Governance of Industrial Districts: Bibliometric and Cluster Analyses

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Abstract

During the last decades, industrial districts have been at the forefront of academic and policy-making debate as important players of the economic development of small and medium sized companies in many countries. Nevertheless, a number of factors have strongly damaged these networks and questioned their competitiveness. Literature suggests that district governance is a proper solution to these issues and interprets this tool as an effective guide for development and changes of industrial districts. However, yet to date, the research on the governance of industrial districts is still sparse and very fragmentary. Furthermore, it presents a strong multidisciplinary breadth that prevents the identification of a comprehensive picture of the academic field. On the basis of these premises, this review study combines bibliometric and cluster analyses of scholarly articles published until March 2016 in order to identify research trends and describe the structure and the evolution of this research field over the last 27 years. The paper has implications for theory and practice. First, it systematizes and consolidates the literature on industrial district governance. Moreover, it highlights the evolutionary pattern of the research and identifies unexplored/underexplored issues that scholars should address. Finally, it proposes additional avenues to guide future efforts of policy makers.

Keywords: bibliometric analysis, cluster analysis, governance, industrial districts

1. Introduction and Conceptual Foundations of the Debate

The governance of industrial districts has remained topic of discussion for a long time, despite networks are the main organizational set-up of highly specialized small and medium size companies (SMEs) in many countries (Paniccia, 1998). Only in the last decades, this issue has come to the forefront of scholarly and policy making interest, prompted by some renown case study evidence (e.g. Silicon Valley, Napa Valley, Route 128, Birmingham jewellery and Taiwan hosiery districts) (European Commission, 2002; De Propris & Wei, 2007).

Indeed, scholars have made a strong research effort to investigate the district companies' interactions (Lazerson & Lorenzoni, 1999; Rabellotti & Schmitz, 1999), the network evolution and life cycle (Dei Ottati, 1996), and their effects on country development and SME competitiveness (Pyke, Becattini, & Sengenberger, 1990; Porter, 2000). In this regard, studies emphasizing the importance of networks for competitive strategies (Porter, 1990; 1998; 2000) have been crucial in stimulating the interest around industrial districts.

In particular, from the off-centre industrialization processes in the 1970s, one of the main challenges of academic research has been to identify the industrial districts' uniqueness and to explain their outstanding outcomes (Paniccia, 1998; Porter, 1998) especially in extensive networks (European Commission, 2002). Two arguments have been used to discuss the industrial networks' competitive advantage (Porter, 1998; Cooke, 2002a; Arıkan & Schilling, 2011). The former comprises the firm geographic propinquity that fosters resources and knowledge exchange (Clifton, Keast, Pickernell, & Senior, 2010), making industrial districts one of the main organizational set-up for company learning and relationship capital (Cooke, 2002a). The latter involves investments and risk sharing that give raise to district company 'coopetition' (Dei Ottati, 1994; Porter, 1998).

Nevertheless, the globalization, the liberalization of markets, the aggressive competition of companies in developing economies, and the distribution channels' evolution, have questioned the ability of these factors to foster district competitiveness (Clifton et al., 2010). The unfolded discussion has strengthened the notion that the lack of an entity in charge of network changes and strategic management is a major issue for industrial districts. In this respect, literature acknowledges the importance of governance systems to successfully compete and guide

sustainable development of companies and districts (Sugden, Wei, & Wilson, 2006; De Propris & Wei, 2007). Indeed, district governance refers to the strategic decision-making power distribution among industrial district actors and to the control and coordination of network companies (Arıkan & Schilling, 2011).

Scholars suggests that proper governance systems can address the issues of managing and coordinating the relationships among autonomous and interdependent district firms, limiting their conflicting interests and ensuring effective cooperation (Sacchetti & Tomlinson, 2009; Arıkan & Schilling, 2011). Moreover, literature emphasizes that a strategic decision-making advisor with a vast knowledge of district, a long term vision, and the ability to appraise its resources, is a key strength to deal with competition challenges, fostering local development (Porter, 1998; Sugden et al., 2006; De Propris & Wei, 2007). With this in mind, research suggests that district governance is a powerful tool to combine the interests of all network actors by specific governing bodies and mechanisms that comply with a framework of shared rules, policies and practices (Mistri, 1999; Alberti, 2001; De Propris & Wei, 2007).

A growing discussion on the topic has been boosted by the studies on the distribution of decision-making power within districts to explain the governance archetypes, the rationale for their adoption, and their impact both on district firms and network competitiveness (Sacchetti & Sugden, 2003; De Propris & Wei, 2007; Provan & Kenis, 2008; Arıkan & Schilling, 2011). Aside this line of inquiry, other investigations have followed an institutional approach to examine industrial districts and have focused on the practices and the regional governance agents involved in managing networks (Alberti, 2001). Following the wave of reforms in the 1990s and prompted by the European Union (European Commission, 2002), the majority of these studies has discussed the role of district committees and meta-managers also in connection with local policies and national regulations in force by examining their contribution to the district strategy and providing prescriptive suggestions for network governance (Wegner & Padula, 2010). Despite this line of inquiry has emphasized the importance of the local asset base in supporting the industrial district development and the meta-managerial effectiveness (European Commission, 2002; McDonald, Tsagdis, & Huang, 2006), both theoretical and empirical contributions on this topic are still limited and usually anecdotal (Mistri, 1999).

Notwithstanding its value and notable insights, the research on district governance is far from being conclusive. In addition, the background diversity of scholars focused on the topic has brought different research questions and approaches. As a consequence, the interdisciplinary breadth and fragmentation of the resulting studies prevent the identification of a comprehensive picture of the academic field. On the basis of these premises, the present literature review aims to identify the state of the art and the evolution of the research on industrial district governance.

To address this issue, the paper presents bibliometric and cluster analyses of articles published into peer reviewed scholarly journals until March 2016. It maps the intellectual structure and content evolution of the research field and presents some conjectures about further developments of the literature on the topic.

The study has a threefold contribution. First, it systematizes the literature on industrial district governance and offers a comprehensive picture on its state of the art, structure and evolutionary pattern over the last 27 years. In particular, compared to previous reviews, it focuses on the governance dimension of district activity, develops the map of the research field, positions the studies along key research dimensions and illustrates the relationships among topics. Second, it identifies the main research tendencies by combining bibliometric and cluster analyses with the qualitative examination of articles, and describes how sub-topics, research approaches, methodologies and settings have evolved over time influencing the research on the subject. Third, it highlights unexplored and underexplored issues that scholars should address. Therefore, the paper provides a useful guideline for both scholars and policy makers to position their future research works and addresses their upcoming efforts on industrial district governance.

