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## BEYOND THE NORTH-SOUTH DIVIDE? THE GEOGRAPHY OF STRATEGIC ALLIANCES IN ITALY

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### Biographical Notes

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### Abstract

Alliances among small- and medium-size enterprises have been considered a response to the global competition, being differentiated over space and reflecting the distinction between 'innovative' and 'traditional' districts. The present study investigates the spatial structure of a representative sample of strategic alliances recently held in Italy to investigate whether the North-South economic divide influences networks' concentration and persistence over time. Using a database covering 333 alliances and 1800 enterprises, alliances and the participating enterprises were classified according

to firm specialization and spatial location. The spatial structure of strategic alliances across Italy was explored through multivariate statistics of the spatial distribution of the participating firms and of additional variables assessing technological intensity, agglomeration factors and networks. The importance of factors shaping the distribution of strategic alliances in Italy varies across space reflecting multiple geographical gradients (agglomeration, accessibility, district specialization) and going beyond the traditional disparities observed between wealthier and economically-disadvantaged regions.

**Key Words:** Strategic alliances, Networks, Proximity, Italy.

**JEL Classification:** 1.2; 1.5; 4.1.

## 1. Introduction

One of the most characteristic aspects of a globalized world is the "increased interconnectedness and interdependence of countries in multiple, overlapping networks" (Cassi et al., 2012). In the last twenty years, economic interdependence and sector interconnectedness influenced the global patterns of production and collaborative networks of firms have become an important research issue (Grabher and Ibert, 2006). Beginning in the 1960s, there was a flourishing of literature about the formation of relationships between social services and agencies (Gulati, 1995), pointing out the contribution of strategic alliances to improve firm competitiveness (Simonin, 1999; Soekijad and Andriessen, 2003). Strategic alliances among firms are intended as voluntary agreements that allow durable exchange, sharing or collaborative development of new products and technologies (Harrigan, 1986; Contractor and Larange, 1988). Several studies focused on the conditions stimulating firms to cooperate (Barley, Freeman and Hybels, 1992; Grabher and Ibert, 2006) and evidence was provided on the importance of firms' networks in knowledge acquisition and transfer processes (Simonin, 1997; Soekijad and Andriessen, 2003).

Companies that invest in structures of alliances that are able to stimulate internal circulation of knowledge are generally successful (Chan et al., 1997; Hoffman and Schlosser, 2001; Kale, Dyer and Singh, 2001). Furthermore, alliances create value for firms that enter into them (Denicolai et al., 2010; Stam, 2010). This relationship, based on confidence and trust, produces stock market gains and market recapitalization. It therefore follows that an important aspect of strategic alliances is the manner in which the cooperation is organised. The literature distinguishes between different types of alliances. Koza and Lewin (2000) variously discerned learning, business and hybrid alliances while Dussauge et al. (2000) identified a difference between alliances created to take advantage of economies of scale, and complementary alliances that create good condition for learning and the appropriation of skills. Van Gils and Zwart (2004), however, adopted a distinction between market

transactions, cooperative agreements, in turn divided in into tactical alliances and strategic alliances, majority participation and based agreements. Also taking into account different forms of agreement, firms prefer to be related to each other for better access to resources such as skills, and preferential access to the market, Gulati (1995) argued that "strategic interdependence between organizations describes a situation in which one organization has resources or capabilities beneficial to but not possessed by other".

The creation of an alliance is not a simple matter. In order to discover new alliance opportunities or to find good partners, firms need to have access to a large range of information on market trends and on strategies of other companies and their characteristics, acquiring data about the reliability of the candidate partner(s). In other words, they must be informed about the reliability of the partner. In this sense, one of the best ways to set up trusting relationships and to gain access to market information is a network of prior alliances. A deep investigation of the relationship between prior and future partners shows how social relations influence economic activities in order to build a reliable network. As Gulati (1998) affirms, "although strategic alliances are dyadic exchange, key precursors, processes and outcome associated with them can be defined and shaped by the social network within which most firms are embedded". It follows that strategic alliances may be created through different methods and for different reasons (Schoenmakers and Duysters, 2006). Even though strategic alliances are fundamental tools to improve firm's competitiveness, in the business strategy literature little attention has been given to the analysis of spatial patterning of collaborative enterprises. Furthermore, the relationship between regional economic development and networks has been clarified only partly.

The present study investigates the distribution of strategic alliances in Italy, in the light of persisting socioeconomic gap between the wealthiest regions in northern Italy and the most economically-disadvantaged regions in southern Italy. By focusing on the latent relationship between strategic alliances, enterprises' specialization and space we analyze the structure of strategic alliances operating in Italy and the geographical distribution of the participating firms, discussing the role of technological intensity, agglomeration and proximity factors. It follows that the present study analyzed the relationship between spatial location of strategic alliances and other relevant dimensions such as geographical proximity, economic specialization and technological diversification. We expect the dynamics of strategic alliances to be different along the North/South divide, or more generally in economically-divided countries. A data mining approach was adopted to explore selected firm attributes by looking at the complex factors that characterize the spatial variability of firm networking in a structurally divided country like Italy. This paper is structured as follows: section 2 provides a short summary of the geography and regional studies literature on the

topic, section 3 illustrates the policy measures recently introduced in Italy to promote agreements among firms, section 4 describes the data base and the methodology adopted in the present study. Results of our analysis and some conclusions are illustrated in section 5, along with the implication of our study for development policies which aim to reduce the North/South divide.

