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Simona De Rosa, Filippo Randelli, Luca Salvati

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Beyond the north-south divide. The geography of strategic alliances in Italy

Simona De Rosa

Università di Roma 'La Sapienza', Dipartimento Metodi e Modelli per il Territorio, l'Economia e la Finanza, Via del Castro Laurenziano 9, I-00161 Rome, Italy.
simona.derosa@uniroma1.it

Filippo Randelli

Università di Firenze' Dipartimento di Scienze per l'Economia e l'Impresa, Via delle Pandette 9, I-50127, Florence, Italy. filippo.randelli@unifi.it

Luca Salvati

Consiglio per la Ricerca e la sperimentazione in Agricoltura (CRA), Via della Navicella 2-4, I-00184 Rome, Italy. bayes00@yahoo.it

Corresponding author:

Luca Salvati, PhD

Phone: + 39 06 700.54.13

Fx: + 39 06 700.57.11

E-mail: luca.salvati@entecra.it

Abstract

Strategic alliances are considered to be a way for private sector firms to fill production gaps and to improve performance through collaboration with partners. The creation of such alliances is indeed shown to increase the competitiveness of firms in national and international frameworks. Recently, such alliances have also been seen as one response of small and medium enterprises to the global economic crisis. This study aims to analyse the dynamics of recent Italian strategic alliances of this type by using a recent database of 333 alliances involving 1,800 companies. The companies and their alliances have been classified according to attributes including specialisation (classified using NACE-REV nomenclature) and location (administrative region and province). The spatial distribution of strategic alliances was studied, taking into account factors such as technological intensity, geographical distribution of companies, and agglomeration factors and networks, at both provincial and regional levels, using descriptive, correlative and multivariate statistics. We show that the effects of various factors vary spatially, and the descriptors of the spatial distribution of strategic alliances across Italy extend beyond the traditional north/south divide.

Key words: strategic alliances, network agreements, proximity, Italy.

JEL Classification: D22; L14; R12.

1. Introduction

In the last twenty years, academic studies have identified the role of strategic inter-firm alliances (Grabher and Ibert, 2006), a voluntary agreement that allows durable exchange, sharing or collaborative development of new products and technologies (Harrigan, 1986; Contractor and Larange, 1988). Researchers have focused on the reasons that cause an alliance to occur and when firms decide to participate in it (Barley, Freeman and Hybels, 1992). In line with this framework, several authors have underlined the added value of strategic alliances with regard to the importance of knowledge acquisition and transfer (Simonin, 1997; Soekijad and Andriessen, 2003). The interest in networks of companies encourages governments to adopt policies that promote alliances and enlarge networks between companies. In this sense, the Italian government has proposed a national strategy called *Contratti di Rete* (literally 'Network Agreements'), in order to sustain the economic heritage created by small and medium enterprises (SMEs) that are suffering the effects of the current economic crisis.

This study discusses the geographical distribution and territorial implication of strategic alliances in Italy. The paper explores the distribution of strategic alliances in Italy, in the light of the persistent socioeconomic gap between affluent northern regions and disadvantaged southern regions, focusing on the relationship between the specialization and location of companies. We take into account evidence relating to agglomeration factors, geographic proximity, and technological intensity. The analysis benefits from a database collecting data on *Contratti di Rete* enterprise networks. A quantitative methodology based on multivariate statistics was adopted in order to analyse enterprise characteristics and network geography by looking at the complexity of factors that characterise enterprise networking.

The paper is structured as follows: section 2 introduces the theoretical framework; section 3 explains the characteristics of *Contratti di Rete* in Italy; section 4 describes the database and quantitative methodology; the results are summarized in section 5; and finally conclusions are drawn.

2. The role of strategic alliances in geo-economic literature

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). This trend has influenced global patterns of production, by tending to give more attention to networks of firms. For this reason, in the last twenty years, collaborative networks between firms have become an important topic (Grabher and Ibert, 2006; Harrigan, 1986; Contractor and Larange, 1988). Beginning in the 1960s, there was a flourishing of literature about the formation of relationships between social services and agencies (Gulati, 1995); several authors (Simonin, 1997; Larson et al., 1998; Soekijad and Andriessen, 2003) have also pointed out the contribution of alliances of firms to enterprise competitiveness.