The reminder of the paper unfolds as follows. Section 2 presents an overview of the research design and review method. Section 3 illustrates the results. Section 4 discusses the research implications and concludes.

2. Methodology

To assess the state of the art and the evolution of the literature on industrial district governance, the paper uses bibliometric and cluster analyses. These methodologies are frequently applied in literature studies and aim to map the existing knowledge by a scientific and rigorous examination of papers (Rashman, Withers, & Hartley, 2009; Sarto, Cuccurullo, & Aria, 2014).

As shown in Figure 1, the enquiry was developed in some steps (Furrer, Thomas, & Goussevskaia, 2008).

RESEARCH DESIGN AND REVIEW PROTOCOL

Step 1: identification of keywords and databases
• Brainstorming of two experts of the field for identifying search strings
• Identification of two groups of search strings to combine in Boolean searches
Search strings:
Group 1: "industrial cluster*", "industrial network*", "industrial district*", district*, cluster*, network*
Group 2: governance*
Database: ISI Web of Science (SSCI), Elsevier Science Direct, EBSCOhost, Hand searching and citation tracking in 10 top journals
Time-frame: all years until March 2016
Source: scholarly articles in English published in international peer-reviewed journals

Scores:	*ISI Web of Science (SSCI)*	*Elsevier Science Direct*	*EBSCOhost*	*Overall*
Extraxted articles	1.407	687	2.717	4.811
Articles after deleting duplicates and merging results from different databases	-	-	-	2.838
Hand searching & citation tracking	-	-	-	16
Total extracted papers				**2.854**

Step 2: selection of papers by two experts of the field
• Review of title, keywords, abstract and reading the full text of the extracted publications
• Classification of articles as pertinent (or not pertinent) to the topic and the research question
• Test the Inter-rater reliability (Kappa test)

Papers
▶ 2.854
▶ (2.747)
▶ **107**

Step 3: qualitative analysis of papers and identification of most cited articles
• Identification of a set of items to classify the 107 papers by two experts of the field
• Pre-test of identified items on two sub-samples of 10 articles
• Qualitative analysis of papers by reviewing and matching the articles to the items
• Ranking of most cited papers by their number of citations per year

Step 4: keyword coding by two independent scholars
• Draft of 12 macro-keywords
• Matching the macro-keywords to the original 323 keywords
• Test the Inter-rater reliability (Kappa test)
• Discussion of inconsistencies and divergences

Step 5: MCA and cluster analyses
Categorical variables: major keywords
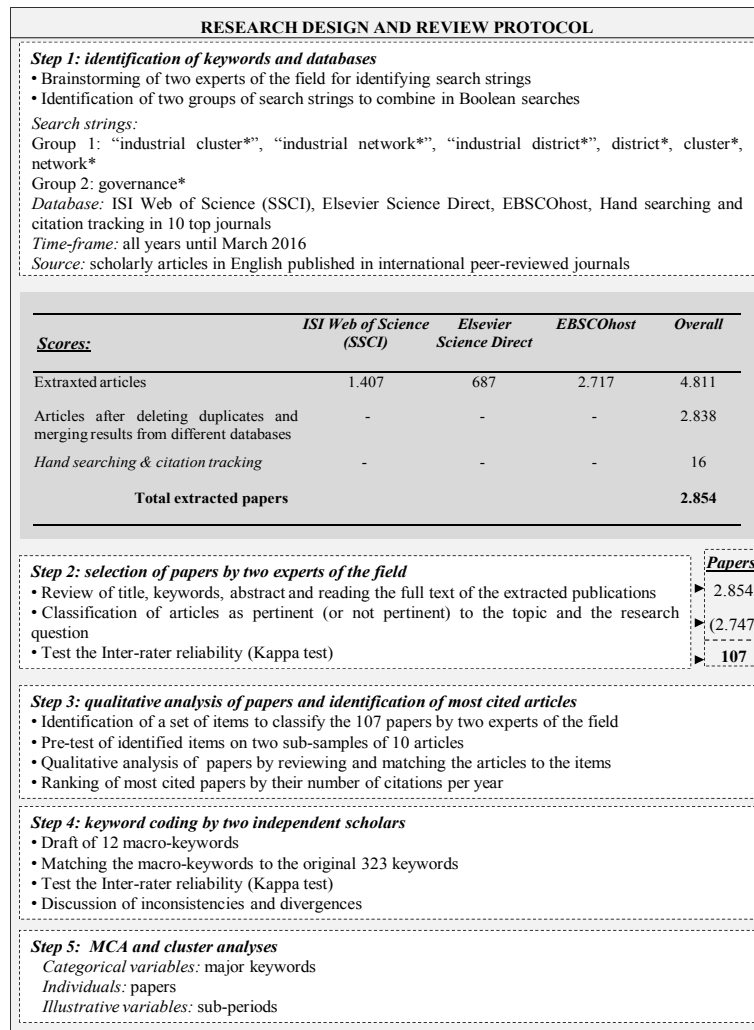*Individuals:* papers
Illustrative variables: sub-periods

Figure 1. Research strategy

First, keywords and databases for extracting articles were selected. Keywords were identified through the brainstorming of two experts in the field and were combined to retrieve scholarly articles through Boolean searches from ISI Web of Science (Social Sciences Citation Index-SSCI), Elsevier Science Direct and EBSCOhost databases (Rashman et al., 2009; Saggese, Sarto, & Cuccurullo, 2015; Saggese & Sarto, 2016). A first group comprised keywords identifying industrial districts ("industrial cluster*", "industrial network*", "industrial district*", district*, cluster*, network*), while a second one consisted of a truncated search string for governance (governance*). The search strategy focused on scholarly articles in English published until March 2016 in international peer-reviewed journals whose title, publication, abstract, keywords and research area matched at least with one search string. This protocol was appropriate since studies were multidisciplinary and their peer reviewing ensured knowledge certification (Saggese et al., 2015; Saggese & Sarto, 2016). It resulted in 4.811 scores and 2.838 univocal articles. The criteria were also applied across 10 management and governance top journals (Rashman et al., 2009) leading to 2.854 significant articles to be processed in the following step.

It focused on the collected papers' selection by two experts that autonomously reviewed title, keywords, abstract and read the full text of each publication. This procedure resulted in a substantial strength of agreement (Kappa statistic 0,65) (Landis & Koch, 1977) and selected 107 papers.