## **2. Theoretical framework**

In the geography and regional studies literature, proximity is a crucial condition for firms' interaction and cooperation. Boschma and Frenken (2010) explain the role of proximity as a driving force for the formation and evolution of networks. In many cases the choice for a given partner is related to geographical proximity, e.g. based on regional clusters because local firms share a tacit knowledge that fosters alliances (Giuliani, 2010). However, in some cases - and above all when we take into account innovative sectors - proximity is not sufficient to explain the formation and consolidation of partnerships and cooperative agreements. In other words, space per se does not guarantee success (Tallmann and Phene, 2007) and firms may be impelled by other motivations (Rallet and Torre, 1995). Additional dimensions of proximity (cognitive, organizational, institutional and social proximity) have been considered to explore the complexity of firms' networks (Boschma, 2005; Capello, 2007).

The cognitive proximity relies on the degree of similitude of the knowledge and skills that firms share. A common set of skills is fundamental to exchange knowledge between partners because it is easier for them to learn from one another (Boschma, 2005). Consequently, similarity with another firm drives the choice of future partners (Boschma and Frenken, 2010). Organizational proximity is associated with the degree of strategic interdependence between two organizations. This kind of proximity seems relevant to reducing uncertainty about the behaviour of the future partner, and also to cutting the costs of collaboration, making the exchange of workers faster and easier (Marrocu et al., 2013). Institutional proximity is related to the macro-political framework in which the actors are working: it deals with the similarity of informal constraints and formal rules shared by economic subjects. The effective transmission of knowledge may be fostered by institutional proximity as firms share a common institutional framework, made of law and norms that provide a set of standard procedures and mechanisms, which are shared and then taken for granted (Basile et al., 2012).

Boschma (2005) introduces a concept of social proximity which refers to the degree of common relationships that improves the circulation of informal knowledge creating collaborations and partnerships as opposed to the geographical proximity, which refers to the spatial distance between nodes that may hinder or foster the transfer of tacit knowledge (Gilly and Torre, 2000). At the

macro-level this implies that regions where network members reside are facilitated in exchanging knowledge (Maggioni et al., 2007). Networking is easier when individuals and firms share the same social and institutional framework, a common language and similar cultural, ethnic and religious values (Ponds et al., 2007). Thus two regions belonging to the same country are expected to have higher knowledge exchange (Marrocu et al., 2013). Similarly, in the case of a clear domestic economic divide, as it is in Italy, we expect a higher networking among firms within the same socio-institutional context (North versus South). We anticipate here that the empirical specification based on such a specific proximity is outperformed by the estimation which includes regional and urban dummies to account for the importance of socio-institutional similarity across firms. Focusing on this kind of proximity (sensu Lagendijk and Lorentzen, 2007) may allow for a better understanding of the relationship between technological level of firms and their spatial distributive pattern.

### **3. "Contratto di rete": an Italian example of strategic alliances**

Especially SMEs are facing new challenges, one of the most important being knowledge acquisition. Knowledge has become the "currency of modern competition" (Van Gils and Zwart, 2004) so that firms are pushed to create more strict connections giving value to the knowledge skills. To reach this goal, firms are required to shift towards a learning-oriented development (Sadler-Smith et al., 2001). In this perspective, strategic alliances are considered a fruitful option to compensate internal knowledge deficiencies through agreements that allow learning, knowledge access and acquisition improvements (Van Gils and Zwart, 2004). Alliances provide firms with an opportunity to leverage their strengths through a continuous interrelation with partners (Inkpen, 1998). Moreover, literature indicates SMEs need to band together to achieve better economic performances (Mothe and Quélin, 2000; George et al., 2001). By considering together (and giving joint value to) strengths, skills and capabilities, SMEs will face the global competition (Harrigan, 1987; Sadler-Smith et al., 2001; Cainelli et al., 2006). Networking has been thrown into sharp focus during last decade largely because of two important processes: (i) increasing globalization, which has affected the flows and structures of the world economy, in turn accelerating human and economic relations and (ii) a stronger interconnection between production spaces by reducing distances and stimulating new visions on economic relations, productive structures and their functioning (Kang and Sakai, 2000). Increased competition in an increasingly interconnected world allows inter-firm alliances to reinvent the role of companies in specific economic sectors.

Policies promoting alliances and stimulating (or incentivizing) networks between firms have been designed and implemented at the national level, often demising the 'regional dimension' of

firms' networking and the role of space and proximity (Marrocu et al., 2013). In this sense, the Italian government proposed a strategy called "Contratti di Rete" (Network's Agreement) with the aim of promoting strategic alliances among Small and Medium Enterprises (SMEs) over the whole national territory.