SMEs in particular are currently facing new challenges, one of the most important being knowledge acquisition. Knowledge has in fact become the "currency of modern competition" (Gils and Zwart, 2004), meaning that firms are increasingly pushed to create tight connections with respect to the skills around knowledge. Reaching this goal is fundamental to firms becoming more learning-oriented (Sadler-Smith et al., 2000). From this perspective, the academic literature presents strategic alliances as an option to compensate for internal knowledge deficiencies through agreements that allow learning, and knowledge access and acquisition (Van Gils and Zwart, 2004). According to Inkpen (1998), strategic alliances provide firms with an opportunity to leverage their strengths through interrelation with partners. Moreover, firms that are able to reach these aims tend to implement systems and processes directed towards learning the lessons from past experience and re-using them in the future, essentially creating a structure that allows the collaboration to function. 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 Schosser, 2001; Kale, Dyer and Singh, 2001). Such alliances should create significant shareholder and company value for firms that enter into them. 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. Among others, Koza and Lewin (2000) variously discerned learning, business, and hybrid alliances, while

Garette and Dussauge (2000) identified a difference between alliances created to take advantage of economies of scale, and complementary alliances that create good conditions for learning and the appropriation of skills. Van Gils and Zwart (2004), however, adopted a distinction between market transactions, cooperative agreements divided into tactical alliances and strategic alliances.

Also taking into account different forms of agreement, one core concept is that companies prefer to be related to each other for better access to resources such as skills, and preferential access to the market. In line with this, 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 [an]other". The creation of an alliance is not a simple matter and in order to discover new alliance opportunities or to find good partners, companies need to have access to a large range of information on market trends and on the strategies of other companies and their characteristics. Before entering a durable partnership, they have to be sure of the issue on which they are going to collaborate. 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. 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[s], key precursors, processes and outcome[s] 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). In many cases the choice of the partner is related to geographical proximity, creating regional clusters, because local firms are able to share tacit knowledge that fosters alliances (Giuliani, 2010). In some cases, however, taking into account innovative sectors, geographical proximity is not enough to explain such partnerships. In other words, geography *per se* does not guarantee success (Boschma, 2005; Tallmann and Phene, 2007) and companies may be impelled by other motivations (Rallet and Torre, 1999). Boschma (2005) suggests taking into account other dimensions of proximity to explain the complexity of networks between firms: cognitive proximity, organizational proximity, institutional proximity, social proximity and geographical proximity.

Cognitive proximity is based on the degree of similarity between the knowledge and skills shared by the companies. A common set of skills is fundamental to knowledge exchange between partners because it is easier for them to learn from one another (Knoben and Oerlemans, 2006). Consequently, similarity with another firm drives the choice of future partner (Boschma and Frenken, 2009). Organizational proximity is associated with the degree of strategic interdependence between two organizations, and the degree of organizational proximity is defined by the level of autonomy and control induced by the collaboration (Boshma, 2005). 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. 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 (North, 1990). This type is composed of formal and informal institutions such as laws and rules, but also work habits that allow the construction of tighter relations between the partners.

Boschma (2005) introduces a concept of social proximity which refers to the degree of common relationships that improve the circulation of informal knowledge during the creation of collaborations and partnerships. This type combines both personal interrelationships and the construction of company networks. In this way, individual ties help to build the network because individuals are embedded in a social context; due to trust and reputation, individuals make bonds with others, and this helps to share informal knowledge. As Boschma and Frenken (2010) explain, social proximity is the inverse of the geodesic distance between two organizations in the same network. Finally, geographical proximity refers to the spatial distance between nodes (Gilly and Torre, 2000) that may hinder or foster the transfer of tacit knowledge.

To conclude, studies about network relations are becoming fundamental to understanding the transfer of tacit knowledge, and to explaining the performances of firms involved in network relationships (Boschma and Weterings, 2005). In this regard, we argue that regional economic development cannot overlook the interaction between firms and networks (Gluckler, 2007); second, we argue that processes such as the evolution of networks (Balland et al., 2012) might be influenced by multiple forms of proximity. Indeed different forms of proximity, together with companies' individual characteristics, are relevant to influencing the creation of collaborative network linkages.