At the third stage, articles were further analyzed focusing on paper type, research approach, research setting, methodology, and kind of data. Regarding the type, papers were classified as conceptual (lacking of empirical metrics and proposing theories through deductive reasoning) or empirical (based on inductive logics, discussing the findings' robustness of qualitative and quantitative methodologies) (Saggese & Sarto, 2016). Concerning the research approach, papers were sorted by primary discipline area (i.e economics, managerial, public policy). As

for the research setting, articles were classified in four categories: America and Canada, Europe, Asia, multiple settings. Regarding the methodology, papers were clustered as qualitative or quantitative. Finally, concerning the data type, articles were distinguished as based on primary, secondary data and multiple sources. This scheme was identified by two scholars that pre-tested two sub-samples of 10 articles and autonomously categorized collected papers according to the items, while their classification disagreements were reconciled by a governance professor. The categorization was also applied to the 10 most cited papers as they have performed a seminal role for the academic field (Furrer et al., 2008). Most cited articles were identified ranking the selected papers by number of citations per year. Data on the sole number of citations was collected from Google scholar by imposing time (January 1990-March 2016) and language (English) constraints to insulate the time effect that penalizes latest publications (Furrer et al., 2008; Saggese et al., 2015).

At the forth step, the whole set of articles was coded by two scholars that autonomously drafted a list of major keywords by bundling the original ones (i.e. 323) into coherent categories. The revision of the list and the discussion of scholar disagreements resulted in 12 major keywords and 1 additional category that was erased as residual (Furrer et al., 2008) (Figure 2).

Major Keywords	Keywords
Competition	Competition; Competitive advantage; Competitive dynamics; Competitiveness; Conflict; Market; Market orientation.
Cooperation	Alliance governance; Cooperation; Co-production; External knowledge integration; Industrial symbiosis; Inter-firm cooperation; Interfirm cooperation.
Corporate strategy	Adjustment; Agglomeration; Biotechnology commercialization; Border agents; Buyer power; Contracts; Corporate social responsibility; Crystallization; Customer; Deintegration; Delocalization; Distribution channels; Industrial policy; Internalization; Internationalisation; Internationalization; Internationalization of production; Localims; Offshoring; Purchasing; Regionalism; Restructuring; Retailing and distribution; Strategic alliances; Strategic change; Strategic intent; Strategy; Subcontracting; Supplier; Trade rules; Transaction hazards.
Entrepreneurship	Entrepreneurship.
Governance forms	Corporate governance; Economic governance; Governance; Governance regime; Governance structure; Governance structures; Governance systems; Network governance; Regional governance; Relational governance.
Innovation	Flexible technology; Innovation; Innovation diffusion; Innovation performance; Innovative development; Local innovation system; Regional innovation system; Regional innovation systems; RIS.
Network management	Cluster dynamics; Cluster life cycle; Cluster life cycles adaptation; Cluster management; Cluster policy; Clusters value chains; Cluster-to-cluster and trans-local strategies; Dynamics; Dynamics of network; Exchange conditions; Financial policy; Global value chains; Network dynamics; Network management; Network process; Network vertical integration; Operations management; Value chains.
Network type	Business nets; Business networks; Cluster; Clustering structures; Clusters; Collaborative networks; Collusive networks; Creative clusters; Creative networks; Dark networks; Electronic networks; Emilian model; Global production networks; Industrial clusters; Industrial districts; Industrial district; Industrial networks; International networking; Inter-organizational networks; Intrafirm network; Italian industrial districts; Network; Network forms; Network typology; Networks; OEM industrial clusters; Organizational networks; Production networks; R&D networks; Regional cluster; Regional clusters; Retail networks; Shadow networks; Social networks; Strategic SME network; Whole networks.
Organization	Bottom-up; Cluster connectivity; Economic power; Embeddedness; Firm relationships; Focal firm; Hierarchies; Hierarchy; Interaction; Interfirm connections; Inter-firm relationships; Inter-organizational learning; Inter-organizational power; Lead companies; Leader firms; Local linkages; Network configuration; Network embeddedness; Network structure; Networked power; Network-firm; Networking; Nonfirm actors; Organisational choices; Organization; Organization of production; Organizational identification; Organizations; Position; Power; Power mechanisms; Relationship; Relationships; Self-organization; Social mechanisms; Social relationships; Spatial distribution of regional economic activity; Supplier relationship; Top-down.
Performance	Agglomeration effect; Cluster evolution; Collective efficiency; Development; District economies; District evolution; Economic development; Economic upgrading; Evolution; Flexibility; Inclusive development; Industrial develoment; Institutional capacity building; Interstanding; Learning; Local development; Local economic development; Network effectiveness; Performance; Performance management; Poverty reduction; Regional development; Regional growth; Regional resilience; Re-localisation vs. de-localisation outcomes; Small to medium sized enterprises; Social development; Social upgrading; Spillovers; Stability and change; Sustainable development; Transaction cost; Transaction costs; Upgrading.
Resources and competitive advantages	Competence view; Core Competencies; Dynamic capabilities; Education; External network competence; Financial services; Firm familiness; Human resources; Internal resources; Knowledge; Knowledge creation; Knowledge management; Knowledge processes; Knowledge transfer; Organizational capabilities; Personal relationships; Proximity; Proximity dimensions; Regional familiness; Relational capabilities; Relational capital; Renewable resources; Resource; Resource efficiency; Resources; Social capital; Trust; Venture capital.
Setting	Aerospace industry; Agricultural sector; Automotive industry; Banking sector; Biotechnology cluster; Biotechnology region; Birmingham; Ceramics industry; Chemistry; China; Clothing industry; Creative industries; Developing countries; Electronics sector; Emerging economies; Europe; Family firm; Family firms; Fashion; Firms; Food sector; Footwear; Gnosjo; Handloom; Italy; Japanese multinational corporations; Jevellery district; Lancashire cotton textiles; Local production systems; Machine tool industry; Malaysia; Manufacturing industry; Mexico; Multinational corporations; Multinational enterprise; Oil and gas industry; Peru; Prato; Region; Regional federalims; Romania; Scotland; Small firms; Small-scale enterprises; SMEs; South East Asia; Spain; Taiwan; Telecommunications; Textile and clothing industries; Textiles; Transnational corporations; Turkish business environment; UK; Varanasi; Vietnam; Wales; Wood industry.

Figure 2. Major keywords

Each scholar autonomously matched these major keywords to the 107 papers via the original 323 keywords. The codified response matching level was measured by the inter-rater reliability test and the resulting Kappa statistic (i.e. 0,71) was above the acceptance threshold (Landis & Koch, 1977). All the responses' divergences were discussed involving a third scholar who settled the disagreements.

