Belso et al., 2024), Industry 4.0 (Hervas-Oliver, 2021), multinationals (Belussi and De Propris, 2013; Belussi, 2018), life cycles (Belussi and Sedita, 2009), networks (Lorenzoni & Lipparini, 1999), institutions (Staber and Sautter, 2011) and many more (e.g. inertia, embeddedness, global value chains, spinoffs, brokerage, etc.), are building up the topic, whose central focus is understanding place-based innovation under the strong influence of social dimensions shaping the economics of a given territory. Over the last 40 years, we have collectively shifted the focus from SMEs represented in traditional works (e.g. Becattini, 1990; Bellandi, 1996) to new realities where multinationals, global value chains and other different elements represent new ways of doing business and support local development (e.g. Belussi, 2018; Belussi and Sedita, 2009; Hervas-Oliver et al., 2022; 2023).

In this Special Issue, we recognize and point out the enormous contribution developed by Fiorenza Belussi in Padova. Fiorenza has been a seminal author on the topic, with thought-provoking authoritative studies that have pushed the topic of industrial districts forward. Fiorenza has pioneered topics such as knowledge, learning and innovation dynamics in industrial districts as well as district life cycles, the interplay between industrial districts and multinationals, among others. At the present time (June 2024), Fiorenza accounts for more than 6,000 citations (Google Scholar) and a very impressive list of highly-cited and high-quality papers in leading journals, such as RESEARCH POLICY[2]. We would like to offer our gratitude and recognition for such an important effort to build up this community, and also for cultivating a growing and important group of scholars in Padova researching on this focal topic. Padova University is, at present, a pillar of the Industrial District topic and Fiorenza has strongly facilitated this outcome, also thanks to her international network of collaborations with eminent scholars worldwide.

2. Studies in this special issue

Following a research tradition initiated by Fiorenza Belussi, the study by **Hervás-Oliver et al.** investigates the role of multinationals within Marshallian Industrial Districts (MIDs), particularly focusing on how these entities challenge and reshape the established framework. The authors analyze different types of multinationals, including traditional and private equity funds (PEFs), and their impacts on local districts. By integrating and reviewing existing literature, the study highlights the necessity of updating the MID framework to incorporate the growing presence and influence of multinationals. Key contributions include identifying new research directions to address the evolving dynamics between local SMEs and multinational actors, and emphasizing the importance of ownership and its effects on local innovation ecosystems and social structures within MIDs.

Recognizing the importance of global interactions on cluster dynamics, **Cooke and Boix-Domenech** explore the unique characteristics of tax haven clusters using a novel analytical framework combining assemblage theory and abductive pattern recognition. The study focuses on tax haven clusters in locations such as Wilmington (Delaware), Ireland, and Gibraltar, highlighting their dependence on specific legislative frameworks and their susceptibility to external legal changes. By examining the motivations and global interactions within these clusters, the paper provides new insights into their formation,

[2] Belussi, F., Sammarra, A., & Sedita, S. R. (2010). Learning at the boundaries in an "Open Regional Innovation System": A focus on firms' innovation strategies in the Emilia Romagna life science industry. *Research Policy*, *39*(6), 710-721.
De Noni, I., Orsi, L., & Belussi, F. (2018). The role of collaborative networks in supporting the innovation performances of lagging-behind European regions. *Research Policy*, *47*(1), 1-13.

maintenance, and impact on the global economy. This research underscores the complexity and fragility of tax haven clusters, emphasizing the need for a deeper understanding of their unique dynamics.

In recent years, sustainability has become increasingly important in corporate strategies, impacting industrial districts by driving product and process innovation and fostering new forms of collaboration. However, research on environmental sustainability in industrial districts remains limited. The work of **Bettiol et al.** examines whether district firms have invested in environmental sustainability and how these strategies are communicated and diffused at the district level. The study focuses on the leather and jewelry industrial districts in Italy, analyzing sustainability strategies through certifications, web communication, and international trade fairs. Findings indicate that while districts are evolving towards sustainability, there is significant variation in strategies among firms within the same district, influenced by their respective markets (B2B vs. B2C).

Another way to look at the sustainability of industrial districts is to focus on their resilience capacity, i.e. their ability to recover from shocks. While their socioeconomic context fosters innovation, it can also be a liability during crises. Resilience involves vulnerability, resistance, adaptability, and recovery. Innovation is crucial for adaptability, though districts often struggle to adjust. During crises, firms may hesitate to innovate, but overcoming this leads to better responses to unexpected events. Traditional views on regional resilience emphasize recovery, overlooking adaptability. The study of **Viana et al.** examines innovation in a Brazilian footwear district during COVID-19, highlighting resilience dimensions and offering new theoretical insights.

Drawing inspiration from the works of Fiorenza Belussi on multiple paths of development in local productive systems, the study of **Bellandi et al.** explores paths of open local development in industrial districts, as a specific type of Local Productive System (LPS), which evolve through the interplay of historical factors and cumulative dynamics. Industrial districts feature interconnected businesses within a specific region, often specializing in certain industries. IDs thrive on spontaneous social interactions and continuous knowledge circulation, functioning as place-based open learning systems. This balance between socio-cultural and economic components is vital but challenging to maintain amid changing environments. Transformation is crucial for LPSs facing contemporary challenges, yet the debate on supportive conditions remains open, particularly for mature IDs at risk of lock-in. This work explores triggering factors such as the diffusion of humanistic management and cultural enhancement of economic strategies for transitioning towards new, sustainable development paths with a focus on Italian industrial districts.

Using local systems of innovation, represented by industrial districts, and multinationals, **Carmine et al.** have elaborated on the intersection between local and global dimensions. This cross-fertilization is drawn by using a paradox lens applied to industrial districts. This novel perspective analyzes the local/global paradox in multinational corporations and industrial districts, unfolding interdependences and tensions from this interaction. From the conceptual framework of paradox theory, the local/global paradox offers a useful tool for analyzing both MNCs and IDs as they evolve.

From a Regional Innovation System (RIS) perspective, **Trippl et al.** reflect on recent modifications of the RIS approach that have been prompted by persistent environmental, social, and economic problems. In particular, the study points out a reorientation of the RIS framework towards addressing territorial sustainability challenges and the notion of challenge-oriented regional innovation systems (CORIS).

Intersecting sustainability and industrial districts, **Sedita and Maghssudipour** elaborate on the creation of new business models for finding solutions to environmental and societal challenges and the role played by industrial districts in firms' orientation towards sustainability. Using Propensity Score Matching technique on a novel database with information on 1,300 Italian fashion firms and an original *Natural Language Processing*-based data mining technique, findings suggest the existence of a sustainability-driven industrial district effect, i.e. a positive association between the sustainability orientation of fashion firms and their localization in industrial districts.

Accounting for the exposition of industrial districts to globalization and the associated break up of complete regional value chains from offshoring, **Asheim** reflects and debates on the new tendencies of de-globalization, regionalization and Industry 4.0 digital technology from within an industrial district level

of analysis. The US narrative of de-industrialization and manufacturing offshoring, seems not to be the case in Europe and, in particular, the case of industrial districts. The experiences of industrial districts, even in peripheral areas rather than large cities, represent an important learning and inspiration for future thinking about the organization of industrial production in different industries and regions.

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Articles

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Articles

Extending the marshallian industrial districts framework: reframing types of multinationals

Jose-Luis Hervas-Oliver, Carles Boronat-Moll**, María Eizaguirre***, Juan Antonio Marquez Garcia*****

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Abstract:

Recently, scholars have begun to show a reorientation of the Marshallian Industrial District (MDI) framework towards addressing topics that were not central to the mainstream, such as multinationals and their different sub-lines of research. In this study, we reflect on multinationals and their challenge to the established MID boundaries. By reviewing literature, we elaborate on, integrate and discuss types and effects of multinationals in districts, highlighting a new type of actor that has recently become more prominent: multinational private equity funds in MIDs. We elaborate on different types of multinationals in MIDs, reviewing and integrating extant evidence about private equity funds as new established realities. The study proposes new sub-lines of inquiry to extend and strenghten the MID framework.

Keywords: Multinationals; industrial districts; innovation.

JEL Classification: O3; R1.

Ampliando el marco de los distritos industriales marshallianos: teorizando sobre tipos de multinacionales

Resumen:

Recientemente, los académicos han comenzado a mostrar una reorientación del marco del Distrito Industrial Marshalliano (MDI) hacia el tratamiento de temas que no eran centrales para la corriente principal, como las multinacionales y sus diferentes sublíneas de investigación. En este estudio reflexionamos sobre las multinacionales y su desafío a las fronteras establecidas y aceptadas de los MIDs. Al revisar la literatura, elaboramos, integramos y discutimos los tipos de multinacionales y sus efectos en los distritos, destacando un nuevo tipo de actor que recientemente se ha vuelto más importante: los fondos financieros multinacionales de capital privado en los MID. Desarrollamos diferentes tipos de multinacionales en MID, revisando e integrando la evidencia existente sobre los fondos financieros de capital privado como nuevas realidades establecidas. El estudio propone nuevas sublíneas de investigación para ampliar y fortalecer el marco MID.

Palabras clave: Multinacionales; distritos industriales; innovación.
Clasificación JEL: O3; R1.

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1. Introduction

Over more than four decades, the MID (Marshallian Industrial District) phenomenon has spawned an expansive body of literature that explicates local endogenous development led by specialized and geographically concentrated networks of SMEs (Small and Medium Size enterprises) that form industrial districts, referring to a socio-economic complex innovation system (e.g. Becattini, 1990; Brusco, 1982; Piore and Sabel, 1984; Bellandi, 1996; Boix and Galletto, 2009; Hervas-Oliver et al., 2008; Belussi and Hervas-Oliver, 2017). SMEs are pervasive in the ID literature (e.g. Becattini, 1990; Asheim, 1996). These SMEs are mostly family firms strongly embedded in the local business ecosystem and its institutional environment (e.g. Pittino et al., 2021).

The idea of MIDs (e.g. coopearation and competition, SMEs, flexible specialization, family firms embedded in the territory, etc.,), however, has radically changed. At the beginning of 2024, while writing this article, new announcements of acquisitons have been reported by newspapers[1] in a used-to-be traditional IDs, the Castellon ceramic tile district, a canonical Marshallian entity. To the extent that around six groups concentrated two-thirds of the ceramic tile production and just two groups control the key innovation engine of the district in the auxiliary (chemestry for ceramic tile decoration) local industry. And not only because of the active presence of multinationals and a wave of concentration and group formation, already reported by scholars (see Cainelli et al., 2006; Mariotti et al., 2014), but the strong presence of a new *rara avis* in the MID landscape: private equity funds (PEFs) or financial firms[2] with short term goals. Its analysis, and a deeper understanding of different types of multinationals in MIDs, are the main goals of this present study. Methodologically, we review and integrate extant literature about these sub-lines of research around the intersection of multinationals in MIDs.

The concept of IDs has impacted on both managerial scholars and economic geographers, also influencing other related (regional) economic literatures working on Regional Innovation Systems (Cooke, 1992), Global Value Chains (e.g. Bathelt et al., 2004; Ponte et al., 2023) or innovation policies (e.g. Tödtling and Trippl, 2005), among many others. Drawing theoretical elements from these innovation systems literatures, the MID framework has evolved as a separate yet related body of literature intersecting different sublines of inquiry (e.g. networks, brokerage, social capital, agglomerations life cycle, multinationals, etc.) around the idea of fostering innovation amongst local (SME) firms. In fact, the main tenet of the MID is to consider that a socio-economic phenomenon, based on agglomerations of SMEs around an industry or industries of specialization, fosters (local/regional) growth, development and trade, supporting innovation effectively at SMEs that show limited resources and capabilities due to their size constraints.

The core argument of the MID concept is that the innovation capacity of SMEs is leveraged by *localization economies* based on (systemic and interactive) social and economic inter-firm and inter-personal intensive interactions. Local advantages, built upon local highly-skilled and specialized labor, suppliers and knowledge spill-overs, support a local and systemic innovation engine where SMEs can be conjointly competitive by overcoming their intrinsic (assumed) poor capabilities due to their size. The local competition and cooperation theme, along with an efficient local division of labor, facilitates local firm innovation and local endogenous development without the need to be driven by large foreign multinationals. The large family of clusters/IDs scholars[3] has shaped this literature in recent decades from different perspectives, intersecting micro-level and meso-level approaches and converging around the topic of innovation.

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[1] https://www.elperiodicodelazulejo.es/industria/pamesa-concreta-en-agosto-la-compra-de-una-nueva-empresa-HF1531283
https://castellonaldia.elmundo.es/economia/ceramica/grupo-lamosa-compra-baldocer-por-al-menos-425-millones-de-euros-BH17017071

[2] McGrath & Nerkar (2023) for understanding PEFs or Hervas-Oliver et al., 2023a for understanding PEFs in IDs.

[3] (not ordered, nor exhaustive) Bellandi, Camagni, De Marchi, Di Maria, Bettiol, Grandinetti, Trippl, Giuliani, Morrison, Grillitsch, Asheim, Belso, Molina-Morales, Boix, Hervas-Oliver, Sedita, Belussi, Lazzeretti, Capone, Caloffi, De Propris, among many more, along with more classical and seminal authors such as Brusco, Becattini, Aydalot, Sforzi, Dei Ottati and many others.

In recent years, however, the MID framework has been challenged from different perspectives and extended by a large number of empirical studies that have also pointed out different elements and actors with a central character not previously considered so important in the literature: the growing presence and importance of multinationals collocated in districts (see Sedita et al., 2013; Belussi and De Propris, 2013; Belussi, 2018; Hervas-Oliver et al., 2020). The goal of this STUDY is to analyze and discuss the sub-line of inquiry of multinationals in clusters and industrial districts, and how the topic of multinationals challenges different aspects of the MID framework. Our main rationale is to update the understanding of multinationals in MIDs, addressing especially a new actor, not previoulsy central in MIDs, and its effects on districts: PEFs.

2. Extending the framework: multinationals in industrial districts

Amin and Thrift (1993) analyzed the importance of MIDs in global production *filieres*, signalling the importance of globalization and the challenges and opportunities for MIDs. In recent years, several scholars have shown that multinationals in MIDs are gaining importance, shaping districts from many different perspectives, imposing new tensions on the model and showing both positive and negative points of the relationship between multinationals of any kind and innovation of local firms (see Hervas-Oliver et al., 2020; Belussi et al., 2017; Belussi, 2015; Hervas-Oliver, 2015). The separation of *foreign vs home-grown multinationals* (e.g. Hervas-Oliver and Albors-Garrigos, 2008a; Sedita et al., 2013; Belussi and De Propris, 2013[4]) started to point to the necessity to look at local firms differently, some of them capable of transiting from SMEs to medium-size firms with extensive international activity and even investing and developing operations across borders. Interestingly, this started to separate the traditional foreign multinationals, less embedded in districts and not always aligning their interests with local ones from those deeply embedded, organically grown and usually leaders and technology gatekeepers of local value chains. The idea is basically that there are leading firms orchestrating local networks of SMEs (see Lorenzoni and Lipparini, 1999). These firms are the ones supplying knowledge to local networks and conducting R&D that is then diffused and spill over to the local SMEs. These multinationals acting as technology gatekeepers and leading firms[5] perform a multi-embeddedness process through internationalization of activities, facilitating the focal MID access to *Global Value Chains* (see De Marchi et al., 2017; Elola et al., 2013). In addition, these multinationals bring home new ideas but also diffuse local knowledge in other international settings (see Hervas-Oliver and Boix, 2013). Despite the usefulness of the topic of leading firms and home-grown multinationals, the Marshallian framework has not extensively researched on the phenomenon of multinationals, as pointed out in Belussi (2018) and Hervas-Oliver et al. (2020). Put differently, we have extensive but fragmented literature on this sub-line of inquiry, preventing integration and consolidation as part of the MID framework. These multinationals, of different nature, are usually positioned in the IDs Mark 3 generation. Bellandi and De Propris (2015) analyze the three generations of IDs, that is, the evolution of the idea and nature of industrial districts from Marshall's conceptualisation to today's realities and theorisations of the concept as model of industrial organization and development. In particular, after the Mark 1 (in brief, a kind of artisan model from the industrial revolution) and Mark 2 (in short, focused on flexible specialization and mass production), the ID Mark 3 is charcterized by local fims developing trans-local external economies and adapting to global forces and global value chains (GVCs) (e.g. Bellandi and Caloffi, 2008; Hervas-Oliver and Boix, 2013), the presence of medium and large sized companies, even large home-grown multinationals and foreign multinationals, both interacting with local SMEs. Also, in IDs Mark 3 it is evidenced the existence of groups of firms within IDs. The latter is particularly emphasized when they claim that "*…emergence of …groups within IDs, with the latter growing in number in the most successful IDs*" (Bellandi and De Propris, 2015, page 83). Also, in IDs Mark 3 there are more knowledge intensive activities being developed as design and marketing, not only manufacturing, higher intensity of R&D and even links to the university system for accessing science-based knowledge to innovate. All these new factors co-exist with the learning-by-doing, sticky tacit knowledge and the usual

[4] Pocket multinationals

[5] Local supporting organizations can also be technology gatekeepers.

ones associated to IDs (such as presence of SMEs, high social capital, cooperation and competition, intensity of manufacturing activities and flexible specialization, labor mobility, etc.). Evidence about how intense they are from Mark 2, however, is scarce.

Accounting for multinational firms in districts, however, refers not only to home-grown ones but foreign multinationals. De Marchi et al. (2018:41) show how in different Italian districts, such as Riviera del Brenta (Veneto, Italy), foreign multinationals exert an influence on the focal local setting by concentrating production and even acquiring local firms. As shown, some local companies that specialized in the production of high-end shoes gradually gave up their own brands to produce for global brands such as Prada and Armani. The net effect, however, is said to be positive, that is, advantages outperform disadvantages due to the integration in Global Value Chains that facilitates district openness. Similarly, Hervas-Oliver et al. (2022) show how ZARA's position in the Vinalopo Footwear District (Alicante, Spain) spills-over knowedge (innovation, design, marketing, trends, etc.). The company is said to perform *labor poaching*, however, by nurturing its own capabilities with technicians from advanced local firms. Overall, the net effects are also said to be positive, as the district became a global hub for footwear design and manufacturing, despite the largest share of ZARA production offshored to different countries such as India or China. The presence of the global multinational in the district, however, shapes the local rules of the game and brings new institutions more based on formal rules. Without ruling out the existence of the trust or social norms characteristics of industrial districts, the study by Belso-Martínez et al. (2018) of ZARA in the district points out that the latter mostly hold for local (SME) firms' interactions. Networking (subcontracting) with the global brand, however, is mostly done by other formal (institutions') rules. These studies open different questions to be solved. As a matter of fact, we need answers to new questions not previously accounted for understanding multinatinals: Does it mean that we have one district with different institutions? Are trust and other socially-thick intensive characteristics accountable for those foreign multinationals? Are institutions in districts different between home-grown and foreign multinationals' relationships with local SMEs?

From a different perspective and district, Hervas-Oliver et al. (2023a) show how since 2012 the Castellon ceramic tile district in Spain, a canonical Marshallian industrial district, is radically shaped by a wave of massive acquisitions of local firms that have dramatically transformed the competitive arena: while in 2002 the largest local market share owned by a district firm was 5%, in 2022 just six (equity-linked) groups concentrated 62% of local ceramic tile production. As above mentioned, while acquisitions and the concentration of production and local business groups formation are not new (e.g. Cainelli et al., 2006), private equity firms (investment funds) in districts are quite new and controversial. While there are local groups acquiring local firms, the different type of foreign (multinational) companies involved in the acquisiton process is really interesting: local groups, foreign multinationals and private equity funds. The latter is the least known one. Usually, the district literature shows different districts where foreign companies acquire local firms targeting specific knowledge or technical skills, as in Riviera del Brenta (e.g. De Marchi et al., 2018). In the Castellon case, however, as Hervas-Oliver et al. (2023b) show, private equity funds (PEFs), that is, venture capital, target local companies to (buy out) gain some percentage of ownership and control and later sell them off for profit. These financially-oriented companies are driven by a buy-and-sell strategy to maximize profits in the short term. While productive multinationals (service-oriented ones, such as global distributors or manufacturing ones) might bring new capabilities, international networks, knowledge and synergies, those financially-oriented companies' purpose is just to buy cheap and sell higher. Put differently, these new types of (financial) multinationals are not bringing access to international networks, knowledge or providing access to GVCs.

2.1. Understanding better PEFs

Private Equity Funds (PEF) has sparked a growing interest in the academic world (McGrath & Nerkar, 2023) and shows an impressive growth in most industries and nations (Bernstein, Lerner, Sorensen, & Stromberg, 2017). A key activity of PEFs is to make acquisitions by buying companies. These acquired companies are then restructured, both operationally and financially, in order to generate financial returns before the fund exits the investment by selling the company (Appelbaum and Batt 2014). Regarding the positive effects on target (acquired) companies, as recently documented in some work

(Gompers et al. 2016), PEF investors place great emphasis on both their ability to select promising companies and their ability to add value through financial, governance and operational engineering. Sometimes, investors often operate in the industry they know, so their expertise can be used directly and more effectively to enhance and improve the company's processes. They also bring to the company a wide range of contacts and managerial practices that can give it an advantage over its competitors. Some studies suggest that their influence leads to increased profits for companies in the long run (Chesini & Giaretta, 2013). Finance is showed as a key benefit for target firms, helping small and medium-sized enterprises to access finance for expansion, and supporting underperforming firms to generate good returns for investors (Appelbaum and Batt, 2014, p. 268). On the negative side, there is a particularly important element that affects the companies themselves in which this type of capital enters. According to some studies, strategies in pursuit of high returns make PEF-owned firms more prone to bankruptcy, with the social costs that this entails (Batt and Morgan 2020, Morgan and Nasir 2021).

2.2. PEFs in IDs?

In this chain of thought, what is the value added to the local district by these financial companies? PEFs are reported to improve local firms by reducing costs, achieving synergies or introducing more professional managerial systems, even forming new bigger groups to achieve synergies, increase their size and improve finance (Hervas-Oliver et al., 2023a). Their main goal, however, is to sell them off as soon as possible.

As evidenced in Hervas-Oliver et al. (2023b), Carlyle Group is a world-class private equity fund, the sixth largest by capital raised, according to PEI300 ranking (see here https://www.privateequityinternational.com/pei-300/#pei-300-full-ranking). This company is active in three (financial) business segments: global private equity, global credit and global investment solutions. Its main strategy is to invest in evaluating in-depth focal target companies to find opportunities to create value for its investors. Carlyle then helps the company to grow and perform better while constantly looking for premium valuation for its acquisitions in order to sell them. The focal case in point, the Castellon ceramic tile district, is a global hub for ceramic tile (chemical) decoration capabilities, as the world-class companies feeding the different clusters worldwide are most of them indigenous to Castellon (see Hervas-Oliver and Albors-Garrigos, 2007; 2008b). These companies were 20 in 2010; in 2023, only two groups (Carlyle and Torrecid) account for 90% of the district's (chemical) decoration product exports (inks and frits for ceramic tile decoration). While Torrecid is still a private (organically grown and locally embedded) company, with a long tradition in the district, the PEF Carlyle clustered the other big competitors in the ceramic tile decoration auxiliary industry by acquiring Altadia.

The story is as follows. In 2017, Lone Star (an American PEF) acquired Ferro, Esmalglass, Itaca and Fritta (four out of the top leading chemical firms in the district) forming Younexa group, that is, around 60% of the (chemical products for ceramic tile decoration) sales in the district. Lone Star renamed renamed the group as Altadia in 2021 and sold it off in 2022 to Carlyle, making a profit of 775 Million Euro in just under five years. As a result, the local fierce competition for decoration of ceramic tiles that constituted an essential element of the local innovation engine turned into a duopoly *de facto* (see Hervas-Oliver et al., 2023b) by Torrecid and Carlyle. Is this new duopoly the kind of specialized suppliers that feed the local SMEs that we know from the MID framework? Is this duopoly good or bad for the focal local district?

In the two districts analyzed, Vinalopo footwear in Alicante and Castellon ceramic tiles, the composition of family-run local SMEs are now a minority, at least in terms of sales. While the former is only one big global multinational (ZARA), the latter is characterized by different multinationals, including PEFs. Riviera del Brenta followed suit and the presence of large (multinationals) brands shapes the local production system. As shown in these cases, those PEFs and foreign multinationals, attracted by excellent localization economies, transformed the district entirely, with uncertain outcomes for the long term. In this chain of thought, non-exhaustive different new research lines show up to accommodate these new actors in the MID framework:

- Are these foreign (PEFs) multinationals bringing new institutions (trust, loyalty, etc.,) to the focal local setting?

- Can we keep counting on the canonical idea of the sense of belonging when firm ownership is not local anymore?
- Is this financial, rather than productive, approach brought by PEFs beneficial for the district?
- How does the entrance of foreign firms affect cooperation and networking in local settings?

We need to incorporate these new realities into the MID framework, through theorizing and gathering empirical evidence, researching whether the fundamentals of trust, loyalty and other socially-driven elements that are characteristics of the MID *corpore*, still exist, are becoming no longer applicable to present boundary conditions. While inter-personal ties are not necessarily affected, we do not know about inter-firm cooperation between the new larger productive groups and local SMEs. The same applies for the new financially-oriented ones orchestrated by venture capital. In the light of this discussion, we have more open questions than answers.

3. Dicussion and conclusions

Since its development in the late 70s and early 80s (e.g. Brusco, 1982; Becattini, 1979), the MID, and its sister *mileux innovateur* (e.g. Aydalot, 1986), have evolved into an idiosyncratic framework for elucidating the existence of enduring product and innovation disparities across territories and successful cases of endogenous local development under the premise of cooperation and competition, social ties and the articulation of innovation engines that support SME innovation. This study takes stock of the emerging body of work on multinationals in MIDs and identifies a number of unresolved issues that demand further research. We centre on one broad theme in the MID framework tht is multinationals, and summarize our argument with the following points reflected in the unanswered questions that might shape future research agendas:

- Do manufactuing-based multinationals bring different institutions into IDs?
- Are trust and other socially-thick intensive characteristics of IDs accountable for those foreign multinationals?
- Are institutions in districts different between home-grown and foreign multinationals' relationships with local SMEs?
- Are PEF multinationals bringing new institutions (trust, loyalty, etc.,) to the focal local setting?
- How does ownership infuence IDs?
- Can we keep counting on the canonical idea of the *sense of belonging* when firm ownership is not local anymore?
- Is this financial, rather than productive, approach brought by PEFs positive or negative for the district?
- How does the entrance of foreign firms affect cooperation and networking in local settings?

As conclusions, we point out the following ideas. First, we contend that future research needs to pay close attention to the *effects* that multinationals exert on clusters. While positive effects are reported (e.g. new knowledge, access to international networks, etc.), negative ones are also evidenced (labor poaching, distortion of local institutions, asymmetric relationships with local SMEs, etc.). We need to explore further specific elements of the MID framework and their possible change from the pressure exerted by collocated multinationals. In addition, the integration of different yet related sublines of inquiry seems important, such as GVCs (see Carmineet et al., 2024 in this issue).

Second, extensive research is needed to map and analyze the effect that private equity funds, a new kind of actor, might bring to the MID framework. While their positive economic rationale for target local firms (e.g. cost reduction, synergies based on larger groups, access to finance, etc.,) is also acknowledged (see Hervas-Oliver et al., 2023b), negative impacts are also shown (e.g. formation of concentrations that might distort competition, short-term visions or distorting some canonical characteristics based on local institutions – like sense of belonging, trust or cooperation – among others).

Third, we propose that future work should delve into the above topics by extending investigations across other industrial districts not reviewed in this present study in order to aggregate more evidence to fill in the MID framework, avoiding fragmentation.

Lastly, we want to urge the necessity to cross-fertilize literature that brings insights important yet under-researched in the MID framework. For instance, as we are now facing the challenge of PEFs and other types of multinationals, new strands of literature from those topics need to be incorporated into the MID perspective (see Hervas-Oliver et al., 2020) in order to enrich the MID framework. Thus, multinational business analysis from the International Business literature, family-owned firms vs venture capital acquired (target) firms from the family business literature, among many other topics that might intersect the MID framework, should be incorportaed to undestand how they shape the MID constructs (for instance, see Li et al., 2018). As a matter of facts, it seems that the nature of *ownership* in MIDs drives different type of networking, evidencing that family firms (vs non-family ones) develop local embeddedness and networking differently (e.g. Pucci et al., 2020). As regards family firms (Gomez-Mejia et al., 2007), they are said to be the cornerstone of MIDs (e.g. Cucculelli & Storai, 2015; Pucci et al., 2020) but their research in MID literature is almost neglected. In addition, *familiness* (intangible aspects linked to non-financial goals, such as family business preservation) of MID firms is not explicitly highlighted enough in the MID literature. This omission, however, is compensated by implicitly assuming that MID literature consideration that local SMEs are mostly family-run business that present a deep attachment to the territory by social and family ties. We posit that analyzing the potential impact of PEFs on MIDs, can be achieved through understanding the relationship between PEFs and family firms, assuming that family firms are typical actors in IDs. Albeit we lack of evidence about family firms in MIDs (e.g. Pucci et al., 2020 can be an exception), we can first understand family firms and then theorize about PEF effects on family firms by adding the socio-economic layer.

Arguably, the research directions proposed in this study encompass a non-exhaustive selection of research questions within the multinational sub-line of inquiry. We believe that the MID framework and its scholar conversation need to evolve and adapt to new specific realities observed in territories. It seems that what started as an endogenous local development where SMEs could compete is gradually transforming into a hybrid and multinational-based version of itself, where the type of ownership matters much more than we thought. These challenges need to be listed in our research agenda, showing the new directions that deserve attention for old and new scholars.

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Articles

A global assemblage of tax haven clusters: profit shifting, tax dodging and money laundering

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Abstract:

In this paper, we examine tax haven clusters considering them as diverse but recognizable examples of about fifty phenomena worldwide rarely studied from an economic geography perspective. Three canonical but diverse examples of tax haven clusters are used for the analysis: Wilmington in Delaware (United States), Ireland (European Union), and Gibraltar (former European Union, now post-Brexit British Overseas Territory). The objects of study are not treated as being almost perfect expressions of the classical, canonical cluster configuration. On the contrary, we focus on the 'agentic' impulses of 'desire' motivating human action and use 'pattern recognition' to identify the features explaining these clusters and the 'agentic' actors motivating them. It is concluded that the characteristics of this type of clusters – tax haven clusters - require more recognition of the interactive and often innovative communication networks through which cluster members interact globally, given they exist within a global system akin to an 'assemblage'. Unlike other types of clusters, we confirm their extreme dependence on the legislation on which they are based as well as their fragility in the face of legislative changes imposed from the outside.

Keywords: Clusters; assemblages; tax havens; agency; desire.
JEL Classification: R1; K4; F2.

Un ensamblaje global de *clusters* de paraísos fiscales: transferencia de beneficios, evasión fiscal y blanqueo de capitales

Resumen:

En este artículo, examinamos los *clusters* de paraísos fiscales, considerándolos como ejemplos diversos pero reconocibles de alrededor de cincuenta fenómenos en todo el mundo, raramente estudiados desde una perspectiva de geografía económica. Para el análisis se utilizan tres ejemplos canónicos pero diversos de *clusters* de paraísos fiscales: Wilmington en Delaware (Estados Unidos), Irlanda (Unión Europea) y Gibraltar (antigua Unión Europea, ahora Territorio Británico de Ultramar post-Brexit). Los objetos de estudio no son tratados como expresiones casi perfectas de la configuración clásica y canónica del *cluster*. Por el contrario, nos centramos en los impulsos "agenticos" del "deseo" que motivan la acción humana y utilizamos el "reconocimiento de patrones" para identificar las características que explican estos grupos y los actores "agenticos" que los motivan. Se concluye que las características de este tipo de *clusters* - *clusters* de paraísos fiscales- requieren un mayor reconocimiento de las redes de comunicación interactivas y a menudo innovadoras a través de las cuales los miembros de los *clusters* interactúan globalmente, dado que existen dentro de un sistema global similar a un 'ensamblaje'. A diferencia de otro tipo de *clusters*, confirmamos su extrema dependencia de la legislación en la que se basan, así como su fragilidad ante los

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cambios legislativos impuestos desde el exterior.

Palabras clave: Clusters; ensamblajes; paraísos fiscales; agencia; deseo.
Clasificación JEL: R1; K4; F2.

1. Introduction

This is an unusual paper because it focuses on an unusual unit of analysis: tax haven clusters. In order to understand the characteristics of tax haven clusters, we seek to perform three main tasks.

Our first focus is on a widely present but mostly under-studied subject in the broad panoply of *cluster* analytics (Cooke, 2001; 2002; Lazzeretti, Capone, F. and Boix, R. (2012); Hervas Oliver et al. (2019), namely tax haven clusters. Prefiguratively *canonical* clusters of the kind so ably interrogated by Belussi (2018) consist of agglomeration in space, untraded as well as market dependencies, predominantly small and medium-sized enterprises, associative or agentic relationships, interaction with large firms inside or outside the cluster and knowledge acquisition, advisory, consultancy and knowledge translation services from research and innovation intermediaries - public and/or private. Tax haven clusters fit the bill almost perfectly, although their nature also confers on them unique characteristics. But until recently, although there are at least fifty such clusters worldwide research on them was fairly scant in the spatial science literature (Cooke, 2023).

The particularities of tax haven clusters requires a point of view alternative to the usual used for canonical cluster analysis. The second focus of our paper is to utilise and assess the value of 'assemblage theory' and its methodologies for future geographical cluster, cluster platform and wider global cluster network analysis (De Landa, 2019; Deleuze and Guattari, 2004; Buchanan, 2021). We do this by referencing key literature, reviewing relevant research, and applying it in this present contribution to new spatial science, spotlighting three tax haven clusters, namely Delaware, Ireland and Gibraltar.

In passing we wish to define the cluster-types we designate as geographical cluster, cluster platform and global cluster network. The first category (geographical cluster) is outlined above as *canonical cluster*. The *cluster platform* is characterised by overlapping clusters that form a 'platform' of 'related variety' clusters in proximity. This occurs, canonically, in Silicon Valley, which combines information and communication technology (ICT), biotechnology, digital media, cybersecurity, cleantech and electric automotive businesses in a horizontal array of technology clusters. These have their overlaps from relying on computation, for example, as the common 'general purpose technology' (e.g. ChatGPT for artificial intelligence [AI]; Jovanovic and Rousseau, 2005) while constructing distinctive relational 'sectoral assemblages'. The third category, the *global cluster assemblage* is like a global supply chain with one or more clusters embedded within it (Belussi, 2006). An example, drawn typically from biotechnology, would be the Cambridge (UK) biocluster which contains numerous Cambridge University spin-outs and more mature, evolved biotechs, incoming firms originating in distant clusters such as Cambridge, Massachusetts and global suppliers of diagnostics or contract drug manufacturing organisations (CDMOs) from, for example United States (US) (Catalent) or Korea (Celltrion; Jeong et al., 2023) with clients like Moderna, Johnson & Johnson and Novo Nordisk.

This paper is constructed as follows. The first main section covers three things. The first of these is to outline the 'pattern recognition' methodology, which is abductive and constructs explanation of a qualitative nature, based on interrogating truth claims, according to binary psychological traits. The second step is theoretical and uses critical assemblage theory modified because of its professed tolerance of 'amorality'. Given the nature of this enquiry this is an unacceptable form of discourse, in which the cause of 'amorality' is precisely the issue. So, its take on 'assemblage' is moderated with reference to 'thirdspace' reasoning which is tolerant of inclusivity rather than exclusivity (Bhaba, 1994; Soja, 1996; Appadurai, 1996). Finally, the third step is to reveal the deeper structure of motivation which it is shown lies in what may be called 'dark' as compared to 'lighter' psychological motivations for human action. In the second and third main sections accounts are given of the structure and mechanisms of our two lengthy accounts of representative tax haven clusters, including their 'agentic' actors and processes by which they are constrained and enabled. Then we anatomise anew the Gibraltar 'gaming' cluster. This leads to the final

section which contains discussion, conclusions and implications of such cluster practices as are revealed by the evidence.

2. Methodology: a novel approach to understanding clusters

Tax havens grounded in cluster-like structures are quite complex artifacts. Their study requires more complex methodological approaches than those based on traditional geographical clusters of regional science, business, and international business theories. In this section we begin briefly to explain the composite method we follow to disentangle those artifacts. First, we introduce an ontology based on agency and assemblage theory. Second, based on that ontology we apply abductive approach and pattern recognition to trace the elements on which tax haven clusters are grounded.

2.1. Philosophical approach: the assemblage theory

2.1.1. Assemblages territorialization

We introduce the philosophical notion of 'assemblage' to analyse the ontological distribution of agency across an arrangement resulting from a combination of things. The notion of assemblage finds its roots in Deleuze and Guattari (2004a,b) and describes a complex, dynamic, and non-hierarchical arrangement of various elements, both human and non-human, that come together to form a temporary and contingent whole, where the whole is more than the sum of the parts[1].