By recognizing the pivotal role of strategic alliances among SMEs, but also taking into account evidence that shows how the Italian firms, on average, are too small to overcome global competition (Banca d'Italia, 2013), the Italian government introduced a legislative instrument to foster the creation of firms' networks through a new kind of agreement, the so called "Contratto di rete", literally 'Networks' agreement' (RetImpresa, 2011). The initiative considers strategic alliances as a best practice to improve firms' performance and reflects the results of preliminary studies carried out in Italy on this issue (AIP, 2008). To support this measure, Unioncamere (2011) proposed alternative policy measures in order to increase firms' competitiveness on local and global markets, including smart tools to coagulate enterprises' networks and to support strategic alliances among them. Based on these assumptions, there was an imperative need to agglomerate smaller companies in order to reach sustainable dimensions and to increase competitiveness (Unioncamere, 2011).

Confindustria (2011) identified six reasons to enter a network of firms: (i) to increase productivity and competitiveness, (ii) to share knowledge and competences, (iii) to develop innovative potentials, (iv) to enter new markets and to have a chance to internationalize products, (v) to certify the quality of the production process and, finally, (vi) to share costs. Promoting economic competitiveness of the territory where a given firm participating to a network agreement is located represent an additional objective of the 'contratto di rete' (RetImpresa, 2011). In line with this, the Italian government approved with the law 122/2010 the "contratto di rete" legislative instrument proposed by Confindustria (Esposito, 2012).

The 'contratto di rete' acts as an agreement between entrepreneurs, creating an alliance to share a common program (RetImpresa, 2014). Such alliances are fundamental to coordinating the interactions of the entire network, although the power of decisions remains independently with each participating company for the duration of the agreement. Specifically, the nature of the collaboration requires that entrepreneurs be obliged to collaborate in manners both consistent with the sectors indicated in the agreement, and linked to the functions of the companies. This highlights that collaboration between nodes can be reproduced in several forms such a (i) by coordinating activities in order to obtain better conditions in external relations (e.g. coordination during the quality control or pricing policies), (ii) by instrumental activities to improve management results (e.g. groups engaged in buying and selling, logistical issues, promotion of brands) and (iii) by

complementary activities to aid firms in performing work that cannot be done alone. Participating in such 'contratto di rete' can provide many advantages, including administrative benefits, financial benefits, research and development advantages and fiscal benefits (Banca d'Italia, 2013).

#### **4. Methodology**

This paper bases its premises on a comprehensive data bank elaborated by Confindustria, the General Confederation for Italian Industry, and InfoCamere, the Union of Italian Chambers of Commerce. All firms that have signed a 'network agreement' ("contratto di rete") in Italy from March 2010 until May 2012, were surveyed. Data on each agreement, constituted by a number of firms ranging from 2 to 72, comprise its name, the date in which the contract was signed, and the common goal that the network wants to reach. Information on each individual firm includes name, and the Italian province in which headquarters are located. A NACE-Rev code (the so called Ateco code) was assigned to every firm participating to a strategic alliance based on the national classification of the economic activities elaborated by the Italian Institute of Statistics (Istat) in 2007. This classification, compatible with the Nace Rev.2 European regulation, was defined according to the instructions provided by Eurostat and following the Isic Rev.4 prepared by the United Nations. The Italian classification is based on a 6-digits code identifying six hierarchical levels: (i) section, (ii) division, (iii) group, (iv) class, (v) category and (vi) subcategory. The Ateco nomenclature perfectly corresponds to the Nace Rev.2 up to the fourth digit. The fifth and sixth digit classes were intended to represent the specific characteristics of Italian activities.

The database mentioned above comprises 333 "contratti di rete" surveying 1800 participating firms. In our study, the elementary analysis unit is represented by each network agreement. From the same database we derived information on the administrative region (NUTS-2 level of the European Statistical Territorial Nomenclature) and the province (NUTS-3) in which every firm participating to a network agreement is located. Every firm was classified into one of four technology-intensity groups (High Technology, Medium-High Technology, Medium-Low Technology and Low Technology) according to the Ateco code (Hatzichronoglou, 1997). The classification we applied is based on that adopted by the OECD in the Technology Intensity Definition provided by the document Isic Rev.3 (OECD, 2011). The OECD proposes divisions based on direct Research and Development (R&D) intensity (Table 1).

In order to include the service sector in this classification we referred to the Knowledge Intensive Business Services (KIBS) (IReR, 2010). In the case of economic activities not considered in previous divisions we proceeded with the interpretation of the activity and by similarity with

other activities. By adopting this classification, each firm was assigned to a specified level of technology. In this study we consider technology intensity to be a proxy to cognitive proximity. Due to the lack of data that could allow to properly measure the cognitive proximity, our paper tries to infer a conceptual link between the technological intensity of firms and the cognitive proximity. We start from a reflection on the meaning of the cognitive proximity. As Boschma (2005) asserts, cognitive proximity indicates the extent to which two or more firms share the same knowledge. In line with this, firms have to be enough similar to create exchanges but not too much similar to generate a locked-in situation (Boschma, 2005), since a common level of knowledge implies a similar level of intensity knowledge.