At the last step, multiple correspondence (MCA) and cluster analyses were performed. The former is an interdependence data analysis of categorical variables without restrictive assumptions and graphically maps the multivariate categorical data to catch the structural features of research fields (Le Roux & Rouanet, 2009). The latter systematizes and offers a comprehensive picture of the literature organizing the selected papers into homogeneous groups (Everitt, Landau, & Leese, 2001). Both analyses started with the "individuals x variables" data matrix (Furrer et al., 2008; Saggese et al., 2015). Selected papers were treated as the matrix's "individuals" and weighted by their citations per year since most cited articles are more representative of the research field. The 12 major keywords were considered as the matrix's "variables" and treated as qualitative and dichotomous items coded "1" when associated to the papers. The MCA output was a set of latent factors resulting from the original variables' combination and described the keyword map providing not directly observable information on the structure of the research field (Greenacre & Blasius, 2006). The factorial axes (dimensions) offering its better illustration were identified by the Benzecrì correction formula (Le Roux & Rouanet, 2009) that selected the first factorial plan (Axes 1 and 2) summarizing 55,62% of overall inertia. The axes were interpreted according to the variables with absolute (eigenvalue) and relative contributions above 2 (Furrer et al., 2008; Saggese et al., 2015). The graph dimensions were named accordingly to describe the structure of the research field.

To trace the evolutionary pattern of the literature, the MCA was performed one more time with sub-periods as illustrative variables. To this purpose, the time-frame between the first and the last publication year was split into three consecutive sub-periods: I) 1990-1998; II) 1999-2007; III) 2008-2016 (Saggese et al., 2015). Finally, cluster analysis was performed to identify similarities among selected papers (Aldenderfer & Blashfield, 1984), allocate their findings along the map dimensions, detect existing open issues, and suggest future research insights.

3. Results

3.1 Descriptive Results

Figure 3 shows the publication trend on industrial district governance according to the number of articles by year. Despite the search strategy considers all papers published until March 2016, the first article appears in 1990 (Powell, 1990). Therefore, all figures and tables cover the observation window 1990-2016. Over this time-frame, the number of papers steadily and irregularly increases. However, the more considerable boost in the absolute number of studies concerns 2015 (15 papers).
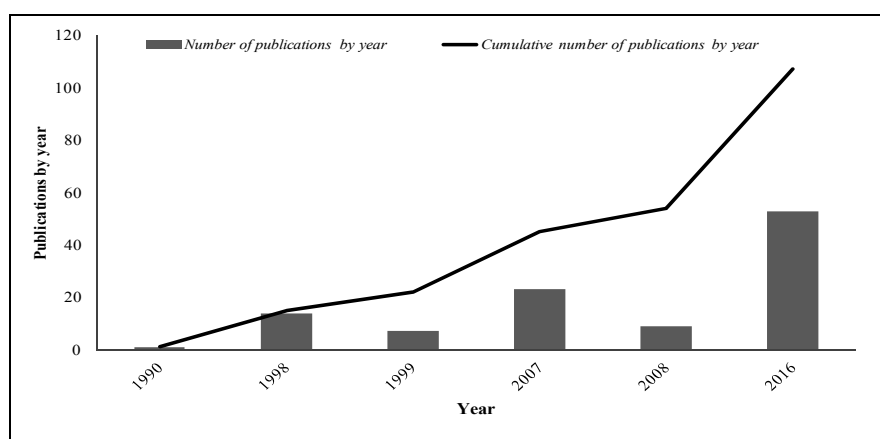

Figure 3. Publication trend

Collected papers are published in 60 journals and Figure 4 reports the 10 most contributory outlets. The first two top journals in the ranking have a specific focus on regional studies and spatial development policies. However, articles are also issued in public policy and management journals. These outlets predominate the last two sub-periods and are combined with general applied practice-oriented and governance journals.
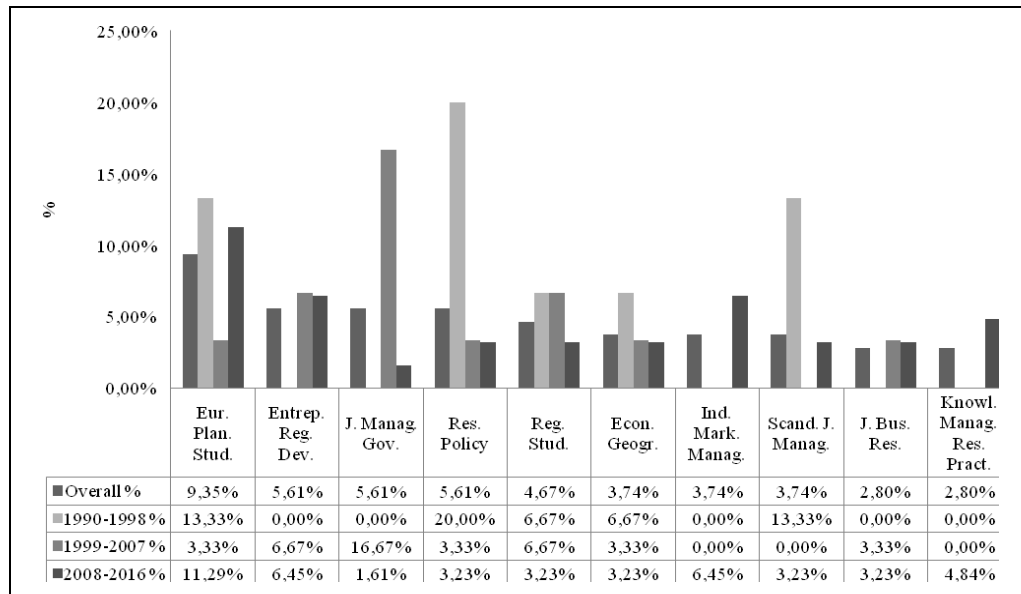
Figure 4. Most contributory journals

Table 1 offers an overview of the paper characteristics in terms of typology, research approaches, settings, methodologies and kind of data. It shows that most articles are empirical and the majority of conceptual studies appears in 1999-2007 and 2008-2016. Both empirical and theoretical works predominantly follow a managerial approach. For empirical studies, this is especially true from 1990 to 2007, while for conceptual articles in 1999-2007 and 2008-2016. In each observation window, scholars also adopt economic and public policy interpretations. Empirical studies follow an economic approach especially in 1990-1998 and 2008-2016, while they open to public policy interpretations in 1999-2007. Differently, conceptual research adopting this approach prevails in 1990-1998 and studies providing economic interpretations increase over time. Most empirical articles focus on the European context and only 8% of research is conducted in American and Canadian settings. These contexts are mainly examined in 1990-1998 and, from the second observation window onward, leave room for research focused on Asian settings. Empirical studies predominantly use qualitative methodologies, chiefly in 1990-1998. The employment of quantitative methods improves from 1999-2007 onward. Especially in the last two sub-periods, studies use multiple data sources while primary data prevails in 1990-1998.