Two concepts are described which interact as drivers for the theory of 'assemblage':

a) The first is 'desire' which motivates all action in the human, animal and even the mechanical worlds. It is stronger than, for example, even the profit motive or arguably the quest for power though it can be tightly bound up with such impulses: 'there is no desiring-machine capable of being assembled without demolishing entire social sectors' (Deleuze and Guattari, 1983, 118).

b) The second is the 'abstract machine' which is the 'interlocking system of things' by which desire is expressed in the world (Buchanan, 2021). Typically, such relational 'things' take the form of markets (e.g. for tax avoidance; Jones et al, 2018); power generation systems (Cooke,2024); cities or regions (Rizzo et al., 2024); or research laboratories (Latour and Woolgar, 1979). 'Free money' is the key motivator for tax avoidance. Much depends on abstract but purposeful machines in this second dimension of the evolved 'assemblage'.

   Assemblages are related to 'places' through movements of 'territorialisation' and 'deterritorialization'. Territorialisation is an imbricated spatial form of the assemblage complex, which also has its 'rhizomatic' (non-hierarchized) underground and overground networks – obviously regarding power grids, cities and regions and tax haven 'profit shifting' offline and online equipment, whose intimate communication relays scientific knowledge and information over, by satellite and fibre, or under the sea by Internet cable.

c) Accompanying the two conceptual components of 'desire' and 'machinic abstraction' are 'agency' (or the 'agentic' impulse) activating the desire and the 'real' or 'material' product or outcome.

These are the process elements of the assemblage. In evolutionary terms each complex of active concepts and their products transforms territory by 'de-territorialisation' or 're-territorialisation'. Capital flows de-territorialise from their places or origin (that is one of the characteristics of capitalism) but then re-territorialize. Tax havens are extremely well geared for this necessity. In the words of Smith and Protevi (2018):

[1] An example is the man-horse-stirrup (Deleuze and Guattari, 2004a), in which once assembled to satisfy a necessity or desire (e.g. ploughing, military weapon), the three elements are not more independent pieces, but affect each other, increasing their functionality.

> *'Capitalism's command is utterly simple: connect deterritorialized flows of labor and capital and extract a surplus from that connection. Thus capitalism sets loose an enormous productive charge—connect those flows! Faster, faster!-the surpluses of which the institutions of private property try to register as belonging to individuals.'*

2.1.2. Tax haven clusters as bodies without organs

A powerful metaphor in 'assemblage' theory is the 'body without organs,' which is not a human but a 'corporate body' that comprises the 'agentic' motivator of desire, with the 'abstract machine' whose interlocking system parts - together comprise the 'assemblage,' set in its territory.

This 'machinic' descriptor is referred to by certain 'assemblage' theorists as 'New Materialism' because they adopt the 'assemblage' approach solely for the interlocking parts of the system and downgrade the 'desire' sub-system (De Landa, 2019). However, they are criticised by those who argue for the completeness of Deleuze and Guattari's dualistic version of 'assemblage' seeing large complex entities as an interesting, dynamic and evolving '*actualité*' or real set of phenomena, but uninteresting unless imbricated in the creative, innovative or replicative motivating 'desire' elements.

Such critique is *a fortiori* extended further in the dismissal of a further variant of 'New Materialism' in the form of 'Vital Materialism' which dispenses totally with the 'desire' element, analysing only the 'interlocking parts' system as the 'assemblage', which even exerts its own motivating impulse back on the 'arrows of desire' as the poet William Blake (Maidment, 2001) called them, activated by 'my bow of burning fire'. Thus, as the critic Buchanan (2021) explains there is research which, for example, endows the 'abstract machine' of geographical space with the origins of Sartre and De Beauvoir's discovery after 1941 of *existentialism* in Café de Flore in Paris, ascribing it to its *vital* 'assemblage' vibe, rather than to any human agentic intent, which seems to mistake an effect for a cause.

Finally, two significant second order concepts deserve mention in our hybrid theory. First, we return to Deleuze and Guattari's (2004) reference to assemblage's 'rhizomatic' character, which emphasises the underground/overground aspects of the complex – easily understood in the context of power generation and distribution systems with their underground gas pipelines and overground cabling 'filaments' which echo features expressive of mycology – but especially regarding the dark arts of 'profit shifting', money laundering and tax avoidance (legal) or evasion (illegal) among tax haven clusters.

2.1.3. Thirdspaces

And, finally, we wish to emphasise the hybridity of our version of assemblage theory'. In our analysis 'assemblage' is moderated away from its acceptance of 'amorality' by combining it with the geographical notion of 'thirdspace' which includes marginalised interests in its perspective.

Thirdspaces are social and cultural spaces that exist beyond traditional binary categorizations. These spaces are neither fully public nor private, urban nor rural, physical nor virtual. Instead, they are hybrid, overlapping zones where diverse social interactions and identities can flourish (Soja, 1996). Thirdspaces, unlike 'assemblages', treats exclusion (social, racial, historical) neutrally as a consequence of 'amoral' evolution (Soja, 1996; Bhaba, 1994; Appadurai, 1996; Thelen and Mahoney, 2010).

Understandably, tax havens involve significantly immoral relational and 'agentic' cluster activity. Tax havens are a type of hierarchical cluster in which the peak 'agentic' actors (the tax shifters) are absent, but which exercise a kind of 'quantum' space by being both present and absent simultaneously. Global intermediary agents represent them, for example, the Big 3 consultants, the Big 4 auditors and the Banks and, in turn, by *their* affiliates and nominees in the cluster as such 'agents' diminish to local cluster scale.

2.2. The method: abduction, pattern recognition and cross validation

Based on the previously announced philosophical ontology, we use an abductive methodological approach on which we position a pattern recognition process. Different from deductive and inductive approaches, the abductive approach is a form of reasoning that involves generating the best explanation or hypothesis for a set of observed facts (Peirce, 1994; Magnani, 2009). Abduction is often used when faced with incomplete or ambiguous information. For example: rain fell in the night because there are puddles in the street.

Pattern recognition is a process through which we make sense of observed data and information by identifying underlying patterns or regularities (Bishop, 2006). This combined method seeks the underlying lineaments beneath the visible or contextual surface. The data sources typically used in this kind of research are more qualitative than quantitative drawing upon 'grey literature' and on financial newsprint, websites, official government and consultancy reports and other 'fugitive' sources, as well as specialist academic literature, publications, reports, and books.

We apply this approach to three cases of study of tax haven cluster assemblage. Regarding the first two (Delaware and Ireland), we depart from an early elaboration in Cooke (2023). The third is Gibraltar, which constitutes another interesting case due to its pre- and post-Brexit circumstances.

3. Delaware tax-haven cluster: de-territorialization of banking, black boxes, and interest caps

3.1. Background

Weitzman (2022) explains Delaware's unique role as a state and tax haven, hosting many large U.S. corporate registrations and over a million smaller companies, while being the smallest state after Rhode Island. Wayne (2012) highlighted Wilmington's 1209 North Orange Street as one of the major corporate clusters in the World, with 285,000 businesses registered there. The Corporation Trust, part of Dutch company Wolters Kluwer, is central to this hub. Major companies like Ford, GMC, Coca-Cola, Intel, Google, and others have legal addresses there. These include specialised trusts, special purpose entities (SPEs) or special purpose vehicles (SPVs) crafting or processing Cayman Island credit default options (CDOs) that caused the Great Financial Crash. Despite the high-profile names, the office had only eighty low-paid clerical workers, not high-fee lawyers (Shaxson, 2012). Weitzman (2022) showed how Delaware, especially the Wilmington cluster, provided a haven not only for legal activities but also for criminal activities (money launderers, kleptocrats, etc.).

What are the main mechanisms derived from agency through which this assemblage internalizes benefits? The first is Delaware's business-formation industry, called 'the Franchise', that charged a $300 fee for firm registrations, generating $1.6 billion by 2020, accounting for 40% of the state's budget and keeping taxes low. The Franchise gives Delaware significant power, as it writes incorporation laws for the U.S. and many other countries[2]. A consequence is that this mechanism diverted funds from some of the poorest Americans.

The second is 'escheatment', which refers to unspent balances on expired gift cards from Delaware-incorporated companies, which revert to the state (Cooke 2024a)[3]. Since 1980, Delaware's corporate tax revenue declined from 50% to 2.5% of total revenue. In 2020, Delaware earned only $245 million from corporate income tax, making the Franchise tax the state's primary income source. However, 'escheatment' became the third largest source of funds, generating $444 million in 2020.

[2] For instance, the 2023 Fox News versus Dominion Voting Systems defamation trial, which settled for $787.5 million, was held in Wilmington because Fox was incorporated there. Fox also faced a $2.7 billion lawsuit from Smartmatic in 2023.

[3] Escheatment is exemplified from cases like Disney Company v. PwC which turn on the issuance of many kinds of gift cards (Cooke, 2024a).e

Another mechanism is Delaware's legal system. Many firms are incorporated there, leading to a high volume of litigation, bankruptcies, company registrations, and mergers and acquisitions, which provide income through high legal fees and related expenses (e.g. accommodation for lawyers and their staff):

> *'Attorney fees, lawyer fees in Delaware are the most expensive in the country, on average, more expensive than New York, more expensive than California. And Washington, D.C., they're the most expensive hourly rates' (Sadek, 2022).*

3.2. The formation of the assemblage: de-territorialization of the de-regulated banking and transformation of Delaware in tax haven

The state of Delaware, and Wilmington particularly, was historically a maritime, shipbuilding, foundry and railway stop on the New York City to Washigton DC rail line. Wilmington was a heavy industry port, which in 1802 was founded as a gunpowder manufacturer and grew to become headquarters of the Du Pont (now Chemours) chemical empire, benefiting from the US Civil War and subsequent conflicts.

Heavy industry dominated until post-World War 2 reconstruction, the arrival of the I-95 highway and urban renewal cleared the inner city, which led to serious race rioting in 1968. Subsequently, by 1981 it began 'de-territorializing' by capturing parts of the de-regulated banking, especially the credit-card industry, augmenting its growing Franchise 'business formation' (incorporation) and asset management industries. This had followed long after early tightening of business incorporation rules, which had diverted that business from New Jersey in the early 1910s.

New Jersey had been known as the 'traitor state' for its loose corporate legislation, for which then-Governor Woodrow Wilson had sought to cleanse it of its murky reputation. In mid-century, it promoted 'shell companies' to foreign investors who sought such 'black box' anonymity for often nefarious motives. Specialisation in incorporation of businesses led to Wilmington and its District of Delaware attracting the United States Bankruptcy Court, which became the busiest of the 94 federal bankruptcy courts in the US. Among the largest Wilmington employers is M&T Bank (Wilmington Trust Corporation) a provider of third-party trustee 'special purpose vehicle' (SPV) and administrative services to hedge funds, investment management, and private banking. The firm was founded as a banking, trust, and safe deposit company by paternalist Du Pont's 'agency' in 1903 then acquired by M&T bank in 2010, employing 1,900 by 2019; Blackrock Capital Management Inc, (which Varoufakis, 2023, 111, notes as the world's largest hedge fund and asset manager ahead of Vanguard and State Street, forming another 'Big 3' with shares in 90% of firms listed in the NYSE), employed 834 in 2019; and WSFS Financial Corporation included commercial banking, retail banking, cash management, trust and wealth management services that in 2019 employed 801.

There is an opaque episode that further explains the transformation of Delaware into a significant global tax haven, the origin of which lies in the early issuance of credit cards. It involves the decision in 1978 by the state of Nebraska to enable the First National Bank of Omaha to break the biblical-era 'usury' sanction for out-of-state cardholder interest rates. In the founding case, the target was consumers in neighbouring Minnesota. Could the Nebraska interest rate (18%) be charged to residents of Minnesota (capped at 12%)? The US Supreme Court ruled it could. Delaware's governor Pierre Du Pont, realised it could do the same as 'first-mover' South Dakota. This state had subsequently removed all interest caps. Doing so would enable dissemination of local credit cards countrywide on condition all major US banks were incorporated in Delaware.

Its Financial Center Development Act (FCDA) of 1981 facilitated that. Next the phenomenon of proto-cluster clientilism occurred at the venerable Wilmington Whist Club. Here local bankers expressed the fear that non-local oligopolists would out-compete them while the oligopolists, in turn, simply needed to operate in a lower-tax environment than New York. A compromise was reached in the 1981 FCDA that, while legally innovative, was morally indefensible. Delaware's tax ladder would be 'regressive', meaning local banks would be protected by a bank franchise interest cap of 8% on income below $20 million, 6% on $20-$25 million and so on, up to peak incomes of oligopolist subsidiaries incorporated in

Delaware that paid only 1.7%. Oligopoly banks, subsidiaries and intermediaries inundated Wilmington with local incorporations and its credit card business boomed. This in fact heralded and coincided with the rise to prominence of 'Reaganomics' after the 1980 US election. It also promulgated the debt-ridden complexities and catastrophes of the 2008-2009 Global Financial Crisis (Shaxson, 2012).

3.3. Geographical assemblage and thirdspace

Accordingly, it is possible to assess the resulting financial 'assemblage' from the qualitative data and interpretations made of the results. A simplified 'layering' of this 'thirdspace' (Bhaba, 1994; Soja, 1996; Thelen and Mahoney, 2010; De Landa, 2019) 'assemblage' and its community hubs indicate the following key nodes and networks:

a) First, at regional paradigm level, the 'reversibility' of the Delaware Valley up to Philadelphia and even Pittsburgh identifies a varied metropolitan 'carbonscape' composed of coal, steel, and shipyards. Delaware shared some of that, though Wilmington as its main city 'inverted' from a 'munitionscape' to a company town 'chemoscape' under the patriarchal, 'agentic' Du Pont interest.

b) At the regional regime level inter-state rivalry and the 'dark' reputation of, in particular, New Jersey led to regulated 'reversibility' that undermined New Jersey's lax and predatory business incorporation advantage. In De Landa (2019) 'amorality' as a cognitive value is an allowable sentiment in 'assemblage'. As a traditionally weak 'agentic' parastatal actor, Delaware nevertheless usurped New Jersey, also shaping a financial agency 'singularity' out of its 'agentic' Du Pont 'chemoscape' monoculture. A Du Pont heir – as Delaware state-governor - subsequently innovated legalised US 'anti-usury' conventions in the 1980s.

c) Deindustrialisation of Wilmington led to further collective 'agentic' initiative of a negative kind by the 'creative destruction' of worker and black residential districts with hegemonic 1960s 'carbonscape' transportation-led, urban renewal initiatives. More amorally but good for growth after the 1980s, the new century transitioned pre-feudal 'usury' reforms, near feudal 'Franchise' and 'escheatment' revenue-raising and business tax relief incentives. These favoured core banking and ancillary financial regulatory and jurisdictional 'singularity.' Alongside waterfront development, designation of the Financial Quarter and of federal institutions like the US Bankruptcy Court these anchored the new cyclical profile.

d) Finally, these consolidated into the Wilmington 'hub' that also sustains annually 6,000 University of Delaware graduates as a fintech talent pool, many of whom are cognitively and physically proximate through personal and transactional contacts to core commercial law, venturing, regulatory, political, and financial services markets. Accordingly, the assemblage had been 'territorialized', 'de-territorialized' then 're-territorialized' during three evolutionary cycles.

To reflect on the geographical 'assemblage' cycles mentioned, the 'rhizomatic' (De Landa, 2019) character of its non-linear 'everywhere' node and network spatial relations requires examination. Their 'fungal' nature implies both 'underground' and 'overground' aspects. The 'underground' aspects are captured in the darker elements like the amoral interactions of 'the Franchise' and 'escheatment,' involving business manipulation and that can even reach crimes tried in the Delaware Court of Chancery (its Federal Bankruptcy Court) such as fraudulence, embezzlement, tax avoidance, money-laundering, conflict of interest or corruption. The 'lighter' spatial relations are seen in Wilmington's 'agentic' history, from the Du Pont legacy to its colonial past as Fort Christina (the capital of New Sweden from 1638-1655). More recently, the replacement of the state's carbonscape legacy and transition to fintech embedded new nodes in major trader training at the University of Delaware, networks of fintech start-ups and new urban entrants to the Wilmington Financial Quarter.

4. Ireland tax-haven cluster: Schrödinger's Cat and anther Quantum Effect

The case of Ireland retains some of the core elements described in Delaware but fed with different fiscal transfer mechanisms. Unusual for 'institutional' analysis, each of O'Toole (2021) and O'Boyle & Allen (2021) refer to the 'agentic' architect(s) of this economic governance organisation as politician and shortly to be Prime Minister of Ireland Séan Lemass (1959-1966) and civil servant T.K. (Ken) Whitaker, secretary to the Irish Department of Finance. Advised initially in 1952 by US consultancy Stacy May to emulate Puerto Rico by becoming a tax haven, Whitaker led a small team of officials to write a 250-page document entitled *Economic Development.*

In 1959, Lemass succeeded Éamon De Valera as President. Lemass, who had long disagreed with De Valera's import substitution policy, supported Whitaker's alternative. The government endorsed the *Economic Development* analysis and approved the white paper *Programme for Economic Expansion*, aiming to double economic growth to 2%, develop export-oriented industrial production, attract foreign capital, reduce trade barriers, and improve workforce skills and technology. This policy was adopted in 1959, with Ireland's Foreign Investment Agency (IDA) as the main facilitator. However, O'Boyle & Allen (2021) note that the shift towards becoming a tax haven really began earlier, with the *Export Profits Tax Relief* in 1956 that had pointed the way towards 'Tax Haven Ireland'. The Shannon Airport Free Trade Zone established in 1959, symbolized the IDA's success in attracting US investors to 'double your after-tax profits'. Its generous tax regime rose for capital allowances from 20% in 1956 to 100% in 1978 with capital depreciation varying from 10% to 25% annually and 50 per cent tax relief for five years on exports (Donnelly, 2013).

By the 1980s, Ireland's tax haven strategy had succeeded, attracting significant US tech foreign direct investment (FDI). The IDA promoted university city growth outside Dublin as a successful geographical translation of the state's *Programme for Economic Expansion*, particularly benefiting the rural West. Cork (University College) was a key beneficiary of FDI attraction to outer growth locations. For instance, the Apple plant, opened in 1980, was situated near Cork airport as overseas manufacturer of the successful Apple Mac PC. Similarly, near UC Galway, the first overseas Digital Equipment (DEC) plant was established in 1971, though it closed in 1998 after being acquired by Compaq, which was later absorbed by Hewlett Packard in 2002.

What caused this FDI roller-coaster? According to O'Boyle & Allen (2021), Apple's Hollyhill site was among the last opened before the European Union (EU) abolished Ireland's Export Tax Relief Scheme in 1981, which had guaranteed zero tax for firms exporting products. Those arriving before 1981 continued to benefit for a decade. But by 1984, the Fine Gael government sought ways for US investors to avoid taxes in Ireland. In 1991, when Apple faced financial issues, it hinted at leaving Ireland due to high recorded profits. Apple argued this was due to intellectual property and branding, not manufacturing. They proposed reducing reported net profit from $270 million to $30-40 million, with Ireland helping to 'disappear' the remaining $230 million, reminiscent of Schrödinger's Cat—both present and absent, alive and dead. O'Toole (2021) ventriloquises the meeting with state's agents accepting the following:

> *"...we'll say that the profit we make in Ireland is $30-$40 million, you will agree to collect the tax on that amount, and we will both be happy. All you need to do is to accept that the rest of the money exists in that place that has always been so central to the Irish imagination: elsewhere" (O'Toole, 2021, 495).*

So, Apple established two Irish incorporated companies as part of the Apple holding: Apple Sales International and Apple Operations Europe. The profits recorded by these two offices were assigned to a 'head office' which did not exist. Accordingly, they were not subject to tax in any country and the after-tax $30-40 million (to the Irish Revenue) residue (of $230 million) had 'disappeared', or in O'Toole's (2021) words:

> *"… a new kind of unknown known…about profit rates and companies that were not companies and magical money that could be everywhere and nowhere" (O'Toole, 2021, 496).*

From the late 1980s until its dismantling in 2014, the 'Double Irish' tax scheme was the largest tax avoidance tool in history, shielding $100 billion annually by 2010 in US multinational foreign profits from taxation. Prime Minister Haughey boosted Ireland's tax haven status by establishing the Irish Financial Services Centre (IFSC), transforming it into a conduit for tax haven activities rather than just an FDI platform. Despite claims of the Irish state that the country was not a tax haven because incentives built businesses and created jobs in Ireland, capital flow data from the IFSC contradicted this. The IFSC culture included illegal schemes like the Ansbacher Cayman scheme and allowed investors to incorporate without becoming residents (à la Delaware), relying on competitive global tax regimes. O'Boyle & Allen (2021) highlighted how intellectual property rights were used to exaggerate transfer pricing between corporations in different jurisdictions. In 2016, the EU fined Apple €13 billion for shielding €111 billion in profits from US and Irish taxes between 2004 and 2014, the largest tax fine in history. The Irish state opposed this fine.

Coming back to the Apple example, the company created valuable intellectual property rights (IPR) which it then sold to an Irish incorporated firm run out of, say, the Cayman Islands. For the US Internal Revenue Service, the Cayman entity is actually *bona fide* Irish thus a Controlled Foreign Company (CFC) which avoids US taxation. Apple then contacts the Irish Revenue that sees Apple as a CFC controlled from Cayman therefore tax resident in the West Indies. The Cayman controlled entity then licenses the IPRs to a second Irish company (hence 'Double Irish'). This one, being in the EU, can trade the IPR there tariff-free at an accepted profit of, say, 95%. This returns to the second Irish firm, having paid Corporate Profit Tax (CPT) of, say, 33% on the 5% owing, a negligible sum. In Ireland CPT at 12.5% is avoided by the Irish entity for the Cayman entity's IPR. This sum is taxed in Cayman at 0% meaning Apple retains the 95%. Because of the Irish Revenue's withholding tax of 20% for transfers to known tax havens, the Irish entity sends the sum to an EU (possibly Dutch) firm that is not liable for such charges. Thus, the two Irish entities represent the 'Double Irish' tax avoidance trick and the Dutch client acts as the 'Dutch Sandwich'. This enabled Apple to become the world's greatest hoarder of avoided taxation, estimated at $246 billion in 2017 starting from 1991 with Apple's variant dating from the early 1980s (O'Boyle & Allen, 2021).

But the list is not limited to Apple. Major Irish accounting and law firms in the IFSC, such as Matheson, Arthur Cox, and Goodbody, have created and managed significant tax avoidance schemes, including a €1 billion per year variant of the 'Double Irish' for Microsoft. Irish tax lawyers developed international tax tools like the 'Single Malt,' using Malta as a counterpart tax haven instead of Bermuda. This also included a further Irish bilateral tax treaty with the United Arab Emirates (UAE) which still pertains.

By 2010, the 'Dutch Sandwich' was eliminated under the Organization for Economic Co-operation and Development's (OECD) BEPS (base erosion profit shifting) anti-transfer pricing rules. The Irish Finance Minister then promoted the 'Green Jersey' scheme involving Jersey as another tax haven. By 2017, the 'Single Malt' was replacing the 'Double Irish' scheme. Major companies like Apple, Google, Facebook, and Pfizer transitioned to new tax avoidance tools like Capital Allowances for Intangible Assets (CAIA), Section 110 Special Purpose Vehicles (SPV), Qualifying Investor Alternative Investment Fund (QIAIF), and Irish Collective Asset-management Vehicle (ICAV), reinforcing Ireland's tax haven status. A University of Amsterdam study identified the IFSC as one of the world's largest conduits Offshore Financial Centres for corporate tax avoidance (Zucman, 2015).

5. A validation-case: Gibraltar, between 'the Rock' and a Not So Hard Place

5.1. Background

Our third case of study is Gibraltar. If our first cluster under study (Delaware) was specialized in finance and the second (Ireland) in tech companies, our third case study has an unusual specialization that makes it particularly interesting: online gambling.

Gibraltar is a small British Overseas Territory of less than 7 km2, (2.6 miles) and with only 33,000 residents, embedded in the southern part of the Spanish region of Andalucia. It was originally part of Spain but was captured by the Anglo-Dutch fleet during the War of the Spanish Succession and ceded to Great Britain in the Treaty of Utrecht (1713).

Gibraltar's transformation into a tax haven is linked to its status as a British Overseas Territory with a legal system based on British common law but a distinct tax system. Historically claimed by the Spanish state as part of its territory, from 1946, Gibraltar was listed as a territory without self-governance. In 1960, the United Nations (UN) declared its right to be a colony.

To counteract the increasing demand for self-determination and independence of Gibraltar and the pressure of Spain to recover control of the territory under international law, Great Britain increased Gibraltar's rights and autonomy in the constitutions of 1964 and in 1969. Gibraltar was recognised as a British colony with an autonomous government: the parliament (House of Assembly) is locally elected and is responsible for all domestic matters, including financial services, taxation, company law and commerce, whereas the United Kingdom (UK) remained responsible for internal security, defence and foreign affairs. In 1970 the UN recommended no longer considering Gibraltar a colony although by then Gibraltar had already developed a more autonomous position.

With Gibraltar holding a high degree of autonomy in legislative and economic matters, the Income Tax Ordinance was introduced in 1968. This ordinance aimed to attract international business and foreign investment by offering a favourable tax regime based on low corporate taxes and tax exemptions, while sovereignty under British law provided legal stability and predictability to business and investors. Corporate tax rates were considerably lower than those of many other jurisdictions (including the UK). At the same time, the Ordinance introduced various tax exemptions that increased over time: exemption subsequently concerned value-added tax, capital gains tax, wealth tax, inheritance and donation tax and estate duty. In addition, these advantages also applied for offshore incomes of companies with a permanent presence in Gibraltar.

This made Gibraltar appealing to business engaged in international trade and financial services and helped in attracting business looking to minimize their tax liabilities. Accession in 1973 by the UK to what subsequently became the European Union gave Gibraltar full access to the European market so that by establishing a company in Gibraltar a firm acquired passport rights: it did not need to establish subsidiaries in other EU countries to set up branch operations and provide services to other European member countries, while also enjoying the advantages of Gibraltar legislation and taxation.

In 1989 the Gibraltar government passed Financial Services Commission Act. The Act established the Gibraltar Financial Services Commission (GFSC), a body of supervision and regulation of financial services. It is the regulatory authority responsible for overseeing financial services in the territory and compliance with international standards and regulations (Schembri, 2018). The GFSC nowadays supervises a broad range of firms including: auditors, banks, company managers, e-money institutions, professional trustees, payment services providers, funds and fund service providers, insurance companies, managers and intermediaries, investment firms, and insolvency practitioners. The activities of the GFSC subsequently facilitated the attraction of financial and gambling companies.

In 2011, Gibraltar increased tax advantages for companies, taxing only income generated locally, which was minimal. Following the Great Crash, this move acknowledged that globalization, financialization, and digital trading had intensified tax competition for mobile capital. The corporate tax

rate was cut to 10%, less than half the EU average of 21%, attracting funds, online gambling, and offshore companies with no significant local economic activity. In 2013, Spain accused Gibraltar of dishonest tax practices and included it in its list of tax havens due to its tax advantages as well as tobacco and drug trafficking issues.

Further disruptions to global investment led multilateral bodies like the UN, EU, and OECD to increase controls on corporate tax rates and 'profit shifting' to tax havens, raising EU corporate taxes to 12.5%. Brexit in 2019 changed Gibraltar's status, with the EU designating it a British colony in the visa regulation. Post-Brexit agreements with the EU now require negotiation between the UK and Spain. The EU Council stated that any UK-EU agreements on Gibraltar need Spain's prior approval (European Council meeting 25 November 2019). Brexit memorandums aimed to curb tax avoidance by ensuring Gibraltar-based companies and individuals with false residency are taxed according to EU regulations. Gibraltar must also exchange tax information with Spain and other EU countries.

As of 2024, Gibraltar remains on Spain's list of tax havens. Post-Brexit, regulatory changes ended Gibraltar's passporting rights with the EU from the end of 2023, limiting service provision without separate licenses and reducing double taxation agreements. International pressure from the OECD, EU, and Spain suggests that Gibraltar's banking secrecy could be affected if it fails to meet agreements with Spain. However, this had not occurred, and Spain continues to list Gibraltar as a tax haven.

4.2. The formation of the assemblage: from colony to gambling tax haven

The clustering of online betting and gambling companies in Gibraltar began in 1961 with the UK's *Betting and Gaming Act 1960*, which legalized betting shops. This permitted licensed bookmakers to establish betting shops nationwide. Gibraltar, as a British Overseas Territory, followed suit and permitted the establishment of betting shops. Over time, Gibraltar became a hub for gambling companies due to two key factors.

First, Gibraltar's stable legal environment has made it attractive for company 'offshoring' registrations. In 1998, the Gibraltar Regulatory Authority (GRA) was established, later extending to online gambling. The Gibraltar Gambling Act 2005 regulates gambling with codes of practice, including anti-money laundering and data protection controls. The Minister, advised by the Gibraltar Gambling Commissioner (GGC), acts as Licensing Authority. This has made Gibraltar appealing to gaming and betting companies, and in particular for the UK sportsbooks (fixed-odds betting e.g. Bet365; Entain [Ladbrokes/Coral]; Betfair; Betfred, and others; Betfair merged with Paddy Power and is now listed as 'Flutter' in Dublin).

Second, Gibraltar's low taxes are attractive: companies pay 12.5% corporation tax (compared to 15% in the UK or 25% for the rest of activities), and Pay As You Earn (PAYE) income tax is only on Gibraltar-derived income for firms and non-residents. Additionally, there are no taxes on VAT or capital gains, and only 0.15% tax on Gross Gambling Yield (GGY).

These advantages encouraged UK gambling firms to migrate to Gibraltar. Victor Chandler (BetVictor) was one of the first, followed by others like William Hill and Ladbrokes (now Entain) to save on taxes. Qualified technical and professional services, such as software and internet providers, also moved to Gibraltar, creating a supportive cluster infrastructure for online gambling. Crucial was the technological upgrading, including high-speed internet and advanced telecommunications systems essential for online platforms. Over time, Gibraltar developed a pool of experienced English-speaking professionals in legal, IT, accounting, and other services related to the online gambling industry, reminiscent in some aspects of the Delaware case.

Hence, these conditions attracted numerous online gambling companies so that the sector could account for about 40% of Gibraltar's GDP and more than 3,800 jobs (about 13% of Gibraltar's jobs). According to Gibraltar government official data, in 2023 there were 39 companies licensed as remote gambling (including casinos), betting or bookmaker operators in Gibraltar, although some of them hold

their main operations and headquarters in other places[4]. Some of those firms include businesses also specialising in gaming and online casinos[5]. It is clear that typical cluster support activities are present to the predominant gambling, gaming and casino incumbents. However global regulatory and jurisdictional impulses affect the fluidity of ownership, specialisation and location as indicated in the acquisition tags and movements towards the US market and the perceived advantages of location inside or outside the EU.

Gibraltar's journey to today's British Overseas Territory from a military colony to a tax haven cluster has been shaped by its unique geopolitical and historical context. The territory's low-tax regime, regulatory framework, legal structure, and access to the EU, have attracted businesses and investors seeking to optimize their tax liabilities (EC, 2017). However, Gibraltar's tax haven status is not without challenges. Some of the main pieces of the assemblage have been changing after Brexit, favouring a process of deterritorialization, in which lightweight companies that want to preserve their status and benefits have started to move to other tax havens and tax spots, as for example Malta or the Spanish autonomous cities of Ceuta and Melilla in the North of Africa, which enjoy special taxation regimes.

The two main changes for the future – shared with other clouds on the tax haven horizon are: international regulatory discourse against tax evasion, money laundering (penalties and fines are growing exponentially (e.g. Entain's – 2023 - £615 million [$777 million)] UK fine for bribery cf. earlier fines of £20 million for money-laundering). OECD's Common Reporting Standard (CRS) and Base Erosion and Profit Shifting (BEPS) initiative influencing Gibraltar/UK compliance. And, again, Gibraltar is affected by UK's Brexit decision that weakened Gibraltar's specific tax haven status (Tatham, 2017). Accordingly, with alternative aspirant locations waiting, since 2018 some gambling operators have moved their headquarters or main operations to Malta: Bet365, 888 Holdings, William Hill, (Dublin HQ for Flutter Entertainment; Malta for International Operations Pokerstars, Singular and Paddy Power Betfair) and Betclic Everest.

6. Discussion and Conclusions: Deconstructing a Cluster

The three case studies of Delaware, Ireland and Gibraltar draw a unique type of clusters: tax haven clusters. The theories developed around the canonical cluster model pose limitations for studying other types of different clusters. In our case, we have used a theoretical framework based on agency, assemblages and thirdspaces. This leads us to conclude that there are cases of clusters that differ from the canonical model of geographic cluster to which the literature usually refers.

Secondly, through this framework, we have been able to conclude that at least three elements are related to the creation of those tax haven clusters that can be found in many other tax haven clusters. The first is its colonial past, and it is from legal autonomy that the transformation begins. This shift is part of

[4] Ladbrokes-Coral (LC) International & ElectraWorks (formerly GVC Holdings PLC, since LC became 2023 Entain), BV Gaming, 32 Red Plc, Virtual Global Digital Services Ltd (888.com Plc), Onisac Limited, WHG International, Hillside (Bet365 Group), Petfre Gibraltar (Betfred), Gamesys Operations International Plc, Tombola (in 2022 acquired by Flutter, former Paddy Power-Betfair) , Markor Technology, IGT (including GTECH), EU Lotto, Realistic Games Evolution NetEnt, LNW Gaming (formerly SG Digital), Greentube, Inspired Gaming, Boylesports, Oakwood Systems, Platinum Gaming (formerly Stan James), Pariplay, Yggdrasil Gaming, Ormston (Playtech group), Gameiom Technologies, Blueprint Technologies, SBTech, PragmaticPlay, Maple International Ventures (Lottomart), Virgin Bet, Roxor Gaming, Livescore Betting & Gaming, Skywind, Relax Gaming, Grace Media, Jocularis, Instant Win Gaming, Apricot Systems, Play'N Go, Rank Interactive, Bede Gaming, Univam (Boldplay), Eyas Services, FSB Technology, QuinnBet, Sportradar AG, Bragg Gaming, and Tamaris.

5 Gamesys Operations International Plc. which is a US (Bally's Group) online gaming and casino acquisition with brands such as: Rainbow Riches Casino, Virgin Games, Virgin Casino, Vera&John, InterCasino Monopoly Casino, Starspins, Tropicana Casino, Jackpotjoy, Heart Bingo, and Botema. Inspired Gaming is a global games technology company, supplying Virtual Sports, Mobile Gaming and server-based gaming systems with associated terminals and digital content to regulated betting and gaming operators around the world. Evolution NetEnt is a provider of gaming software to online casino operators. Yggdrasil Gaming specialises in video slots, lottery games, instant Lotto products and Keno games. They also have a portfolio of Mobile and online Scratch games available to play on computers, mobiles and tablets. Others may be accessed from the above list. Specialist software supplier Markor Technology offers B2B gaming software and services for the online casino industry. Markor Technology's headquarters is located in Gibraltar. Competitors in this space include Pragmatic Play (Gibraltar, operated by Tamaris), Spribe (Kyiv, this is an iGaming studio founded in 2018 in Ukraine. The company markets Turbo Games - its gaming section is an optimal combination of new generation games with traditional elements); and Your Story Interactive. (which is an independent game development studio located in Chisinau, the capital of Moldova).

the long-term tax haven timeline, similar to other post-colonial outposts of former empires, as described by Buchanan (2021) as the ultimate functioning 'assemblage'. Thus recall Delaware was once a colonial outpost of the Swedish, then the British, crown before American independence. Ireland was a colonial 'foodscape' based on its largely agricultural assemblage, then after independence, developed its FDI 'technoscape' led by Apple and other IT giants, until today it has been re-territorialised, notably in its Dublin financial cluster as a 'offshorescape' for profit shifting tax avoidance. Finally, Gibraltar de-territorialised from a colonial 'navyscape' to a post-colonial 'resortscape' and presently its re-territorialised status is as a leading 'gamingscape' located in its Europort cluster.

The largest question, which we cannot resolve but may suggest some leads towards understanding, is how 'colonialism' and its post-colonial aftermath leads so commonly to tax haven cluster status. One important reason is that the colonial experience is socially, politically, and culturally so traumatic that the colony seeks to relieve the trauma by a desperate quest for ontological security through risky financialisation as it aspires/desires to achieve relative affluence to insure against its endemic lack of resilience, or fragility (Taleb, 2012).

The desire for colonies is often summarized as 'God, Gold, and Glory,' but it is more complex. Religion was a significant motivation for European colonizers, who saw themselves as civilizing native peoples. Different religions played a role, such as the Catholic and Protestant motivations behind European colonization. For instance, New England was colonized by Puritans rejecting the wealth and corruption of the Catholic Church, while the Spanish conquistadors sought both gold and the salvation of native souls. Non-European powers like the Japanese also pursued territorial expansion for gold and glory rather than religious reasons.

So, the motivations are both complex and contradictory, but they come together in the desire ultimately for 'control' and its corollary for the colonised of 'freedom' from control. Deleuze and Guattari (2004a) are clear states are necessarily oppressive, representing an 'abstract interest' in resisting domination from the 'other'. Power thus takes 'active' and 'reactive' forms. That is 'power over' and 'power to'. Both state and market (capitalism) are ultimately regressive towards everyone, but some have a greater interest in their continuing subordination i.e. the financially favoured (Appadurai, 1996; Kapoor, 2004).

The second element is the existence of predatory/maximizing agents, companies or individuals, and the amoral/optimizing behaviour they exhibit in the use of tax havens. The third element is the appropriation of functions and the cannibalization of rents from functionally or geographically connected territories. In this game there are two winners and many losers. Tax haven clusters and the companies/actors that use them make a profit from their residents at the expense of other states (most of whom do not use the services of tax havens).