**Table 1.** The main divisions used in this study to classify firms into homogeneous sectors according to the level of intensive technology.

<b>High-technology industries</b>	<b>Medium-high technology industries</b>
Aircraft and spacecraft	Electrical machinery and apparatus
Pharmaceuticals	Motor vehicles, trailers and semi-trailers
Office, accounting and computing machinery	Chemical excluding pharmaceuticals
Radio, TV and communications equipment	Railroad equipment and transport equipment
Medical, precision and optical instruments	Machinery and equipment
<b>Medium-low technology industries</b>	<b>Low-technology industries</b>
Building and repairing of ship and boats	Manufacturing, Recycling
Rubber and plastics product	Wood, pulp, paper, paper products, printing and publishing
Coke, refined petroleum products and nuclear fuel	Food products, beverages and tobacco
Other non-metallic mineral products	Textiles, textile products, leather and footwear
Basic metals and fabricated metal products	

The final data matrix (Table 2) contains 18 variables available for 333 Contratti di Rete. In particular, the localization of economic activities was estimated by using nine variables. Variables were based on the proportion of companies located in the provinces of (i) Milan (MI%) and (ii) Rome (RM%), the two major metropolitan areas in the country, in (iii) eight administrative regions belonging to the southern Italy division (SUD%), and in the following central and northern Italy regions: (iv) Emilia Romagna (ER%), (v) Lombardia (LO%), (vi) Marche (MA%), (vii) Tuscany (TO%), (viii) Veneto (VE%) and (ix) Piemonte (PI%), which are considered the most industrialized regions in the country. Next, the distribution of technology levels related to the activity of the companies was estimated by using four variables: the proportion of firms involved in (x) high technology (AT%), (xi) medium-high technology (MAT%), (xii) low technology (BT%) and (xiii) medium-low technology (MBT%). Finally, five other variables were considered relating to (xiv) the density of firms in each contract (IMPR), the share of firms participating in strategic alliances in each (xv) province (DenPro) and in each (xvi) region (DenReg), (xvi) the proportion of inactive



firms (IN%), and finally the standardized frequency (xvii) of the six digit of the Ateco codes (DenAtec), indicating company diversification in each contract.

The data matrix composed of 18 variables for each network agreement was explored through descriptive statistics and multivariate analysis including Principal Component Analysis (PCA) and hierarchical Clustering (CA) using Euclidean distances and Ward's agglomeration method. The PCA reduces the redundancy of information and allows investigating similarities between variables and cases (i.e. network agreements). Significant components with eigenvalue  $> 1$  were considered in the analysis, and related to the studied variables with the aim to investigate the role of latent dimensions such as proximity, geographical location, technological intensity, and agglomeration. Results of the PCA allows focusing on multiple analysis' dimensions, including economic specialization, agglomeration dynamics, and geographical location that shape the structure of firms' networks. Dendrograms produced by the PCA were considered in the analysis of spatial convergence (or divergence) among the studied variables.

**Table 2.** The list of variables used in the present study (firms included in the database of strategic alliances in Italy were only considered, see section 4).

Acronym	Name	Measurement unit
MI%	Firms in the Province of Milan	Percentage
RM%	Firms in the Province of Rome	Percentage
SUD%	Firms in Southern Italy	Percentage
ER%	Firms in Emilia Romagna Region	Percentage
LO%	Firms in Lombardia Region	Percentage
MA%	Firms in Marche Region	Percentage
TO%	Firms in Toscana Region	Percentage
VE%	Firms in Veneto Region	Percentage
PI%	Firms in Piemonte Region	Percentage
AT%	Firms involved in High Technology	Percentage
MAT%	Firms involved in Medium- high technology	Percentage
BT%	Firms involved in Low Technology	Percentage
MBT%	Firms involved in Medium-Low Technology	Percentage
IMP	Firms in every contract	Percentage
DenPro	Density of firms in the same province	Percentage
DenReg	Density of firms in the same region	Percentage
IN%	Inactive firms	Percentage
DenAtec	Density of the Ateco code	Percentage

## 5. Results

The highest number of firms participating to a strategic alliance in Italy (Table 3) concentrates in northern Italy, decreasing slightly in central Italy and more evidently in southern Italy. The number of alliances follows the same pattern, with more than half sample constituted by firms exclusively located in northern Italy. However, firm density is slightly higher in central Italy than in northern Italy with a value decreasing in southern Italy. The highest percentage of high-tech firms was found in southern Italy, while central Italy alliances are primarily constituted by medium high-tech firms.