Table 1. Overview of articles

| | 1990-1998 | | | | 1999-2007 | | | | 2008-2016 | | | | Overall | | | |
	C*		E**		C*		E**		C*		E**		C*		E**	
Research approach																
Economics	2	29%	3	38%	4	36%	3	16%	4	36%	14	27%	10	34%	20	26%
Managerial	3	43%	4	50%	5	45%	10	53%	5	45%	24	47%	13	45%	38	49%
Public policy	2	29%	1	13%	2	18%	6	32%	2	18%	13	25%	6	21%	20	26%
Total articles	7	100%	8	100%	11	100%	19	100%	11	100%	51	100%	29	100%	78	100%
Research setting																
America and Canada	-	-	1	13%	-	-	1	5%	-	-	4	8%	-	-	6	8%
Europe	-	-	4	50%	-	-	13	68%	-	-	25	49%	-	-	42	54%
Asia	-	-	1	13%	-	-	2	11%	-	-	10	20%	-	-	13	17%
Multiple settings	-	-	2	25%	-	-	3	16%	-	-	12	24%	-	-	17	22%
Total articles	-	-	8	100%	-	-	19	100%	-	-	51	100%	-	-	78	100%
Methodology																
Qualitative	-	-	7	88%	-	-	10	53%	-	-	29	57%	-	-	46	59%
Quantitative	-	-	1	13%	-	-	9	47%	-	-	22	43%	-	-	32	41%
Total articles	-	-	8	100%	-	-	19	100%	-	-	51	100%	-	-	78	100%

Type of data																
Primary	-	-	4	50%	-	-	6	32%	-	-	15	29%	-	-	25	32%
Secondary	-	-	1	13%	-	-	3	16%	-	-	9	18%	-	-	13	17%
Multiple sources	-	-	3	38%	-	-	10	53%	-	-	27	53%	-	-	40	51%
Total articles	-	-	8	100%	-	-	19	100%	-	-	51	100%	-	-	78	100%

Note. C*: Conceptual papers; E**: Empirical papers.

Figure 5 illustrates the papers' distribution by country according to the affiliating institution of the main Authors at the time their articles have been published. It shows that collected studies are conducted in 23 countries, especially in Italy, UK and USA. Articles cover a wide spectrum of topics. Studies from Italy are overwhelming empirical, use qualitative methodologies, follow a managerial approach and are strongly country specific as they focus on Italian case studies (Dei Ottati, 1996; Rabellotti & Schmitz, 1999). The same conclusions apply to the articles from UK. These papers are mostly empirical but mainly use quantitative methodologies (De Propris & Wei, 2007; Clifton et al., 2010). The opposite occurs for papers authored by USA scholars as they are overwhelming conceptual and provide theories to model industrial district governance (Powell, 1990; Gereffi & Lee, 2016).
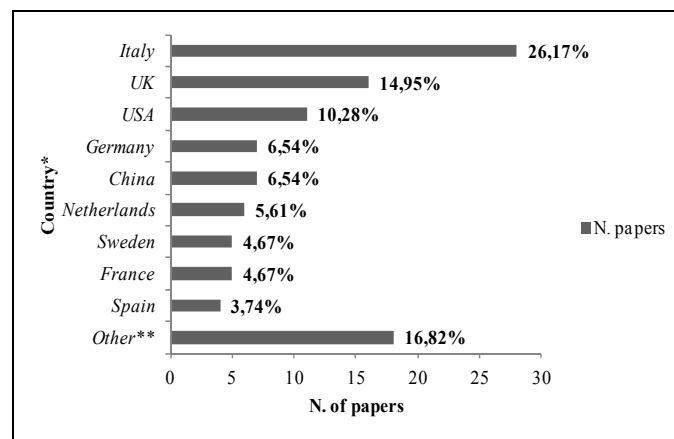
Figure 5. Country overview of papers

Note. *Country refers to the Academic institution where the main Authors have been employed at the time their articles have been published.
**Other: Australia; Austria; Denmark; India; Japan; Korea; Poland; Russia; Singapore; Turkey; Brazil; Canada; Finland; Norway.

Figure 6 shows the rankings of top ten articles by number of citations per year (Furrer et al., 2008) and summarizes their main elements in terms of period, type and focus. All papers are conceptual and advance or improve theories following deductive reasoning. Most articles are published in 1990-1998 and 1999-2007. The first most cited paper (Powell, 1990) also appears in 1990-1998 and presents an average citation by year two times more than the second one in the ranking (Provan & Kenis, 2008). Overall, the most influential articles can be grouped into three categories. A first group contributes to the debate on alternative governance models in industrial districts by exploring the conditions that give rise to different network types, and discussing their strengths/weaknesses (Powell, 1990; Markusen, 1996; Jones, Hesterly, & Borgatti, 1997; Provan & Kenis, 2008). A second group critically reviews network-based studies and identifies existing literature gaps to suggest new avenues for future research (Hoang & Antoncic, 2003; Pittaway, Robertson, Munir, Denyer, & Neely, 2004). Finally, a third group discusses the industrial district success also in connection with the governance of interactions of network actors (Harrison, 1992; Lazerson & Lorenzoni, 1999; Cooke, 2002b; Håkansson & Ford, 2002; Humphrey & Schmitz, 2002).