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Articles

Sustainability Strategies in Clusters and The Role of Communication

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Abstract:

Environmental sustainability impacts on industrial districts and their lifecycle evolutionary processes. Nevertheless, research in this direction is scant, suggesting on the one hand, the role of lead firms of global value chains and, on the other hand, potential contributions of suppliers. The paper explores how district firms have invested in sustainability by analyzing sustainable-oriented communication strategies (certification, web, exhibitions) of Italian leather and jewelry clusters. Results show that districts are evolving by including sustainability in their strategies. A variety of sustainability strategies emerge among district firms, with differences also between firms in B2B and B2C markets.

Keywords: Communication; sustainability; jewelry; leather; cluster; certifications.
JEL Classification: Q56; O30; M14.

Estrategias de sostenibilidad en los clusters y papel de la comunicación

Resumen:

La sostenibilidad medioambiental repercute en los distritos industriales y en los procesos evolutivos. La investigación en este sentido es escasa, lo que sugiere, por un lado, el papel de las empresas líderes de las cadenas de valor mundiales y, por otro, las posibles contribuciones de los proveedores. El artículo explora cómo las empresas de distrito han invertido en sostenibilidad analizando las estrategias de comunicación (certificación, web, exposiciones). Los resultados muestran que los distritos están evolucionando mediante la inclusión de la sostenibilidad en sus estrategias. Surgen diversas estrategias, con diferencias también entre las empresas de los mercados B2B y B2C.

Palabras clave: Comunicación; sostenibilidad; joyería; cuero; cluster; certificaciones.
Clasificación JEL: Q56; O30; M14.

1. Introduction

In recent years, sustainability is becoming more and more important in corporate strategies given the increasingly attention on environmental problems, also intertwined with social sustainability. This trend may have an impact also on industrial districts and their lifecycle evolutionary processes (Belussi, 2015) since it pushes product and process innovation and calls for new forms of collaboration. Nevertheless, research on environmental sustainability focused on industrial districts is scant and does not help disentangling the role of lead firms of global value chains (De Marchi, Di Maria, & Ponte, 2013) from

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the potential contributions of firms within the district that act as specialized suppliers in global value chains (De Marchi & Di Maria, 2019) with strategy specific strategies (Sako & Zylberger, 2019) that may be developed also independently from the global lead firms (Ponte et al., 2023).

Environmental sustainability push firms to develop new product and process innovation in order to cope with market requests and the challenges related to sustainability (Kolk & Pinkse, 2005). This innovation dynamic requires collaboration to share key knowledge and to leverage on different contributions of actors in the value chain (De Marchi, 2012; Pace & Miles, 2019). From this perspective, industrial districts may become important contexts where to develop sustainability-oriented strategies and to innovate at the product and process level due to their strong orientation towards open, collaborative innovation and specialized manufacturing knowledge (Becattini et al., 2009). Nevertheless, the evolution towards sustainable districts requires to consider the interdependency of districts with external actors – i.e. multinational companies (Belussi, 2018) – and the cluster's inclusion in extended, global value chains (Giuliani & Rabellotti, 2017).

Moreover, firms oriented to sustainability need to show towards stakeholders their level of commitment and to legitimize their effort towards the market (Bansal & Roth, 2000; Porter & Kramer, 2006). Relevant factors in the sustainable strategy of firms refer to the communication activities and the actions implemented oriented towards sustainability. In this regard, different communication strategies can be adopted depending on the set objectives. In particular, online communication is one of the most adopted by firms given the current high use of digital platforms (Vogler & Eisenegger, 2021). Such communication effort can change to consider the difference in terms of the market – between busines-to-business (B2B) and business-to-consumer (B2C) (Blenkhorn & MacKenzie, 2017).

In this scenario, further knowledge is required to understand whether district firms have invested in environmental sustainability in terms of product or process innovation and how such firm strategies are diffused at the district level to obtain a better view of its broad impact in terms of district evolution. Research in this domain is in fact scant and not well developed (Barakat et al., 2023; Da Ronch et al., 2013; De Marchi & di Maria, 2019). Limited research has explored the communication investments at the industrial district level related to firm' sustainability strategies within the broad transition of industrial district towards sustainability. We aim at exploring whether district firms have invested in environmental sustainability by analyzing their communication effort and how such firm strategies are diffused or not at the district level to capture a broad impact in terms of district evolution.

The paper explores sustainable-oriented communication strategies of district firms and its role in the relationship with the market. Based on empirical analyses of sustainability strategies (captured through certification, web communication and communication during exhibitions at international trade fairs) of district firms in the leather and jewelry industrial districts in Italy, the paper provides a better understanding on the direction of sustainability strategies in terms of product and process innovation at the firm and at the district levels.

Results show that districts are evolving by including sustainability in their strategies. Nevertheless, even if the broad district scenario emphasizes a moving towards sustainability, a variety of sustainability strategies emerge among district firms, suggesting that there is still a difference among firms within the same district (district internal heterogeneity) (De Marchi, Di Maria & Gereffi, 2017; Hervas-Oliver et al., 2023), and in relation to B2B and B2C markets.

2. Theoretical framework

2.1. Environmental sustainability and cluster evolution

Investing in environmental sustainability is relevant for firms to sustain their competitive advantage and being consistent with requests coming from the market and the society (Bansal, 2005; Porter & Kramer, 2006). Firms are pushed to redefine their business strategies and the sources of value creation at different levels (Orsato, 2006), and it is tightly connected with innovation (De Marchi, 2012).

Environmental sustainability may refer to path of innovation at the process and product levels, managed internally to the firm, but also involving the whole supply chain (Kolk & Pinkse, 2005).

It can also involve the redefinition of the firm's business models towards sustainability (Evans et al., 2017; Ritala et al., 2018) suggesting a deep transformation of firms where firms may compete not only relying on efficiency, but through innovation in creating new products or services rooted on a sustainable view. Some research is also highlighting the systemic approach towards sustainability and innovation, further emphasizing the collaborative dimension for value creation (Adams et al., 2016).

This scenario requires an evolution for firms embedded into industrial districts. Research on the life cycles of industrial districts suggest that there are multiple factors driving the transformation at the district level, related to internal and external causes (Belussi, 2015; Belussi & Sedita, 2009; Bianchini Galuk et al., 2023). Among the different drivers, scholars have considered technological innovation as well as (international) demand, together with strategic and product diversification. Technological innovation can affect industrial districts in its development stage while the role of the demand – both in terms of final customers and global buyers – and the transformation in the district product range can shape district evolution in its maturity stage. Industrial districts have been able to benefit from a virtuous cycle of knowledge exchange and exploitation of local and global knowledge (Bathelt et al., 2004) - as open learning systems (Belussi & Sedita, 2012) – through the interaction with external actors operating abroad or embedded into the districts (multinational firms).

In this view, environmental sustainability influences cluster evolution. On the one hand, environmental sustainability pushes industrial district to innovate (De Marchi, 2012) in radical terms (Kennedy et al., 2017), where the role of technical innovation and knowledge (R&D) is relevant and calls for open innovation approaches. From this point of view, the emerging technological trajectories connected with sustainability (Horbach et al., 2012) can ask district firms to change, with potential impacts on the whole industrial district evolutionary trends. On the other hand, emerging market requests related to environmental sustainability urges industrial districts to adjust.

While studies on environmental sustainability related to proximity among firms within the framework of industrial symbiosis is extensive (Baldassarre et al., 2019; Deutz & Gibbs, 2008), limited attention has received environmental sustainability in relation to the framework of industrial districts (Becattini et al., 2009). In this view, scholars have explored the drivers of sustainability at the district level (Da Ronch et al., 2013), identifying that district firms may have their own sustainability strategies – specifically leading firms –exploiting knowledge already available within the district to achieve new product and process innovation. District firms may also develop sustainability-related knowledge exchange with actors external to the district. In other cases, the district can evolve towards an eco-cluster where, through coopetition (Afuah, 2000; Dagnino, 2007), firms benefit from internal manufacturing ties and pooling of resources, also in relation to changes in regulation. By exploiting spatial proximity, firms can benefit from dynamics related to industrial symbiosis and define innovation paths that sustain firms' competitiveness in terms of "eco-collective efficiency", also relying on the support of location institutions for environmental upgrading (Yoon & Nadvi, 2018).

Research on Global Value Chains (GVC) offers additional insights related to the relationships between environmental sustainability and clusters specifically in terms of environmental upgrading. According to this framework firms may develop sustainability strategies enabling the reduction of environmental impacts of their business activities – through innovation in product, processes, or at the organizational level (De Marchi, Di Maria, & Micelli, 2013; De Marchi, Di Maria, & Ponte, 2013). Scholars have identified different drivers of such upgrading (De Marchi et al., 2019; Krishnan et al., 2022; Ponte et al., 2023): a) external-to-the-firms, that is considering the role of customers and society at large (i.e. NGOs) and regulations; b) lead firms, which push suppliers to modify their production processes or outputs to be aligned with their environmental strategies and goals; c) internal-to-the firm, where the firm decides to implement environmental strategies to reduce its business impacts, by developing innovation processes and actions irrespectively from external pressures; d) the pressure of the local community who has to carry on the burden of the negative externalities of the districts in terms of pollution.

The role of lead firms has been specifically emphasized as fundamental driver for environmental upgrading in GVC, but empirical evidence suggests also that different forms of governance – not only captive, but also relational – may be crucial in achieving such goals (De Marchi, Di Maria, & Ponte, 2013; Golini et al., 2018). In this respect, research also emphasizes the role of suppliers as active actors within the GVC. Suppliers are not necessarily passive receivers of knowledge inputs from lead firms, as specified in much research on upgrading (Schmitz & Knorringa, 2000). Rather, with their manufacturing competences and innovation expertise they can contribute to innovate at the process and product level towards more environmental-friendly outputs. Through such viewpoint, firms operating in industrial districts may play a specific role in developing innovation oriented to sustainability specifically because of their expertise and gain competitiveness beyond a top-down approach (De Marchi & Di Maria, 2019).

2.2. Sustainability strategies and communication

Environmental sustainability is rooted in collaboration among firms within the value chain. District firms may benefit from their embeddedness in the cluster, where competition and cooperation coexist (Dei Ottati, 1994, 2017). Firms investing in sustainability strategies are interested in communicating with their potential partners and customers about their commitment to sustainability. This communication serves the dual purpose of setting up open innovation processes and making the market aware of their strategic efforts (Verk et al., 2021). Cluster-wise, this can be valid not only within the district, but also beyond the district boundaries towards international suppliers and global buyers (lead firms in global value chains). On the one hand, district firms can follow the requests of lead firms oriented to sustainability such as in the case of globally led cluster models (Giuliani & Rabellotti, 2017), following standard-driven forms of governance (i.e., adopting specific certifications (Ponte & Ewert, 2009)) or mentor-driven ones. On the other hand, as mentioned above, district firms can play an active role in environmental upgrading trajectories as specialized suppliers where more relational forms of governance may be adopted and hence communication within the value chain is a key process.

Firms can derive benefits by developing specific communication strategies that convey their commitment to sustainability, aiming to communicate their societal engagement to the markets (Porter & Kramer, 2006a). Such strategies also serve to legitimize their behavior in comparison to competitors and in the eyes of stakeholders (Maignan & Ferrell, 2004). Scholars confirmed the positive outcomes of communication on Corporate Social Responsibility (CSR) in terms of firm's reputation (Nickerson et al., 2021). However, there are also threats connected to greenwashing (Delmas & Burbano, 2011) and research pointed out that firms should carefully evaluate the tools adopted and the appropriate message to convey to their audience (Illia et al., 2022).

In this scenario, digital technologies – from web to social media – have been recently considered relevant tools to enhance stakeholder engagement, by emphasizing their interactive role (Amabile et al., 2022). Nevertheless, the use of digital technologies does not always lead to positive impacts in terms of reputation and possibility to legitimize the effort done by the firm towards its customers (and stakeholder in general) (Vogler & Eisenegger, 2021) . According to CSR communication studies, it becomes relevant to consider both the use of digital technologies and personal interaction within communication strategies related to sustainability, paying attention on the different markets and audience – between B2B andB2C– (Garner & Mady, 2023; Huang et al., 2022). On the one hand, scholars pointed out that digital-based communication may support firms in structuring deliberate CSR communication strategies (Verk et al., 2021) in addition to interactive, social-media based, approach. On the other hand, specifically in B2B contests, communication for CSR may particularly be influenced by tightly connection with the strategic dimension of sustainability where the buyer-supplier relationship is important (Blenkhorn & MacKenzie, 2017; Huang et al., 2022).

In the context of Small and Medium-sized Enterprises (SMEs), specifically operating in (global) supply chains, research has pointed out the opportunities, but also the challenges, connected with CSR communication (Baden et al., 2009; Matten & Moon, 2017; Morsing & Spence, 2019). On the one hand, SMEs suppliers may invest in explicit communication strategies to cope with market (lead firms) requests, but this may not necessarily relate to a coherent sustainability strategy of the firm or real internal transformation of the strategic intent of the firms. On the other hand, communication can also become

an important driver for competitiveness in the realm of SMEs, when they can signal their commitment towards sustainability and hence being considered attractive for global buyers (Krishnan et al., 2022).

This may be particularly interesting considering firms operating in industrial districts, characterized by high level of physical interaction rooted on proximity (Becattini et al., 2014) and at the same time being involved in extended value chains (De Marchi et al., 2017). Communicating the district firms' effort towards sustainability may allow them to be coherent with lead firm' sustainability and sourcing strategy, pursuing the attractiveness of the district local manufacturing system for multinational firms (Belussi, 2015). At the same time, district firms may adopt different communication strategies. On the one hand, district firms can invest in more formalized communication such as through digital technologies or certification as mentioned above. On the other hand, consistently with the often B2B nature of their business, district firms may also use personal communication to transfer knowledge about sustainability of their products and processes towards their customers. This dynamic has traditionally led to knowledge diffusion and product and process innovation (Camuffo & Grandinetti, 2011; J. L. Hervas-Oliver et al., 2022; J.-L. Hervas-Oliver & Belussi, 2018) and it is important to explore these dynamics also when environmental sustainability is considered.

3. Empirical analysis

3.1. Methodology

In this work, we evaluate the sustainability strategies of firms of two industries – jewelry and leather – characterized by the presence of significative industrial districts and we specifically consider Italy as empirical setting for the research. We studied these industries due to their relevance to the Italian economy rooted on industrial districts (Belussi & Sedita, 2009b; De Marchi et al., 2014). Specifically in the case of jewelry, industrial districts are in Vicenza (Veneto region), Arezzo (Tuscany region), and Valenza Po (Piedmont region), while leather districts are in Vicenza, Santa Croce sull'Arno (Tuscany region), and Solofra (Campania region). We formed two samples each composed of 50 firms with the highest turnover, divided by industry operating in those industries and which participated in the international industry business fairs (VicenzaOro, September 2022 and 2023 editions for the jewelry sector; LineaPelle, September 2022 and 2023 editions for the leather sector) to have a homogeneous and comparable set of data in terms of communication (see below). Firms data were extrapolated through the ORBIS database.

Firstly, sectorial filtering following the NACE Rev. 2 code classification was performed to find the firms operating in those sectors. In particular, we selected the 32.12 code (i.e., Manufacture of jewelry and related articles) for the jewelry firms and the code 15.11 (i.e., Tanning and dressing of leather; dressing and dyeing of fur) for the leather ones. Subsequently, we identified the belonging of each firm to an industrial district by finding the location of headquarters and production sites for each firm, and then we matched them with the location of the districts. Moreover, we marked a firm as belonging to international groups if more the 50% of its shareholders were not from Italy. Finally, firms have been classified based on size into four categories: Micro (from 0 to 9 employees), Small (from 10 to 49 employees), Medium (from 59 to 249 employees) and Large (over 250 employees) following the European Union classification.

For both the district specializations, the firms selected can provide a significant view of the trends occurring at the district level. Concerning jewelry, among the 50 analyzed firms, 17 belong to the district of Vicenza (Vicentino), 27 from the Arezzo district (Aretino) and only 4 from the Valenza Po one. Two firms were not related to any industrial district. Despite the sample is made by 48 district firms, representing 3.3% of all firms belonging to the analyzed districts, it describes them very well as it represents 56,3% of the overall district production (95.0% for the Veneto district, 63.1% for the Aretino district and 20.1% for the Valenza Po one). Additionally, 11 of the 48 district firms (22.9%) are controlled by a foreign group. These 11 firms represent the 34.4% of all Italian firms controlled by a foreign group.

Similarly for leather, among the 50 analyzed firms, 15 belong to the district of Arzignano (Veneto), 28 from the Santa Croce sull'Arno district (Toscano) and only 2 from the Solofra one (Campano). Five firms were not related to any industrial district. Despite the sample is made by 45 district firms,

representing 3.3% of all firms belonging to the analyzed districts, it describes them well as it represents 40,8% of the overall district production (42.0% for the Veneto district, 44.5% for the Toscano district and 18.1% for the Campano one). Additionally, 8 of the 45 district firms (17.8%) are controlled by a foreign group. These 8 firms represent the 47.1% of all Italian firms controlled by a foreign group.

We did an accurate literature review to select the most significant product, environmental and social sustainability certifications regarding both industries (Heidingsfelder, 2019; Śmiechowski & Lament, 2017) to apply such certification for the analysis of communication strategies. Research outlined four certifications (or group of certifications) for each industry, as described in Table 1.

Table 1.
The list of certifications concerning sustainability for the jewelry and leather industries

GOLD / JEWELRY	
Responsible Jewelry Council (RJC) Code of Practices standards (COP),	The RJC Code of Practices is the only industry standard covering the entire jewelry and watch supply chain. It defines the responsible ethical, human rights, social and environmental practices.
Responsible Jewelry Council (RJC) Chain-of-custody (CoC)	RJC Chain of Custody certification gives the assurance that the products and materials have been sourced, traced, and processed through the supply chain. This standard defines an approach for companies to handle and trade gold and platinum group metals in a way that is fully traceable and responsibly sourced.
OECD Due Diligence Guidance (OCSE)	The OECD Due Diligence Guidance provides detailed recommendations to help companies respect human rights and avoid contributing to conflict through their mineral purchasing decisions and practices. This Guidance is for use by any firms potentially sourcing minerals or metals from conflict-affected and high-risk areas. The OECD Guidance is global in scope and applies to all mineral supply chains.
London Bullion Market Association (LBMA)	LBMA Responsible Sourcing programme is mandatory for all Good Delivery refiners wishing to trade with the London Bullion market. Compliance with an audited process assures investors and consumers that all London precious metal stocks are conflict-free. The Responsible Gold Guidance (RGG) is based on the OECD Due Diligence Guidance as well as Swiss and US KYC, Anti-Money Laundering and Combatting Terrorist Financing regulations.
LEATHER	
Leather Working Group (LWG)	LWG through collaboration and standard setting, is creating a value chain for leather in the most transparent and traceable way possible. This is all to achieve the most positive impacts and aligned with the Sustainable Development Goals. There are 4 categories of standards based on the type of business processes: Leather Manufacturer Standard, Leather Trader Standard, Commissioning Manufacturer Standard, and Subcontractor Standard.
I.CE.C. Enviromental sustainability	This group of certifications drawn up by the Italian certifying body (I.CE.C) includes the following standards: EMAS (environmental declaration according to EU Reg. 1221/2009), ECO-LEATHER (UNI11427 Leather with a low environmental impact and PRODUCT ENVIRONMENTAL FOOTPRINTS.
I.CE.C. Product and economic sustainability	This group of certifications drawn up by the Italian certifying body includes the following standards: MADE IN ITALY OF LEATHER PRODUCTION (EN 16484), MADE IN ITALY OF PRODUCT REALIZATION (I.E. OF LEATHER GOODS, FOOTWEAR), PRODUCT (FINISHED LEATHER) CONFORM TO UNI TECHNICAL SPECIFICATION/ CUSTOMER'S STANDARDS (i.e. UNI 10594 for footwear, UNI 10826 for leather goods), TRACEABILITY OF RAW MATERIALS (LEATHERS) (ICEC TS_SC410, ICEC TS_PC412), TRACEABILITY OF PRODUCTS (ICEC TS_PM414) and TANNING SECTOR LABORATORIES (ICEC TS_406).
I.CE.C. Ethic and social sustainability	This section includes the UNIC CODE OF CONDUCT AND SOCIAL ACCOUNTABILITY certification prepared by I.CE.C.

Source: authors' elaboration

To evaluate the number of certifications adopted, we performed accurate qualitative research on firms' sustainability annual reports by keyword research. Then, we carried out an analysis of the certifying

bodies' databases to identify the years of certification of time-based analysis of investments towards sustainability by district firms.

To analyses companies intensity of the investments towards environmental sustainability, we defined a variable called $Sust_Level_k$ of a firm k (k=1,…,50) as the normalized sum of the certifications adopted by the firm:

$$Sust_Level_k = \frac{\sum_{i=1}^{N} Cert_i}{N}$$

being N the number of certifications for each sector, in our case equal to 4, and

$$Cert_i = \begin{cases} 1 & if \quad i-th\ certification\ has\ been\ adopted \\ 0 & otherwise \end{cases}$$

a dummy variable, assuming the value 1 when a certification has been adopted during the production process and 0 otherwise.

Concerning the communication of sustainability, we have considered two communication channels: 1) online communication via website and 2) offline communication employing either posters or claims during expositions at international sectorial exhibitions. To examine sustainability communication via corporate websites, a qualitative assessment was undertaken on the website of each firm. The criterion for identifying communicative instances was established as any explicit reference or inclusion of sustainability matters or a sustainability report within the website. The manifestation of sustainability communication through these online platforms of a firm k was represented by a dichotomic variable termed Web_Comm_k, adopting 1 to denote instances of communication and 0 otherwise.

$$Web_Comm_k = \begin{cases} 1 & if \quad k-th\ firm\ communicate\ through\ website \\ 0 & otherwise \end{cases}$$

In the context of international exhibitions, active participation was undertaken at prominent international sector-specific events. The identification of communicative instances during these exhibitions was defined by the public display (via posters or flyers) of claims associated with social or environmental certifications by the participating firms. This form of communication was represented through a binary variable named $Exhib_Comm_k$, set to 1 to denote instances of communication and 0 otherwise.

$$Exhib_Comm_k = \begin{cases} 1 & if \quad k-th\ firm\ communicate\ at\ exhibitions \\ 0 & otherwise \end{cases}$$

Finally, we set the overall communication value of a firm ($Communication_k$) equal to 1 if at least one form of communication has been adopted:

$$Communication_k = Web_Comm_k \vee Exhib_Comm_k$$

being $\vee$ the logical "or" operator.

3.2. Results

We started from the analysis of the jewelry industry. The most adopted certification, among the top 50 firms for turnover participating to VicenzaOro fair, is the RJC Code of Practices (52%) followed by the OECD certification (34%), the RJC Chain of Custody (32%), and the less adopted LBMA certification (8%). The firms registered an average Sustainability Level (SL) of 0,34 and only the 44% of them communicated the sustainability (Figure 1a).

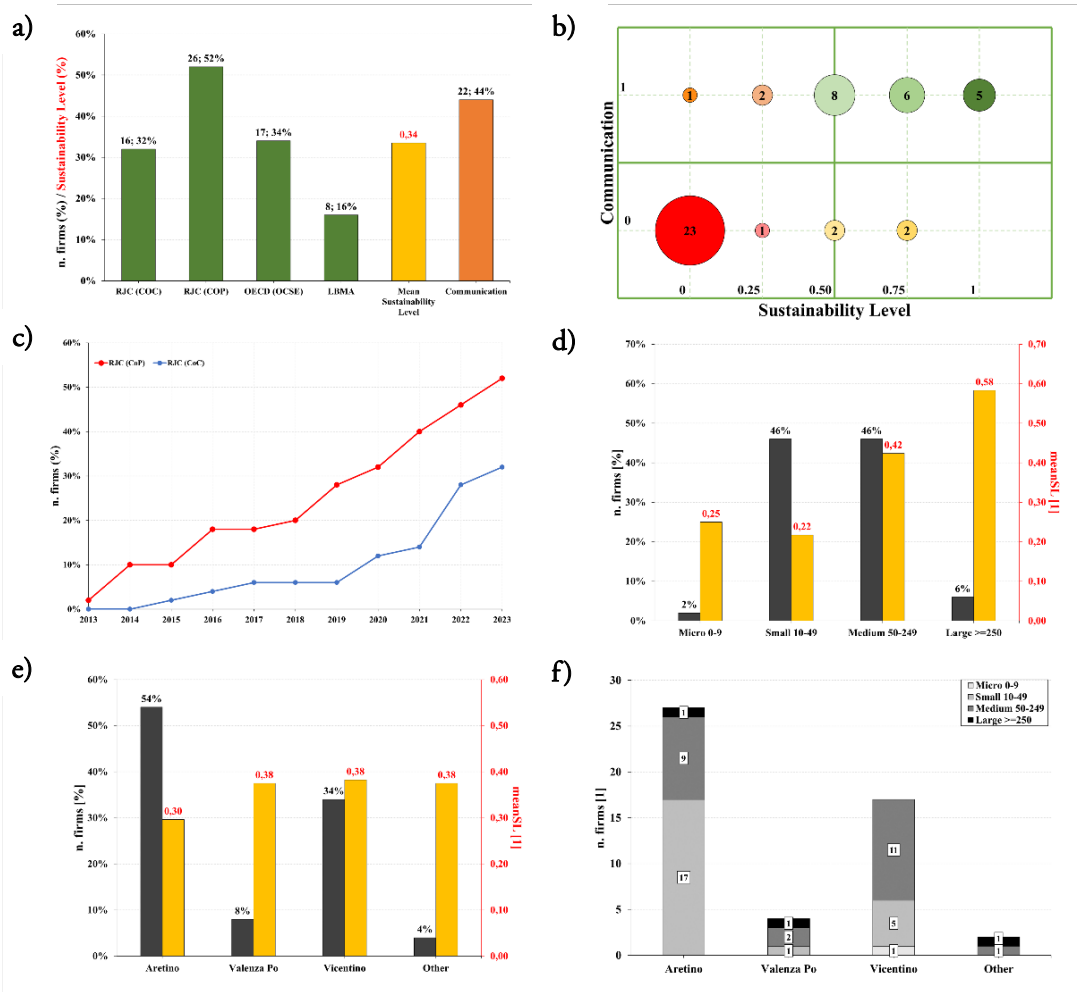
Then, we analyzed the correlation between the Sustainability Level of the firms and their Communication. As 0.5 is the median Sustainability Level, we consider a low level of sustainability if a firm adopt less than 2 certifications (SL<0.5). From Figure 1b, it is easy to see that 23 firms had both a lack of sustainability and a lack of communication. On the contrary, 11 firms had both a high

Sustainability Level and perform sustainability-related Communication. Regarding the most adopted certifications (RJC CoP and RJC CoC), in Figure 1c we can see a linear increase in terms of certifications adoption among the firms of the sample from 2013 to nowadays, witnessing the increasing orientation towards sustainability of district firms specializing in this sector.

Subsequently, we investigated if the size of the firms impacts the Sustainability level or the Communication. As depicted in Figure 1d, most of the analyzed firms were SMEs and the larger is the firm the higher is its Sustainability level.

In Figure 1e we can see that the Sustainability Level is almost the same for all the firms independently to the district they belong to, suggesting that district firms have the same behavior with respect to environmental sustainability. Finally, Figure 1f elucidates that the district industry firms are mostly of small and medium size.

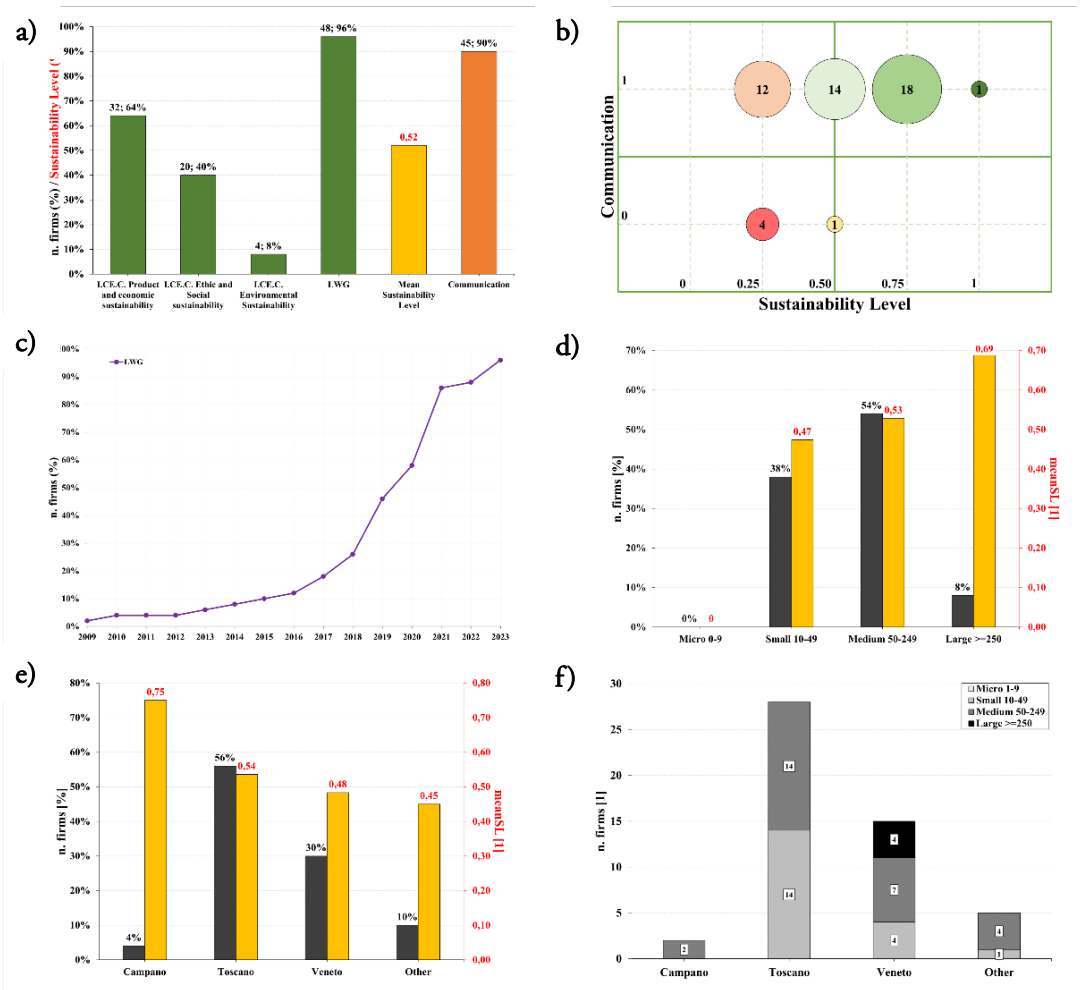
FIGURE 1.
Sustainability data of Top 50 (on Production Value) Italian Jewelry firms that participated to the exhibition VicenzaOro



Graph a) depicts the adopted certifications, the mean sustainability level, and the Communication. The scheme in b) displays the relationship between Sustainability Level and Communication. The graph in c) shows the adoption of the RJC certifications over the years. Charts d), e) and f) depict the characteristics of the sample depending on the dimensions of the firm and the belonging to a specific production district. We calculated meanSL as $\sum_{k=1}^{M} Sust_Level_k / M$.

The same analysis has been performed concerning the leather industry. Among the top 50 firms participating in Lineapelle fair, the Leather Working Group (LWG) certification was the most prevalent (96%), followed by Product and Economic sustainability certification (64%), Ethic and Social sustainability certification (40%), with Environmental sustainability certification being significantly less adopted (8%). The firms recorded an average Sustainability Level (SL) of 0.52, and 90% of them conveyed their commitment to sustainability, both figures markedly surpassing those observed in the jewelry sector (Figure 2).

FIGURE 2.
Sustainability data of Top 50 (on Production Value) Italian Leather companies that participated to the LineaPelle fair



Graph a) depicts the adopted certifications, the mean sustainability level, and the Communication. The scheme in b) displays the relationship between Sustainability Level and Communication. The graph in c) shows the adoption of the LWG certification during the years. Charts d), e) and f) depict the characteristics of the sample depending on the dimensions of the firm and the belonging to a specific production district. We calculated meanSL as $\sum_{k=1}^{M} Sust_Level_k / M$.

Regarding the relationship between environmental sustainability practices (captured through certification) and communication, as indicated in Figure 2b, it is evident that only 4 firms had both a lack of sustainability and a lack of communication. On the contrary, 19 firms had both a high Sustainability Level and perform the Communication. It is interesting to notice that 12 firms had a low Sustainability Level but communicate it, this can be attributable to their exclusive possession of the LWG certification.

Concerning the LWG certification, from Figure 2c the adoption of this certification increases almost exponentially from 2009 to 2023.

Subsequent investigation focused on examining whether firm size influences the Sustainability Level or Communication. Illustrated in Figure 2d, most of the firms were of small or medium-size ones, revealing an inclination towards higher Sustainability Levels among larger firms. Moreover, no Micro firms were registered in our sample.

Lastly, an assessment was conducted to determine whether affiliation with a manufacturing district influenced the abovementioned parameters. It was found that belonging to a district slightly increase the Sustainability Level (Figure 2e). It also emerges that there are no specific differences between the districts observed, taking into account specifically Arzignano and Santa Croce sull'Arno, while the Solofra district firms in Campania show higher levels of sustainability – but there is a limited – and small-sized – sample of firms considered for the analysis. It is mentionable that all the larger firms were belonging to the Arzignano leather district (Figure 2f).

4. Discussion

While considering the two industries and the districts analyzed, we observed that the attention to environmental sustainability is more diffused among tanneries and leather firms than jewelry ones. If we compare Figure 1b and Figure 2b, it is possible to spot a striking difference: 23 out of 50 jewelry firms did not have any form of certification as opposed to almost none of leather firms. In addition, if we consider the threshold below of 0,5 of the sustainability level as a low level, we can find only 16 leather firms as opposed to 27 jewelry firms are below this level. This result seems to be in line with the evolution path of the two industries. For leather firms, the request to reduce their environmental impacts is fierce. Large manufacturing companies (i.e. automotive or fashion lead firms) that are important buyers of leather products have increased, in the last decade, the requirements in terms of sustainability and certifications (Omoloso et al., 2021). This may also explain the inflection point in the adoption of environmental certification starting from 2017 as it is evident from figure 2.c and by the fact that all the top fifty firms have at least a certification. In addition, the tanning process has per se a higher toll on the environment than jewelry production. The process requires the use of chemicals and metals (i.e. chromium) that can severely pollute the environment. On the contrary, jewelry production has a more limited environmental impact while the main concerns are related with the phase of gold mining and extraction and the possible exploitation of labor (social sustainability). Moreover, the sensibility of the consumer of jewelry to environmental sustainability is relatively low (Armano and Joy, 2021).

In terms of communication, we observed a substantial coherence between the initiative undertaken by firms and their communication online and offline in both industries. In fact, we found only one jewelry firms that communicate some sustainability initiatives without having a certification. This result does not allow us to dismiss the possibility of greenwashing in firms' communication but at least it tells us that firms are engaged in the process of greening the supply chain. We noticed that there is also an opposite phenomenon: firms that do not communicate via websites their efforts in terms of environmental sustainability although they have one or more certifications. Ten firms (5 for each industry) deliberately decided not to communicate their initiatives. We could explain this behavior in at least two ways. This first one is that those firms are mainly B2B and they interact with relatively few customers that probably already know their efforts. The second is related to the tendency of the firm to self-protect itself by possible allegations of green washing moved by NGOs, media and the public sphere in general. The second way seems coherent with recent literature that highlights the tendency of firms to under communicate their environmental sustainability initiatives (Falchi et al., 2022). This behavior appears quite counterintuitive but in an era of increased public scrutiny of firms' actions and the possibility of a media storm (i.e. especially social media) could have some grounding.

The results do not show relevant differences among industrial districts in term of sustainability if we compare firms of the same industry. On average, firms located in different industrial districts do not show a high variance in terms of sustainability levels. What seems to differentiate firms is their size. The larger firms are the ones that present higher sustainability levels. The combination of these results may imply that

the leading firms within the industrial district play an important role in promoting this issue at the local level. This role has helped the industrial districts in both industries to address new demands in terms of sustainability.

From a district level point of view our results show that districts are evolving in the direction of environmental sustainability. There is a growing number of firms that are investing in certifications related to product and process innovations over time. The differences between the two industries capture the different trends at the market and technological levels in which district firms are operating. On the contrary, it seems that such variety is not instead so much evident when considering district specialized in the same industry. In this respect, the internal flows of knowledge related to product and process technological improvement characterizing districts favors district firms' environmental upgrading: through supplier-buyer interaction as collaborative dimension of the district (Belussi & Sedita, 2009; De Marchi & Di Maria, 2019) or imitation process in which knowledge flows also support positive imitation-innovation dynamics (Belussi, 2015; Camuffo & Grandinetti, 2011). At the same time, district firms may be interested in communicating their effort in sustainability towards the market to support their competitiveness in a competing scenario both inside the district and outside (global markets).

The embeddedness into a specialized local manufacturing system thus may facilitate firms' investments towards environmental sustainability (also small ones) at the product or process levels, which requires collaboration and specialized, technical knowledge. The traditional strong interaction between technical providers (e.g. KIBS) and manufacturing firms at the district level support effective knowledge transfer and the possibility to upgrade district firm's offering (Camuffo & Grandinetti, 2011). Such dynamics can be linked also to environmental innovation (De Marchi, 2012) where the district as opening learning system (Belussi & Sedita, 2009) can gain through the internal but also external flows of knowledge connected to environmental sustainability. In this view, autonomous strategies of district firms as well as investments from abroad towards the district impacts on district changes towards environmental sustainability.