**Table 3.** Distribution and selected attributes of firms and alliances in Italy by geographical division\*.

Variable	North	Centre	South
# firms	957	504	339
% firms	53.2	28.0	18.8
# alliances	207	104	88
% alliances	51.9	26.1	22.1
Firms/alliance	4.6	4.8	3.9
Firms per 1000 inhabitants	0.04	0.05	0.02
Firms per 100 km <sup>2</sup>	0.80	0.86	0.28
<i>% firms by technological level</i>			
High	12.6	10.5	17.1
Medium-high	25.3	48.6	36.3
Medium-low	19.4	15.3	15.9
Low	37.2	24.0	28.6
Inactive firms	0.4	0.8	1.5

\* Northern Italy (Piedmont, Liguria, Lombardy, Trentino-Alto Adige, Veneto, Friuli Venezia Giulia, Emilia Romagna); Central Italy (Tuscany, Umbria, Marche, Latium); Southern Italy (Abruzzo, Molise, Campania, Basilicata, Apulia, Calabria, Sicily, Sardinia).

The geographical distribution of firms and strategic alliances was analyzed in Table 4 at the scale of administrative regions and provinces in Italy. Most firms participating to a network agreement are located in one region (69%). More than four contracts out of ten were signed by firms based in one province. Two alliances out of ten were constituted by firms active in two regions while firms located in two provinces participate to 23% of the total alliances surveyed. The remaining part of network agreements signed in Italy are constituted by firms distributed in more than two regions with headquarters in more than two provinces.

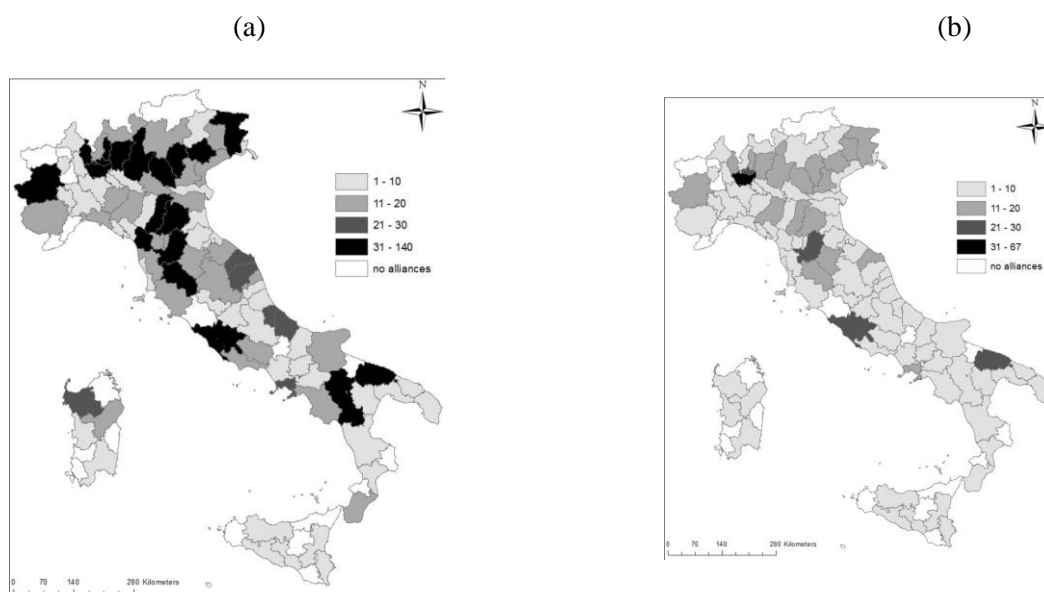
**Table 4.** Distribution of firms and alliances by occurrence in single or multiple spatial domain(s) (regions or provinces) in Italy.