Paper ranking	Period*	Type**	Focus	N. of citations	N. of citations per year
1. Powell (1990)	I	C	Focuses on networks as organizational solutions characterized by market and hierarchical governance structures. It discusses the conditions giving rise to networks and explores their distinctive features by illustrative examples of their arrangements in different industries. It suggests a number of research avenues for further studies on the topic.	9.134	338,33
2. Provan & Kenis (2008)	III	C	Develops three basic models of network governance based on their structural characteristics and advances some propositions on the conditions that affect their outcomes.	1.462	162,56
3. Markusen (1996)	I	C	Rejects the dominant paradigmatic configuration of industrial district and identifies 3 forms on the bases of their internal/external orientations, and governance structures (i.e. hub-and-spoke district, satellite platform, and state-anchored district). It examines strengths and weaknesses of these networks, and provides suggestions to explore industrial districts through a broad institutional approach.	2.975	141,71
4. Jones et al. (1997)	I	C	Provides a theory to explain the underling conditions of network governance comparative advantage over hierarchy and market solutions. This theory integrates transaction cost economics and social network theories, and interprets network governance as a proper solution to the exchanging conditions of asset specificity, demand uncertainty, and task complexity.	2.581	129,10
5. Hoang & Antoncic (2003)	II	C	Critically reviews network-based research in entrepreneurship focusing on network relationship governance and structure. It suggests that scholars should explore the determinants of network content, governance, and structure, and also recommends cross-fertilization across process and outcome oriented research for theory building on the topic.	1.634	116,79
6. Humphrey & Schmitz (2002)	II	C	Studies local upgrading strategies in global value chains and discusses how the affiliation to these chains affects upgrading in industrial clusters. It focuses on firms in developing countries and proposes that local upgrading opportunities change according to the governance of the chain.	1.702	113,53
7. Håkansson & Ford (2002)	II	C	Discusses the relationships in business networks and focuses on some intrinsic paradoxes. It draws out their managerial and governance implications and provides suggestions for proper firm interactions within these organizational structures.	1.244	83,00
8. Pittaway et al. (2004)	II	C	Systematically reviews the studies on networks and innovation. It discusses the main benefits of networking and highlights the importance of network governance for innovation performance and productivity. It also identifies some literature gaps and suggests research avenues to develop interdisciplinary studies on networking, network structures and dynamics.	990	76,23
9. Harrison (1992)	I	C	Discusses the extent to which industrial districts are explicable by the conventional neoclassical conceptualizations (i.e. agglomeration and transaction cost theories) compared to the more recent industrial district theorization.	1.141	45,68
10. Cooke (2002b)	II	C	Sheds light into regional innovation in the context of multi-level governance by discussing case study evidence from Biotechnology clusters in the USA and UK. It explores differences and similarities in the regional innovation processes focusing on the role played by the public policy involvement.	424	28,33
10. Lazerson & Lorenzoni (1999)	II	C	Discusses the organizational complexity of industrial districts by focusing on Italian clusters. By relying on the empirical evidence provided by previous studies on the topic, it emphasizes the strategic role played by leading firms in orchestrating subcontracting relations, exploring commercial avenues, and investing in R&D to the benefit of the overall industrial district.	509	28,33

Figure 6. Most cited papers

Note. *I: 1990-1998; II: 1999-2007; III: 2008-2016. ** C: Conceptual papers.

3.2 Structure of Research Field and Clusters

Figure 7 offers a comprehensive picture on the research field by showing the map of the studies on industrial district governance. As mentioned earlier, the MCA provides the coordinates of major keywords according to the factors on the axes of a two-dimensional graph. While the middle of this map shows the centre of the research field, the points on the graph illustrate each major keyword and reflect the average position of allocated articles (Furrer et al., 2008). Their contiguity depends on the proportion of papers that jointly discuss the covered topics. Differently, the proximity between the keywords and the map centre relies on the number of papers on industrial district governance that also focus on the keywords' topics. Finally, the keyword size reflects their absolute contribution in identifying the factors on the map's axes. It is measured by the ratio of the modality coordinates (weighted by frequency) to the factor variance (eigenvalue) (Saggese et al., 2015).

The graph's vertical axe indicates antecedents (bottom) and effects (top) of district agglomeration. The horizontal axe identifies the actors' types in terms of companies (right) and networks (left). The dimensions' combination describes main topics in the literature. In particular, papers on the right-hand side explore district governance at company level, focusing on the motivations (organization, cooperation, innovation, resources and competences) behind this phenomenon (bottom) and its effects in terms of network type, entrepreneurial and strategic orientation (top) (Powell, 1990; Boari & Lipparini, 1999; Håkansson & Ford, 2002). Articles on the left-hand side investigate districts as organizational models and discuss their managerial antecedents (bottom), as well as competitive and performance effects (top) (Clifton et al., 2010; Arıkan & Schilling, 2011).

Aside the overview of the research field, Figure 7 shows the evolutionary pattern of the studies over the last 27

years. Indeed, the broken line describes the trajectory of the relationship among major keywords (Furrer et al., 2008) from 1990 to March 2016. The line trend involves all four graph quadrants, and moves from the studies theorizing the motivations behind district governance to the research on governance forms and network management.

To provide an inclusive picture on the state of the art of the research field, and to identify existing gaps, Figure 7 also illustrates the four clusters where collected articles are allocated by the MCA.

Cluster 1 gathers papers of early literature dating back to the beginning of the 1990s and more recent articles published after 2000. This line of research emerges in response to the evolving market competition and the lack of evidence on how address organizational and coordinating issues of district companies (Jones et al., 1997). The debate is hosted by regional and general management journals. Mainstream literature explores under what conditions network governance emerges and thrives (Robertson & Langlois, 1995). Moreover, it examines the governance issues arisen by network firm interdependencies and interactions (Dei Ottati, 1994; Jones et al., 1997). Research in this cluster interprets district governance as alternative model to markets and hierarchies aiming to design and manage the network partners' relations (Powell, 1990; Benassi, 1995). Studies suggest that network governance systems result from organizational, cooperative and innovative needs of industrial districts and their firms. Furthermore, research highlights that district governance drives network type and matters for district companies and their strategic orientation (Robertson & Langlois, 1995; De Propris, 2001). In particular, studies examine three factors: district openness and cohesion, nature and distribution of power among network firms, presence of structural and safeguarding mechanisms for district company interests (Sacchetti & Sugden, 2003; De Propris & Wei, 2007). Most of published articles do not refer to the classic theoretical paradigms and new standpoints interpret district governance. Conceptual papers provide theories that integrate both transaction cost economics and social network paradigms (Benassi, 1995; Markusen, 1996; Jones et al., 1997). Differently, empirical studies explore cluster governance motivations and industrial district organizational solutions to support firm cooperation (Storper & Harrison, 1991; Dei Ottati, 1996).