5. Conclusions

Our research offers new insights on the evolutionary trajectories of industrial districts, specifically related to environmental sustainability trends. Industrial district firms are investing to increase their degree of environmental sustainability of their products and processes and this trend is positive over the years. Although the demand for environmental sustainability originates from the market (both B2B and B2C) in both industries – with specific roles of lead firms - district firms are actively enhancing their production processes and products, recognizing that acquiring environmental certification is a significant step in this direction. It is true that the intensity of this adaptation seems in line with the strength of the request coming from the market.

Our research confirms that industrial districts as specifically open in facing new transformations (Belussi & Sedita, 2012). Our study is based on the district firm-level, but the trends emerged from the firms analyzed show that all the districts observed are characterized by visible change towards environmental sustainability. An increasing number of certifications are widespread at the district level. Our analyses offer additional inputs on the theoretical research on industrial districts, by offering the new theoretical perspective of environmental sustainability as an innovation and market challenge that interests also local manufacturing (and learning) systems.

Large firms seem to drive the intensity of initiatives on environmental sustainability. As it appears, those firms are more exposed to international competition, and this may influence their investments in sustainability. This may represent an indirect confirmation of the literature of the role played by lead firms in GVC in sustaining the greening of the supply chain (De Marchi et al, 2019). Based on those elements, we may conclude that industrial districts are reacting and not anticipating the request coming from the market. On the one hand, this may appear critical for the future as it implies that firms need to catch up. On the other, it confirms the role of the industrial district in contributing to the diffusion of environmental practices. From this point of view, the internal B2B relationships between district firms (and with technical providers) may support the diffusion of knowledge also related to environmental sustainability transition

of products and processes, thus favoring a district upgrading. Firms belonging to clusters may benefit from this transition more than isolated suppliers in GVC. The district context represents a good social and economic ground for environmental upgrading, as other recent research is showing (Ponte et al. 2023). At the same time, especially in clusters in a maturity phase (Belussi, 2018) it is also relevant the inputs that comes from external linkages and knowledge inputs in order to push innovation.

Firms belonging to different clusters have similar sustainability levels suggesting that the industry specialization matters in shaping sustainability investments of firms – distinguishing between firms operating in the production of an intermediate good (the leather) with respect to a final product (jewelry). In this respect, our research sheds further light on the discussion concerning the variety in district evolutions (Belussi, 2018) and the potential heterogeneity across districts (De Marchi et al 2017). Our results suggest that in relation to sustainability business strategy matters, while more limited differences emerge across districts with the same manufacturing specialization. We observed a greater variety of sustainability strategies across firms than across districts specialized in the same industry. This evidence offers additional contributions on the positive innovation dynamics that can occur within a district in relation to the industry specialization that characterizes local manufacturing systems. The specific product and process-related knowledge put district firms operating in the same industry but located in different clusters in front of the same threats connected to sustainability. Reactions towards such challenges may be different across district firms based on their internal resources and peculiarities (Hervas-Oliver & Belussi, 2018; Puig & González-Loureiro, 2017), but can generate however consequences at the district level.

From a managerial perspective, our research shows the importance of the investments on environmental sustainability and the increasing diffusion of the certification among the firm both in the industry and in the industrial district. If this is true, managers should consider further initiatives in terms of sustainability to differentiate themselves in the market. Certifications are important, but as they become more widely adopted in the industry and industrial districts, their significance for competitive advantage tends to diminish. From this perspective, firms should cultivate an autonomous capacity to enhance their environmental sustainability through technological investments in the development of new products and industrial processes.

Our study has some limitations related to the scale of the analysis that includes only one country and a specific number of firms selected, with a focus on industrial districts. Future research could expand the analysis of district firms' strategies by enlarging the number of firms observed and offering also an international comparison. Additional research can also consider other industry specializations to include other cases of industrial districts and provide additional knowledge on the link between environmental sustainability and district transformations and the role of firms' strategies.

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Articles

Do you have feet in your shoes? Innovation and resilience in a footwear industrial district in Brazil

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Abstract:

This study examines innovation as a shock reaction in the process of regional economic resilience, focusing on a footwear industrial district in southern Brazil during the COVID-19 pandemic. The results show that innovation, a mechanism of adaptability, emerged in the industrial district not only to support economic recovery, but also to mitigate the adverse effects. Firms implemented novel marketing and sales processes, and some also had to change their information and communication systems or organisational structure to support e-commerce. As such, this study highlights the influence of adaptability on economic resistance.

Keywords: Regional resilience; innovation; adaptability; shocks.
JEL Classification: B52; O30; R11.

¿Estás por tu cuenta? Innovación y resiliencia en un distrito industrial del calzado en Brasil

Resumen:

Este estudio examina la innovación como reacción de choque en el proceso de resiliencia económica regional, centrándose en un distrito industrial del calzado del sur de Brasil durante la pandemia de COVID-19. Los resultados muestran que la innovación, un mecanismo de adaptabilidad, surgió en el distrito industrial no solo para apoyar la recuperación económica, sino también para mitigar los efectos adversos. Las empresas implementaron nuevos procesos de marketing y ventas, y algunas también tuvieron que cambiar sus sistemas de información y comunicación o su estructura organizacional para apoyar el comercio electrónico. Como tal, este estudio indica la influencia de la adaptabilidad en la resistencia económica.

Palabras clave: Resiliencia regional; innovación; adaptabilidad; choques.
Clasificación JEL: B52; O30; R11.

1. Introduction

Resilience has been repeatedly tested in the face of increasingly frequent shocks, revealing industrial districts' ability (or inability) to adjust their firms, workers and local institutions to changing conditions.

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The specific socioeconomic context in which they are embedded is conducive to the introduction of innovative products and processes, but it can also become a liability in the face of adverse effects from unanticipated events (Belussi, 2015). The dynamic interplay of different actors and their relationships, developed based on shared norms and values, shapes an industrial district's resilience process, which includes four dimensions: vulnerability before the shock, resistance, adaptability and recovery (see Martin & Sunley, 2020; Sutton et al., 2023).

In a context of rapid change, research has confirmed innovation as a key adaptability mechanism to explain regional performance differences (Viana et al., 2023). However, making industrial districts more innovative is not an easy task. Industrial districts may have difficulties adjusting their economies to new contexts (Alberti, 2006; Grabher, 1993). In times of crisis, firms may also hesitate to develop new relationships, processes and practices, such as narrowing the focus of attention, simplifying information codes and reducing the number of channels used (Netten & van Someren, 2011; Staw et al., 1981). When industrial districts overcome these challenges, they can respond to unexpected events with innovation, enabling them to reduce adverse impacts or seize new opportunities.

Nevertheless, numerous studies on regional resilience implicitly assume that economic adaptability only influences recovery and not resistance (e.g., Hu et al., 2022; Martin et al., 2016; Martin & Gardiner, 2019; Martin & Sunley, 2015, 2020; Sutton et al., 2023; Sutton & Arku, 2022). This assumption has led to the understanding that economic adaptation or transformation through innovation emerges after absorbing a shock (e.g., Filippetti et al., 2020).

Against this background, we aim to examine innovation as a reaction to a shock in the process of regional economic resilience. Using a case study of a footwear industrial district in Brazil, we analyse the perceptions of different regional actors about the effects of the COVID-19 crisis and some secondary data. By adopting an evolutionary perspective on regional resilience and viewing product and process innovation as a creative response, we seek to deepen the understanding of how an industrial district adjusts to a crisis.

This paper's main contribution is examining the dimensions of resilience, thereby enriching our understanding of how they are interrelated. In doing so, we extend the research on shock reactions (David, 2018; Molina-Morales et al., 2023; Simonen et al., 2020). This approach differs from the conventional focus of the regional resilience literature, which has predominantly examined the determinants of economic resistance or recovery while rarely considering the dimension of adaptability (see Miranda & Hoffmann, 2021; Sutton et al., 2023). In addition, we present two theoretical propositions to guide future research efforts.

The remainder of the paper is organised as follows. Section 2 assesses the process of regional resilience and the role of innovation as a creative response within this framework. Section 3 presents the methodological path followed, while Section 4 briefly contextualises the case study. The results of the empirical investigation are presented in Section 5, followed by a discussion of them in Section 6. Finally, Section 7 concludes the paper.

2. Integrating creative responses into the regional resilience process

2.1. The process of regional resilience

Regional resilience is the ability of a regional economy to adapt or transform in order to reduce vulnerability or enhance resistance or recovery from shocks (see Bristow & Healy, 2018; Sutton et al., 2023). From a regional perspective, resilience has been studied at the macro level, which includes municipalities, provinces and cities (e.g., Filippetti et al., 2020; Lazzeretti et al., 2022; Martin & Gardiner, 2019; Sedita et al., 2017), and at the meso level, which focuses on industrial districts or innovation systems (e.g., Belussi, 2015; Hervas-Oliver et al., 2011; Molina-Morales et al., 2023; Pinto, Nogueira et al., 2019).

The concept we adopt here views resilience from an evolutionary perspective, treating it as a dynamic process rather than a static attribute of a system (Boschma, 2015; Simmie & Martin, 2010). This process

encompasses the trajectory of economic development and the dimensions of regional resilience, namely vulnerability, resistance, adaptability and recovery (Martin & Sunley, 2015, 2020). Additionally, resilience is often characterised in terms of the capacity to adapt or transform in the face of shocks and the resulting performance of this capacity (e.g., Bănică et al., 2020; Evenhuis, 2017; Sutton & Arku, 2022). By integrating these categorisations, we present in Figure 1 the elements of the regional resilience process, their description and analytical focus.

Figure 1.
The process of regional resilience

Analytical focus	Element of resilience process	Description
Trajectory disruption	Pre-shock reference state or dynamic	Pre-shock economic development levels and trajectory
	Shock	Discrete events with sudden negative effects on economic activity
Resilience performance	Vulnerability	The degree of exposure and susceptibility of a regional economy to a shock
	Resistance	The degree and extent to which a regional economy can withstand the shock's initial impact
	Recovery	The degree and extent of post-shock economic growth
Resilience capacity	Adaptability	Capacity of economic adaptation or transformation

Source: Prepared by the authors based on Bănică et al. (2020), Evenhuis (2017), Martin and Sunley (2015, 2020) and Sutton et al. (2023).

The focus on vulnerability, resistance and recovery has enabled the study of the asymmetric performance of regions experiencing shocks and their inherent, inherited and adaptive determinants (Hu et al., 2022; Martin & Sunley, 2015). This emphasis on performance is the most prolific line of inquiry in the regional resilience literature (Miranda & Hoffmann, 2021; Sutton et al., 2023; Viana et al., 2023). Typically, this analysis relies on secondary data on employment or wealth (Sensier et al., 2016). Molina-Morales et al. (2023) have also proposed alternative measures specifically for assessing the resilience of industrial districts facing technological disruption, including increases in product portfolios and the number of firms.

In contrast, adaptability analysis focuses on the "mechanisms by which the region's firms, workers, and institutions respond and adjust to shocks" (Martin & Sunley, 2015, p. 15). Potential mechanisms might include innovation, entrepreneurship, provision of support services (see Hervas-Oliver et al., 2011; Hoffmann et al., 2017; Simonen et al., 2020), as well as retrenchment and actions aimed at maintaining the status quo (see Wenzel et al., 2020). Among the dimensions of regional resilience, adaptability has received less attention and usually requires a qualitative or multi-method approach to understand reactions to shocks (Lemke et al., 2023; Pinto, Healy et al., 2019; Sutton et al., 2023). Because adaptability is the least studied dimension, empirical research contributes little to understanding its relationships with the other dimensions (see Evenhuis, 2017; Sutton et al., 2023).

The problem is that the prevailing studies in regional resilience often depict a sequential progression through dimensions—vulnerability, resistance, adaptability and recovery—shaping the process linearly (e.g., Martin et al., 2016; Martin & Gardiner, 2019; Martin & Sunley, 2015, 2020; Sutton et al., 2023). According to this model, vulnerability influences resistance, which shapes adaptability and leads to recovery (Sutton et al., 2023). However, this linear perspective may overlook the dynamic nature of how reactions to shocks influence the degree and extent of their impact on a regional economy. In other words, these reactions could aim not only to foster recovery but also to reduce the magnitude of the shock itself.

2.2. Innovation and response to shocks

Under high-impact events, organisations need to be connected with the environment to search for unorthodox and unprecedented responses (Lengnick-Hall & Beck, 2005). Innovated reactions can be called creative responses, which are context-dependent and characterised by technological change (Antonelli, 2015). These innovations make it possible to undermine existing practices that prove inadequate in moments of shock, thus promoting resilience (Filippetti et al., 2020).

In industrial districts, this creative response can be supported by the existence of a web of relationships that foster innovation. The relationships between firms and other organisations allow for the dissemination of knowledge, particularly tacit knowledge, the promotion of cooperative action and the monitoring of the actions of other organisations (Belussi, 2015). The agglomeration of firms in the same sector can also facilitate the dissemination of knowledge from sources outside the industrial district, which, when recombined, enables the emergence of innovations (Hervas-Oliver et al., 2011).

Recent research on organisational resilience has highlighted the benefits of being flexible and innovative and having networks to access relational resources and social capital in the face of disruptive events (Hillmann & Guenther, 2021; Lengnick-Hall & Beck, 2005). Belonging to a web of relationships helps organisations anticipate relevant information about future events, share experiences on how to respond to the new environment, access experiences and ideas from others, learn new management practices that are more appropriate to the new situation and possess complementary resources (Díez-Vial & Fernández-Olmos, 2016).

From a regional perspective, studies exploring the relationship between innovation and resilience also provide insights into innovative responses to different types of shocks (see Viana et al., 2023). For example, Hervas-Oliver et al. (2011) showed that the resilience strategies of the North Staffordshire ceramics industrial district in the first decade of the 21st century included diversifying into new markets through product innovation, including changes in format and design and using ceramic in other products. Other research done in the United Kingdom revealed that Leicester's clothing industry has moved towards fast fashion through product innovation as a strategic response to an economic recession (Oxborrow & Brindley, 2012).

In addition, Machado et al. (2019) suggested product innovation through value-added investments as a means for a clustered footwear industry in southern Brazil to cope with recessions and exchange rate fluctuation scenarios. Furthermore, Schmidt et al. (2023) explained how the Brazilian wine cluster Serra Gaúcha fostered resilience through process innovation, especially regarding production methods, by introducing new equipment and automation.

Looking at other types of shocks, Simonen et al. (2020) showed that the response to the collapse of Nokia's operations in Oulu, Finland, included retaining human capital in the region, which supported entrepreneurship based on product innovation, while diversifying into clean technology, health and printed intelligence. Moreover, in analysing technological disruptions—digital printing on tiles in the 2000s in Castellón (Spain) and the rise of plastic ski boots in the 1970s in Montebelluna (Italy)—Molina-Morales et al. (2023) suggested that industrial districts need external knowledge to facilitate the introduction and development of new technologies and internal firms to absorb and recombine knowledge. In the diffusion phase, industrial districts benefit from machinery and component manufacturers that act as promoters of innovation (Molina-Morales et al., 2023).

However, industrial districts can also face challenges in innovating as a means of promoting resilience. These challenges can arise for a number of reasons: i) innovation may emerge too late; ii) firms may not take into account the support organisations for business activity, or these organisations may have been affected by a shock (Hoffmann et al., 2017); iii) there may be resistance to change on the part of firms, an issue discussed in organisational theory (e.g., Staw et al., 1981); or iv) there may be difficulties in redirecting the trajectory of economic development—lock-in (e.g., Alberti, 2006; Grabher, 1993).

Nonetheless, acknowledging the challenges that industrial districts face in innovating does not lead to the conclusion that innovation, as a creative response, only emerges during the economic recovery. Filippetti et al. (2020) introduced the Schumpeterian concept of creative response in the regional resilience

literature; the authors used patents as a proxy for technological innovation, showing that this variable was associated with resilience both during and after the 2008–2010 financial crisis. However, the study also established theoretical links between shock absorption and the resistance dimension, as well as between response and the recovery dimension. These links support the implicit assumption that creative response manifests itself after the end of the recession. Accordingly, this theoretical postulate raises the question of whether persevering or retrenching during a shock is the only option (Viana et al., 2023).

The fact that a shock affectes the creative response capacity of economic actors does not mean that this response does not occur during the recessive period. Instead, this awareness allows us to shed light on the effects triggered during a shock, the resilience performance of an economy and, in particular, how innovation and other response mechanisms relate to this performance.

3. Method

3.1. Characterization of the research and case selection

We conducted an exploratory-descriptive and cross-sectional case study, considered an appropriate method for understanding the emergence of innovation in a changing context (Eraso et al., 2017). We chose to study the footwear industry, the Brazilian manufacturing sector most affected by COVID-19 (Brazil, 2023), as this facilitated our examination of the sector's reaction to the shock. Specifically, the industrial district of São João Batista, located in Santa Catarina, Brazil, was selected. This choice was based on the high level of economic specialisation in its main municipality (Begnini & Carvalho, 2021), as well as the presence of several supporting institutions and suppliers in the district that influence innovation in local firms (see Belussi, 2015; Boschma & ter Wal, 2007; Hoffmann et al., 2023).

3.2. Data collection

We used interviews for data collection because they allow for a deeper exploration of complex phenomena through dialogue and interaction (Kvale, 2007; Tracy, 2020). We conducted semi-structured interviews using predetermined questions and had the flexibility to include or exclude questions based on the responses obtained (Morse, 2012). This technique allows for clarification of the perspectives of different interviewees and has been widely used in writings on regional resilience (e.g., Bathelt et al., 2013; Hervas-Oliver et al., 2011; Oxborrow & Brindley, 2012).

Based on the elements of the resilience process (Figure 1), we developed the interview script based on two categories (Figure 2): i) trajectory disruption and resilience as performance and ii) resilience capacity (i.e., adaptability). The first category let us delve deeper into perceptions about resilience to what and with what outcome, while the second allowed us to explore by what means—how the reaction was. Because there is no consensus on how to study adaptability, despite our focus on innovation, we also considered other subcategories. In terms of innovation, we looked at both product and process innovation. In this case, process innovation included, for example, marketing and sales innovation, production methods, administration and management, and information and communication systems (see OECD, 2018). Furthermore, as we used a semi-structured instrument, (sub)categories not foreseen a priori were extracted and marked in italics in Figure 2.

We conducted 20 interviews with economic actors, such as business executives, labourers and representatives from the regional government and other institutions supporting business activities (Figure 3). This approach follows other studies on regional economic resilience (e.g., David, 2018; Hervas-Oliver et al., 2011; Hoffmann et al., 2017). We identified initial contacts from documentary research by searching for local news about the footwear industry, a procedure used in the studies of David (2018), Miranda et al. (2023) and Schmidt et al. (2023). Other participants were selected by chain sampling, as people who were contacted recommended new informants (Patton, 2014).

FIGURE 2.
Research categories and subcategories

Category	Subcategory	References
Trajectory disruption and resilience performance	Pre-shock economic development path	Bristow and Healy (2018); Brown et al. (2020); Evenhuis (2017); Harris et al. (2020); Martin and Sunley (2015, 2020)
	Vulnerability	
	Pre-shock reference	
	Shock	
	Resistance	
	Recovery	
Resilience capacity-adaptability	Retrenchment	Bathelt et al. (2013); Bristow and Healy (2018); Brown et al. (2020); David (2018); Hervas-Oliver et al. (2011); Hoffmann et al. (2017); Martin and Sunley (2015, 2020); OECD (2018); Oxborrow and Brindley (2012); Simonen et al. (2020); Spigel and Vinodrai (2021); Williams and Vorley (2014)
	Perseverance	
	Entrepreneurship	
	Innovation	
	Provision of support services	
	Importance of intraregional relations	
	Importance of extra-regional relationships	
	Expansion	
	The passivity of regional actors	
	Change in horizontal relationships	

Note: ex-post categories.
Source: Developed by the authors based on the cited references and the present case study.

FIGURE 3.
Profile and code of the interviewees

Code	Interviewee	Function	S.	Code	Interviewee	Function	S.
I01	Firm	Labourer	□	I11	Firm	Owner	→
I02	Firm	Manager	□	I12	Firm	Owner	□
I03	Credit union	Manager	□	I13	Labour unions	Director	□
I04	Local association	Manager	□	I14	Firm	Owner	→
I05	Local government	Director	□	I15	Firm	Manager	→
I06	Firm	CEO	→	I16	Technical support institution	Manager	□
I07	Firm	CEO	□	I17	Firm	Manager	□
I08	Firm	Manager	→	I18	Real estate agent	Owner	→
I09	Firm	Manager	□	I19	Firm	Owner	→
I10	Firm	Manager	→	I20	Trade association	Director	□

Note: S. = Source; □ = documentary research; → chain sampling.
Source: Prepared by the authors.

The script was submitted for pre-testing with an outsourced firm and a businesswoman to verify the interviewees' understanding and determine whether the answers obtained were in line with the questions asked (Breakwell et al., 2012). The interviews were conducted in June 2022 after obtaining informed consent forms as recommended by method manuals (e.g., Breakwell et al., 2012; Tracy, 2020). After that,

the interviews were transcribed in a denaturalised manner, including grammatical corrections and application of the discursive conventions of written language (Nascimento & Steinbruch, 2019).

Secondary data also supported the analysis. We collected the 2020 and 2021 footwear industry sector reports (coded D1 and D2, respectively) and the 2020 annual activity report (D3), all published by the Brazilian Footwear Industry Association (Abicalçados). We also used data from the Semiannual Survey of Innovation (Semiannual PINTEC), based on the Community Innovation Survey (CIS), available on the website of the Brazilian Institute of Geography and Statistics (IBGE). The Abicalçados reports generally refer to the national footwear industry. The results of the Semiannual PINTEC on economic sectors, in addition to referring to Brazil, also aggregate data on preparing leather and manufacturing leather goods, travel goods and footwear. Although these open data cannot be stratified at the level of São João Batista, they also help to understand the reaction to the shock of the COVID-19 pandemic.

3.3. Data analysis

Content analysis, a set of techniques that enable the systematic description of message content, was applied in three stages of operationalisation, following Bardin (2011): i) pre-analysis, which involved organising the transcriptions and skimming; ii) exploring the material with coding and categorising; and iii) processing and interpreting the findings. We analysed the data using MaxQDA software. In writing the results of the paper, we included transcripts of the interviews to address construct validity, following the guidance of method manuals (e.g., Beverland & Lindgreen, 2010; Yin, 2018). Following Hoffmann et al. (2017), we inserted the transcripts into the figures for ease of access. We have enumerated and cited the transcripts in the text to support the data analysis. Furthermore, we performed an exploratory analysis of the quantitative data from the Semiannual PINTEC.

4. The footwear industrial district of São João Batista

The footwear industry in Brazil accounted for approximately 270,000 formal jobs and more than 6,000 companies in 2021 (Brazil, 2023). This industry is characterised by the development of spatially clustered activities in different parts of the world (Boschma & ter Wal, 2007; Eraso et al., 2017; Galuk et al., 2023).

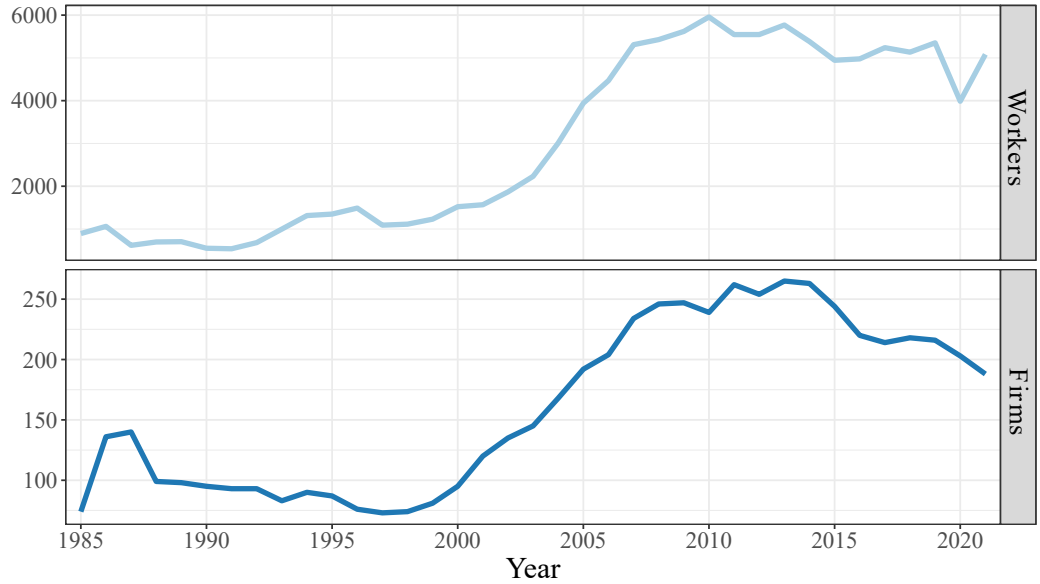
The industrial district of São João Batista, located in the Tijucas River Valley, is the largest footwear producer in Santa Catarina and accounted for more than 70% of jobs in this industry in the state in 2021 (Brazil, 2023). The region's origin as a footwear producer dates back to 1926 with the artisanal production of shoes. The sector expanded in the region in the last two decades of the 20th century, driven by the closure of the Usati sugar factory and the migration of workers to the footwear industry (Vargas et al., 2015). As an almost century-old industrial district, it includes suppliers of soles, insoles, cardboard manufacturers, metallurgical companies and business support institutions, such as trade unions and industrial learning organisations.

In line with the work of Marshall (1920), Andrade and Hoffmann (2010) highlighted the following trends in São João Batista: i) specialisation due to the high degree of outsourcing between firms; ii) advantages resulting from the co-location of suppliers and resources, including the presence of institutions to support business activity; iii) the predominance of micro and small firms; and iv) a tendency for firms to act similarly, which seems to refer to the diffusion of knowledge. In addition, the interviewees in this paper emphasised the availability of skilled labour in São João Batista, especially before the COVID-19 shock. These characteristics led us to refer to São João Batista as an industrial district, following Marshall's (1920) concept.

Figure 4 shows the evolution of the number of jobs and firms in the footwear industrial district of São João Batista from 1985 to 2021. We can highlight a crisis in 1987–1988 due to the price of leather and the fact that the Brazilian economic opening, which aimed to liberalise the economy and integrate it into the global market, did not affect São João Batista as much as other footwear agglomerations in the country due to the industrial district's focus on the domestic market in the early 1990s (Vargas et al.,

2015). The industrial district expanded between the end of the 1990s and the beginning of the 21st century.

FIGURE 4.
Evolution of the number of footwear workers and firms in the São João Batista industrial district



Source: Developed by the authors based on data from Brazil (2023).

Between 2002 and 2010, a period of economic growth in Brazil, the number of formal workers in the industrial district more than tripled, increasing from 1,800 to almost 6,000. Between 2011 and 2019, the employment level fluctuated between 4,900 and 5,700, as it was affected by the 2008–2010 financial crisis and the 2014–2015 political crisis. The situation worsened in 2020 due to the COVID-19 pandemic, with the number of formal jobs falling to 3,987. The following year, just over 5,000 formal jobs were recorded, a number lower than the pre-crisis situation but tending to recovery. The pandemic also affected the number of formal firms, which fell to levels close to 2006, the lowest in 15 years, and continued to decline in 2021, reaching a low of 188. The region is characterised by the production of women's shoes, which suffered the greatest drop in demand due to COVID-19 (D2).

5. EMPIRICAL EXPLORATION

Before the pandemic, the employment level had been increasing, although it had not surpassed the levels before the 2008–2010 and 2014–2015 crises, as shown in Figure 4 (see also T01-02 in Figure 5). Vulnerability to the COVID-19 crisis was related to the nature of the shock, the types of manufactured products and the lack of firms' cash reserves (T03-05). The pandemic resulted in uncertainty, suspended activities and absenteeism, which led to layoffs, company closures, order cancellations, production drops, revenue reduction, default and a shortage of input materials (with subsequent price increases) (T06-12; D1-2). There was also a loss of human capital, as migrant workers from other states had left São João Batista (T13-15). Furthermore, the negative effects of the shock were not homogeneous at the micro level. The data indicate that workers, outsourced firms and smaller industries were more afflicted, while larger industries had a greater capacity to absorb the adverse effects (T16-18; D3). After the initial impact of the shock (T19-20), the impression that the industry had resumed a trajectory of economic growth was almost unanimous (T21-23), which is consistent with the employment data (Figure 4).

FIGURE 5.
Transcripts on trajectory disruption and resilience performance

Pre-shock reference state or dynamic
T01 - Before the pandemic, the city's economy was better… plenty of jobs and population growth. (I03)
T02 - Before the pandemic, if I announced that I was hiring workers, there would be a crowd in front of the firm..., including qualified workers. (I12)
Vulnerability
T03 - Our [industrial district], producing both types of shoes [open- and closed-toe shoes], could not ship either to the Northeast or the South; the stores were closed. Exporting was even harder. (I13)
T04 - The firms needed more preparation to survive this crisis. (I16)
T05 - The main lesson is that people need to be better prepared financially. Those who often work on the edge can't cope when the crisis hits. (I03)
Shock
▪ *Shock effects*
T06 - Manufacturing activities began to decline. There is no manufacturing without employees. (I01)
T07 - The price of raw materials has risen too much. And there's a shortage of raw materials. (I01)
T08 - It was sometimes challenging to produce because the workers also got sick. (I03)
T09 - We saw firm closure. (I13)
T10 - Large chain stores cancelled orders. (I17)
T11 - The market was very uncertain. We didn't know what was going to happen. (I09)
T12 - There were many layoffs in São João Batista. (I09)
T13 - With the pandemic, people returned to their cities of origin. (I09)
T14 - Many people migrated to another industry in São João Batista. (I14)
T15 - Today, we cannot even select [labourers]. The workforce is very scarce. (I17)
▪ *Most affected actors*
T16 - Default increased more for individuals and microentrepreneurs. (I03)
T17 - Some small companies have suffered. Large companies have succeeded. (I04)
T18 - Large and medium-sized firms were better able to absorb the impact. (I13)
Resistance
T19 - At the beginning of the crisis, São João Batista had a significant retraction. (I03)
T20 - We were able to absorb the negative impact that the pandemic had on other sectors. (I13)
Recovery
T21 - [The economy] improved in the second half of last year, 2021. (I08)
T22 - The market today is very good. People have a very positive sales perspective. (I09)
T23 - The number of workers is increasing every day. (I17)

Source: elaborated by the authors.

Just as the actors were affected differently, the adjustment to the crisis was also heterogeneous (Figure 6). As a means of absorbing the shock, there was cost containment, contract suspension, process reduction and renegotiation with suppliers (T24-27). Measures to persevere were also adopted, such as retaining human capital, preparing samples for product dissemination and avoiding any changes to the production process (T28-30). In the case of some companies seeking to retain human capital, it should be noted that Brazilian labour laws discourage unfair dismissal through termination penalties, which justifies the retention of workers. Furthermore, there are indications that business expansion measures were particularly successful for some firms, as demand for footwear was not uniformly affected (T31-32; D1).

Despite reports of new firms, especially those classified by Brazilian legislation as individual microentrepreneurs (who can only hire one labourer) (T33-34), the number of formal firms in the industrial district decreased in 2020 and 2021, as seen in Figure 4. In this context, the opening of firms providing services related to the footwear production stages is a warning point, especially if it is done informally and because of job losses.

FIGURE 6.
Transcripts on reaction except for innovation

Retrenchment
T24 - There was a salary reduction. There was also cost reduction, as much as possible, to maintain the firm. (I09)
T25 - In fact, we had to reduce processes. (I17)
T26 - The organisation continued to operate, but with fewer employees. Some had their contracts suspended. (I04)
T27 - We calculated how much money we had to pay, how much we had to receive... We talked to all the suppliers and negotiated. (I10)
Perseverance
T28 - The manufacturing process has not changed. (I01)
T29 - We tried to keep as many workers as possible, there wasn't a big reduction in the workforce. (I09)
T30 - We produced samples while the market was at a standstill. We did what we could do. (I10)
Expansion
T31 - During the pandemic, the firm hired three times the number of workers it had. I hired people who were fired or who had a salary reduction. (I14)
T32 - The firm did not follow what was most common. Everyone sought cost reduction. (I14)
Entrepreneurship
T33 - People chose to work at home after losing their jobs, look for other opportunities, and work in ateliers. (I09)
T34 - [Some people] sought micro-entrepreneurship. Some people got services from large industries, acting as outsourced workers, while others produced their own footwear. (I13)
Provision of local services
T35 - We did not need it, but we saw Sebrae helping other firms and providing consultancy. (I08)
T36 - Before there was a shoe fair, but events were forbidden during the pandemic. So, travel tickets were paid to customers to visit the factories. The customers came directly to the source. (I10)
T37 - Both employers' and workers' unions supported the firms. There were many lectures on what could be improved and what could be done to avoid layoffs. (I17)
T38 - Online fairs were held. It took a while for sales to grow, but the online fairs were great. (I17)
T39 - In 2020, we talked to the government about changing the city's patron saint's holiday to an optional holiday. (I20)
The passivity of regional actors
T40 - In terms of local government, I did not see support for firms. I also saw the unions very quiet. (I08)
T41 - I did not see many local government actions. (I09)
T42 - [Technical support institution] performance has not changed concerning the pandemic. (I17)
Importance of intraregional relations
T43 - We've made some partnerships to borrow raw materials; this has happened several times. (I07)
T44 - Entrepreneurs met. A business circuit was set up [to bring customers to visit the factories]… Unity was strength. (I10)
T45 - I realised how important networking is. Relationships generate dialogue. (I20)
T46 - We also show projections to banks to get a credit loan. People at the bank already knew me because I had been in the footwear market for a long time. (I10)
Change in horizontal relationships
T47 - Firms tried to reinvent themselves by uniting during the pandemic. (I05)
T48 - Our firm became closer to some competitors, as it was a time for one to depend on the other. (I09)
T49 - Before the pandemic, we did not have access [to other competitors]. (I07)
Importance of extra-regional relationships
T50 - I firmly believe that factories have seen the need to be faster, to be more connected to the domestic and foreign markets. (I05)
T51 - We hired two Milan-based women for fashion advice. (I10)
T52 - São João Batista depends a lot on other regions. The factories do not produce for the city's stores. It is very to the Northeast and other countries. So, when businesses began to reopen, São João Batista began to react. (I01)
T53 - And our industry depends on national retailers, not only in Santa Catarina, but especially in the Southeast. Many companies also sell to the Northeast, and others here even have a market share in the South. (I20)

Source: elaborated by the authors.

Figure 6 also reveals that firms benefited from the actions of support institutions, such as guidance, training, consulting, holding online fairs and paying for tickets for clients to visit the industrial district (T35-38). Due to the shock, political representation was also carried out to ease restrictions on the operation of firms and reduce labour costs (T39). However, the shock also affected business support institutions, with the suspension of activities contributing to a perception of passivity on the part of some interviewees (T40-42).

The transcripts also highlight the perceived importance of relationships in São João Batista (T43-45), including easier access to credit (T46). Some firms also sought closer links with competitors, which was facilitated by the fact that they were facing common problems (T47-49). In addition, respondents mentioned extra-regional links as a means of accessing new information (T50-51) and because of the location of consumer markets (T52-53). With the reopening of shops in several cities, firms in São João Batista have resumed suspended distribution channels, which has stimulated the economic recovery of the industrial district.

Figure 7 shows some transcripts about innovation, with the segregation to other reactions because of this study's focus solely. The corpus indicates that different types of innovation emerged in the industrial district. Product innovations included new models and design improvements based on the understanding that fashion constantly changes (T54-56). In terms of process innovations, those related to marketing and sales were driven by the need to facilitate the commercialisation of footwear directly to end consumers, which boosted internet use during the pandemic (T57-61). To this end, the footwear industrial district has accelerated digitalisation (T62-65), and some firms have also created departments or business models dedicated to e-commerce (T66-68). In addition, there were some reports of firms introducing new machinery, including using credit lines offered during the pandemic (T69-71) or trying to improve the manufacturing process in response to the drop in sales (T72). Thus, among the innovations emerging in São João Batista in the face of the COVID-19 shock, the data suggest that process innovations—particularly marketing and sales innovations—were the ones guiding the response to the contingencies arising from the pandemic.