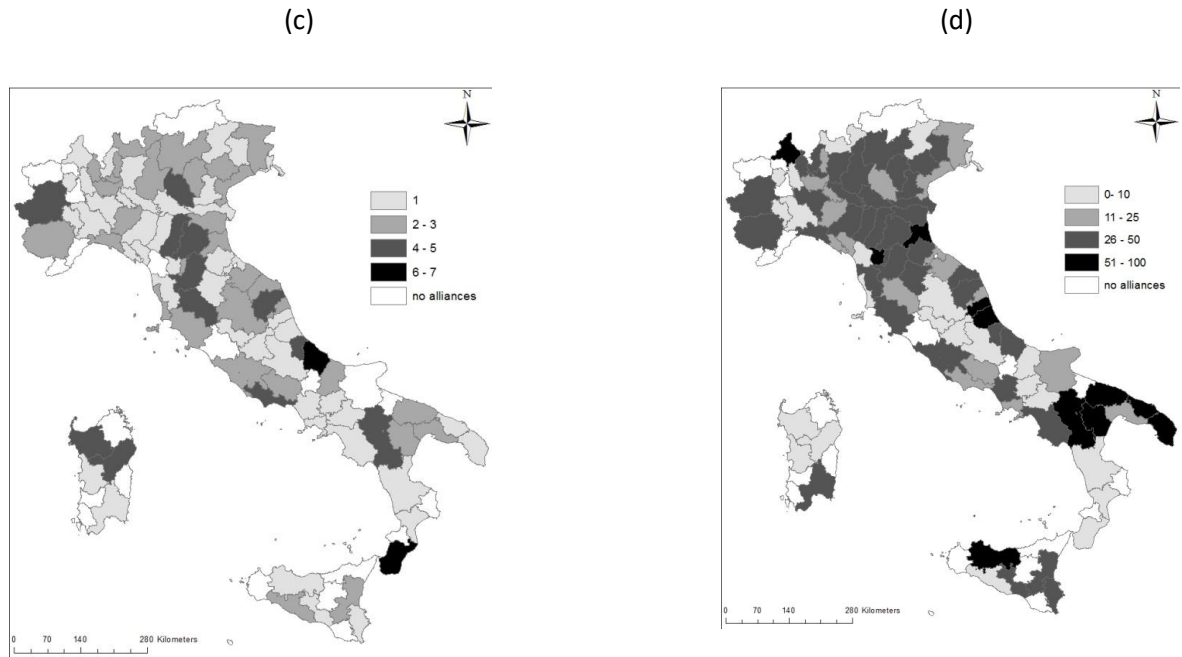
# spatial units	Administrative (NUTS-2) regions					NUTS-3 provinces				
	Alliances		Firms		Firms/alliance	Alliances		Firms		Firms/alliance
	#	%	#	%		#	%	#	%	
1	231	69.4	1118	62.1	4.8	139	41.7	607	33.7	4.4
2	68	20.4	377	20.9	5.5	94	28.2	423	23.5	4.5
3	17	5.1	96	5.3	5.6	54	16.2	314	17.4	5.8
4	10	3.0	114	6.3	11.4	19	5.7	117	6.5	6.2
5	4	1.2	41	2.3	10.3	13	3.9	122	6.8	9.4
6	1	0.3	14	0.8	14.0	4	1.2	54	3.0	13.5
7	-	-	-	-	-	2	0.6	17	0.9	8.5
8	1	0.3	30	1.7	30.0	1	0.3	9	0.5	9.0
9	1	0.3	10	0.6	10.0	5	1.5	94	5.2	18.8
11	-	-	-	-	-	1	0.3	13	0.7	13.0
18	-	-	-	-	-	1	0.3	30	1.7	30.0
Total	333	100.0	1800	100.0	5.4	333	100	1800	100.0	5.4

Most firms participating in a strategic alliance operate in northern or central Italy (Figure 1a); enterprises active in southern Italy, with the exception of Potenza and Bari, show a lower participation rate. Milan province totalized the highest share of agreements signed in Italy; on average, a higher alliance density was found in northern provinces in respect to southern provinces (Figure 1b). However, the average number of firms per alliance indicates a substantial similarity across Italy (Figure 1c). The percentage of high-tech firms is particularly high in network agreements dominated by enterprises active in southern Italy (Figure 1d).

A Principal Component Analysis (PCA) applied to the indicators assessing the structure of network agreements in Italy extracted eight components with eigenvalues  $> 1$  which explain nearly 65% of the total variance. Component loadings indicate the importance of multiple dimensions related to the geographical distribution of firms, the level of firms specialization, agglomeration and place-specific factors. The two principal components (Figure 2) illustrate the relationship between firm diversification and the rate of participation to network agreements. Firms are generally located in the same region - frequently in the same province - and are often active in similar sectors with a comparable technology. Consequently, a large number of alliances shares a low or moderate level of firms' diversification. An example is provided by the profile of alliances dominated by enterprises based in Milan province and Lombardy. Firms' concentration suggests that in some part of Italy (especially, but not exclusively, in northern Italy) agglomeration is still a competitiveness factor.

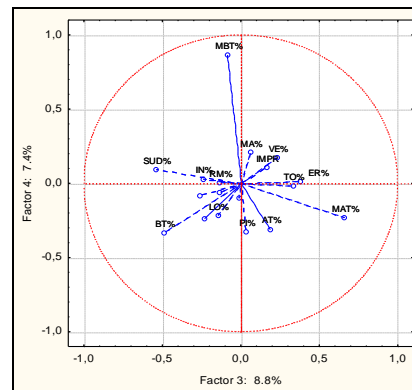
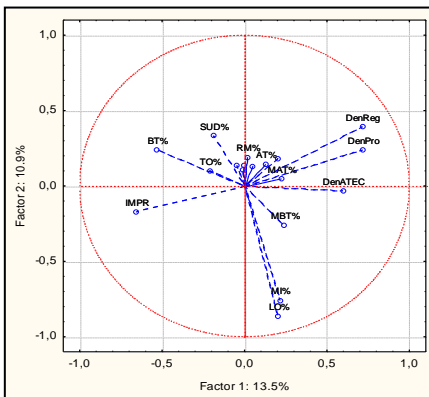
**Figure 1.** Maps illustrating the spatial distribution of the number of firms participating to a strategic alliance (a), the total number of strategic alliances (b), the size of network agreements (average number of participating firms c), and the percentage of medium- and high-technology firms participating to a strategic alliance by province in Italy (d).