Cluster 2 comprises research exploring the role of leading firms in governing the relationships among district companies, especially in terms of district actor entrepreneurial links. Both conceptual and empirical studies are published in general applied practice-oriented journals in management and economics. Two lines of inquiry are illustrative of this research tradition. The former focuses on the role of district leading firms in driving strategic actions of network and its companies (Boari & Lipparini, 1999). In particular, scholars emphasize that leading firms play a pivotal role for district and company outcomes. First, they build bridges inside and outside network boundaries to pursue a common objective for all firms (Lazerson & Lorenzoni, 1999). Second, they provide the districts with entrepreneurial dynamism by limiting the perceived risk of business activities and foster local entrepreneurial action (Hoang & Antoncic, 2003). Third, they protect the interests of all parties involved in the network (Liu & Brookfield, 2000; Håkansson & Ford, 2002) and encourage the expansion of its horizons through cooperation (Lazerson & Lorenzoni, 1999). The latter stream of literature explores the determinants of leading firm activity. Moving from the premises of transaction costs and social capital theories, articles discuss the factors shaping the action of leading district actors also in connection with network type and local development (Liu & Brookfield, 2000). In particular, scholars emphasize the role of social, non-contractual mechanisms and relational capabilities of district leading firms for reinforcing, substituting or undermining district governance mechanisms, depending on the influence of institutional environment (Rabellotti & Schmitz, 1999).

Cluster 3 gathers studies exploring governance forms and managerial issues of industrial districts. Aside journals with specific focus on regional and policy research, both conceptual and empirical studies are hosted in management and governance outlets. Research discusses factors and roles shaping governance models and promoting network firm participation in decision making and cluster effectiveness. On the one hand, scholars examine the main tasks of network governing bodies (Sacchetti & Tomlinson, 2009). On the other hand, they identify and discuss the managerial implications of heterarchical and hierarchical district governance schemes (Provan & Kenis, 2008; Arıkan & Schilling, 2011). In particular, the former line of literature explores the role of cluster governing actors in fostering district development and outcomes by leading regional strategic direction (Clifton et al., 2010). The latter focuses on the economic power distribution as pivotal determinant of district partner relationships and discusses strengths and weaknesses of connected governance schemes by relying on case study evidence based on primary and secondary data (Sacchetti & Tomlinson, 2009). Research also emphasizes the contingent nature of network governance structures and highlights that each solution aims to attract new companies, support network management and increase its effectiveness (Wegner & Padula, 2010).

Cluster 4 includes papers focusing on competitive and performance implications of industrial district governance.

As for the competitive effects, a relevant research issue is the advantage that proper network governance may bring to regional economy and local development (Chen, 2011; Crestanello & Tattara, 2011). Indeed, a recent line of literature explores the role of network governance for regional development, especially in family companies (Cucculelli & Storai, 2015). As for the performance implications, scholars examine district governance outcomes in terms of delocalization/relocalization effects, district internationalization and growth (Zander, Trang, & Kolbe, 2016). Overall, studies adopt a comprehensive notion of performance. Thereby, a fruitful line of research yields implications of network governance for practice and policymaking by exploring its role for corporate social responsibility (Lund-Thomsen & Renginee, 2012). Indeed, literature highlights that industrial network governance matters in advancing the social responsibility of network and its companies, and illustrates the importance of "synergistic governance" for district environmental sustainability (Gereffi & Lee, 2016; Zander et al., 2016). Empirical and theoretical research coexists and papers are published in regional and management journals. In particular, empirical investigations employ bivariate and multivariate regression techniques or combine case studies with prior theorizing to provide country specific evidence (Clifton et al., 2010; Cucculelli & Storai, 2015). Differently, drawing on various theoretical paradigms, conceptual studies develop frameworks for interpreting the potential effects of industrial district governance on competition and performance (Gereffi & Lee, 2016).
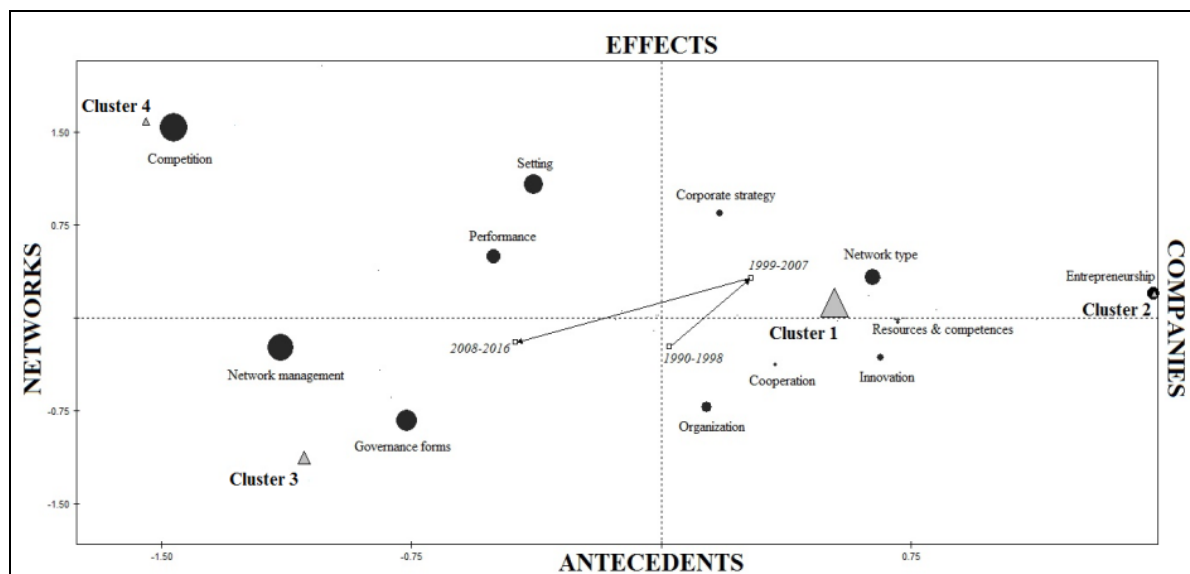

Figure 7. Map of studies and clusters

4. Discussion and Conclusion

The analysis of 27 years of publication on industrial district governance provides insights into the structure of the research field, the relationships between topics, the subjects' evolution and the main directions of studies.

The article distribution by years suggests that the topic is quite young since earliest contributions hail from 1990. However, from this year onward, it is clearly recognizable an increasing interest of scholars that further boosts during the late 2000s (Figure 3). This trend reflects the growing space devoted to industrial district governance since 1990 by governance and firm network academics. While in the 1970s and 1980s scholarly research tries to explain the outstanding performance of industrial districts, in the 1990s their competitive merits begin to be seriously questioned and district governance starts to be seen as one of the most effective tool to address the developmental issues of SMEs (Paniccia, 1998; Clifton et al., 2010). The debate presents multidisciplinary intellectual heritage and is influenced by exogenous and endogenous factors (globalization, market liberalizations, competition of companies in developing economies, distribution channel evolution) that shift the attention to the main drivers of district competitiveness (Lazerson & Lorenzoni, 1999). In this respect, both scholars and practitioners strongly emphasize the desirability of proper governance systems for network effective strategic management (Pyke et al., 1990). Thereby, the debate is strongly fuelled and highlights the influence of governance posture on district strategies and outcomes (De Propris, Menghinello, & Sugden, 2008; Clifton et al., 2010; Zander et al., 2016).