FIGURE 7.
Transcripts about innovation

Product innovation
T54 - In the footwear industry, fashion changes very quickly; the footwear factories focused on modernising the shoe design [and] working with fashion materials. (I05)
T55 - When a colour comes into fashion, factories start producing shoes in that colour. (I05)
T56 - Our firm's innovation was to give extra joy to the product by working with the colours… We have invested in life [colours] and in the comfort of products. (I12)
Process innovation
▪ *Marketing and sales*
T57 - Despite all the bad things that have happened, companies have also recognised the need to reinvent themselves. There has been a lot of reinventions in São João Batista. Many companies have increased their turnover by reinventing themselves with internet sales. (I05)
T58 - We invested more in social media, social networks and digital marketing during the pandemic. (I12)
T59 - E-commerce was one area of positive growth in the industry. (I13)
T60 - E-commerce boosted the firm… the consumption of footwear continued. The final consumption of shoes was happening. It wasn't happening in normal, physical shops. So where were the end consumers shopping? In e-commerce. And the company was selling through e-commerce. (I14)
T61 - Online fairs were held… We now have an online store we acquired at that time. (I17)
▪ *Information and communication systems*
T62 - Now, basically, everyone is more digital. (I03)
T63 - Our digital structure was something that had been planned. However, it was small, incipient and, out of nowhere, took on enormous proportions. (I03)
T64 - The pandemic brought everything online. There has been a rapid evolution in technology to be able to have an online meeting. I think we've evolved about ten years of technology in one year. (I12)
T65 - Clearly [the pandemic] has accelerated digitalisation. (I20)

FIGURE 7. CONT.
Transcripts about innovation

▪ *Administration and management*
T66 - Today, firms have people dedicated to digital marketing and to e-commerce. (I13)
T67 - Some firms today only work with e-commerce, outsourcing footwear production. (I05)
T68 - Specific departments were created, people were assigned to work with social networks… People have been assigned to work with marketing… (I20)
Production methods
T69 - Some industries were looking for new machines during the pandemic… A few times, a businessman said there was [an imported] machine… he wanted to finance it. What I see most in terms of innovation in this industry is investment in new machines. (I03)
T70 - [After the credit line was opened during the pandemic] we were able to buy another machine, an Italian machine, which we needed to produce our products. By buying that machine, we also had to buy another one, and we had to invest in the factory, in production. And that [buying new machines] helped the production process a lot.
T71 - The firm also acquired new machinery… We invested in the company. (I14)
T72 - If you enter our factory floor, you will see the most organised factory in Brazil because we started having a lean and fast production process… We achieved that post-pandemic. (I07)

Source: elaborated by the authors.

The results of the interviews with different actors in the São João Batista industrial district are in line with the data available at the national level. According to reports from Abicalçados, the pandemic has prompted footwear companies to implement digital strategies, resulting in increased online sales and relationships (D1-2). Furthermore, among the sectors surveyed by the Semiannual PINTEC, preparing leather and manufacturing leather goods, travel goods and footwear had the highest percentage of innovative firms that developed innovation activities as a result of the pandemic (43.13% of the 234 responding companies, compared to 10.2% of the total sample of 6,630 innovative companies).

6. DISCUSSION

Our empirical research indicated that the footwear industrial district of São João Batista was still dealing with the impacts of the 2008–2010 financial crisis and the 2014–2015 political crisis when it faced the shock of COVID-19 (see Figure 4). The pandemic triggered adverse economic effects, such as layoffs and company closures, with small and medium-sized enterprises, workers and outsourced firms—formal and informal—being particularly affected. The industrial district's response to this latest shock involved a range of mechanisms, which we explore in the subsequent paragraphs, detailing how they contributed to its resilience.

Marketing and sales innovations emerged in the São João Batista industrial district to facilitate interaction with the end consumer. With the closure of retail outlets in various regions due to measures aimed at reducing the spread of COVID-19, these process innovations enabled firms to implement direct sales to final clients, configuring an adaptation to the shock. These innovations were sought to mitigate negative impacts, a scenario that questions the segmentation between a moment of shock absorption without innovation and a moment of creative response. As such, this study extends our understanding of the creative response in the regional resilience process introduced in this literature by Filippetti et al. (2020).

By conceptualising innovation as a mechanism of adaptability, we challenge the sequential ordering of the dimensions of regional resilience—vulnerability, resistance, adaptability and recoverability—as found in other studies (e.g., Hu et al., 2022; Martin et al., 2016; Martin & Gardiner, 2019; Martin & Sunley, 2015, 2020; Sutton et al., 2023; Sutton & Arku, 2022). We argue that the initial impact of the shock could have been more severe if reactive measures based on innovation had not been taken or if they had been limited to attempting to maintain the status quo. It cannot be assumed that adaptation or economic transformation happens only after the shock's initial impact. Thus, this study contributes by

indicating that the influence of adaptability is not limited to economic recovery. We therefore suggest the following for future studies:

Proposition 1: The economic resistance of an industrial district is positively related to its adaptability.

The results also showed that the creative response is not limited to one type of innovation. In the case study, some companies reported that they had to improve their information and communication systems to support marketing and sales innovations. Others changed their organisational structures or business models. The existing literature has already reinforced the role of knowledge accumulation in the innovation process, showing that the pre-crisis innovations enabled the mitigation of adverse impacts during a shock (e.g., Bathelt et al., 2013). This article adds to these studies by showing that when pre-shock conditions are not well developed or are insufficient, the creative response requires a complementary set of innovations to cope with new contingencies. Therefore, it seems riskier and more costly to assume that the lack of pre-crisis innovations can be compensated by innovation during the crisis.

Regarding innovation types, this paper highlights process innovation as a reactive mechanism. In the industrial district studied, product innovation was related to using new materials, which is common in the footwear industry (see Boschma & ter Wal, 2007; Galuk et al., 2023). There were also design changes aimed at a "positive emotional response[s]" (OECD, 2018, p. 71), another common reaction in the fashion industry during recessionary periods, as shown by Oxborrow and Brindley (2012). Another response documented in the resilience literature is the introduction of new, higher value-added products (Belussi, 2015; Machado et al., 2019; Molina-Morales et al., 2023). However, process innovation, especially in marketing and sales, supported the search for adaptation in São João Batista in the face of the negative effects of COVID-19. Our findings suggest that process innovation can help explain the resilience of a fashion-related industrial district in the face of a pandemic.

Accordingly, we emphasise that the shock's nature influences the creative response. The drop in demand in the São João Batista industrial district was temporary due to limited spatial mobility and face-to-face social contact in consumer markets. The COVID-19 crisis is distinct from recurrent financial crises and exchange rate fluctuation scenarios, as in these cases, differentiation is seen as a resilience strategy for the footwear industry, as Machado et al. (2019) suggested. Our case also differs from the Finnish one studied by Simonen et al. (2020) when it comes to entrepreneurship and product innovation in response to a shock. The case reported in this article is also different from the technological disruptions caused by the innovation of plastic ski boots in Montebelluna (Italy) and digital printing on tiles in Castellón (Spain). In these industrial districts, disruptions emerged from firms activating intra- and extra-industrial district networks, generating shocks that required responses in search of innovation diffusion and resilience (Molina-Morales et al., 2023). Thus, by drawing on the context of São João Batista in the face of COVID-19, and contrasting it with other cases presented in the regional resilience literature, we argue that the specificity of a shock drives industrial districts to direct their efforts towards different types of innovation. Therefore, we suggest:

Proposition 2: The relationship between the type of innovation and the economic resistance and recovery of an industrial district is shaped by the shock's nature.

This study's findings also highlight how the determinants of resilience can be affected during a shock, thereby reducing the capacity for a creative response. While the ability to attract and retain skilled workers is a source of regional resilience (Spigel & Vinodrai, 2021), the emigration of human capital is seen as a barrier to resilience (Simonen et al., 2020). In this context, the footwear sector faces a challenge: the low attractiveness of the manufacturing sector for the next generation of workers (Galuk et al., 2023). Furthermore, in the case of the pandemic, interviewees reported an exodus of workers in São João Batista due to the cost of rent and the closure of workplaces. Thus, the present case study sheds light on how a shock can affect human capital in the form of skilled labour, thereby turning a source of resilience (availability) into a barrier (scarcity). Previous research has shown the limitations of using the sectoral structure as a determinant of economic resilience or recovery, emphasising skill and experience levels instead (Harris et al., 2020; Martin et al., 2016; Martin & Gardiner, 2019). Moreover, regardless of the preexisting capabilities considered, from the perspective of our results, they cannot be assumed to be immutable or available and ready to be mobilised in times of shock.

Another mechanism of shock reaction is entrepreneurship, a source of adaptability and economic diversity (Simonen et al., 2020; Williams & Vorley, 2014). In this sense, Molina-Morales et al. (2023) pointed to the growth in the number of firms in an industrial district as one of the possible alternative measures of resilience in the context of a shock resulting from disruptive innovation. In the case of this paper, we considered the reaction to a pandemic shock in a footwear industrial district. While formal employment in the São João Batista recovered to just below pre-pandemic levels in 2021, the number of firms declined (Figure 4). The evidence from the interviews portrays the opening of outsourced firms, mainly through i) the legal figure of the micro-entrepreneur, characterised by the work of a business owner with up to one employee or ii) informality. Thus, in the industrial district under study, entrepreneurship as a response to the crisis resulting from COVID-19 did not support the type of resilience characterised by a propensity to risk and innovation. When dealing with different industries and shocks, we suggest extending the measure proposed by Molina-Morales et al. (2023) to include informality. As such, we recommend that future studies include the rates of change in the number of formal and informal firms as complementary proxies for assessing the resilience of an industrial district.

The reaction to the studied shock also included business support services, such as consultancy, training, online fairs and political representation. Despite reports of the provision of these services, some interviewees perceived passivity on the part of certain institutions. These findings point to an active role for institutions in the event of a shock and that firms should not simply wait to be rescued (see also Brown et al., 2020; Hoffmann et al., 2017). In particular, the present paper suggests that these services should include informal economic activities to create conditions for exploring opportunities during a pandemic shock. Furthermore, this study also illustrates the perceived importance of relationships within an industrial district in responding to a pandemic shock. Our results indicate that some may be temporary and established because of contingency (see also David, 2018).

7. Conclusion

This research examined innovation as a response to a shock in the process of regional economic resilience through a case study of the footwear industrial district of São João Batista (Southern Brazil), considering the COVID-19 crisis. We conducted interviews with different regional actors and collected secondary data to complement the analysis of the transcripts. Our findings suggest that the emerging reactions supported the footwear industrial district's adaptation to the shock, allowing us to outline some propositions.

First, our empirical evidence indicates that innovation, particularly in marketing and sales, was sought to mitigate the severity of the COVID-19 pandemic crisis in the São João Batista footwear industrial district. Understanding innovation as a mechanism of adaptability, we propose the influence of this dimension of resilience on economic resistance. Second, our discussion contrasts the findings of our paper with studies in the regional resilience literature that emphasise other types of innovation as a means of adaptation or transformation. In this context, we suggest that the relationship between the type of innovation and economic resistance and recovery depends on the nature of the shock.

In terms of practical implications, considering resilience as a process, we recommend promoting a culture of innovation in the industrial district and identifying different types of shocks and possible preventive measures or responses to them. For a traditional manufacturing industrial district characterised by the outsourcing of services, including informally, we also suggest that institutional support should not be limited to formal firms during a shock. In addition, following reports of worker migration, we suggest considering policies to maintain employment through different forms of work contracts in the absence of technological obsolescence. During a pandemic, public policies to settle people in the region can reduce the outflow of skilled workers and increase employment and production levels when activities resume.

One limitation of this research is that we conducted it shortly after the shock. Therefore, the reaction dynamics may not have been completed when we collected the interview data. As a recommendation, we suggest further studies with a longitudinal perspective, which could also compare the reaction process to different types of shocks and even cover multiple regions. In addition, the procedures used to reach our interviewees, though based on the literature, emphasised the selection of firms and support institutions.

Future research could delve more deeply into the perceptions of (former) labourers and the question of resilience for whom (see also Lemke et al., 2023). Furthermore, the propositions in this article represent avenues for advancing knowledge on regional resilience.

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Articles

Humanistic place leadership, cultural enhancement, and change in industrial districts

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Abstract:

Drawing inspiration from the works of Fiorenza Belussi on multiple paths of development in local productive systems, the essay contributes to the ongoing debate on factors facilitating such transformations, focusing primarily on industrial districts (IDs) as open learning systems. With specific reference to the Italian context, this paper recalls the delicate balance between socio-cultural and economic elements within IDs transitioning towards new paths of development, crucial for facing the current technological and societal challenges. The essay proposes to look at the possible diffusion of humanistic management (HM) and cultural enhancement of economic strategies, as new triggering factors against lock-in conditions and tendencies toward degradation during phases of ID transformation. HM prioritizes the well-being of individuals and ethical decision-making, aligning with a broader societal purpose. Cultural enhancement, rooted in a common heritage, supports place identity, and suggests bases for multiple specializations. The convergence of HM and cultural enhancement within IDs may offer to renewed place-leaderships levers for strategies of transition pointing to sustainable paths that align with broader societal goals in an era of disrupting challenges.

Keywords: Industrial districts; humanistic management; cultural-based development; place leadership.
JEL classification: L60; O1; P25; Z1.

Liderazgo humanístico, mejora cultural y cambio en los distritos industriales

Resumen:

Inspirándose en los trabajos de Fiorenza Belussi sobre múltiples vías de desarrollo en los sistemas productivos locales, el ensayo contribuye al debate en curso sobre los factores que facilitan tales transformaciones, centrándose principalmente en los distritos industriales (DI) como sistemas de aprendizaje abierto. Con referencia específica al contexto italiano, este documento recuerda el delicado equilibrio entre los elementos socioculturales y económicos dentro de los DI en transición hacia nuevas vías de desarrollo, cruciales para hacer frente a los actuales desafíos tecnológicos y sociales. El ensayo propone examinar la posible difusión de la gestión humanista (HM) y la mejora cultural de las estrategias económicas, como nuevos factores desencadenantes contra las condiciones de bloqueo y las tendencias hacia la degradación durante las fases de transformación de la DI. HM prioriza el bienestar de los individuos y la toma de decisiones éticas, alineándose con un propósito social más amplio. La valorización cultural, enraizada en un patrimonio común, apoya la identidad del lugar y sugiere bases para múltiples especializaciones. La convergencia de HM y la mejora cultural dentro de los DI puede ofrecer nuevas palancas de liderazgo para estrategias de transición que apunten a caminos sostenibles que se alineen con

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objetivos sociales más amplios en una era de desafíos disruptivos.

Palabras clave: Distritos industriales; gestión humanista; desarrollo cultural; liderazgo de lugares.
Clasificación JEL: L60; O1; P25; Z1.

1. Introduction

Paths of open local development in local productive systems (LPSs) occur over extended periods following an evolving interplay of historical endowments of supportive and triggering factors and cumulative auto-reproductive dynamics within such paths (Becattini, 2004; Belussi and Sedita, 2009; Bellandi and De Propris, 2015). Scholars have investigated evolutionary processes of LPSs, evaluating the role of path dependence (Hassink, 2005; Belussi and Sedita, 2009), knowledge bases (Belussi and Sedita, 2008; Bellandi et al., 2018b), gatekeepers (Giuliani, 2011; Hervás-Oliver et al., 2011; Morrison et al., 2013), place leaders and agency (Bellandi et al., 2021; Sotorauta et al., 2017). In the context of contemporary great technological, environmental, health, societal and geo-political challenges, LPSs need to transform and are transforming as well, following forking dynamics and diverse paths of development (Belussi and De Propris, 2013; Bellandi et al., 2018; Jeannerat and Theurillat, 2021; Hervás-Oliver, 2021).

Consider industrial districts (IDs), a particular type of LPS. IDs are characterized by the spatial concentration of interconnected businesses within a specific region or locality. Often specializing in particular industries, IDs boast a close-knit network of firms, suppliers, and supporting institutions collaborating to drive economic activities (Becattini, 2004; Boix et al., 2015). The endogenous mechanisms for cultivating innovative capabilities follow a non-linear model of innovation (Lombardi, 2003). Emergent structures involve spontaneous and non-deliberate forms of social interaction, such as social networks and communities of practice. This involves the reuse of existing knowledge blocks or the recombination of dispersed knowledge fragments, leading to the emergence of novelties. Applying an endogenous perspective, knowledge, both new and existing, circulates continuously, creating a perpetual process (Bellandi et al., 2018b). Combining an exogenous perspective to the endogenous ones, IDs may be seen as open learning systems (Belussi and Sedita, 2012), where the development paths rely on the interplay between local and non-local triggering factors. Business networks and communities of civic practice fuel the interweaved evolution of the industrial organization and the socio-cultural structure, bringing about the formation of new knowledge structures and depending on the related support put in place by local leaders (Beers et al., 2019). Therefore, the district's openness to different possible evolutions arises from a delicate balance between socio-cultural and economic components within the internal structure of the district and its relations with the external environment (Becattini and Rullani, 1996; Giuliani and Rabellotti, 2017). This balance is difficult to maintain, especially in changing and turbulent environments where sociocultural, technical, productive and market conditions change (Ramazzotti, 2010; Dei Ottati, 2017; Sedita and Blasi, 2021).

Path transformation is crucial for LPSs facing contemporary disruptive challenges, but the debate on conditions that support such transitions is still quite open, for example for mature IDs, where degradation in the endowments of local capitals of development may bring about lock-in and fragmentation (Bellandi et al., 2018; Lazzeretti et al., 2019). This short essay tries to delve into such debate that, as the previous references suggested, has one source of inspiration in the works of Fiorenza Belussi. We propose an original view of strengthening in triggering factors that may help to mobilize more-or-less degraded endowments of local capitals for thriving and transitioning towards new paths of development.

In the following sections, we will recall a set of triggering factors for path transformation that may help to counteract contemporary conditions of degradation and open to new path of sustainable development. Specifically, we will point out the role that can be played by different types of place-leaderships and the combination of progressive types of PL with an emergent awareness of the role and possibilities of 'humanistic management' and 'cultural enhancement' of local development. We will refer our discussion mainly to Italian industrial districts.

2. Triggering and hindering factors in local development and ID transformation

In Italian IDs, historical endowments of supportive conditions that have helped take-off in the first decades after WW2 have transformed along the paths of development in the next decades (Trigilia and Burroni, 2009). Let us think of conditions such as traditions of crafts skills and attitudes to diffused entrepreneurship and non-local trading in the old cities of Renaissance, as well as ethic of hard work and attention to natural resources and commons from nearby rural areas, together with political sub-cultures oriented to provision of public goods specific to local needs of social and economic progress (Becattini, 2004). These conditions emerged in some Italian regions at the beginning of the 20th century and revamped at the end of WW2 (Belussi, 2009; Trigilia, 2001). This local 'primitive' accumulation of pools of composite technical, human, and social capital is consistent with ignition of the auto-reproductive dynamics of open learning systems (Becattini and Rullani, 1996; Belussi and Sedita, 2012). Triggering factors of take-offs, which both established and built upon such primitive accumulations, were, in various compositions (Belussi, 2009):

- local larger firms promoting or giving way to an articulation of spinouts and independent suppliers;
- entry of non-predatory large external companies or traders;
- joint entrepreneurial action with various forms of cooperative initiatives in manufacture, agriculture, banking etc.

Development not only increased local capital but also altered its original composition. Factors of weakness in this evolution remained obscured until the onset of disruptive challenges necessitated transformative changes in the local ID structure. The delayed recognition of these weaknesses underlines the critical need for ongoing adaptive strategies to sustain growth and resilience in the face of emerging disruptions.

Case-studies have highlighted various degrees and compositions of conditions leading to degradation (Schamp, 2005; Hassink, 2010; Isaksen, 2014; Dei Ottati, 2017; Iammarino et al., 2019; Bellandi and Storai, 2022). For examples, excessive offshoring has deprived some areas of crucial technical capital. The success of DUI modes of learning (by doing, using, and interacting) and innovation within traditional productive specializations has often hindered the urgency for local investments in STI (science and technology) modes, knowledge intensive services, and new high growth productive specializations. Additionally, challenges in entrepreneurial successions coupled with a lack of renewal in the practice and image of working conditions in factories have diminished new human capital investments in the local industries by the younger generations. Immigration flows, while aiding the renewal of workforce in lower qualifications, have strained local social relations and decreased local business investments in new good high productive jobs. The accumulation of private financial and real-estate ownership among many families of small entrepreneurs and skilled workers has risked tilting work and trust ethics towards rent-seeking and rent-protection attitudes. Similarly, old political subcultures, which once generated robust local institutional fabrics, have been threatened and sometimes replaced by political practices oriented towards rent-seeking and rent protection. The control over predatory or monopolizing strategies promoted or helped by external financial capital has weakened; the exploitation of local natural resources and land was halted only in extreme cases while going on in softer ways for the short-run benefit of local public budgets and private profits.

These factors collectively underscore the complex interplay between local development dynamics and broader economic and social challenges (Sammarra and Biggiero, 2001; Giuliani et al., 2005; Bellini, 2006; Belussi and Sedita, 2008; Lazzeretti et al., 2019; Sedita and Blasi, 2021).

The long list of degradation conditions provides of course plenty of interpretative keys to understand negative path dependency in depressed areas as well as look-in, decline and fragmentation in IDs that have thrived along the wave of industrial development in the second half of the 20th century. However, local productive systems in general, and IDs in particular, are still important engines of development in old and

new industrialized countries (Bettiol et al., 2020; Hervás-Oliver, 2021). They need a revamping of leadership and triggering factors.

3. Place-leadership for the ID transformation

Local development can either be vicious or virtuous depending on how challenges are addressed. It emphasizes the need for legitimizing actions and leveraging adequate strategies to ensure positive outcomes. Regional studies have been recently expressing a growing interest in the role of the so-called 'place leadership' (PL). This body of literature characterizes PL as sets of key actors at the core of territorial governance processes. These actors not only drive but also wield crucial influence over the reproduction and variation of collective resources, such as commons and public goods, specific to territorial development (Stimson et al., 2005; Sotorauta et al., 2017). Specific embedded actors, either organizations or single individuals, have the ability and legitimization to mobilize both collective and private resources, establish shared visions and initiatives, and drive strategic functions within governance structures and practices. These functions are designed to address the economic and social performance of the place, as outlined by researchers such as Sotarauta and Pulkkinen (2011) and Beer et al., (2019). They are particularly relevant today in relation to the transformation asked to IDs that face disruptive global challenges related to social polarization, technological revolutions, climate change, etc.

In studies dealing with the exploration of local development paths, the functions of PL have been mainly explored in relation to features of strength and openness. However, a PL may be weak or dominated by either civic oligarchic or monopolistic corporate interests, in each of these cases expressing barriers that hinder positive path transformation (Bellandi et al., 2022). What type of place-leadership dominates depends both on the features of the local business and social configurations and on the cultures of policy and governance to which public and private joint action rests in the place.

For example, the presence, within the local business and social structure, of nodes of potential monopolistic power and capitalist-dominated social relations, as well as the presence, within the governance culture, of approaches pointing either to separation from place-based specificities or to capture by private interests, make easier the prevalence of dark-sides in PL; more positive prospects are related instead to a broad local multiplicity of nuclei of productive know-how, the permanence of rules of chorality and mobility among local players, and attitudes of inclusive governance (Becattini, 2015; Bellandi et al., 2022). There are, evidently, circular relations, either vicious or virtuous, between these variables. Nonetheless, some new triggering factors, operating at multi-level, local and non-local, scales, may be identified.

Indeed, the history of local development provides evidence of types of structures and strategies that might expand in present-day conditions and assume the role of such new triggering factors. Leet us consider, specifically, three hints from the Italian thought on local development:

- In the 1950s, Adriano Olivetti introduced the concept of a communitarian enterprise as a driving force for local development. He envisioned these enterprises, along with networks of local stakeholders, as places "where justice dwells, where progress reigns, where beauty sheds light" (Olivetti, 1952, pp. 42-43). Olivetti's communitarian enterprise model emphasized the integration of economic activities with social and cultural development, creating a synergistic relationship that fostered holistic local development. His ideas remain influential, demonstrating how businesses can play a central role in cultivating just, progressive, and beautiful communities.
- In the 1980s, Sebastiano Brusco highlighted the importance of local 'real services' extending from the direct support to innovation and marketing strategies of local small firms to social services that played a crucial role in facilitating workers' family organization. According to Brusco, these services reduced the costs associated with family life and enhanced overall well-being. These services favoured or strengthened attitudes towards the active contribution of workers to the good performance of the company, a necessary ingredient when SMEs try to position themselves in market segments with growing

differentiation and variability, as was (and is) a competitive necessity in many IDs (Brusco, 1982 and 2008).

- According to Giacomo Becattini, all along the literature on IDs the "most important trait of the local community is its relatively homogeneous system of values and views, which is an expression of an ethic of work and activity, of the family, of reciprocity, and of change" (Becattini, 2004, p. 20).

Those hints from history, among others, combine strategic perspectives and resources of ethics and culture. They seem to inspire or at least anticipate a broad blossoming of contemporary theories, initiatives, and debates within and without IDs, on the importance of drivers like corporate social responsibility and cultural capital in sustainable development (Paolazzi et al., 2018; Coda, 2023; Mosconi and D'Ingiullo, 2023; more in general Porter and Kramer, 2011; Cohen, 2021). In what follows, building on the above historical hints, we propose a codification of such blossoming. The codification points out the key role of concepts of 'humanistic management' and 'cultural enhancement' of industries and places. Referring to them, we try to offer an original perspective on the possibilities and features of new progressive triggering factors for the transformation of IDs.

4. Humanistic Management

Over the past 50 years, concepts like corporate social responsibility (CSR), conscious and cooperative capitalism, social business and entrepreneurship, benefit corporations, business citizenship, and business ethics have emerged and strengthened, paving the way for practical and conceptual improvements in the value creation processes of our economy (Elkington, 1997).

More than 10 years ago Porter and Kramer (2011, p. 4) underlined that "creating economic value in a way that also creates value for society by addressing its needs and challenges" is something that needs to be addressed by our production systems. By introducing the concept of Creating Shared Value (CSV) (*ibidem*), the authors stressed the need of a transition towards a paradigm of sustainability where business and social concerns are re-integrated within both private and public, individual, and collective strategies.

The Humanistic Management (HM) literature, also ignited by the urgency for the business world to face the looming Twin Transitions and the related new political agenda (Bianchini et al., 2023), integrates all the streams of contributions just recalled within the idea that the unconditional support to the dignity of every human being becomes a core organisational goal (Spitzeck, 2011). It represents a novel paradigm where individuals engage in long-term relationships and materialize their freedom through values-based social interactions instead of maximising their immediate utility (Melé 2016; Pirson, 2017). Key elements of HM are dignity, ethics, and legitimacy (Pirson and Amann, 2010).

Therefore, HM is a paradigm that places a profound emphasis on the well-being of individuals, ethical decision-making, and the overall flourishing of both employees and the broader community within the organizational context. It seeks to balance economic goals with social and environmental considerations. Beyond shareholders and profit-centric models, HM aligns with ethical principles, fostering a workplace culture that values collaboration, inclusivity, and the personal development of employees. By prioritizing human welfare, HM aims to create sustainable organizations that contribute positively to society. It is crucial to emphasize that these sustainable entities are distinct, in principle, from non-profit organizations. Leaders, entrepreneurs, and managers adopting a humanistic approach can effectively lead for-profit organizations as well (Rosanas, 2008). HM has become a promising alternative business and development approach to research, practice, policy, teaching, and education (Della Lucia et al., 2021). Approaching business change from this perspective opens questions about leadership, change management, and impact on the business ecosystem (Lawrence and Pirson, 2015).

Despite HM was born with a strong individual-level emphasis within the business context, it has evolved to embed the multi-level nature of responsible managerial actions (Pirson, 2020; Laasch et al., 2020), as in corporate social responsibility and CSV approaches. At the individual level, responsible leaders are oriented to the development of human virtue to its fullest extent, grounding here leaders' legitimacy

for corporate activities. At the business level, the values-based business management shapes the organizational structure, and business decisions and activities are crucial for assuming and sharing responsibility (Hall and Soskice, 2001). At the system level, responsible practices and routines foster trust, company image and reputation, but also political legitimacy (Pirson, 2017). Therefore, the entrepreneurial priorities combine with the local society's needs, community vocations, and know-hows, enhancing collective goods and shared values.

In a more general sense, CSV and HM approaches at the system level should not be conceived as the sole responsibility of enlightened managers, but rather as a communitarian endeavour (Grimbert et al., 2024), following also an Olivettian inspiration (Camoletto and Bellandi, 2021, p. 34), which takes to consider what could be the impact of HM to place-leadership in transformation and new local development paths.

Before discussing the point, it is necessary however to also consider another variable, which is the possible role of beauty and cultural heritage in new paths of development. Indeed, the reference to this variable allows to complete the trilogy advocated by the same Adriano Olivetti when drawing the nature of strong dynamic enterprises investing in corporate welfare and communitarian development. Indeed, it could be also suggested that some current reflections on aesthetic approaches, beauty, and 'artification' in organizations (Ratiu, 2017) naturally intersect those on HM.

5. Cultural enhancement of industries and places

Reference to a common cultural heritage, especially when strengthened by material relics of symbolic/artistic content left in the urban and rural fabric by previous history, attributes identity to a place. Inherited identity is vital if it is expressed in a higher relational congruence within locally based educational, productive and innovation projects, which Becattini (2015, p. 59) called "productive chorality". The accumulation of relationships and intersections in the fields of activity of families, businesses, local government, cultural, religious, recreational and social assistance bodies, together with the apparatus of traditions of productive know-how, commercial rules, and care of the common goods, related jargons, symbols, rituals, norms, and values constitute the "cultural background (in the anthropological sense) on which individual decisions, including economic ones, depend and are projected" (idem , pp. 59-60).

The same chorality is the basis for the creation of new cultural objects that are included and give support to the reproduction of the contemporary social and economic life of the place (Kebir and Crevoisier, 2008). These objects help broaden the set of artistic and/or cultural activities proper to a place, as well as to bring out auxiliary activities for the typical products of the production system. Cultural opportunities for renewed local development paths arise from the exchange of experiences and ideas in an area where production activities intersect with cultural heritage, including artworks, performing arts, festivals, etc. Artistic and cultural activities become drivers for the development of the place through tourism, residential, logistics and communication services (de-Miguel-Molina et al., 2012). Furthermore, an easy and continuous access to cultural opportunities facilitates "innovative thinking and social cooperation" (Sacco et at., 2013, p. 560). Such phenomena are emblematic in those places where material cultural and landscape heritage is incorporated into an economic specialization, as in many LPSs with tourism specialization (see Lazzeretti and Capone, 2015). Or, as suggested by Santagata (2002), advanced cultural functions can be found in many contemporary Italian industrial districts, strengthening the value and image of typical products and their competitiveness in global markets, as well as the capabilities of transition to sustainable development paths. More recently, Innocenti and Lazzeretti (2019) emphasized the role of cultural and creative industries in bolstering local and regional development trajectories.

6. Humanistic place-leadership and new IDs development paths

Drivers alike HM and cultural enhancement have been present along paths of local development in the past, though usually quite implicitly.

As recalled by Becattini (2004 and 2015) and Brusco (1982 and 2008), the functioning of both labour markets and social services in successful Italian IDs in the second half of the 20st century exemplified the combination of the competitive advantage of their population of SMEs with broad local opportunities for workers' mobility to stable job positions, professional growth, relatively high remuneration, some transitions to the entrepreneurial ranks, and territorial welfare. The Olivetti's case in the local system of Ivrea presented similar features, though centred on the leading role of a large 'communitarian' enterprise.

Similarly, the intersection of development of LPSs with endowments of cultural heritage can be traced in various cases, according for examples the four models assessed by Bellandi and Santini (2017).

- The first concerns the possibility of cultural heritage acting as a historical anchor for the typical products of an LPS. This anchoring allows traditional manufacturing sectors to increase the competitiveness of their goods thanks to the combination of specialized production knowledge and the style and aesthetic attitudes of the local community. The ceramics of Caltagirone are an example of this. Here, the cultural heritage in production processes is a source of authenticity and quality, which through product differentiation mechanisms produces higher added value.
- The second model reflects the possibility of a more direct transformation of the production system. Local manufacturing specialization can intersect with cultural heritage and give rise to new tertiary-based specializations that complement or even partially replace manufacturing specializations. An interesting case is shown by the "Slow Food movement" born in Bra, a city of Langhe and Roero in Piedmont (Italy).
- In the third development model, the relationship between the cultural heritage and the production base points to the recovery of traditional artisanal productions and therefore exploits the sedimentation of cultural heritage around the traditional manufacturing industry of a LPS (Sacco et al., 2013). An emblematic example is the Swiss Watch Valley, where the system reacted to the challenges posed by Japanese electronic watches, between the 1970s and 1980s, rediscovering traditional mechanical watches capable of leading to a new positioning in luxury goods markets (Kebir and Crevoisier, 2008).
- The three models can also act together in places characterized by a strong cultural heritage that interpenetrates a plurality of productive specializations, for example manufacturing and tourism, and is renewed through systems of cultural activities, for example museum clusters (Lazzeretti, 2012). This is itself a fourth development model of multi-specialized development where a variety of specializations is integrated, directly and indirectly, thanks to the reference to the common cultural heritage.

We have recalled in section 2 above, on one side, that various conditions of degradations have hindered the reproduction of such and other typical ID processes in the last decades; and, on the other side, that the great contemporary challenges bring about the necessity of transformation in IDs following sustainability and twin transitions (Bianchini et al., 2023).

Triggering factors for new IDs development paths are needed. Of course, as in the past, we can suppose that local anchor firms, non-predatory multinational companies, and joint entrepreneurial action should be still fundamental (Belussi, 2009; Belussi and Sedita, 2012). However, the supportive conditions to which such factors applied in the past, i.e., the 'primitive' accumulation of technical, human, and social capital, has largely disappeared. And the new accumulated composite capital, even if stronger in many respects, can be non-aligned with the need of transformation, if not degraded in some crucial respects.

We propose here that a key to strengthened triggering factors is to make explicit the relation between the traditional IDs practices and HM and cultural enhancement approaches. The idea is that local anchor firms, non-predatory multinational companies, and joint entrepreneurial action should be driven, explicitly and systematically, by place-leadership (PL) initiatives that incorporate such approaches. We would call such hybridization a 'Humanistic PL'. It extends both to business strategies and to joint private and public action where it intersects the idea of creating 'communitarian shared value' (Camoletto and

Bellandi, 2021) or of 'collective shared value' (Grimbert et al., 2024). This PL approach may be exemplified referring to two levels of application.

- At a grassroot, operative level, humanistic PL could play a pivotal role in fostering a stronger organizational culture within IDs. Leaders in these contexts would prioritize open communication, employees' professional development, and participative decision-making. They would help a renewal of the local awareness and understanding that, by nurturing the well-being of individuals and fostering a sense of belonging, firms could contribute to the overall success and resilience of both the same firms and the community where they embed. Therefore, this approach not only would enhance the satisfaction and engagement of employees and SMEs' entrepreneurs, but also contribute to the innovative capacity and adaptability of the entire local system, together with the strengthening of the community wellbeing and better quality of life expectations.
- At a direct agentive systemic level, humanistic place leadership is collaborative and responsive to the needs of the community and would enter in the local governance dynamics, favouring the supersession of oligarchic or monopolistic positions. Humanistic leaders would recognize the unique strengths and potential of the different constituencies of the district, promoting a culture of empowerment and shared responsibility. They would also liaise with those members of the civic society that carry experiences and competencies deeply related to the local cultural and artistic heritage, in order both to infuse the IDs transformation with renewed senses of local identity, and to explore and exploit the possibilities of transitions and multi-specialized development with a relation to the local levers of cultural enhancement and identity.

Literature presents some cases of enterprises and multinationals that have been increasingly adopting shared value perspectives (Blasi and Sedita, 2022). In Italy, this trend is visible at the grass-root level as well. There has been an explicit expansion in references to Olivettian sources (Zattoni, 2023). Additionally, some contributions explicitly address the local/district context, providing a direct application of the 'grass-root operative level' concept (Balduzzi and Perugini, 2023; Mosconi and D'Ingiullo, 2023).

An example is provided by Camoletto and Bellandi (2021b) in relation to the province of Cuneo. Located in Piedmont, Northwest Italy, this is a prosperous area where a network of interrelated local production systems has seen traditional specializations evolve and integrate with new, robust specializations (Santagata, 2002; Garavaglia, 2009). The region has successfully preserved and renewed its endowment of local capitals, which were originally tied to rural traditions and supported by a Catholic political sub-culture promoting collective goods. This renewal has been significantly aided by a kind of Olivettian entrepreneurial champions, playing a place leadership role with a humanistic approach, able to leverage the cultural enhancement of industries and places. Furthermore, the propensity to support or complement entrepreneurial strategies of corporate welfare with so-called "community corporate welfare" has a tradition in the area that, more recently, is explicitly spelled out and suggest a reflexive action at the systemic level. Consider, for example, the case of the consortium "Talenti Latenti" (*Latent Talents*) started in 2016: "With a minimum cost per employee, this group of SMEs, large enterprises and institutional entities … provides high-value welfare services to employees and community', extending to culture, healthcare, social and psychological support to individuals and families." (Camoletto, Bellandi, 2021b, 407-410).

We argue therefore that the transformation of IDs and their transition to new sustainable paths of development could benefit from opportunities for open, strong, and progressive PLs that the hybridization with HM and culturally enhanced approaches could allow.

7. Some conclusions

Scholars underlined that the exploration of open local development in IDs reveals a complex interplay of historical factors, evolving dynamics, and transformative processes (Belussi, 2009). The paths of development within these systems are intricately linked to endowments of supportive elements and triggering factors, as well as to cumulative auto-reproductive dynamics featuring both evolving balances

between local socio-cultural components and economic structures and virtuous interactions with the external environment. In face of both long run tendencies to degradation of original supportive conditions and contemporary disruptive challenges (Dei Ottati, 2017), the factors triggering path transformation need to be revamped and strengthened.