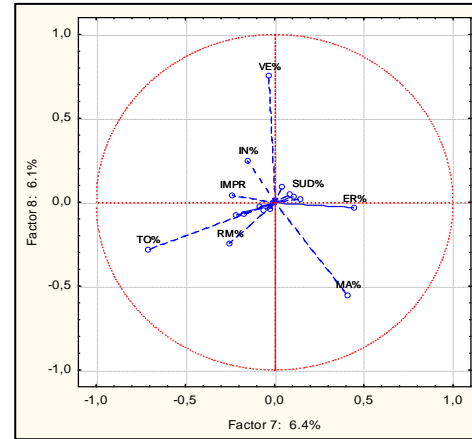
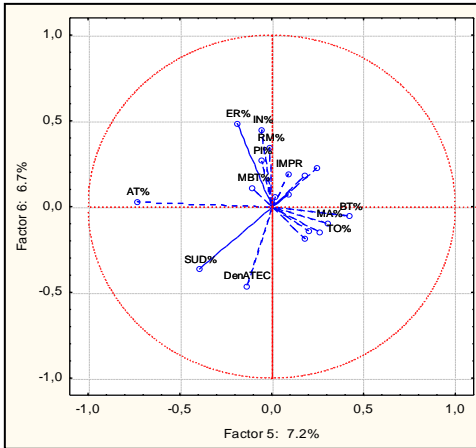




A different structure characterizes network agreements with firms based in Rome province or in Southern Italy regions. These agreements are composed by firms with medium-high technological specialization operating at medium-low distances (e.g. in neighboring districts). The highest concentration of inactive firms was observed in Southern Italy. Agreements dominated by enterprises active in some northern Italian regions, such as Piedmont and Emilia-Romagna, were characterized by a high level of technology in the cooperative firms. A direct correlation between geographical diversification and economic specialization was also observed. Principal components 5 and 6 pointed out the relationship between space (e.g. the prevalence of network agreements based in Southern Italy) and sector diversification in the participating firms, with agreements signed among Southern Italy enterprises being more diversified in respect to the agreements signed by firms operating prevalently in Central or Northern Italy.

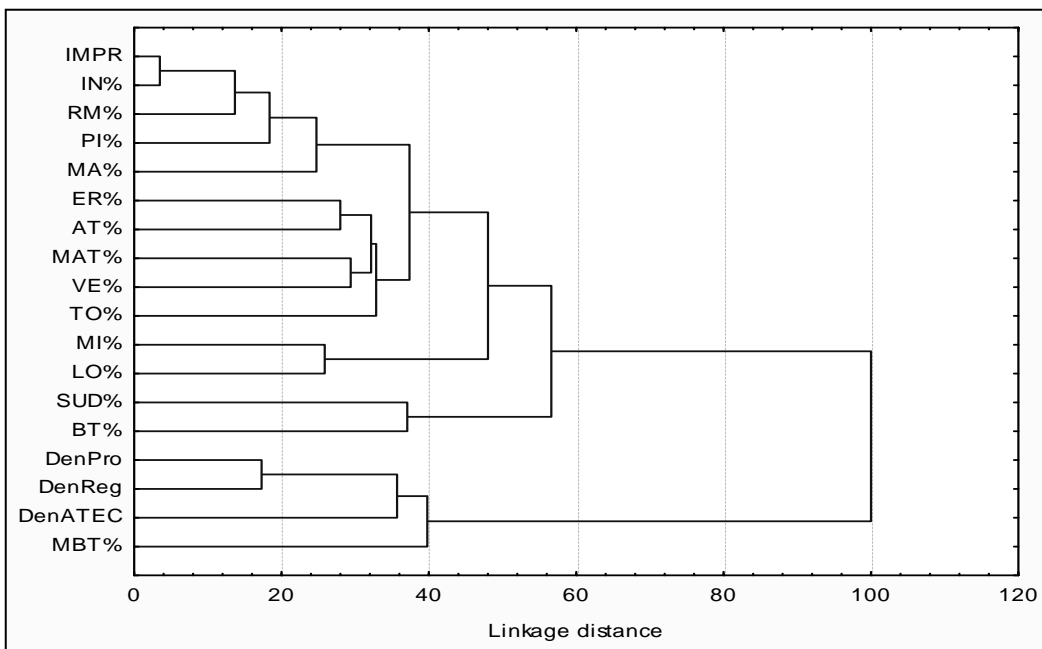
**Figure 2. Plot of principal component loadings.**





The PCA also identified alliances with firms operating in Marche region as the agreements with the lowest percentage of inactive firms. Agreements based in Veneto were constituted by enterprises localized in close proximity, possibly in the same district. The complex system represented by the structure of network agreements in Italy is illustrated in Figure 4. A hierarchical cluster dendrogram identified groups of variables characterized by different spatial patterns, confirming the evidence gathered from the PCA. Dendrograms, indeed, suggest the presence of multiple dimensions related to the geographical distribution of firms. In addition, the level of firms specialization together with agglomeration and place-specific factors generate a complex picture that highlights the singularity of firms and the territorial framework build on both spatial and non-spatial dimensions.