As suggested by the map of the studies (Figure 7), from 1990 onward, the scholarly attention moves towards two main directions. The former concerns the type of actors in terms of networks and companies. The latter involves antecedents and effects of district agglomeration (Dei Ottati, 1994; Provan & Kenis, 2008; Lin, Huang, Lin, & Hsu, 2012). However, a reflection on the development of the research field is needed to conjecture about the future of the studies.

Earlier works identify network governance as solution to address the organizational, coordinating and exchanging challenges of district companies (Powell, 1990; Benassi, 1995). In fact, in 1990-1998, most papers examine the factors shaping the network governance structure (Storper & Harrison, 1991; Dei Ottati, 1996), and explore the interdependencies of district companies (Powell, 1990; Dei Ottati, 1994; Jones et al., 1997) (Cluster 1). In 1999-2007, research focuses on the strategic role of network leading firms (Boari & Lipparini, 1999), emphasizing the factors that drive their activity and their support to network company cooperation and entrepreneurial dynamism (Håkansson & Ford, 2002; Hoang & Antoncic, 2003) (Cluster 2). In 2008-2016, the research agenda follows a double track. A first line of literature investigates district governance models focusing on the related governing bodies/actors, with a special emphasis on their role of guarantor for network firm involvement in decision making process and strategic posture of industrial clusters (Sacchetti & Tomlinson, 2009). The research strengthens the notion that the distribution of economic power is a key issue for district governance and managerial effectiveness (Provan & Kenis, 2008; Arıkan & Schilling, 2011) (Cluster 3). Consistently, a second literature strand investigates the competitive and performance implications of district governance for clusters and their companies. Scholarly attention is focused on the competitive advantage driven by effective network governance (Chen, 2011; Crestanello & Tattara, 2011), as well as on the delocalization/relocalization effects, internationalization, growth and corporate social responsibility outcomes (Clifton et al., 2010; Gereffi & Lee, 2016; Zander et al., 2016) (Cluster 4).

The evolutionary trend of the studies (Figure 7) suggests that the research transition from 1990-1998 towards the following observation windows is not steady. First, the research pathway involves both the horizontal (from companies to networks) and vertical (from antecedents to effects) dimensions. Second, the longer line length between the second and last sub-period highlights the stronger swiftness of this transition from 1999-2007 to 2008-2016. This result is also supported by the analyses on the most influential articles (Figure 6). Since Powell (1990) is cited two times more than Provan and Kenis (2008), it strongly affects the following development of the research field (Furrer et al., 2008). Thereby, it is not surprising that the later debate develops around governance structures and their roles for network strategic effectiveness (Arıkan & Schilling, 2011).

This evolution is in line with two phenomena. The former concerns the growing awareness that governance systems play a pivotal role in guiding network strategy and supporting the formulation of a shared vision. The latter involves the shift in scholarly research from the governance content to its roles and processes. Therefore, this study highlights that only recently scholars start to examine these issues, and are encouraged to go beyond the structuralism of earlier research in the field (Powell, 1990; Harrison, 1992; Markusen, 1996). In fact, as suggested by Table 1, the industrial district governance is empirically investigated following a managerial approach lately. This tendency especially involves European settings. On the one hand, most empirical studies explore European industrial district governance through both qualitative and quantitative methodologies (Clifton et al., 2010; Zander et al., 2016). On the other hand, most scholars focusing on this topic are affiliated to European academic institutions (especially in Italy and UK) (Figure 5). Thereby, this result witnesses and strengthens the pivotal role of industrial districts for European markets as the backbone of these economies (Lazerson & Lorenzoni, 1999; De Propris & Wei, 2007).

Despite the growing academic interest, the field of study has still not influential outlets and is characterized by a multidisciplinary intellectual heritage (Figure 4). However, the journal trend and the leading role of regional and management outlets are in line with the shift of the research focus towards governance as pivotal solution to foster the development and competitiveness of companies, industrial districts and local economies.

The variety of theoretical perspectives and inconclusive findings emerged by this literature review suggests that a considerable research effort remains to be done to clarify and improve our understanding of district governance dynamics. First, future studies should investigate the interaction of leading companies, governing bodies and district meta-managers inside and outside the network to shed additional light on politics, bargaining processes, overlapping and conflicting preferences of key district actors. Second, future research questions should explore how national settings and district characteristics affect the interaction among its actors and their participation in network governance processes. Indeed, additional research efforts are needed to shed light into the processes and factors that influence the district governing body activity. Third, a promising research avenue should investigate the joint impact of governing body structure, tasks, dynamics and working style on district decision making

effectiveness. Indeed, future studies should explore how motivation and expertise of their members contribute to network outcomes. Furthermore, more research is needed to examine how task performance of key district governance actors influences network and company district outcomes, and is affected by trust relationships among district companies.

Scholars are encouraged to develop more archival data-based studies over an extensive time period. Advancements in this direction can also benefit from research design based on direct observation and greater cross-fertilization with governance disciplines bringing more classic theory into industrial district tradition.

Potential paper limitations also suggest an additional research avenue. In line with previous bibliometric studies, this work focuses on peer reviewed articles in English published in international academic journals (Rashman et al., 2009; Sarto et al., 2014; Saggese et al., 2015; Saggese & Sarto, 2016). Therefore, future studies should assess how other publication types have influenced the research field.

The paper has implications for both theory and practice. First, it maps the state of the art and brings order to the literature on industrial district governance. Moreover, it describes the evolution of the research field and highlights a number of gaps with respect to topics covered and methodologies used. Therefore, the study disseminates existing knowledge on the subject, identifies unexplored issues and provides avenues for future works. Second, it suggests that the growing research on district governance echoes a movement towards more effective systems to guide and expedite development and competitive changes of industrial districts. Thus, it calls practitioner attention to the strategic role of district governance. This is especially true for policy makers since an effective regulation to design governance roles and practices would allow district actors to properly contribute to the network decision making. Since industrial district development is strongly affected by public policy focus (O'Gorman & Kautonen, 2004; McDonald et al., 2006), this paper encourages policy makers to support district firm cooperation through proper governance systems promoting both the entrepreneurial activities of district companies and the overall district development.

Acknowledgments

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