In IDs, the humanistic approach to management finds a fertile ground to flourish. While the alignment between humanistic management (HM) and IDs offers promising synergies, it is not without difficulties. Balancing the economic imperatives of industrial activities with the humanistic goals of employee well-being and social responsibility requires careful navigation. This seems to be particularly relevant today, considering that IDs, as open learning systems, evolve in response to globalization and technological advancements, which might not maintain the human-centric focus of place 'chorality' (Becattini, 2015).

The opportunities provided by HM approaches in IDs are substantial. The inherent logics of IDs, fostered by a strong sense of community and shared values, aligns with the sustainability goals of humanistic management. The collaborative nature of the IDs may allow the pooling of resources, knowledge, and efforts to address societal challenges and contribute positively to the broader community. Here, cultural enhancement, rooted in a common heritage, adds a layer of identity to a place, providing a vital foundation for local development. It opens avenues for new models, combining traditional manufacturing with cultural heritage, resulting in unique multi-specialized development paths. The essay argues that a humanistic place leadership, combining HM and cultural enhancement approaches, can serve as a transformative force for IDs.

IDs are not just economic hubs but thriving communities where the well-being of individuals and the collective good are central to the organizational ethos. The hybridization of place leadership, HM, and cultural enhancement, to which we refer as Humanistic PL, presents an opportunity to redefine success in business, moving beyond mere financial metrics, to encompass the broader impact upon individuals, communities, and the environment. As businesses continue to navigate an ever-changing landscape, the integration of Humanistic PL within IDs offers a compelling model for sustainable and purpose-driven economic development. At the systemic level, Humanistic PL engages in collaborative transformation projects, recognizing and leveraging the unique strengths and potential of the IDs constituencies and driving new sustainable paths of development.

In a world facing unprecedented challenges, the convergence of humanistic management and cultural enhancement within local productive systems, such as IDs, offers a promising model for sustainable and purpose-driven economic development, prioritizing the well-being of individuals, communities, and the environment, and contributing positively to societal progress. This convergence might allow the strengthening of a progressive and open orientation of triggering factors towards new models and paths of development.

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Articles

Industrial districts, multinational corporations, and their local/global paradoxes

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Abstract:

Over the past fifteen years, several studies have used the organizational theory of paradoxes to understand some typical organizational tensions, including that between global and local dimensions typically faced by multinational corporations. These studies analyze paradoxical tensions at the organizational or even intra-organizational level, while the paradox lens has not yet been applied to study systems such as industrial districts. This paper attempts to do so by analyzing and comparing the local/global paradox in multinational corporations and industrial districts. For the latter, the analysis rests on some empirical studies conducted on Italian districts. Moreover, as the presence of multinationals in these districts has become stronger in the recent phase, an attempt has been made to understand if and how this phenomenon impacts the local/global tension at the district level.

Keywords: Organizational paradoxes; local/global paradox; multinational corporations; industrial districts; Italy.
JEL Classification: F23; R12.

Distritos industriales, empresas multinacionales y sus paradojas local/global

Resumen:

En los últimos quince años, varios estudios han utilizado la teoría organizativa de las paradojas para comprender algunas tensiones organizativas típicas, incluida la que se da entre las dimensiones global y local a la que suelen enfrentarse las empresas multinacionales. Estos estudios analizan las tensiones paradójicas a nivel organizativo o incluso intraorganizativo, mientras que la lente de la paradoja aún no se ha aplicado para estudiar sistemas como los distritos industriales. Este artículo intenta hacerlo analizando y comparando la paradoja local/global en las empresas multinacionales y los distritos industriales. En el caso de estos últimos, el análisis se basa en algunos estudios empíricos realizados sobre distritos italianos. Además, dado que la presencia de multinacionales en estos distritos se ha hecho más fuerte en la fase reciente, se ha intentado comprender si este fenómeno influye en la tensión local/global a nivel de distrito, y de qué manera.

Palabras clave: Paradojas organizativas; paradoja local/global; empresas multinacionales; distritos industriales; Italia.
Clasificación JEL: F23; R12.

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1. Introduction

Looking at industrial districts (IDs) in the UK in the second half of the 19th century, Alfred Marshall (1898) described them as a population of small- and medium-sized firms (SMEs) connected to each other and concentrated in a limited area could compete with large vertically integrated firms, by contrasting the ID external economies to the internal economies that characterize large firms, the division of labor (that increases efficiency) between firms to the division of labor within firm (Belussi and Caldari, 2009). A century later, Giacomo Becattini (1979, 1989) further developed the concept, detailing the characteristics of the Marshallian ID by observing the Prato textile area in Italy: his analysis reinforced the idea, already contained in Marshall's thought, that the strength of localness rested on a solid social base, or better, on the interpenetration between ID firms and the local community. With the rise of globalization, however, firms are led to define their localization choices related to buying, producing and selling on a global scale, challenging the demise of localness as a source of competitive advantage (De Marchi and Grandinetti, 2014). Several local firms moved their activities and supply chains abroad, and several multinational corporations (MNCs) opened factories in districts or became the main customer for districts firm. In this context of profound transformation, resilient IDs are those that succeed to transform what seems a contradiction between being local and having to be global, into a virtuous coexistence.

This paper attempts to investigate such a local/global tension emerging in the current configuration of IDs, using a novel theoretical lens: the paradox theory, increasingly influential within the management community (Lewis, 2000; Smith and Lewis, 2011; Schad *et al.*, 2017). We backed the analysis based on existing empirical studies conducted on Italian IDs and on secondary data where presence of multinationals has become stronger. Accordingly, we aim at contributing both to the ID and the paradox theory. On the ID side, the use of paradox as a theoretical frame will allow not only to better understand the tensions but also to shed light on how they could be effectively managed, and on further research questions to be empirical accessed, to better understand future resilience of districts. On the paradox literature side, we contribute by focusing on a novel level of analysis – the industrial districts –, thus going beyond the traditional individual and organizational level of analysis to bring this lens to a system level in order to investigate the nature and the management of tensions emerging in systems of organizations. Over the past fifteen years, indeed, several studies have used paradox theory to understand the nature and the management of organizational tensions (Carmine and Smith, 2021), yet mainly resting at the organizational or even intra-organizational level, while the paradox lens has not yet been applied to study systems (Carmine and De Marchi, 2022; Schad and Bansal, 2018), such as IDs.

2. The local/global tensions

2.1. Industrial districts and the challenge of globalization

Globalization, which shows its first signs in the early 1990s and then grows in intensity and becomes increasingly disruptive in its effects, heavily impacted on IDs. Drawing on a large body of empirical research, De Marchi and Grandinetti (2014) speak of collapse of the model that marked the previous "golden season" of IDs – the Marshallian ID. This outcome was brought about by several causes converging in effect: the intensification of competition on a global scale and the consequent demographic decline of IDs due to increased firm mortality and falling birth rates, traditionally linked to spin-offs from existing firms (Furlan and Grandinetti, 2014); the increase in the concentration of each ID's total turnover and employment base in leading firms, to which is added the rarefaction of the web of relationships between firms due mainly to the de-localization choices of manufacturing operations internationally; the impact that the massive presence of immigrant workers – and in many districts also of immigrant entrepreneurs – has had on the interpenetration between social structure and production structure, which constitutes the true hallmark of the Marshallian model (Becattini, 1989); generational change, which has made the reproducibility of the entrepreneurial factor more problematic; and finally, the diversification and

consequent de-specialization of the local production structure[1]. More and more local firms moved their operations abroad, and MNCs entered the district, changing their structure.

The phenomena indicated therefore prevent us from still using the Marshallian framework to represent the current reality of Italian IDs, while the focus must shift to the processes of change triggered by globalization in these local systems. One fact on which scholars agree concerns the increased heterogeneity of IDs in that the ability to respond to its challenges was found to be widely differentiated among them[2]. This has been found to be true in Italian IDs (Belussi and Sedita, 2009; Corò and Grandinetti, 2001a; Corò and Rullani, 1998; Dei Ottati, 2018; De Marchi *et al.*, 2018b; Giuliani and Rabellotti, 2018; Rabellotti *et al.*, 2009), in the other district systems studied in Europe (Belso-Martínez, 2008; Belussi and Sedita, 2008; Hervas-Oliver and Parrilli, 2018), and also in the industrial clusters scattered in the rest of the world, such as those observed by scholars of global value chains in developing countries (Belussi and Sedita, 2012; Giuliani *et al.*, 2005).

In the case of Italian IDs and reducing the differences among them to the sole aspect of the reproducibility of the district system in globalization, the observed cases lead to discriminate between IDs whose life cycle seems to have entered the phase of decline and others that reproduce the district formula of geographical concentration of interconnected firms in a business area (Belussi and De Propris, 2013; Dei Ottati, 2018; De Marchi *et al.*, 2018b). The former are seeing their global weight increasingly shrinking in the business area in which they specialize, and at the same time their *districtuality* has faded as within-district inter-firm relationships (interconnectivity) have faded. The latter qualify as evolving IDs, where globalization has resulted in a robust selection of the population of district firms in favor of those with adequate adaptability, which in turn determine the resilience of the system (Folke *et al.*, 2010; Pike *et al.*, 2010)[3]. The selection process has raised the average size of district firms, making obsolete the traditional identification of an ID with a population of employees working predominantly in SMEs (Grandinetti and De Marchi, 2012).

2.2. Multinational corporations between global and local

The literature of international marketing has long strand with the dilemma between marketing (global) standardization and marketing (local) adaptation. The issue emerged in the 1960s with reference to advertising, but then the discussion extended to other forms of marketing communication and the other levers of the marketing mix (product, price and distribution) (Theodosiu and Leonidou, 2003; Vrontis *et al.*, 2009). For a long time, the debate followed an either/or logic, with proponents of standardization (Buzzell, 1968; Jain, 1989; Levitt, 1983) and proponents of adaptation (Kashani, 1989; Papavassiliou and Stathakopoulos, 1997). Among the pro-standardization advocates, it became famous the thesis of an influential marketing scholar, Levitt (1983), who at the dawn of modern globalization claimed: technology drives the world toward homogenization of needs and desires; this process results in the emergence of global markets for standardized goods; in the new scenario, traditional MNCs are destined to succumb to globally thinking and acting firms. The former operate in a multiplicity of countries adapting to local differences, with high relative costs, while the latter conceive of the world as a single entity and operate there with low relative costs: they sell "the same things in the same way everywhere" (p. 93). In other

[1] Other authors take a different position regarding the issue of reproducing the Marshallian model in the globalization scenario (Bellandi *et al.*, 2019; Breznitz *et al.*, 2024; Dei Ottati, 2018). For example, Bellandi *et al.* (2019) advocate a reproduction however dynamic of the Marshallian model, although, considering the textile district of Prato (Tuscany), an archetypal example of Marshallian IDs, they admit that "at the turn of the twenty-first century, several shocks damaged the district. Low-cost competitors from Asia in the yarn and fabric markets undermined its domestic and international position, hitting local production and the related system of local firms and jobs. On the other hand, trickling since the 1990 and gathering pace more recently, an inflow of Chinese migrants led to the emergence of a parallel clothing and knitwear cluster of activities in Prato, centred around Chinese entrepreneurs and labour, and with weak relations with the historical textile district" (p. 196).

[2] However, it is worth mentioning that differences between IDs could be observed even before globalization, but they were overlooked by ID studies (Paniccia, 1998).

[3] Following Folke *et al.* (2010, p. 20), adaptability or adaptive capacity is "the capacity of actors in a system to influence resilience", while resilience is "the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure and feedbacks, and therefore identity, that is, the capacity to change in order to maintain the same identity".

words, Levitt asserted, in an earth destined to become increasingly flat, the logic of absolute standardization (and scale economies) dreamed up by Henry Ford will finally be vindicated.

However, Levitt's prophecy has not come true: globalization has turned out to be a far more complex phenomenon than the simple causal concatenation proposed by the author, the earth has not become flat. In their review of the empirical literature conducted, Birnik and Bowman (2007) clearly points to the fact that that the degree of standardization of marketing policies decreases as the differences between geographic markets in which the MNC sells its products (in terms of cultural distance and other variables) and local competition intensity increase. The degree of standardization is represented by a simple number, but it summarizes a complex reality in relation to: the number of distinct marketing variables for which to decide on the appropriate standardization-adaptation mix, the cross-functional relationships when the variable is the product (new product development), the interdependencies among the marketing variables, the amount of information to take into account, and the changes in the competitive environment that lead to revise the decisions made (Liu and Shi, 2020).

On the other hand, international business literature has pointed out the relevance of the local dimension to MNCs, not only in relation to the needs of customers and the demands of local communities, but also because subsidiaries are embedded in their local networks and this affects the way they practice their autonomy within the organizations of which they are a part. This issue takes shape with the shift (Bartlett and Ghoshal, 1989; Ghoshal and Bartlett, 1990; Rugman and Verbecke, 2001) from the multi-domestic and radial model of MNCs – with the high-value-added activities concentrated in the headquarters and the production-sales or sales-only activities distributed among the subsidiaries – to the transnational and networked model, which overlaps and enhances the decentralized model mentioned earlier. An MNC of the second type "consists of a group of geographically dispersed and goal-disparate organizations that include its headquarters and the different national subsidiaries. Such an entity can be conceptualized as an interorganizational network that is embedded in an external network consisting of all other organizations such as customers, suppliers, regulators, and so on, with which the different units of the multinational must interact" (Ghoshal and Bartlett, 1990, p. 603). Specifically, subsidiaries may carry out specific activities to serve the entire MNC, such as producing a component or finished good with the support of their own R&D resources, or they may be R&D subsidiaries that develop innovations under a mandate from their headquarter by collaborating with it or other subsidiaries with specific capabilities (Ambos *et al.*, 2011; De Marchi *et al.*, 2022; Medcof, 2001; Phene and Almeida, 2008).

In short, both marketing and international business literature highlighted the contraposition between a local perspective and a global one, which can lead to the emergence of local/global tensions for MNCs, due to the need to adapt global production to local needs.

2.3. The coexistence of industrial districts and multinational corporations

MNCs have long shown the interest for local IDs, both to locate their own subsidiaries (Belussi *et al.*, 2018; Hervas-Oliver *et al.*, 2020) or to source from them. Such investments are the implication of the aforementioned evolution of MNCs from the multi-domestic shape to the reticular one where subsidiaries turn out to be variously specialized to forming different configurations depending on the strategy followed by the MNC (Hernández and Pedersen, 2017).

The first entries of MNCs are documented at the turn of the 1980s and 1990s, mainly in the form of acquisitions of existing district firms (Parri, 1993). A case in point is the Montebelluna sportsystem district in the Veneto region (Corò *et al.*, 1998), where a number of foreign MNCs and a major Italian MNC (Benetton Group) acquired some of the most important firms (and brands) in the production of the district's characteristic products, mountain shoes and ski boots, during that period. Events such as these raised concerns about the future of IDs, seeing external MNCs as organizations with great market power and interested in internalizing the district's most valuable resources to replace the district form with the MNC form. Such a worry was expressed particularly by local communities, with reference to policy makers and trade unions, and was also echoed among scholars (Amin and Malmberg, 1992; Harrison, 1994a, 1994b; Whitford, 2001).

However, after the early pioneering experiences, the entries of MNCs into IDs multiplied, and thirty years later the evidence does not lead one to recognize any "predatory" effect by MNCs. On the one hand, these organizations have been attracted to IDs as places with a high density of information, knowledge, and skills related to their business, and have benefited from them in ways not unlike local actors (Camuffo and Grandinetti, 2011). On the other hand, district subsidiaries have acted as knowledge brokers between global and local (Biggiero, 2002; Grandinetti, 2019; Mariotti *et al.*, 2008), with results that have sometimes had non-negligible effects in the evolution of IDs. In the cited case of Benetton's entry into the Montebelluna ID, it has been observed that the MNC's strategic choices triggered the district's evolutionary shift from footwear specialization to a more diversified range of products related to sports or sports lifestyle, which justifies the "sportsystem" label that has become customary to apply to that district. Also in Montebelluna, the giant Nike acquired a small local firm in 1994, which it transformed into an R&D subsidiary well connected to other district firms; when Nike closed this venture after ten years, a new firm (Novation Tech) was born from it, which is now a leader on an international scale in the designing and manufacturing of high-tech components for the automotive, aerospace, sports and eyewear sectors (De Marchi and Grandinetti, 2016; Gottardi and Scarso, 2009). A very special case is then represented by the Mirandola biomedical district (Emilia-Romagna) in that, in the very formation of this ID, MNCs played an important role: at the beginning, there was only one firm in that geographic area, founded by a local pharmacist (Mario Veronesi); this venture was remarkably successful and the entrepreneur sold it to an MNC to found another one soon after; from the first one came some employees who formed their own firms (spin-offs) while the (serial) entrepreneur at some point also sold the second firm he founded to another MNC, and so on (Biggiero, 2002; Sammarra, 2003).

3. Using paradox theory to understand the local/global tensions

3.1. The paradox theory of organizations

Paradox theory is a theory about the nature and the management of tensions emerging in organizations (Carmine and Smith, 2021). This theory is increasingly being adopted to understand and investigate tensions emerging in multiple contexts and fields (Lewis and Smith, 2014). Paradoxical tensions are defined as contradictory but interdependent elements that persist over time (Smith and Lewis, 2011). Therefore, a paradoxical tension is defined, in this literature, by three core dimensions: (1) contradiction, two – or more – poles involved are in opposition, (2) interrelation, cannot be completely separated as there are strongly connected, (3) persistence, the contradiction cannot easily solved, but it remains over time.

Moreover, Smith and Lewis (2011), in their seminal paper, have identified four general types of paradoxical tensions that can occur in organizations: paradox of learning, since innovation and change efforts carried out by firms generate a tension between the knowledge established in the past and the knowledge needed to face the future; paradox of belonging, as individuals seek both self-expression and homogeneity with the rest of the organization; paradox of organizing, which surfaces when the achievement of a desired outcome creates competing designs and processes within the organization; paradox of performing, which stems from the "differing, and often conflicting, demands of varied internal and external stakeholders" (Smith and Lewis, 2011, p. 384). Some paradoxical tensions operate within each of these categories: for example, a typical learning paradox is faced by those organizations that March (1991) called ambidextrous, that is, capable of simultaneously doing exploration (developing radically new knowledge) and exploitation (employing knowledge already available or at most incrementally increasing it). Other tensions arise between two categories, for example between belonging and organizing to reflect conflicts "between the individual and the aggregate, individuality vs. collective action" (Smith and Lewis, 2011, p. 383), or between learning (building capabilities for the future) and performing (ensuring success in the present). Because the elements of conflicting and interrelated poles existing simultaneously over time, a fundamental problem of paradox management arises in organizations. Existing paradox literature has highlighted that leaders and organizations faced with paradoxical tensions can respond following the either/or logic, that is, prioritizing one element and excluding the other. On the opposite, they can choice

the both/and logic, that is, exploiting the interdependence/complementarity among the opposing elements in the paradox to construct a dynamic equilibrium – i.e., working through tensions and pursuing both poles simultaneously.

After the foundational contribution of Smith and Lewis (2011), paradox theory has been used by many management scholars aware that organizations in all sectors are increasingly pervaded by tensions and competing demands in their competitive environment (Lewis and Smith, 2022; Schad *et al.*, 2017; Schad *et al.*, 2019). On the one hand, several contributions have explored the role of leadership and other aspects of paradox management (Lewis *et al.*, 2014; Miron-Spector *et al.*, 2018; Smith, 2014; Smith *et al.*, 2016). On the other hand, some classic dichotomies have been read through the paradox lens, in particular: exploration and exploitation, or ambidexterity (Cunha *et al.*, 2019; Andriopoulos and Lewis, 2010; Martini *et al.*, 2013; Papachroni *et al.*, 2015); financial goal and social responsibilities, or sustainable development (Hahn *et al.*, 2018; Carmine and De Marchi, 2023; Slawinski *et al.*, 2021); collaboration and competition in inter- and intra-firm relationships, or co-opetition (Bengtsson and Raza-Ullah, 2017; Ouyang *et al.*, 2023).

3.2. Multinational corporations and the local/global tension

Within these works on organizational tensions, the local/global one is frequently cited, as clear example (Lewis *et al.*, 2014; Lewis and Smith, 2014; Smith *et al.*, 2010; Smith and Tracey, 2016). Lewis *et al.* (2014, p. 60) state that "achieving strategic agility often means attending to multiple, often contradictory demands – innovation and efficiency, global demands and local markets, and social missions and financial outcomes". The authors use Unilever as an emblematic example of a multinational company capable of facing challenges between global markets and local demands: "Unilever uses global categories to emphasize long-term goals and seeks discontinuous innovations that do not get bogged down by daily operations; while regional structures ensure short-term efficiencies, focus on local needs, and monitor ongoing operational goals" (p. 72). However, even if the global-local paradox has been presented in the literature, current research has just started to deeply investigate such tension (Carmine and De Marchi, 2023).

In this light, few IB studies started to adopt the paradox lens when looking at the local/global tension from the MNE perspective (Ambos *et al.*, 2020; Tippmann *et al.*, 2023). Current research has shown that the strategic recommendation "think globally, act locally" (Kefalas, 1998; Levy *et al.*, 2007), although suggestive, appears simplistic in the face of the complex work that makes navigating the local/global tension sustainable, during which it is necessary to think and act globally as well as to think and act locally (Keh and Thelisson, 2021; Marquis and Battilana, 2009). Pant and Ramachandran (2017) analyzed how leaders of a subsidiary (Hindustan Unilever) developed and used (navigated) an identity duality (local vs. global), i.e., a belonging paradox. Keh and Thelisson (2021) analyzed how local managers of IBM Montpellier addressed and dealt with tensions generated by headquarter choices with heavy employment implications for the subsidiary, tensions generated by a belonging paradox given the established global (IBM) mindset of the subsidiary managers but also their strong local embeddedness.

The evolution described above toward transnational and networked models of MNE further supports the creation of local/global paradoxical tensions. For example, the study by Kuivalainen *et al.* (2020) adopted the paradox lens to study the phenomenon of R&D offshoring, i.e., the relocation of headquarter R&D activities to R&D subsidiaries located in countries with low-cost engineering work to meet global operational requirements. MNCs adopting this strategy expect high project performance from R&D subsidiaries. On the other hand, the latter – partly thanks to the knowledge-intensive relationships they develop with local actors – are interested in developing their own autonomous innovation capability and demonstrating it at headquarters in competition with other R&D subsidiaries. This creates a paradoxical tension that the authors call learning but which, on closer inspection, arises from the opposition between learning and performing – "between building capabilities for the future while ensuring success in the present" (Smith and Lewis, 2011, p. 384).

3.3. Extending the paradox theory to understand the local/global tension in industrial districts

The local/global tension might be experienced not only in the MNCs context, but also in IDs, as discussed above, and IDs literature has investigated those conflicting dynamics. However, paradox theory has not be adopted to study such tension in the context of IDs. Extending paradox theory to IDs may seem an inappropriate choice given that they are not organizations with centralized governance (Grandinetti, 2014). However, they are rather cohesive systems due to the presence of several factors: the typical vertical relationships between firms specializing in different manufacturing or service activities; the presence of shared rules of behavior and values that reduce transaction costs in inter-firm relationships and facilitate the circulation of information and knowledge among district firms; and sometimes, the presence of institutional actors that produce collective resources (identity, culture, knowledge) through carrying out specific activities and providing services. Systemic cohesion is particularly strong in the Marshallian or neo-Marshallian district, which Becattini (1989, p. 112) defined as "a socio-territorial entity characterized by the active coexistence, in a circumscribed, naturalistically and historically determined territorial area, of a community of people and a population of industrial firms. In the district ... [where] ... the community and firms tend, so to speak, to interpenetrate with each other". However, some systemic cohesion is also present in IDs or clusters that cannot be ascribed to the Marshallian model (Porter, 1998)[4]. The strong systemic interconnections existing in IDs make them an important setting where to understand tensions' dynamics and management at a broader level than the organizational one, due to the strong effect tensions can generate over the organizations of the system.

Traditionally in IDs literature, the local and global dimensions have mostly been described in terms of opposition. The competitive advantage of IDs has been derived from their relative closeness as systems, capable of developing locally much of the knowledge needed to efficiently produce the products of district specialization and to innovate them (Grandinetti, 2019). However, we can increasingly describe also the local-global tension to be characterized by interrelation. Globalization exerts a formidable pressure toward the openness of the district system in relation to the multiplying opportunities – for individual district firms – to make or purchase advantageously in places outside their ID (Corò and Grandinetti, 2001a) or to become part of global value chains. Being global, in any of the possible forms this word could assume for an ID firm, is, indeed, inextricably linked with the possibility to be competitive. Finally, this tension is also persistent over time. While attention to globalization of IDs started in the 2000s, when the size of the phenomena got it to the fore in academic and practitioners' studies, this tension has not solved yet. Not even a strong crisis such as the one spurred by COVID-19 managed to localize production activities: local production activities keep being well embedded in global production systems (De Marchi *et al.*, 2022). Accordingly, we suggest that the local-global tension can be described and studied as a paradoxical tension.

3.4. The role of local/global interfaces in evolving industrial districts

Having clarified that it is possible to transpose the concept of organizational paradox from the company (organizational system) level to the ID (inter-organizational system) level, it is nevertheless necessary to ask whether the analogy should break down when we move on to consider the paradox management aspect. In order to resolve this doubt, however, the need to return to the impact of globalization processes on IDs discussed in section 2.1.

It is the presence of local actors with adaptive capacity that discriminates between declining and evolving IDs. Among these actors, we distinguish in particular those that function as local/global interfaces, meaning by this term the (competitively relevant) connecting function between the district context and the global environment. Several authors, referring to the Italian case and beyond, have emphasized this function by stressing its cognitive or entrepreneurial value. In cognitive terms, interface actors absorb knowledge (tacit or codified) from the global environment and feed it into the local context, and vice versa; sometimes, they combine knowledge absorbed from both fronts to produce new knowledge

[4] The broad category of IDs/clusters hosts distinct variants, including the Marshallian variant (Belussi and Caldari, 2009).

that they again make available to district firms (Bathelt *et al.*, 2004; Camuffo and Grandinetti, 2011). Those who have addressed the entrepreneurial dimension that these local/global interfaces or global pipelines can take on (Bathelt *et al.*, 2004) have considered cases of district firms capable of identifying and exploiting opportunities on an international scale, and involving other district actors/resources in the process (Amdam and Bjarnar, 2015; Carbonara, 2018; Grandinetti, 2019; Randelli and Lombardi, 2014).

Reasoning in terms of local/global paradoxes, it is the interfaces described that provide a dynamic balance between the two dimensions and support the evolution of their IDs. Returning to the initial doubt, IDs lack an orchestrator capable of managing the local/global paradoxical tension (something analogous to managers who, within organizations, represent paradox leaders). However, the joint action of local/global interface actors leads to a similar outcome.

The role of local/global interface can be played by different actors: subcontracting firms that, leveraging the skills developed in district customer relationships, have become global subcontractors; small or medium-sized final firms active in global niches; district firms that have attained the rank of MNCs; and local firms acquired or created by external MNCs (Belussi et al. 2011; De Marchi *et al.*, 2018a; Hervas-Oliver, 2015). Focusing on the latter type of local/global interface, MNCs are among the key evolutionary actors observed in IDs capable to evolve (De Marchi *et al.*, 2018a). Consider below the case of the eyewear district of Belluno and that of the Riviera del Brenta footwear district, both in the Veneto region.

The eyewear district in the province of Belluno has shown a long and irreversible process of concentration in a small number of leading firms (Camuffo, 2003), including at the top Luxottica, with its extraordinary growth path (Tripodi, 2008). Luxottica also represents an anomalous case in the landscape of district firms in that its growth strategy has been based on a strong and extended integration of the value chain from manufacturing operations to retailing (Corò and Grandinetti, 2001b): because of this "anti-district" characterization, the great weight this company has acquired on the total revenue of the Belluno eyewear ID has led to talk of a hierarchical evolution of that ID (De Marchi *et al.*, 2018b). Luxottica's growth path is punctuated by a number of turning points, the latest of which occurs in 2018 when EssilorLuxottica was born from the merger of the Italian frames maker Luxottica with the French lens maker Essilor (Flaig *et al.*, 2021). This event changes the international structure of the eyewear industry because Essilor-Luxottica, whose headquarter is based in Paris, constitutes by far the world's largest eyewear company in terms of revenues.

If this event did not have a significant impact on ID – due to the weak link between Luxottica and the rest of the Belluno ID and the different specialization of Luxottica and Essilor – the same cannot be said for a second event that had happened in the meantime. We refer to the creation in 2014 of Kering Eyewear by Kering Group, a world leading organization in the luxury market with brands such as Gucci, Yves Saint Laurent, Bottega Veneta, Balenciaga, and others (Cabigiosu, 2020). Kering Eyewear follows the Kering's established business model, based on the coupling of concentration on high added-value activities such as R&D and marketing and outsourcing of manufacturing (as opposed to Luxottica) for which it uses a large number of subcontractors, most of them located in the Belluno district. Kering Eyewear can rely since its founding on the demand for sunglasses coming from the collections of the house-brands, and thus represents a major buyer for district first- and second-tier suppliers. A special case in point is Gucci, a Kering Group maison whose eyewear collection was produced by Safilo, the second largest company in the district after Luxottica, and unlike the latter not vertically integrated; Kering Eyewear has renewed its agreement with Safilo for the production of Gucci eyewear, partly due to the fact that the CEO of the former had previously been CEO of the latter. Kering Group is based in Paris, Kering Eyewear is based in the city of Padova (capital of another province in the Veneto region) but has deep roots in the Belluno district. In seemingly paradoxical fashion, the foreign MNC (Kering) helps the district evolve by reproducing the district form much more than the local MNC (Luxottica).

In the Riviera del Brenta district, located between the provinces of Venice and Padova and specialized in the production of women's footwear, transformations began more recently than in the eyewear district, and in an accelerated manner. Described still in the 1990s as a typical Marshallian district in the in-depth research carried out by Belussi (2000), with the turn of the century a phenomenon occured that, starting with early pioneering experiences, spread rapidly in the area. It is the entry of luxury MNCs (LVHM, Kering, Prada, Giorgio Armani, and others), first as buyers of finished products made by functionally

downgraded district firms (Amighini and Rabellotti, 2006), and then through the acquisition of existing firms or the creation of greenfield plants (Belussi *et al.*, 2017; De Marchi *et al.*, 2018b) that nonetheless make extensive use of the production skills of local firms. The first acquisition was that of Rossimoda by luxury giant LVHM, which had great clamor in the area because Rossimoda historically represented the leading district company (Belussi *et al.*, 2017). The case is also interesting because it shows the complexity that acquisition processes of this magnitude can have: the process began in 2001, when LVMH, interested by Rossimoda's development potential and its technical know-how, acquired some shares, and could only be said to have been completed in 2014, with the transformation of Rossimoda's business model, its reorganization and integration within LVHM's Fashion & Leather Goods Division as a platform for the development and production of footwear for the Celine and Givenchy maisons[5].

4. Conclusion

In this paper we have shown how, within the conceptual framework of paradox theory (Smith and Lewis, 2011), the local/global paradox offers a useful tool for analyzing both MNCs and IDs as they evolve. In the case of MNCs, the traditional tension between the global-scale standardization of what they offer and its adaptation to the needs of local markets has been compounded – with the emergence of the internal (inter-subsidiary) network model embedded in local networks – by the tensions arising from the fact that each subsidiary becomes an interface between "contradictory but interdependent elements" (Lewis, 2000, p. 760) coming from its local environment and the organization to which it belongs, respectively. IDs are inherently cohesive and co-opetitive local systems that, after a long season of competitive localness, have suffered from the formidable competitive pressure exerted by the globalization process. To remain competitive in the global economy, they must become global, but how to do so without losing localness? IDs capable of reproducing and evolving in the current competitive scenario, as they have been described by empirical studies, offer answers to this paradox, and the invariant element that characterizes them is the presence of local actors operating as local/global interfaces.

Among these local/global interfaces that are vital for the reproduction of the district model in the global economy, some studies point to the growing importance of subsidiaries established in IDs by MNCs interested in access to the skills diffusely embedded in these local networks. In this way, the presence of MNCs in IDs does not pose a threat to IDs, as was feared in the past, but rather offers support in the "systemic" management of the local/global paradox that IDs face today. It must be emphasized, however, that for this support to be effective it must be complemented by *other* interfaces, in particular, thinking of luxury IDs, by district firms capable of operating their brand in the end markets: otherwise, the ID is functionally downgraded to a mere productive appendage of MNCs within their GVC configuration. Therefore, IDs hosting MNCs become an interesting object of future research as well (Hervas-Oliver *et al.*, 2023). On the other hand, it would be equally interesting to understand whether – within the internal network of the MNC to which they belong – ID subsidiaries are distinguished from other subsidiaries with respect to the presence or absence of tensions that can be classified as local/global paradox, and the specific nature of these tensions.

To the best of our knowledge, this paper represents the first attempt to read IDs through the paradox lens. We believe that the results obtained from our reflection may open a new strand of studies on resilient/evolving IDs, with a focus on actors capable of performing the function of local/global interface, managing the local/global paradox de facto.

[5] The case of Riviera del Brenta is not unique: the district of Santa Croce sull'Arno – based in Tuscany and specialized in the production of leather for accessory and fashion industries – followed a similar path. Several international maisons increasingly acquired small and medium sized local companies. In some cases, these district firms have been working before as long-term suppliers for those firms.

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Articles

Challenge-oriented regional innovation systems: towards a research agenda

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Abstract:

In this *letter*, we reflect on recent modifications of the regional innovation system (RIS) approach that have been prompted by persistent environmental, social, and economic problems. Scholars have begun to advocate a reorientation of the RIS framework towards addressing territorial sustainability challenges and have introduced the notion of challenge-oriented regional innovation systems (CORIS). While the CORIS approach holds promise given the challenges of our time, several unresolved issues remain. We elaborate on and discuss three themes that demand further research. Firstly, there is a need for in-depth studies of the *geographies of problems*. Systematic analyses of the origins and interrelations of territorial challenges are high in demand. Secondly, the *geographies of challenge-oriented innovation-exnovation dynamics* warrant more attention. We argue that future research should delve into questions around the development, testing and upscaling of innovative solutions, as well as the unlocking and destabilisation of unsustainable practices in various spatial contexts. Lastly, we contend that a better understanding of the *geographies of RIS reconfiguration* is necessary. This entails shedding light on various forms of system-level agency involved in reorienting or transforming historically-grown real-world RIS in different types of regions.

Keywords: Challenge-orientation; regional innovation systems; CORIS; challenge-oriented regional innovation systems; research agenda.
JEL Classification: P48; R11; R58.

Sistemas regionales de innovación orientados a los retos: hacia un programa de investigación

Resumen:

En esta carta reflexionamos sobre las recientes modificaciones del enfoque de los sistemas regionales de innovación (SRI) impulsadas por los persistentes problemas medioambientales, sociales y económicos. Los especialistas han empezado a abogar por una reorientación del marco de los SRI para abordar los retos de la sostenibilidad territorial y han introducido la noción de sistemas regionales de innovación orientados a los retos (en inglés: *Challenge-Oriented Regional Innovation Systems*, abreviado: CORIS). Aunque el enfoque CORIS resulta prometedor para afrontar los retos de nuestro tiempo, quedan varias cuestiones por resolver. Desarrollamos y debatimos tres temas que exigen más investigación. En primer lugar, es necesario estudiar en profundidad las *geografías de los problemas*. Hay una gran demanda de análisis sistemáticos de los orígenes y las interrelaciones de los retos territoriales. En segundo lugar, las geografías

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de *las dinámicas de innovación-exnovación orientadas a los retos* merecen más atención. Sostenemos que la investigación futura debería profundizar en cuestiones relacionadas con el desarrollo, la puesta a prueba y la ampliación de soluciones innovadoras, así como el desbloqueo y la desestabilización de prácticas insostenibles en diversos contextos espaciales. Por último, sostenemos que es necesario comprender mejor *la geografía de la reconfiguración de los SRI*. Esto implica arrojar luz sobre diversas formas de agencia a nivel de sistema implicadas en la reorientación o transformación de los SRI existentes, incluyendo su evolución marcadamente histórica, que se desarrollan en diferentes tipos de regiones.

Palabras clave: Orientación a retos; Sistemas Regionales de Innovación; CORIS; Sistemas Regionales de Innovación orientados a retos; programa de investigación.
Clasificación JEL: P48; R11; R58.

1. Introduction

Over the course of more than three decades, the RIS approach has spawned an expansive body of literature that explicates the uneven geography of innovation (Cooke, 1992; Asheim et al., 2019). It has also had a significant impact in policy circles, informing place-based innovation strategies and policies such as smart specialisation (Tödtling & Trippl, 2005; Barca et al., 2012; Foray et al., 2012; European Commission, 2014; Foray, 2014; Belussi & Trippl, 2018).

The core argument of the RIS concept[1] is that the innovation capacity of regions is essentially shaped by systemic interdependencies between three RIS elements: actors, networks, and institutions. Interactive learning between firms, research organisations, and policy actors (the so-called triple helix) is considered vital for the innovation performance of regions. Over the past years, a substantial corpus of research has illuminated that regions differ markedly in terms of their endowments of RIS elements, internal connectivity, and external connectedness (Cooke et al., 1997; Tödtling & Trippl, 2005; Asheim et al., 2019). RIS scholarship has thus helped to better understand the spatially uneven structural conditions for novelty generation. In the last decade, the RIS notion was also linked more explicitly to questions around longer-term innovation-based regional economic restructuring, highlighting the role of industrial specialisations, organisational and institutional support structures, and regional networks for the emergence of new industrial paths and the rejuvenation of mature ones (Isaksen & Trippl, 2016, 2017). Acknowledging that RIS are open systems (Belussi et al., 2010), attention is also devoted to the role of global production and innovation networks, market linkages, as well as national and supranational institutional contexts and policies in influencing innovation-driven industrial path development in regions (Binz & Truffer, 2017; Trippl et al., 2018; Hassink et al., 2019).