**Figure 3. Hierarchical clustering of selected attributes of structural alliances in Italy.**



## 6. Discussion and concluding remarks

Studies about network relations are becoming fundamental to understand transfer of knowledge and to explain the performance of firms involved in network relationships (Boschma and Weterings, 2005; Sorenson et al., 2010). In this regard, we argue that regional economic development cannot overlook the interaction between firms and networks (Gluckler, 2007). Moreover, processes such as the evolution of networks might be influenced by multiple forms of proximity (Balland et al., 2015). Indeed, different forms of proximity together with individual characteristics of firms, are relevant to influence the creation of collaborative networks linkages (Boschma and Frenken, 2010).

The distribution of strategic alliances over Italy shows a particular spatial pattern on a national scale and reflects a complex picture of dimensions such as economic specialization, diversification, and technological intensity of firms. Cooperative firms based in northern Italian regions are characterized by geographical proximity and low economic diversification compared to those operating in southern Italy. Alliances constituted by a large number of enterprises based in northern Italy were signed among firms operating in the same economic sector, sharing similar (generally medium-low) level of technology and located in the same area. Cooperative firms in southern Italy are more diversified in terms of geographical location and economic activity and show a higher level of technology. Contrasting the prevalent pattern observed for northern and central Italy alliances, our analysis outlines the peculiarity of high-tech, diversified firms based in Emilia Romagna that mostly participate to medium- and large-size agreements.

This evidence suggests that Italian firms share different typologies of alliances depending on the geographical location, the related spatial network and the intimate structure of alliances, with impact on firm's economic performance. Our findings represent the uneven distribution of strategic alliances according to the economic context in which they operate. The spatial distribution of alliances confirms the fragmentation and the division of Italian economic system. As a matter of fact, the production system reflected in the network agreements studied here still shows a relevant north-south divide with place-specific variability. Cooperative firms based in southern Italy have demonstrated to face structural problems promoting diversified alliances at both geographical and specialization level. This means that territorial specialization is a powerful factor shaping the formation and consolidation of network agreements.

Southern Italy firms are required to go beyond the geographical proximity in order to find partnerships: the number of firms participating to a strategic alliance per 100 km<sup>2</sup> amounts to 0.28 in southern Italy and increases to 0.86 in central Italy and to 0.80 in northern Italy. It follows that firms tend to search for partners locally, in the same sector and with a similar technological level as the first option, because it is less costly in term of time and financial resources. If a stand-alone firm

develops in an unfavourable environment with low specialization and low agglomeration (such as in some southern Italy districts), the second option will be searching for partners in more competitive regions (e.g. in northern Italy).

Recent studies about different forms of proximity (Basile et al., 2012; Balland, 2012; Balland et al., 2015; Marrocu et al., 2013) underline the importance of integrating firms and actors through long distances in order to reach a common target. Based on this evidence, the long-distance alliances linking southern Italy and Emilia Romagna enterprises are examples of a more complex and diversified way to collaborate (Boschma, 2004), which is going beyond geographical, social and institutional proximity. It follows that a cognitive proximity allows southern firms to go beyond the North/South divide, and that the existence of a common knowledge and productive base can thus be more important than unintended interactions due to spatial proximity.

It is worth recognising that results related to social and institutional proximities are likely to be driven by the inherent difficulties in measuring with fitting variables. This is a limitation in the present study that we will be able to address in future analysis by exploiting additional sources at the micro-level (i.e. European social surveys), which are expected to provide a better measures of social closeness both in the southern and northern regions. Furthermore, while variables available in the network agreement data base do not allow estimating the international relations of cooperating firms, future researches are required to integrate quantitative analysis with qualitative approaches collecting additional information about firms participating to strategic alliances.

Notwithstanding the difficulties to measure some kind of proximity, the current analysis has provided empirical findings which allow for a better understanding of the processes of networking going beyond the North/South divide. This allows formulating some general recommendations for policy with the aim of reducing the gap between southern and northern regions in Italy and, more generally, in economically-divided countries. The policy implications of our study derive from the existence of several channels of interregional networking capable to generate spillovers and externalities on a regional scale. It is clear that there is no one policy measure fitting everywhere (Trippel, 2010) and that every divide has specific historical and socio-economical characteristics. In general, policies have to support knowledge diffusion and absorption rather than invest in research and development in underdeveloped regions. Due to policy support each region could be able to reduce territorial divides by acquiring as much as possible from ongoing inter-regional knowledge flows and, at the same time, by spreading the benefits of innovation throughout the entire regional economy (Marrocu et al., 2013). In this perspective, we can affirm that “contratti di rete” might be able to increase the relational proximity intended as a measure of cooperation among firms beyond

the regional divide, since “while geographical proximity is given, social and relational proximities can be changed via ad hoc intervention policies” (Basile et al., 2012, p. 715).

In conclusion, the analysis of the spatial distribution of strategic alliances in Italy provides insights into the diversification of regional spaces as far as inter-firm networks are concerned, providing an original interpretation of the Italian SMEs geography. Despite strategic alliances are a possible response to the global competition, pivotal differences can be found in the way northern and southern Italian firms respond to this challenge. Moreover, the traditional economic divide found in Italy is not entirely reflected in our analysis, providing elements for a renewed interpretation of territorial disparities focusing on the geographical profile of strategic alliances and cooperative firms.

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