In recent years, however, the question has been raised as to whether the RIS framework warrants adaptation, given the multiple crises and challenges of our time (Tödtling et al., 2022). The climate urgency, the re-emergence of social and territorial inequalities and other grand societal challenges contribute to the emergence of new risks and confront regions all over the world with an immense imperative for transformation. In this *letter*, we reflect on recent modifications of the RIS approach that have been undertaken in light of this dramatic shift in the contextual conditions for regional innovation and development. RIS scholars propose the notion of challenge-oriented regional innovation systems (CORIS) and advocate new policies that promote place-based transformative change towards sustainability (Bugge et al., 2022; Isaksen et al., 2022; Tödtling et al., 2022; Trippl, 2023).

[1] For an in-depth discussion on the origins of the RIS concept and its positioning within the broader literature on territorial innovation models (Moulaert & Sekia, 2003) such as industrial districts (Becattini, 1990; Boix et al., 2015; Belussi & Sedita, 2019), clusters (Porter, 1998; Belussi & Hervás-Olivier, 2018; Belussi & Trippl, 2018; Harris, 2021), innovative milieus (Jeannerat & Crevoisier, 2022) and innovation system approaches (Weber & Truffer, 2017), see, for example, Asheim et al. (2019).

2. Challenge-oriented regional innovation systems

At the outset of this decade, a critical rethinking and reassessment of the RIS approach is underway. Contending with the predominant focus of RIS scholarship on innovation aimed at economic growth and competitiveness, Tödtling et al. (2022) championed a modification of the concept and introduced the notion of challenge-oriented regional innovation systems (CORIS). This represents a deliberate endeavour to redirect the RIS approach towards addressing territorial sustainability problems. This rethinking of the RIS concept is situated within the broader context of an evolving trend in economic geography, regional development and innovation studies.

First, several scholars are questioning the prevailing research priorities and theoretical frameworks in regional studies and related fields (Patchell & Hayter, 2013; Phelps et al., 2018; Martin et al., 2021). They call for research that moves beyond the dominant focus on "innovative growth models [that are] often divorced from the broader social and ecological context" (Donald & Gray, 2019, p. 297) and advocate scholarly engagement with an alternative agenda for regional development, one that places less emphasis on short-term economic growth and instead stresses the importance of environmental and social sustainability (Evenhuis, 2017; Morgan, 2019; Jeannerat & Crevosier, 2022; MacKinnon et al., 2022).

Second, in innovation studies, a more critical and progressive understanding of innovation has emerged (Schot & Steinmueller, 2018; Biggi & Giuliani, 2021). The discourse highlights the inherent concern that innovation can have unintended adverse social and ecological consequences, thereby precluding an unequivocal association of innovation with social progress. Questions about the directionality of innovation are increasingly raised and efforts are being made to incorporate societal challenges into innovation system frameworks. This trend is evidenced in the literature on dedicated innovation systems (Pyka, 2017; Schlaile et al., 2017), temporary mission-oriented (or mission-specific) innovation systems (Hekkert et al., 2020; Elzinga et al., 2023), and problem-oriented innovation systems (Ghazinoory et al., 2020).

Third, and closely related to the previous points, in the realm of innovation policy, a new paradigm is emerging. Scholars advocate a reorientation of innovation policy towards societal challenges and explore new ways to legitimise policy interventions. This is clearly reflected in mission-oriented (Mazzucato, 2018) and transformative innovation policy approaches (Schot & Steinmueller, 2018), which have gained increasing attention recently. There is also a growing discussion about spatially sensitive variants of such policy approaches (Flanagan et al., 2023; Henderson et al., 2023; Pontikakis et al., 2022).

The CORIS approach draws inspiration from and ties in with these recent dialogues. It expands the conventional perspective on the purpose of innovation, moving beyond the typical focus on economic growth and competitiveness. CORIS scholarship emphasises addressing place-based problems and needs (Tödtling et al., 2022). Dealing with territorial challenges necessitates acknowledging a wider array of innovation activities and agents. The conventional focus of RIS studies and policies on technological innovation in the firm sector is broadened to encompass diverse forms of innovation. These include social, user-driven, and institutional innovations generated by various actors operating in different domains and at multiple spatial scales. In addition to the established triple-helix actors, new and previously overlooked agents – such as civil society groups, public sector actors, municipalities, users, and citizens – are recognised as playing pivotal roles in developing, applying, and scaling innovative solutions for urgent territorial challenges (Tödtling et al., 2022; Trippl, 2023; Trippl et al., 2023).

The CORIS approach directs attention to the capacity of regions to address various, and partly interrelated, territorial sustainability problems by developing challenge-oriented initiatives. Following the CORIS framework, this capacity is not only conditioned by regional dynamics but also by non-local processes and the ways a region is embedded in national and supranational regulatory arrangements and policy structures (multi-level governance settings), global innovation and production networks, and trans-local learning linkages (Tödtling et al., 2022).

While some progress has been made in elucidating the potential the CORIS framework holds in an era of persistent sustainability problems, several unresolved issues persist. The following sections introduce and discuss three key themes that require further research: (1) the geographies of problems, (2) the

geographies of challenge-oriented innovation-exnovation dynamics and (3) the geographies of RIS reconfiguration.

3. Geographies of problems

As noted above, the CORIS approach calls for a stronger alignment of regional innovation and transformation activities with territorial challenges and place-based needs. This constitutes an important shift in focus. The CORIS approach clearly ties in here with recent work that holds that there is not only a geography of innovation but also a geography of problems (McCann & Soete, 2020). To make sense of such claims, more research on the problem endowments and vulnerability of regions and comparative assessments (also based on new measures) are required. Recent work in this field (see, for instance, Rodriguez-Pose & Bartalucci, 2023; OECD, 2023) should be complemented by broadly-designed empirical investigations of the multifaceted and uneven spatial variations of vulnerabilities. But also studies that zoom in on particular regions and their specific challenges will strengthen the emerging research agenda on the geography of problems[2].

In addition to the **question of their origin** (sustainability problems can range from territorial manifestations of global challenges to very region-specific crises or problems), it should be considered in such research efforts that regions often face multiple problems, and that they can, as emphasised by CORIS protagonists (Tödtling et al., 2022), be **interrelated.** The examination of these interrelations holds significance not only from an academic perspective but also for political decision-making processes. Addressing environmental problems, for example, can at times lead to profound social challenges (Sovacool, 2021). Consequently, conflicts and trade-offs may arise among economic, social, and ecological goals. How regions navigate these complexities merits more in-depth investigations.

A central issue is **which problems are selected and prioritised** in regional innovation and development agendas and how are they framed. These processes can be heavily contested. More research is required that delves into the question of which actors, both within and outside the region, wield power to shape the process of problem selection (and framing) and thus influence the directionality of change (MacKinnon et al., 2022). Without empirical studies that examine and systematically compare these questions for different (types of) regions, statements on problem endowments of regions and quests that innovation activities and policies should respond to territorial challenges remain of little value.

4. Geographies of challenge-oriented innovation-exnovation dynamics

According to CORIS protagonists (Trippl et al., 2023) and other scholars (Flanagan et al., 2023; Wesseling & Meijerhof, 2023), the framing of problems will also influence how the search for solutions unfolds (for a detailed discussion, see, Flanagan et al., 2023). Moreover, it is stressed that challenge-oriented solutions may not only include innovation activities but also exnovation, that is, the destabilisation of environmentally and socially damaging technologies and practices (Trippl, 2023; Trippl et al. 2023; Wesseling & Meijerhof, 2023).

Challenge-oriented innovation is said to encompass the development, testing and upscaling of innovative solutions in the region (and beyond). This might include the development (or importation) of technologies or non-technological solutions, or a combination of both, since many sustainability challenges require an integration of a range of technological and non-technological innovations (Hekkert et al., 2020).

[2] It is vital to recognise that challenges can provide opportunities for regions to embark on more socially and ecologically sustainable trajectories. In this sense, the confrontation with challenges – be it region-specific ones or territorial manifestations of global challenges – can become a source of legitimacy for action, sparking new approaches in finding, developing and/or testing solutions, creating knowledge and markets, etc. in affected regions (Uyarra et al., 2023), hence fuelling challenge-oriented initiatives.

Future research should systematically investigate disparities in regional capacities to facilitate challenge-oriented innovations aimed at addressing territorial challenges. This entails an analysis of asset endowments, and the use or repurposing of various assets, in the development of technological, social, institutional, organisational, and behavioural innovations (Trippl et al., 2023). Additionally, it requires scrutinising how external assets are leveraged through connections such as trans-local networks. Attention should also be directed towards understanding the variations of challenge-oriented innovation across different types of regions. In particular, research should focus on the strategies available to less-developed regions (see, e.g., Vale et al., 2023), especially those facing significant "challenge-asset mismatches".

Challenge-oriented exnovation may, in some cases, be crucial for addressing territorial problems. As noted above, challenge-oriented solutions might encompass not only innovation activities, but also the unlocking, destabilisation and phase-out of unsustainable practices, products, technologies, networks, and institutions (Hölscher et al., 2019; Trippl 2023; Trippl et al. 2023; Wesseling & Meijerhof, 2023). Therefore, it is crucial to pay attention to the geographies of exnovation. This has long been a neglected theme in academic and policy debates. But it is now gaining more momentum (Kivimaa & Kern, 2016; Rinscheid et al. 2021). In future CORIS studies, it is essential to address questions related to "breaking with what" that may have persisted in the region for a long time. Alongside a more detailed examination of exnovation necessities and how they vary across different (types of) regions, it is also vital to investigate which actor groups are affected most by exnovation, and equally important, how resistance to change by powerful incumbents and other actors may hamper exnovation efforts. This places a spotlight on the capabilities of regions in identifying the exigencies for exnovation (at the firm-organisational, industry and regional levels), as well as in legitimising and governing exnovation (including handling resistance to exnovation).

It is essential to map and analyse the **nature of challenge-oriented solutions**, since they can take on diverse forms. These solutions may encompass highly technology-focused approaches primarily developed by companies or research organisations. Examples include carbon storage and capture in heavy industry, artificial meat or plant-based milk in the agro-food sector, and wind and solar technologies in the energy sector (Geels, 2020). Other solutions involve a higher degree of social and grassroots innovation, thereby creating significantly more opportunities for previously underrepresented innovation actors to participate (Coenen & Morgan, 2020; Henderson et al., 2023). Examples of such solutions are alternative food networks and urban farming in the agro-food sector, or decentralised energy production by prosumers in the energy sector (see, e.g., Geels, 2020). Further, solutions may, or may not, involve exnovation activities. Another crucial dimension pertains to the gains, that is, the economic, social, or environmental benefits, the proposed solution offers. Some solutions primarily aim for economic gains, while others prioritise public benefits. Finally, one important aspect is their scalability, which entails distinguishing between regionally bound solutions and spatially transferable ones (Coenen et al., 2015). Future research should concentrate on developing robust typologies of solutions based on the criteria mentioned above, as well as other distinguishing factors, to assist empirical studies and facilitate the categorisation of empirical observations.

An important question concerns the willingness and ability of both established actors and new or hitherto neglected ones, to engage in challenge-oriented initiatives. The question arises as to which **governance** setups are best suited to bring together heterogeneous actors with often very different problem definitions, interests, motivations, and perspectives on what desirable solutions are. It is also vital to investigate why some regions succeed to formulate shared visions, set collective priorities, and minimise trade-offs and conflicts, while others fail. Furthermore, the role of regions in complex multi-level governance settings is worthy of more in-depth investigation. This includes the ways in which policies pursued at higher spatial scales affect regional sustainability transitions as well as the transformation opportunities and challenges these policies bring to regions. Moreover, regional contributions to national and supranational policy goals, and how regions mobilise (or not) support from national and EU policies to meet place-specific problems and address broader societal challenges in the region should be further examined.

Finally, the **outcomes** of challenge-oriented solutions need to be thoroughly examined. This entails addressing questions about the extent to which solutions effectively contribute to addressing specific

territorial challenges, what economic, social and environmental gains and costs these solutions generate, and how these are distributed across different actor groups. In this regard, CORIS research would benefit from a deeper engagement with the literature on just transitions (Upham et al. 2023; Eadson & van Veelen, 2023).

5. Geographies of RIS reconfiguration and CORIS agencies

Finally, we seek to critically discuss work that has begun to examine how real-world RIS (i.e., the innovation structures that have been built up in the past) (need to) change in order to generate challenge-oriented innovation (and exnovation) processes. Such reconfiguration is considered essential because the region's organisational and institutional support structures, its research specialisation, skill base, dominant policy approaches and practices tend to be strongly aligned with the economic and industrial configurations developed in the past (Trippl et al. 2020). This implies that historically-grown RIS may prove inadequate for addressing territorial challenges as they seldom provide the necessary assets and resources for challenge-oriented solutions (Markard et al., 2021; Trippl et al., 2023). The place-based structures inherited from the past and the prevailing innovation and entrepreneurial activities may reinforce unsustainable trajectories. Therefore, there could be a pressing need to reconfigure innovation systems (Isaksen et al., 2022).

CORIS scholars have recently brought into focus the reconfiguration processes that RIS need to undergo in order to bolster their capacity for addressing territorial challenges. This reconfiguration may involve the reorientation of established RIS elements and functions, thereby augmenting the challenge-orientation of the existing RIS. It may also manifest as a more profound transformation, entailing the creation of new challenge-oriented RIS elements and functions, while concurrently dismantling outdated and unsustainable components (Isaksen et al., 2022; Trippl et al., 2023). Apart from a few exceptions (see, for instance, a Special Issue of European Planning Studies; Isaksen et al., 2022), empirical evidence on how regions rearrange their RIS is still limited. Analysing and comparing RIS reorientation and transformation efforts across different regions should be a focal point for future research endeavours.

Particularly intriguing is emerging scholarly work on the relation between RIS reconfiguration and system-level agency. These contributions examine how multiple actors at various spatial scales are either driving or obstructing a rearrangement of innovation system structures.

System-level change agency is defined as "collective and distributed activities enacted by firms, non-firm actors and intermediaries in developing and adapting the relevant supportive innovation system structures" (Gong et al., 2022, p. 527). It can be undertaken by diverse actors seeking to influence (regional) innovation systems through collective vision building, the creation of new system elements (e.g., setting up research centres), networking, resource mobilisation, institutional adaptation, legitimation of change, or policy design and implementation (Isaksen et al., 2019; Sotarauta et al., 2021).

Equally relevant is the question of how actors undertake strategic interventions to hamper RIS reconfiguration processes. Here, recent work on **system-level maintenance agency** (Henderson, 2020; Jolly et al., 2020; Bækkelund, 2021; Baumgartinger-Seiringer, 2022) provides useful insights. This literature accords attention to agency seeking to secure the persistence of existing structures, thereby countering pressures for change. For instance, a recent study of bioplastics in the province of Lower Austria illustrates how powerful innovation system actors engage in diverse forms of system-level maintenance agency such as obstructing institutional change, delegitimising new solutions in public discourses, and wielding influence over the direction of academic research as well as the shape of cluster activities (Steinböck & Trippl, 2023).

Scholarly work on the link between system-level agency and RIS reconfiguration is relatively new and still evolving. Further efforts are warranted to move beyond limited evidence. Future research should delve into the dynamics of system-level change agency and explore why it manifests differently across various regions. This entails examining in more detail who performs agency to reveal the roles of firms, intermediaries such as cluster organisations, policy makers, universities, or civil society actors in RIS reconfiguration, as well as the coalitions they form in the process. Arguably, such analyses should not be

limited to regional actors but also encompass the influence of external actors. Equally significant is the question of who is deprived of agency (Eadson & van Veelen, 2023). Additionally, more research is needed to uncover the role of system-level maintenance agency in RIS reconfiguration. A deeper understanding of how influential economic and political interests (in the region and beyond) work against the destabilisation of RIS structures and practices, as well as strategies to overcome resistance to change, is necessary. A focus on system-level agency can shed light on the **contested nature of RIS reconfiguration** and contribute to a more profound understanding of how RIS undergo changes or, conversely, remain unchanged.

6. Conclusions

Since its development in the 1990s (Cooke, 1992; Asheim & Isaksen, 1997), the RIS approach has evolved into a potent framework for elucidating the existence of enduring disparities in regional innovation performances. Moreover, it has become a significant wellspring of inspiration for regional policymakers seeking to facilitate place-based strategies and policies. In recent years, however, several scholars have argued for refocusing the RIS concept and policies towards territorial sustainability problems. This has led to a modification of the RIS approach and the development of the notion of challenge-oriented regional innovation systems (CORIS) (Tödtling et al., 2022; Trippl, 2023). This letter takes stock of the emerging body of work on CORIS and identifies a number of unresolved issues that demand further research. We centre on three broad themes.

First, we contend that future research needs to pay close attention to the geographies of problems. The requested shift towards orienting innovation and transformation activities around territorial challenges necessitates not only a profound examination of the uneven distribution of problems across regions but also more research on their origins and interrelations. Further, it is essential to investigate how territorial problems are identified, selected and prioritised in regional development agendas.

Secondly, extensive research is needed to map and analyse the geographies of challenge-oriented innovation-exnovation dynamics. These dynamics underpin the development of challenge-oriented solutions to address territorial challenges. A more thorough examination of the factors that shape regional capacities to engage in various forms of CORIS initiatives and the environmental, social and economic outcomes of those initiatives is required.

Thirdly, we propose that future work should delve into the geographies of RIS reconfiguration. We claim that for understanding how historically-grown RIS enhance their challenge-orientation, which forms this takes (reorientation versus transformation), or why this does not take place at all or very slowly, attention should be paid to system-level change and maintenance agencies. Unravelling such CORIS agencies and their relation to RIS reconfiguration should thus rank high on future research agendas.

Arguably, the research directions proposed in this *letter* encompass a non-exhaustive selection of themes. While they could be a first step to enhance our understanding of CORIS dynamics in different regions, they should be supplemented with further topics and questions to fully uncover the transformative potential of CORIS in addressing the territorial dimension of combating the complex societal challenges of our time.

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Articles

From fashion to sustainability: the key role of industrial districts

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Abstract:

Sustainability issues are increasingly influencing firms' decision making, leading to the creation of new business models for finding solutions to environmental and societal challenges. This work aims to explore what is the role played by industrial districts in firms' orientation towards sustainability. It implements a Propensity Score Matching technique on a novel datatabase with information on 1300 Italian fashion firms. Their sustainability orientation is measured using the Quantitas Intelligent Business Analyzer (QIBA), an original Natural Language Processing-based data mining technique, which allows scraping firms' websites and analyzing their content adopting a Term Frequency–Inverse Document Frequency weighting scheme. Findings suggest the existence of a sustainability-driven industrial district effect, i.e. a positive association between the sustainability orientation of fashion firms and their localization in industrial districts.

Keywords: Fashion; Environmental sustainability; Social sustainability; Natural Language Processing; Industrial districts; Made in Italy.
JEL Clasiffication: M00; Q01; R11.

Desde la moda hasta la sostenibilidad: el papel clave de los distritos industriales

Las cuestiones de sostenibilidad están influyendo cada vez más en la toma de decisiones de las empresas, lo que lleva a la creación de nuevos modelos de negocio para encontrar soluciones a los desafíos ambientales y sociales. Este trabajo tiene como objetivo explorar cuál es el papel desempeñado por los distritos industriales en la orientación de las empresas hacia la sostenibilidad. Se implementa una técnica de Propensity Score Matching en una nueva base de datos con información sobre 1300 empresas de moda italianas. Su orientación hacia la sostenibilidad se mide utilizando el Quantitas Intelligent Business Analyzer (QIBA), una técnica original de minería de datos basada en procesamiento de lenguaje natural, que permite extraer información de los sitios web de las empresas y analizar su contenido mediante un esquema de ponderación de Term Frequency–Inverse Document Frequency. Los hallazgos sugieren la existencia de un efecto impulsado por la sostenibilidad en los distritos industriales, es decir, una asociación positiva entre la orientación hacia la sostenibilidad de las empresas de moda y su localización en distritos industriales.

Palabras clave: Moda; Sostenibilidad ambiental; Sostenibilidad social; Natural Language Processing; Distritos industriales; Made in Italy.
Clasificación JEL: M00; Q01; R11.

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1. Introduction

Sustainability is now at the heart of managerial decisions and firms' strategies, it orients customers' purchasing behaviors, and it affects development and innovation policies (Markman et al., 2016; Nawaz and Koç, 2018; Belussi and Trippl, 2018). This work specifically focuses on the association between firms' location in industrial districts (IDs) and their sustainability orientation. Studies about IDs proliferated in the last decades (see Becattini et al., 2014; Lazzeretti et al. 2019, and Sedita et al., 2021, for reviews) after their re-discovering by Giacomo Becattini (Becattini, 1979; 1990) building on the intellectual groundwork by Marshall (1920). Becattini (1979; 1990) proposed to adopt IDs as a unit of analysis for understanding a relevant part of the socio-economic structure of the Italian production system. He particularly stressed how the concentration of firms and local communities in spatially bounded places were able to spur the flexible production of high-quality goods and to fuel knowledge flows and local entrepreneurial dynamism. Stemming from his original contribution, the literature has span on a diverse combination of topics, suggesting that IDs are favored places where to develop innovations and leading the global competition based on localized superior know how, the sedimentation of social capital, and the competitive positioning within global value chain. In our paper, we suggest that IDs are functional units of analysis to study the transition towards sustainability, especially when it comes to the typical Made in Italy sectors (such as Italian fashion, food, furniture, machinery, and related sectors).

Following the inspiration and seminal works by Fiorenza Belussi on the fashion IDs (Sammarra and Belussi, 2006; Aage and Belussi, 2008; Belussi, 2000), we focus on companies operating in the fashion sector, as an industry which tends to agglomerate in space across different phases of the value chain and to be often – although not always - localized in IDs (Samarra and Belussi, 2006). Studying the relations between the fashion industry and sustainability is relevant because the fashion industry was responsible for 2.1 billion tons of carbon emission, as estimated in 2018, accounting for around 4% of the global total, although other studies report that this estimation could even be near 8-10% (United Nations, 2019). According to the World Economic Forum and Boston Consulting Group (2021), this industry is also one of the eight supply chains responsible for more than 50% of overall global air pollution. To respond to the urgent call for more responsible production, fashion firms are increasingly developing and using eco-fashion (sustainable and ethical fashion) production processes and marketing strategies (Joergens, 2006; Fletcher, 2008; Chan and Wong, 2012).

The adoption of sustainable business models is not only limited to slow fashion firms (i.e., those adopting more sustainable production techniques, producing more durable goods, or designing season-less clothing), nor to the luxury ones, but also to fast fashion brands (i.e., those characterized by low cost and flexibility in design and speed to market) (Torelli et al., 2012; Kapferer and Michaut-Denizeau, 2014; De Angelis et al., 2017). Such an emergent trend is also certainly associated with the demand side. In fact, as claimed by Kotler (2011), a relevant group of consumers considers sustainability as a key criterion in their consumption choice.

The sample we investigated in this contribution is composed of 1300 Italian fashion companies. Then, we used data mining through Natural Language Processing (NLP) techniques to collect information on the sustainability orientation of firms from the websites of all the companies. Specifically, data was obtained using the Quantitas Intelligent Business Analyzer (QIBA), a web crawling and scraping tool (Toschi et al., 2019). We adopted the Term Frequency–Inverse Document Frequency (TF-IDF) weighting scheme, a commonly used tool in information retrieval from documents of different lengths (Paik, 2013), to depict the content of the sustainability communications addressed by fashion firms. Finally, implementing a Propensity Score Matching (PSM) technique (Caliendo and Kopeinig, 2008), we investigated whether fashion firms located in IDs show a higher or lower orientation to sustainability than their peers located outside. To do so we also exploited firm-level georeferenced, economic, and financial data and information on Italian industrial districts identified through the Local Labor Systems based on ISTAT (2023).

The contribution of this study is twofold. First, it concurs to define the key role of IDs in supporting the sustainability transition of firms. Second, it offers a novel methodology to measure the sustainability orientation of firms. This is important as it provides a distinctive way to quantitatively measure firms'

sustainability also beyond traditionally used secondary data and voluntary reports and, specifically, social sustainability that is inherently difficult to measure.

The article is structured as follows. Section 2 casts light on the sustainability of the fashion industry and puts forward the hypotheses, Section 3 illustrates the empirical setting, Section 4 presents data and methodology, Section 5 shows the results, finally Section 6 offers a discussion and some conclusive remarks.

2. Industrial districts and the sustainability of fashion

On the one hand, the fashion industry is generally in the eye of the storm because of the social and environmental impact of the production processes, which are often proved to pollute the environment, exploit child labor and low-paid and precarious work in developing countries, and to adopt greenwashing strategies to hide its bad actions to consumers, and so forth. On the other hand, this industry shows exemplar cases of firms adopting sustainable business models based on circular economy practices and green innovations, relying on fair trade, promoting pro-sustainability awareness campaigns, developing healthy working environments, and so forth.

In order to establish a positive balance between virtuous actions and bad practices, changes at the organizational level are expected, which span from internal initiatives and decisions regarding the management of the supply chain, through the adoption of a greener and pro-societal approach (de Brito et al., 2008). The responsibility for actions oriented towards the limitations of the negative effect of the production process on the society and the environment is necessarily spread among all the actors of the value chain. The more the value chain is kept under control, the higher the probability to change organizational practices for the good (Svensson et al., 2018). Seuring and Müller (2008) highlighted three distinctive features of a sustainable supply chain management: firms need to consider a longer part of the supply chain, with a higher number of performance objectives (especially the ones related to environmental and social sustainability) and with an increased need for cooperation with other partners of the chain. Carbone and Blanquart (2008) added that the broadening of the number of stakeholders also requires the adoption of coordination methods for dealing with different sustainability driven needs.

In this context, the ID's supply chain appears to be an interesting point of departure to observe the sustainability orientation of firms, mainly for three reasons.

Firstly, after a period of extreme relocation of production sites from traditional producing places in Europe to developing countries with lower labour and input costs (Sammarra and Belussi, 2006), which posed challenges for sustainability, reverse relocation processes (Belussi and Sedita, 2020), and reshoring (Belussi, 2015), also stimulated by the recent COVID-19 pandemics, created the precondition for a more sustainable trend in the fashion industry. Local production systems have now the chance to become sustainability excellence, based on the exploitation of local highly specialised labour force, more sustainable energy resources, and the adoption of innovative eco-friendly materials.

Secondly, since the fashion industry is surely one of the sectors more influenced by fashion trends (Morgan and Birtwistle, 2009), the high sense of fashion and style, combined with an increasing attention towards sustainability matters (under the positive influence of Greta Thunberg and a multitude of social media influencers), of the local demand, trigger sustainable behaviors and anti-consumption movements.

Thirdly, since IDs are highly involved in international networks of production and consumption, relevant parts of global values chains are interrelated with both global and local sustainability. IDs frequently work in one or some related phases of the production typical of international value chains (Chiarvesio et al., 2010). Scholars underlined their need to be open to international networks and stakeholders at different levels in a balanced mix between local manufacturing and internationalization (i.e., in the supply of raw materials and technologies, in the demand identification, in the attraction of distant investors, under transnational regulations, etc.) (Belussi and Samarra, 2009), and between close and distant knowledge (Belussi and Sedita, 2010).

The literature about sustainability usually disentangles environmental and social aspects. Looking at both the environmental and social side of sustainability is certainly important here as highlighted by

theoretical contributions about sustainability and IDs and clusters (Porter and Kramer, 2009) and specifically on SME's systems operating in the fashion industry (Battaglia et al., 2014).

An ID is inherently linked with social and environmental aspects by its very nature. In fact, it was originally defined as "as a socio-territorial entity which is characterized by the active presence of both a community of people and a population of firms in one naturally and historically bounded area. In the district, unlike in other environments, such as manufacturing towns, community and firms tend to merge." (Becattini, 1990, p. 38). Such systems are places of life and work with dense and frequent overlapping of activities, behaviors, and habits of local families with those of companies located in the same place (Becattini, 2004). Thus, in well-functioning IDs, also a "conscience of place" (Becattini, 2015) diffuses, and it is likely to carry and stimulate local care to social and environmental sustainability (Bellandi et al., 2021).

Thus, we aim at testing the following hypotheses:

- Hp1: Fashion companies operating in industrial districts show a stronger orientation towards environmental sustainability than those operating outside industrial districts.
- Hp2: Fashion companies operating in industrial districts show a stronger orientation towards social sustainability than those operating outside industrial districts.

The mechanisms mentioned above are certainly enhanced by typical to the ID internal functioning as knowledge diffusion and learning process by imitation and interaction, and they can be reinforced by the presence of material and immaterial specific public goods (Bellandi, 2006). The sustainability orientation of IDs' firms might qualify as a specific public good that can be diffused among local firms (Bellandi et al., 2021). This could also apply when dealing with sustainability-based knowledge. More specifically, sustainability can become a systemic territorial phenomenon in the case of IDs (even beyond the firm level) (Bellandi et al., 2021). This contribution precisely aims at testing whether firms oriented to sustainability in the fashion value chain are more likely to be located within or outside IDs.

3. The Italian fashion industry: a constellation of industrial districts

Fashion goods in Italy are typically produced by a multitude of micro, small and medium sized companies which sometimes cluster in specific locations and support a local fragmentation of the production process in several IDs. Such socio-economic systems have been proven to be crucial for the emergence, development, and the international success of typical Made in Italy industries in general, and of the Italian fashion industry in particular (Becattini, 1998; Aage and Belussi, 2008; Belussi and Sedita, 2009). Recent available data estimated that the Italian fashion value chain is composed of 5929 companies distributed among 41 districts, with 64% of them belonging to textiles, clothing, and footwear sectors (Intesa Sanpaolo, 2020). Toscana, Veneto, Marche, and Lombardy emerge as the regions with the highest concentration of fashion IDs. Among them, those with the highest turnover and number of companies are the ten Italian fashion IDs listed in Table 1.

Italian fashion districts present a quite heterogeneous picture. For example, those specialized in goldsmith, leather goods, and sporting goods registered revenues growth between 2008 and 2019; while others specialized in sectors as textiles, clothing, footwear, tanning, knitwear, and eyewear, were recording a negative performance (Intesa Sanpaolo, 2021b). Moreover, Italian fashion districts are characterized by a higher degree of internationalization, measured by the number of foreign enterprises in the area, than all the other industries. For example, the historical textile and clothing district in Prato holds the top spot in the overall standing, with 124 foreign companies accounting for 14,6% of the total businesses located in the ID (Intesa Sanpaolo, 2022).

Table 1.
Top ten fashion industrial districts in Italy

Industrial district	Specialization
Arezzo gold jewelry	"The city of gold", it is one of the world's most famous jewelry capitals
Prato textile and clothing	One of the largest in Europe, with each firm within the district specialized in one of the stages of textile manufacturing (spinning, warping, weaving, dyeing, trimming, and finishing)
Fermo footwear	In the provinces of Fermo, Ascoli Piceno and Macerata is located the largest concentration of footwear companies in Italy, specialized in the production of shoes components. It is characterized by the presence of few leading companies – like Tod's and B.A.G (NeroGiardini) - and a high number of smaller companies (Intesa Sanpaolo, 2021c)
Florence leather and footwear	This district is famous for its high-quality leather goods, that range from footwear to bags, wallets, belts and suitcases. Both global luxury brands (such as Gucci, Ferragamo, LVMH, Yves Saint Laurent, and Balenciaga) and small and medium-sized local businesses can be found in the area (Intesa Sanpaolo, 2021a)
Belluno eyewear	Since the opening of the first factory in Calalzo di Cadore in the late 19th century, the district – which produces every type of eyewear components - has been one of the highest expressions of quality, design and innovation. In this area not only a myriad of micro-enterprises is located, but also some of the world's leading companies, like Luxottica and Safilo.
Santa Croce sull'Arno leather and footwear	One of the largest tanning districts in Europe, also characterized by its close collaboration with the nearby Florence leather and footwear district.
Arzignano leather	Between Vicenza and Verona, it comprehends a complete and integrated supply chain – from tanning to recycling – that serves the automotive, furniture and fashion industries.
Biella textile	High-end yarns and textiles, such as wool and noble fibers, obtained from sheep breeding.
Montebellluna sportsystem-footwear	Specialized in sports equipment and footwear (Sammarra and Belussi, 2006), it has a long history of innovation – also being, among the leather districts, the one with the highest number of patents. Geox S.p.a., Stonefly S.p.a. and Garmont S.r.l. are some of the most important companies in the area (Intesa Sanpaolo, 2021a).
Como silk-textile	All processes of the silk textile chain - twisting, weaving, dyeing, printing, finishing – are present in the province, making it a region known worldwide loved by many luxury brands.

Source: Intesa Sanpaolo (2022).

4. Data and Methodology

4.1. Data sources and collection

We investigated Italian firms operating in the fashion industry (textile, clothing, footwear, jewellery, and eyewear sectors). Economic and financial data of textile, clothing and footwear sectors were collected from the AIDA Bureau van Dijk database, whereas data on the jewellery and eyewear sectors were collected from the ORBIS Bureau van Dijk database. Selected companies have businesses with a turnover higher

than € 400,000 in 2018 and not lower than €150,000 in 2019 and 2020, and assets higher than €0 during the 2018-2020 period. Specifically, data are about number of employees, production value, profit or loss before taxes, operating profit or loss, financial flow, total assets, equity, current ratio, profit margin, return on equity, return on capital employed, solvency ratio, number of advisors, number of group companies. Data on Italian IDs and their territorial extension were collected from ISTAT (2023). They allowed us to classify firms into two relevant categories depending on their location within or outside an ID.

The sustainability orientation of firms is proxied by their communication intensity about sustainability extracted from firms' websites, as in Blasi et al. (2020; 2022). It is calculated implementing the Quantitas Intelligent Business Analyzer (QIBA), a web crawling and scraping tool developed in Python by Quantitas srl, a company providing services in business analytics and data analysis. It is a data enrichment solution based on machine learning and artificial intelligence capable of exploring the world wide web, allowing its users to obtain a great volume of significant, relevant information about specific companies (Toschi et al., 2019). The software follows a three-step process: starting from uploaded companies' information (the minimum being the business names and VAT numbers), QIBA operates the web scanning process, analysing each company's webpage to extract different types of information (ranging from keywords connected to products and services to certificates), then presented and structured to make them more accessible and easier to interpret.

An in-depth data cleaning process, broken down in several steps and repeated various times, has been performed to corroborate if QIBA had correctly identified each company's website and to correct possible errors (for example, the inclusion of online journals in place of the right website). Starting from a list of more than 2400 companies, this phase of data pre-processing entails removing duplicates (178 cases), incorrect and erroneous data from the original dataset, to obtain a reliable, complete, usable and consistent database (Agarwal, 2013). Then, a number of critical cases which required to be manually verified were identified based on the proprietary algorithm of the software, Index2, that assigns a score reflecting the goodness of search results (Toschi *et al.*, 2019). Along with data cleaning, data integration was also implemented (Agarwal, 2013). Hence, all the 364 companies for which a website was not indicated were controlled, finding that 154 companies have a website. They have been included in the dataset.

4.2. Baskets of Words

Information retrieval systems are designed to find documents relevant to a specific query in a document collection (Hiemstra, 2000), also allowing to rank them, from most to least pertinent, by comparing the words of the selected query with the terms present in each document. Assuming their ability to describe and identify a certain topic, the first step is choosing the most appropriate terms composing the basket of words (the query). In a NLP framework, a hybrid approach was adopted by applying a two-step procedure, starting from a qualitative lexicon-based strategy. This initial selection was then enriched and expanded using the *word2vec* package from R, a method for producing word embeddings (Mikolov *et al.*, 2013).

The final list of selected keywords is composed of terms shown in Appendix A, which were then categorized in groups about environmental sustainability and social sustainability. We also collected data on certifications-based sustainability for robustness checks. In fact, since forms of greenwashing to attract consumers can be present, we also considered certifications as verifiable and reliable instruments of sustainability orientation (Richards et al., 2017; Blasi et al., 2020)[1].

The sustainability categories are described in Table 2.

[1] A wide range of certifications was considered: some of them focusing more on environmental aspects - such as green claims companies can make on their products (ISO 14021), the certified responsible origin of materials (FSC, or Forest Stewardship Council, and Oeko-Tex® Standards, for the textile and leather sectors), and about the recycled content of final products (RCS, or Recycled Claim Standards) – and others – like SA8000 and ISO 26000 - being more concerned with social responsibility issues. For example, many businesses, by complying with the quality standard ISO 9001, aim at guaranteeing their customers the absence of harmful or toxic substances in their products.

Table 2.
Description of the four baskets of words

Basket	Description
Environmental sustainability	It covers themes related to sustainability in respect to local sourcing and production, transparency across the supply chain, traceability of work processes and raw materials, the use of environmentally friendly raw materials (Henninger et al., 2016).
Social sustainability	It is about measures of the social impact of businesses (e.g., impacts on local communities, fair wages and working conditions in the industry) (McKenzie, 2004).
Sustainability certifications	It includes standards and certifications adopted to demonstrate orientation to good environmental, social, or ethical practices.

Source: our elaboration.

4.3. Term Frequency – Inverse Document Frequency (TF-IDF)

The TF-IDF is adopted in NLP for information retrieval (Paik, 2013). It is implemented to assess the strength and extent of companies' sustainability orientation. It consists of two components: the Term Frequency (TF) and the Inverse Document Frequency (IDF).

The TF measures how frequently a word appear in a document and follows three key hypotheses: the advanced TF hypothesis (a modified TF hypothesis that proposes that the rate of change of a word's weight should decrease as TF increases), the document length hypothesis (that regulated the TF value to consider that, in longer documents, terms are likely to be used more frequently than for shorter documents) and the term discrimination hypothesis (for which documents containing rarer terms should be preferred). In this case, the TF also includes the relative intra-document TF (RIFT), more effective for shorter queries, and the length regularized TF (RLTF), that performs better on longer queries (Paik, 2013).

The other component, IDF, assigns higher scores to documents containing rare, uncommon terms in the collection, offsetting the weighting of the TF component on the assumption that some terms can naturally appear frequently in a text, making them less unique identifiers (Paik, 2013). Many different versions of this measure exist and there is a need to choose the most suitable one, combining the TF-IDF with document length normalizations. The one proposed by Paik (2013) has been found to be the most effective when dealing with documents of various lengths - since it includes the two different within-document TF normalizations, which are then combined to obtain the final weight – allowing to obtain the most accurate retrieval result (Hiemstra, 2000).

4.4. Estimates of treatments effects by PSM

PSM is a popular methodology to estimate treatment effects (Caliendo and Kopeining, 2008). It allows to make comparisons of all-conditions-but-one being equal in a semi-parametric way (Abadie and Imbens, 2006). This methodology creates groups of objects of interests (in our case fashion firms) which are very similar regarding a set of relevant characteristics, except for the characteristics of primary interest – the treatment effect (in our case the fact that they are located within or outside IDs). Then the two groups are contrasted for the estimate of treatments effects and the resulting difference can be positive (fashion firms withing IDs are more oriented to sustainability) or negative (they are less oriented to sustainability). For the analysis, we inserted all the variables listed in Section 4.1. They are included to create very similar groups for the comparison. We matched each observation with its three nearest neighbours: for each fashion firms located within an ID the procedure matched the three most similar fashion firms - the closest regarding the propensity score.

The picture in Appendix B shows the analysis of the balance among compared groups of observations. The box plots for the matched sample are similar. The medians, the 25th percentiles, and the 75th percentiles appear to be the same, although there may be some differences in the tails, the upper

adjacent values, the lower adjacent values, and the outliers. Thus, this picture suggests that matching on the estimated propensity score appears to be balanced.

Once the matches were obtained, this methodology provided the average sustainability score of the set of interest. It fits well the analytical objectives of the present study, and it clearly overcomes potential concerns about selection bias, thus ensuring robust and reliable estimations. Estimations are computed with "teffects psmatch" in STATA-software.

5. Data analysis

5.1. Descriptive statistics

The QIBA methodology returned TF-IDF values which allowed to rank firms according to the baskets of words presented in Appendix A. The higher the score, the higher the intensity of communication about sustainability topics on the website. Table 3 presents several statistics on the sampled firms, including the three relevant sustainability dimensions together with economic and financial indicators.

Table 3.
Descriptive statistics

Variable	Obs (% 0)	Mean	Std. dev.	Min	Max
Environmental sustainability	1438 (21%)	9,380447	8,385432	0	56,9699
Social sustainability	1438 (36%)	1,488767	1,09763	0	3,269659
Number of employees	1335	145,5978	511,5798	1	13195
Production value	1340	41071,42	104549,8	0	2270739
Profits or loss before taxes	1340	2639,673	11901,03	-61729,31	259968,7
Operating profits or loss	1340	2185,879	11346,86	-61648,97	190414,7
Financial flow	1331	4189,084	19826,88	-35385,47	446086
Total assets	1340	53738,68	174416,4	459,3997	3813589
Equity	1340	24285,26	75906,93	-47239,64	1109637
Current ratio	1339	2,400273	2,453062	0,14	63,257
Profit margin	1333	5,081246	10,64511	-72,452	79,709
Return on equity	1323	13,04862	29,6043	-294,369	294,249
Return on capital employed	1316	10,20753	19,66445	-282,083	114,834
Solvency ratio	1338	42,23552	21,14355	-95,645	95,133
Number of advisors	1344	1,855655	2,185036	0	19
Number of group companies	1341	37,217	178,0328	0	1967

Note: financial indicators are measured in Euro.
Source: our elaboration.

The TF-IDF analysis informed that environmental sustainability related words were the dominant ones, being present in 1278 of the websites, followed by social sustainability with 916 of companies mentioning these themes. Moreover, several businesses (251) only discussed environmental sustainability related topics and 23 companies deepened social themes alone.

Data suggests an heterogenous orientation towards sustainability, which become a moderate-to-high one when coming to environmental sustainability, probably because the conversation on this aspect is traditionally the most diffused. Environmental sustainability is the subtopic in which most companies are keen to talk about (the first 50 TF-IDF results are in the environmental sustainability basket), and also the

one where the highest TF-IDF values were recorded. In fact, its average score is equal to 9.73 whereas, in the case of the social sustainability basket, this value is significantly lower: 2.16. Environmental sustainability also shows the greatest sample variance.

Table 4 shows indicators about fashion firms' orientation towards sustainability, distinguishing by those operating within and outside IDs. At a first glance, looking at mean values, it appears that sustainability indicators are slightly higher for firms located in IDs. Such a picture calls for a further enquiry applying the PSM methodology.

Table 4.
Sustainability indicators distinguishing between firms within or outside IDs

		Environmental sustainability	Social sustainability
District	Mean	10,10981653	2,178141911
	St. Err.	0,311071017	0,021841096
	Median	7,045647316	2,117262785
	Mode	23,31493935	1,5446947
	St. Deviation	8,54738024	0,5145421
	Sample Variance	73,05770897	0,264753573
	Min	3,280125112	1,37429016
	Max	56,96990075	3,264434746
	Observations	755	555
		Environmental sustainability	Social sustainability
Non district	Mean	9,319549095	2,136986197
	St. Err.	0,343830815	0,029380599
	Median	6,467671888	2,032170901
	Mode	7,755887843	1,751606254
	St. Deviation	7,603249231	0,540954192
	Sample Variance	57,80939886	0,292631437
	Min	3,270030619	1,373196918
	Max	51,45644471	3,269658751
	Observations	489	339

Source: our elaboration.

5.2. Results from the PSM

Table 5 shows estimates on treatment effects by PSM. The treatment model is a logit, variables regarding sustainability are standardized before the computation to allow for comparisons and robust standard errors are reported. Results are distinguished by environmental and social sustainability.

Coefficients are all positive and statistically significant at traditional statistical levels, suggesting a positive association between fashion firms' orientation towards sustainability and their location within IDs. Thus, they confirm all the hypotheses included in Section 2 and suggest the existence of a sustainability-driven ID effect. Specifically, findings suggest that firms operating in IDs are more oriented towards environmental and social sustainability than firms operating outside such socio-economic systems.

TABLE 5.
Estimates on treatment effects by PSM (environmental and social sustainability)

District vs non-district	Coeff.	Robust std. err.	P value	Number of obs.
Environmental sustainability	0,1876288***	0,0546552	0,001	1288
Social sustainability	0,152721*	0,0627912	0,015	1288

Source: our elaboration.

Fashion firms operating within IDs seem to benefit from a plus in terms of sustainability orientation. Both district level and internal factors should be at work, simultaneously. In fact, in addition to their internal capability to meet sustainability challenges, firms operating within IDs also enjoy a territorial advantage that may led them to a higher sustainability orientation. This is relevantly liked with the cooperation-competition mix typical of firms operating within industrial IDs (Dei Ottati, 1994). On the one hand, cooperation among firms within IDs seems to be likely to be associated with the spread of sustainability-based knowledge; on the other hand, competition among the same set of companies is expected to push them to invest more in sustainability commitment and related innovative outcomes as another, more and more relevant, competitive advantage.

One of the main consequences of the detected sustainability-ID association is for efficiency in coordination among firms and other organizations, and for continuous innovation, as two core characteristics of well working IDs often highlighted by the literature on the theme (Bettiol et al., 2021; Broekel et al., 2021). In fact, sustainability can be an important driver of both efficiency and innovation, thus reinforcing key advantages of firms operating within IDs and of the system as a whole. For example, the network of interacting firms may lead to an efficient use of resources, limiting waste of resources and energy (Albino et al., 2012). Moreover, institutions at different levels may be likely to design pro-environmental and pro-social policies to moderate or overcome the impacts of the productive side on the local community and environment (Mazzanti and Zoboli, 2009). Finally, this detected association can also be recalled in promoting the sustainable qualities of products and services of firms operating within IDs (Appolloni, et al., 2022).

However, it is not just about being in the right place (Gertler, 2003) because a valuable and effective orientation to specific attitudes and knowledge requests a proactive approach (Camisòn and Villar-Lòpez, 2011). As suggested by the sample variance (especially the one computed on environmental sustainability) included in Table 4, sustainability-based knowledge spillovers do not flow freely and spontaneously within industrial districts, as sometimes argued by the literature (Giuliani, 2007). In the case under study, this means that a firm needs to create internal learning capabilities and to trigger their absorptive capacity for a better understanding and assimilation of others' sustainability-based knowledge.

As a robustness check, we also computed the same model but investigated fashion firms' communications about their pro-sustainability certifications. This is important because firms might also communicate pro-environmental and pro-social attitudes as the outcome of greenwashing behaviors (Delmas and Burbano, 2011). Certifications can capture firms' more genuine sustainability orientation and signal the implementation of concrete actions in favor of sustainability (Richards et al., 2017). Findings reported in Table 6 confirm the positive association between fashion firms' orientation toward sustainability (measured by the communication of sustainability certifications) and their location within IDs.

TABLE 6.
Estimates on treatment effects by PSM (certifications)

District vs non-district	Coeff.	Robust std. err.	P value	Number of obs.
Sustainability certifications	0,2437612***	0,0570736	0,000	1288

Source: our elaboration.

6. Discussion and conclusions

The investigation into the role of industrial districts (IDs) in shaping the sustainability orientation of firms, particularly in the fashion industry, is a novel and underexplored area, especially in terms of quantitative analysis using large databases, as highlighted by Bellandi and Stefani (2023). Our study aimed to fill this gap by examining whether fashion firms within or outside IDs exhibited varying degrees of orientation towards different sustainability domains. The findings revealed a higher inclination towards environmental and social sustainability among firms located within IDs compared to those operating outside them. This discovery unveils a previously unidentified ID effect in the case of sustainability.

This work contributes a fresh perspective on the role of IDs in fostering a transition towards a more sustainable future. Despite occasional criticisms associating IDs with adverse environmental outcomes due to their strong manufacturing nature (Bellandi et al., 2021), our results challenge this notion. Drawing from the theory of knowledge spillover entrepreneurship (Audretsch and Keilbach, 2007), we argue that efficient knowledge diffusion in IDs can lead to more entrepreneurial opportunities, particularly in sustainability. When companies within such IDs possess sustainable knowledge, a symbiotic relationship is established, benefiting neighboring firms, especially those with a proactive attitude and efficient sustainability-related knowledge absorptive capacity.

This study holds implications not only for IDs but also for the fashion industry. As early as 2014, Vivienne Westwood emphasized the imperative to "Buy Less, Choose Well, Make it Last," signaling the growing awareness of the crucial link between fashion and sustainability. Achieving sustainable development in the fashion industry involves significant innovations and changes to mitigate its environmental impact and ensure the well-being of workers, aligning with the principles of the World Commission on Environment and Development (1987).

Scientific inquiry into the intersection of fashion and sustainability is recent but substantial, focusing on consumer perspectives, sustainable supply chain management, new business models, and the role of luxury fashion in driving a sustainable paradigm shift (Blasi et al., 2020). This contribution delves into the current state of the fashion industry's sustainability in social and environmental aspects, highlighting both progress and persistent challenges. Notably, as fashion companies and policymakers increasingly integrate sustainability into their strategies, our findings emphasize the need for collaborative efforts across the supply chain, institutions, governments, and consumers.

The study underscores the pivotal role of supply chains as "core activators" of sustainability orientations. Collaboration within and outside the value chain, the establishment of standards and targets, and enhanced traceability and transparency are identified as key elements for improving the industry's sustainability performance. While the Made in Italy fashion industry has thrived due to the leadership of IDs, there is still room for improvement in environmental and social orientation, acknowledging the sector's relative lag behind other industries.

Methodologically, our work breaks new ground by providing a comprehensive overview based on firm-level fine-grained data from a large dataset, addressing concerns related to external validity common in single case study approaches. The managerial significance lies in reaffirming the importance of sustainable practices, particularly in areas dominated by IDs. Companies in these places where IDs are located can strategically benefit from the exchange of sustainability-related knowledge.

However, the study has limitations. The focus on a specific country, Italy, calls for future research to explore other contexts, considering the influence of IDs and fashion traditions. Additionally, incorporating qualitative methods such as interviews and field observations could enhance the quali-quantitative understanding of sustainability practices. Finally, it's crucial to acknowledge that this study primarily assessed firms' communication of sustainability attitudes, leaving room for future investigations into concrete actions and specific measures.

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Appendix

Appendix A

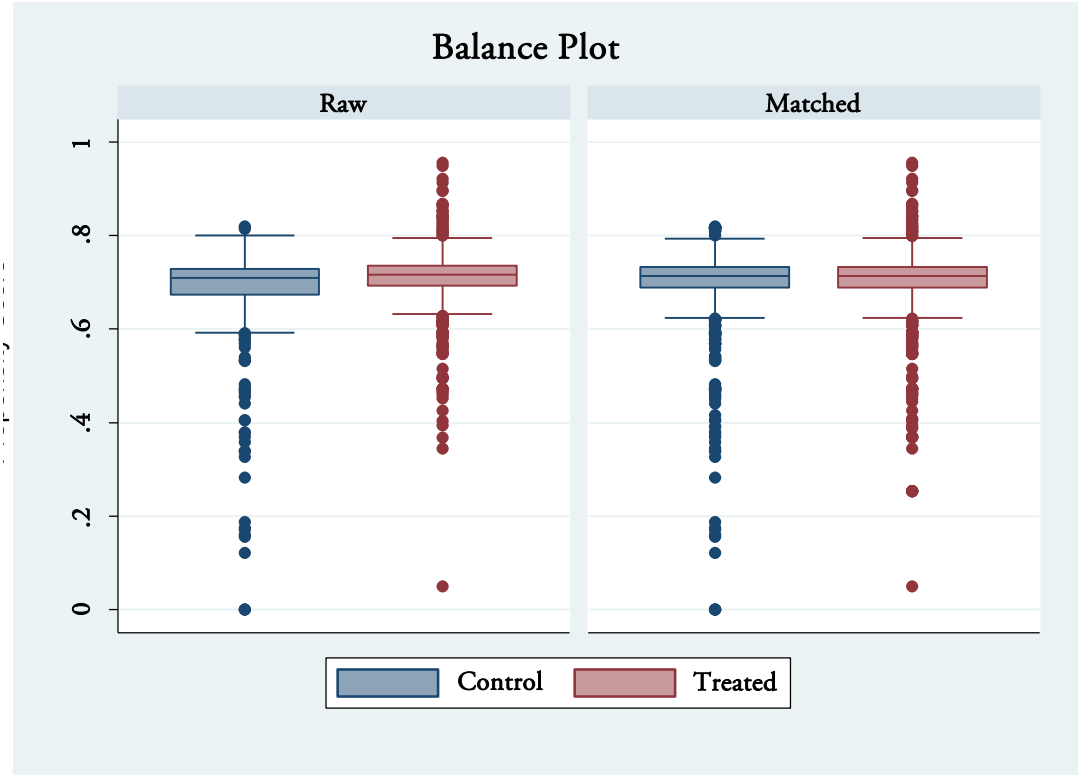
Environmental sustainability: Antibacterial, Assessment, Bio, Biodegradable, Biodegradables, Biodiversity alliance, Biomass, Bioplastic, Climate change, Carbon, Carbon credit, Carbon footprint, Carbon free, Carbon negative, Carbon neutrality, Carbon positive, Circular economy, Closed loop, Co2, Environmental code of conduct, Combustible, Compostable, Compostables, Cradle, Cradle to cradle, Carbon credit, Eco, Eco®, Ecology, Ecologic, Ecosystem, Ecofriendly, Emission, Energy, Forest, Fossil, Greenhouse gas, Green, Green deal, Green guard, Green innovation, Global warming, Environmental, Environment, Environmental impact, Environmental footprint, Environmental innovation, Paris agreement, Pollution, Polluting, Product lifecycle, Kyoto protocol, Lca, Life cycle analysis, Life cycle assessment, Natural, Naturals, Net zero, Net zero goal, Organic, Organics, Package free, Plastic free, Post-consumer, Recondition, Recovery, Recycle, Recycled, Reduce, Regenerated, Reusable, Reuse, Recyclable, Recyclables, Recycled, Recycled cotton, Recycles, Recycling, Reforestation, Regenerated, Renewable, Renewable energy, Reuse, Reusable, Reused, Sustainable, Sustainable packaging, Sustainability, Sustainability®, Traceability, Washable, Waste, Water footprint, Zero emission, Zero waste, Zero water, 0 km.

Appendix A cont.

Social sustainability: Anti-corruption, Anti-corruption, B corp, B impact assessment, B impact report, B lab, Benefits, Benefit corporation, Code of conduct, Code of ethics, Code of social conduct, Ethical code, Corporate social responsibility, CSR, Declaration of interdependence, Equity, Ethics, Ethical, Ethical code, Global impact investing rating system, Global reporting initiative, Gri, Honesty, Human rights, Hybrid enterprise, No profit, Social enterprise, Social innovation, Social entrepreneurship, Social innovation, Social responsibility, Sustainability reporting, Sustainability®, Sustainable, Transparency, Workers.
Certifications based sustainability: Bci, Better cotton initiative, Brcgs etrs, C2c, Certification, Certified, Certify, Certifications council®, Certipur, Confidence in textiles, Cotton bci, Cradle to cradle, Cruelty free, Csqa, Dap, Ecolabel, Emas, Epd, Fsc, Fsc®, Gots, Greenlabel, Grs, Iso 14001, Iso 14021, Iso 14024, Iso 14025, Iso 17025, Iso 21401, Iso 26000, Iso 37001, Iso 37101, Iso 45001, Iso 50001, Iso 9001, Iso14064, Iso14067, Lga, Ocs, Oeko, Oeko-tex, Pdr 42, Pefc, Rcs, Rms, Rvs, Sa8000, Smeta, Sr 10, Tex®, Vegan.

Note: the large majority of keywords were originally included in Italian and a part of them both in Italian and in English.

Appendix B



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Articles

Will the post-neoliberal era represent a renaissance of industrial districts as we knew them?

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Abstract:

We have now entered a post-neoliberal era, characterised by deglobalisation and reindustrialisation to obtain resilience and security in value chains and increase manufacturing capacity in Europe and the US. Europe has not to the same extent suffered from deindustrialisation as the US. Typical examples of the industrial structure in Europe are the 'hidden champions' of Germany and the industrial districts of the Third Italy. The industrial districts have been exposed to globalisation, resulting in the brake up of the original complete regional value chains through outsourcing in some sectors. However, in general the industrial districts have been surprisingly resilient during the 40 years period of neo-liberalist globalisation illustrating the 'many possible world view' of Sabel and Zeitlin (1985). In this contribution we ask what will the new tendencies of deglobalisation, regionalisation and Industry 4.0 digital technology mean for the future of the industrial district model? Will it imply a strengthening of the original form of industrial districts so that this model of (re)industrialisation once again takes on a position as a role model for developed economies. The intention of this letter is to introduce a discussion about this fascinating topic.

Keywords: Industrial districts; post-neoliberal era; deglobalisation; regionalisation; industry 4.0.
JEL Classification: R3; O3; L6.

¿Representará la era posneoliberal un renacimiento de los distritos industriales tal como los conocíamos?

Resumen:

Hemos entrado en una era posneoliberal, caracterizada por la desglobalización y la reindustrialización para obtener resiliencia y seguridad en las cadenas de valor y aumentar la capacidad de fabricación en Europa y Estados Unidos.
Europa no ha sufrido la desindustrialización en la misma medida que Estados Unidos. Ejemplos típicos de la estructura industrial en Europa son los "campeones ocultos" de Alemania y los distritos industriales de la Terza Italia. Los distritos industriales han estado expuestos a la globalización, lo que ha resultado en la ruptura de las cadenas de valor regionales completas originales a través de la subcontratación en algunos sectores. Sin embargo, en general los distritos industriales han sido sorprendentemente resilientes durante el período de 40 años de globalización neoliberal, lo que ilustra las "muchas visiones del mundo posibles" de Sabel y Zeitlin (1985). En esta contribución nos preguntamos ¿qué significarán las nuevas tendencias de desglobalización, regionalización y tecnología digital Industria 4.0 para el futuro del modelo de distrito industrial? ¿Implicará un fortalecimiento de la forma original de los distritos industriales para que este modelo de (re)industrialización vuelva a posicionarse como modelo a seguir para las economías desarrolladas? La intención de este artículo es introducir una discusión sobre este fascinante tema.

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Palabras clave: Distritos industriales; era posneoliberal; desglobalización; regionalización; industria 4.0.
Clasificación JEL: R3; O3; L6.

1. Introduction

According to many observers we have now entered a post-neoliberal era, characterised by deglobalisation and reindustrialisation to obtain resilience and security in value chains through reshoring and regionalisation, and increase manufacturing capacity in Europe and the US to carry out the green transition. This is promoted by expansive industrial policies in the EU and the US and is expected in the US to result in a reindustrialisation of previous industrial regions which have suffered from deindustrialisation and plant closures caused by offshoring.

In Europe, which in contrast to the software-based platform economy of the US, is dominantly a hardware manufacturing region, most of Western Europe (including the Northern and Central part of Italy) and the Nordic countries have not suffered a similar deindustrialisation (with the exception of parts of Northern France and Belgium). Much of the manufacturing capacity is located in small towns and other semi-peripheral areas, and not in the large city-regions as is the case with the US platform economy. Typical examples of this industrial structure are the 'hidden champions', the Mittelstand firms of Germany (Lehmann and Schenkenhofer, 2023) and the industrial districts of the Third Italy (Asheim, 2000). These industrial districts have been exposed to globalisation, resulting in the brake up of the original complete regional value chains through outsourcing of labour- intensive work functions and the influx of MNC. However, in general the industrial districts, especially in Veneto and Emilia-Romagna have been surprisingly resilient during the period of neoliberalist globalisation. In this letter we aim to try to answer the question of what the new tendencies of deglobalisation, regionalisation and Industry 4.0 digital technology will mean for the industrial district model. Will it imply a strengthening of the original form of industrial districts where the (almost) complete value chain was the ideal form of organisation? This form of industrial organisation will clearly have more supporting environments in the post-neoliberalist era due to technologies of the fourth industrial revolution of industry 4.0 as well as a rising political focus on environmental, economic and social sustainability issue, viz. a resilient and secure value chain, CO2 emissions, exploitation of labour and infringement of human rights (Grillitsch and Asheim, 2023). The latter factors will gradually be integrated in trade policies and tariffs to even the global playing fields. In addition, security factors have attained increasing importance in the thinking about reindustrialisation, which means that what we now see is the integration of industrial policy, innovation policy, trade policy and security policy, which dramatically is changing the operation of the world economy.

2. Background: Neoliberalist globalisation and post-neoliberalism

Economies of developed countries underwent a quite dramatic change in the 1970s and especially 1980s due to the trinity of change in economic and political thinking that first took place in leading liberal market economies such as the UK and the US, and later gradually and partly diffused also to the coordination market economies of Western Europe: neo-liberalism, financialisation, and globalisation.

Neolibralism represents a political philosophy of minimizing the state and maximising the market; what is also often understood as laissez-faire economic philosophy of free-market capitalism without state intervention. Neo-liberalism was first introduced by president Reagan in the US and prime minister Thatcher in the UK in the 1980s (that is why it is 'neo' as liberalism as an ideology is much older), but slowly diffused also the other countries. This policy surprisingly survived change of governing political parties and continued to be the dominating political paradigm, as is seen in the UK when Blair took power, in the US when Clinton became president but also in Nordic countries. The neoliberalist thinking also became manifest in the public sector through the theories of new public management, which lead to a

systematic downsizing and outsourcing of tasks from the public sector to the growing market of big consultancies. This strangled the public sector and reduced its influence and capacity to regulate the economy in accordance with the philosophy of neo-liberalism.

Globalisation appeared first in the mid 1970s and Ford's 'world car' was the first manifestation of it. The idea was that parts of the car should be produced where the location factors for such production was optimal and the cost lowest, and then finally assembled in plants located close to the main markets such as Europe and the US. We see here the main idea of splitting up and offshoring of the original technical, intra-firm division of labour within a factory in global production network, orchestrated by multinational or transnational companies. The original plan of Ford become too complicated, but the idea of splitting up and offshoring of production of parts, functionally integrated in a global production network remained as the core of globalisation, where TNC played the orchestrating role (Dicken, 2015). What the becoming of neoliberalism meant for globalisation was a one-dimensional focus on cost minimisation to maximise the shareholders value, in accordance with the Friedman doctrine, which is central in neoliberalist economic thinking. This strong focus on cost meant that economies of scale drove FDI to countries with cheap labour, as it was primarily labour-intensive tasks that were offshored, which lead to a concentration of the operations in often gigantic plants, which Foxconn's factories for iphone production in China is an example of. Furthermore, the lowest cost focus implied that no other considerations of resilient and secure value chains as well as environmental and social sustainability issues were taken into consideration, which was drastically disclosed during the Covid-19 pandemic, and was the last nail in the coffin for the neo-liberal form of globalisation. The first serious crack in the operation of neo-liberal globalisation came under the financial crisis in 2008, which demonstrated the problems of a too strong influence in the economy by the financial sector.

In the discussion of globalisation it is important to recognise that globalisation and internationalisation is two different regimes of international cooperation and trade. As globalisation is a relatively new phenomena of the last 40-50 years, and represents the functional integration of the previous internal division of labour in global production systems and value chains, orchestrated by transnational corporations, internationalisation has existed since the great discoveries in the 15th century. Internationalisation simply means the exchange of goods in an international market, and is constituted by countries and regions' social division of labour, which means the individual countries and regions produce products which they are relatively most efficient in doing, which was the basis for the principle of comparative advantage, the foundation of international trade. Concretely, this meant the one region concentrated on wine production, another on textile and a third on autos. This was the forms of exchange that was also dominant in industrial districts.

What a deglobalisation and reshoring represent is a gradual transformation from global value chains to interregional and regional value chains and an increased importance of international trade of goods and services at the expense of the trade of parts as in globalisation.

3. Industrial districts and globalisation – what was the impact?

According to the logic of neo-liberal globalisation of cost minimization to maximize profit and shareholders value, the anticipation was that the model of industrial districts would have a hard time to survive, resulting in bankruptcies, closures of firms and outsources of production, even if the local production systems of specialised SMEs were effective as well as efficient. This opinion was especially based on the fact that many of the industries of industrial districts are traditional which products were labour intensive, less knowledge intensive and, consequently, easy to offshore and relocate to countries with cheap labour and less regulations. The experience, though, as showed in a thorough researched article by Fiorenza Belussi, the leading Italian scholar of industrial districts and globalisation, from 2015, is almost the opposite with most industrial districts being very resilient and showing no sign of a significant de-industrialisation, as was expected. This does not mean that industrial districts were unaffected by globalisation but that the impact did not result in a massive downsizing and rising unemployment. Belussi concludes her analysis by underlining 'how interwoven the evolution of local economies and MNEs is'

(Belussi, 2015, 108). This interconnection was manifested in breaking up the traditional internal districts-based value chain by outsourcing labour-intensive parts of production, by the entering of MNEs, so that the structure of the districts was no longer dominated by SMEs, by the merger of local firms into larger firms, of which some become home-grown MNEs, and by increased access to global knowledge (Belussi and Asheim, 2009). Thus, Belussi concludes her analysis by arguing that 'the recent entry and exit of MNEs, and the phenomena of offshoring did not question the model of ID/C per se' (Belussi, 2015, 108). But why did it develop this way, and not the way many observers had argued it would do, and does this development contain aspects which can be valuable for clusters in Western Europe in the coming reshoring of global value chains?

Even if industrial districts in the broader picture is seen as a distinct form of industrial organisation, it contains large differences with respect to the products manufactured, the knowledge and labour intensity of the products, the qualification of the workforce, the level of technology advancement, the level of R&D intensity, and the markets for the produced goods. Thus, it is not a question of 'one size fits all' but of a high degree of diversification. Industrial districts are far from all labour intensive and low tech, many districts have medium and high-tech industries such as engineering firms and biotech companies as well as design intensive and high fashion products. This differentiation of industrial districts is also the main explanatory factor of the different impact and consequences of globalisation for the various types of industrial districts.

According to Belussi (2015) offshoring took mostly place in the labour intensive parts of the value chain in districts specialised in the 'made in Italy' sectors such as footware and clothing, though with the value creation parts such as design, remaining in the Italian districts. One of the preferred locations was Romania, where sometimes similar industrial districts to the Italian one, were established, though without the special fusion of society with economy, that is one very important characteristics of the Italian districts (Sabel and Piori, 1984). In the present era of deglobalisation, this is an interesting example, as it would be characterised as near- or friend-shoring taken place within Europe in a country that is member of both the EU and Nato. One different example of consequences of globalisation in the textile sector is Prato in Tuscany, which has witnessed a massive influx of Chinese entrepreneurs as well as illegal Chinese workers. Prato specialised in medium quality fabric made from regenerated wool, and in colouring the fabric in a fast and flexible way. But this was neither a technologically advanced nor a design intensive production. But instead of upgrading to e.g. technical textile, the SMEs and their organisations insisted in doing what they always had done, which resulted in the takeover by Chinese entrepreneurs, as the production was low tech and did not demand any specific competence beyond a willingness to work hard. As a result, Prato was one of the very few industrial districts that had to rely on competition by cost (and not innovation), which led to the district being exposed to hypercompetitive strategies such as cut-throat prices resulting in severe restructuring and plant closures (Belussi, 2015, p. 107).

This is a key dimension in analysing which consequences globalisation had for industrial districts. According to Belussi's analysis, high- and medium-tech mechanical industrial districts, represented by biomedical, packaging machines and agricultural machinery, did not often choose to offshore part of the production (Belussi, 2015, p. 107). Also in industries with more integrated production processes, such as ceramic, relocation was marginal, and some local lead firms in the Bologna packaging and Reggio Emilia agricultural machinery industrial districts, have also developed into home grown MNEs. (Belussi, 2015, pp. 107-108).

The outcome of FDIs in industrial districts is also strongly correlated with how advanced the product and production as well as the technology level and the R&D intensity are. As many of these firms with more advanced products and technology are engineering based firms, the importance of tacit knowledge, developed over many years of specialised production, what Marshall called 'the industrial atmosphere', is significant. Such firms also base much of their innovation activities, especially concerning incremental innovation, on tacit knowledge, which is sometimes described as application development, in contrast to technological development, which is applied research in cooperation with technical universities (Asheim and Parilli, 2012). As tacit knowledge is sticky to places, and, thus, less mobile, foreign firms have to invest in the firms in these districts to have access to this form of knowledge and to exploit it, and they will have to remain and develop the firms in these places. The experience from industrial districts confirms this, as demonstrated by e.g. the Swedish globally leading medical technology firm, Gambro, investing in the

Mirandola biomedical district, and the Investment by Fiat and Audi Volkswagen in the Bologna motor valley districts as well as similar FDIs in the Montebelluna industrial districts, which is the world leading producer of technical sport shoes (Belussi, 2009). This represented an efficient way to get access to local knowledge, which strengthened the competitiveness of the districts.

Thus, the conclusion we can draw from this short overview of the experiences of industrial districts in the era of neo-liberal globalisation, is that districts with technologically advanced production and specialised products for niche markets, in general, have been resilient and done well, and have benefited from access to global knowledge and FDIs, and have come strengthened out of globalisation. This is very much the same development as the hidden champions of Germany have experienced (Lehmann and Schenkenhofer, 2023). The exception is few, foremost represented by Prato, with a relative low-tech production and not very specialised products, that now more or less are taken over by Chinese entrepreneurs and workers, and are competing on cost in the market of fast fashion.

Even if the strength of tacit knowledge of these engineering based industrial districts are their basic competitive advantage, to remain competitive and increase their competitiveness, access to science based, analytical knowledge becomes increasingly important, especially in relation to taking advantage of Industry 4.0 technology to implement robot and automation technology to make the production process more efficient and less dependent on labour costs. Applying Industry 4.0 technology will in many ways be a parallel story to the adoption of computer aided machinery in industrial districts in the beginning of the 1980s, which resulted in the production systems of SMEs enjoying the same productivity level as large firms exploiting internal economies of scale (Asheim, 2000).

An example of how knowledge base combination of analytical and synthetic knowledge (Asheim et al., 2017) can be achieved, is the mechatronic industrial districts of Vicenza. The mechatronic industry is solidly based on synthetic knowledge, but to upgrade to be able to implement Industry 4.0 solutions, the access to analytical knowledge is necessary. One way this demand has been accommodated, has been to locate the Doctoral Programme in Mechatronic and Product Innovation Engineering of the University of Padova in Vicenza. This decision has significantly made the access to this type of knowledge much easier, and also lowered the barriers that often exists between SMEs and universities, by co-locating the educational offer with the industrial district (Plechero and Grillitsch, 2023). Surely, often it can be even more important to co-locate relevant master educations in engineering in the districts of the industry.

4. What can be learned from the industrial districts experience of neoliberal globalisation relevant for the new post-neoliberal era of reshoring value chains

In general, industrial districts seem to have been very resilient with a positive economic development during the time of neo-liberal globalisation, as is also the case with the German 'hidden champions', with no dramatic down-sizing and loss of jobs. This is especially the case in districts producing technologically advanced or design based (luxury) products for niche markets. This seemingly continued success is also due to characteristics of the labour force and the social embeddedness of the districts. Lately, also an increased cooperation with regional technical universities, something that has been more prominent among the 'hidden champions' to upgrade products and the competence of the workforce, has been an important contributing factor (Plechero and Grillitsch, 2023).

However, even in spite of this, industrial districts and 'hidden champions' have always been looked upon as exceptions or special cases, that has surprisingly survived due to regional contingencies, and not as an alternative model for manufacturing industries. Most observers and researchers within economic geography and innovation studies in Europe has bought into the US based narrative about a rapid deindustrialisation as well as the story about (manufacturing) industry representing the past. This has been the case in the US, which as pointed at earlier in the letter, has developed into a software-based platform economy, and where the majority of the manufacturing firms and jobs in the traditional industrial centres in the Mid-West, has been outsourced to countries with cheap labour in East Asia and Mexico. But as argued in this letter Western Europe is still basically a manufacturing economy, which has not experienced

a similar deindustrialisation. And when we now look forward to the green transition of societies and economies, we see the need for a dramatic increase of industrial production capacity and capabilities to be able to manufacture the large amount of tangible products that is required to carry out such a transition. Thus, industry is the future, not the past. This new development has been supported by the reintroduction of industrial policy as part of the post-neoliberal era, and the deglobalisation and reshoring of value chains, caused by a combination of environmental, social and economic sustainable considerations as well as security reasons, connected to geo-political tensions and control of the production of products of strategic importance, such as semiconductors.

In this new context, the experiences of industrial districts and the 'hidden champions' can represent important learning and inspiration for the future thinking about the organisation of industrial production. Here it is important to keep in mind the 'many possible woofrld view' (Sabel and Zeitlin, 1985), which was mentioned in the introduction. This view argues that the future development is not based on or limited by only technological trajectories and firm-based economic consideration, but is fundamentally a question of politics and policies, of how inhabitants and politicians make value judgements and priorities of what is considered as important for a prosperous life and a save future for people and planet. We see this clearly in our time of large societal challenges concerning economic, social and environmental sustainability as well as rising geopolitical tensions and of non-democratic, strong nations. New technological development gives us the opportunities to contribute to solving these challenges, and also to organise the production and distribution in a sustainable way, that at the same time creates a basis for a meaningful and prosperous life for people and a sustainable planet. The story of industrial districts represents an example of the 'many possible world view' that can inspire and help us to act responsible.

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Sus objetivos fundamentales son:
• Promover la Ciencia Regional como materia teórica y aplicada al territorio proveniente de la confluencia sobre el mismo de disciplinas y campos científicos diferentes que contribuyan a un desarrollo armónico y equilibrado del hombre, medio y territorio.
• Crear un foro de intercambio de experiencias favoreciendo la investigación y difusión de métodos, técnicas e instrumentos que afecten a la Ciencia Regional.
• Promover relaciones e intercambios a nivel internacional sobre Ciencia Regional.
• Impulsar el estudio de la Ciencia Regional en los centros docentes y de investigación.
• Promover publicaciones, conferencias y cualquier otra actividad que reviertan en una mejora del análisis y las acciones regionales.
• Colaborar con la Administración Pública, a todos los niveles, para una mejor consecución de los fines de la asociación y el desarrollo del Estado de las Autonomías.
• La asistencia técnica a la Administración Pública u otras instituciones, públicas o privadas, así como a la cooperación internacional en el ámbito de sus objetivos.

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