3. *Contratto di Rete: an Italian example of a strategic alliance*

The literature concerning strategic alliances identifies a fundamental concept: in general SMEs need to band together in order to achieve better economic performances (Mothe and Quélin, 2000; George et al., 2003). Only by adopting a learning orientation (Sadler-Smith et al., 2001) and combining their strengths, skills and capabilities can they survive global competition (Harrigan, 1987; Cainelli et al., 2006). The need for networking between smaller companies has been thrown into sharp focus during recent years, 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 productive spaces by increasing accessibility and stimulating new visions regarding economic relations, productive structures and their functioning (Kang and Sakai, 2000). Increased competition in an increasingly interconnected world allows inter-company alliances to reinvent the role of companies in specific economic sectors. Due to increasing competition between economic subjects, a second factor that favours partnerships between firms has been the recent economic crisis. In recent years, the crisis has profoundly affected the heterogeneous panorama of SMEs, putting the survival of this key productive segment at serious risk (Antonioli et al., 2013).

The SME sector is particularly important in the Italian economic structure. Italy is currently facing one of the worst economic crises of the last few years, which has had a large impact on SMEs (RetImpresa, 2012). Enterprises and entrepreneurs are facing a cut in public assistance, unsustainable taxes, and debts that are difficult to overcome – particularly taking into account a large reduction in household consumption and the ongoing crisis in global markets. Consequently, one of the principal solutions to continue driving the Italian economy forward has been to create a new legislative instrument to foster the creation of networks of firms through a new kind of agreement; the *Contratto di Rete* (literally 'network agreement') (RetImpresa, 2011). The initiative, which arose following discourse in economic literature about the benefits to SMEs of strategic alliances, reflects the results of several preliminary

studies on this issue (AIP, 2008; Confindustria, 2011). The aim of these empirical studies was to search for alternative policy measures to increase the competitiveness of Italian SMEs in local and global markets (Unioncamere, 2011). Evidence showed that Italian firms are in general too small to overcome the problems that they are facing (Banca d'Italia, 2013); based on this assumption, there was an imperative need to agglomerate smaller companies in order to reach sustainable dimensions, and to increase the competitiveness of each firm (Unioncamere, 2011).

The major reasons for firms to enter into a network agreement have been identified by Confindustria as: (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; (vi) to share costs (RetImpresa, 2011). The aim of such collaboration is valorizing the firm and the territory in which the firm is located. In this way, the *Contratto di Rete* acts as an indirect input to the local socioeconomic context. The new instrument proposed by Confindustria was accepted by the Italian government and brought into law in 2010 (law no. 122/2010) (Esposito, 2012).

The *Contratto di Rete* acts as an agreement between entrepreneurs, creating a strategic alliance in order to share a common programme (RetImpresa, 2014). Such alliances are fundamental to coordinating the interaction of the entire network, although the power of decision 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 consistent with and within 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 as by coordinating activities in order to obtain better conditions in external relations (e.g. coordination during quality control or pricing policy in accordance with anti-trust regulations), by instrumental activities to improve management results (groups engaged in buying and selling, logistical issues, promotion of brands, etc.), and by complementary activities to aid firms in performing work that cannot be done alone, such as participation in calls for funding. Clearly participating in such alliances can provide many advantages, including administrative benefits, research and development advantages, and fiscal benefits (Banca d'Italia, 2013).

4. Database and methodology

This paper bases its premises on a database created by Confindustria, the General Confederation for Italian Industry, and InfoCamere, the Union of Italian Chambers of Commerce. The database collated information on all firms that signed a *Contratto di Rete* in Italy between March 2010 and May, 2012, which represents our latest collation of the dataset. Data on each agreement, constituted by a number of firms ranging from a minimum of 2 to a maximum of 72, comprises its name, the date on which the contract was signed, and the common goal that the network wants to reach. Information on each company includes name, the province in which is located, and an Nace-Rev code (the 'Ateco' code) based on the national classification for economic activities set up by the Italian Institute of Statistics (Istat). In 2007, Istat devised a new classification for economic activities, replacing the previous one. The latest version was defined following instructions provided by the European Union in order to align classifications on a global scale, in line with the Isic Rev.4 document provided by the United Nations. The European Union, under the auspices of Eurostat, adopted a new regulation (Nace Rev.2) and each member of the Union created its own classification in accordance with this system of nomenclature. The Italian version was defined by a committee composed of public administration experts and production associations, supported by other stakeholders. The committee created a 6-digit code: in order, the digits indicate the section, the division, the group, the class, the category and the subcategory respectively. Up to the fourth digit, the Ateco nomenclature corresponds to the Nace Rev.2; the fifth and sixth digits represent specific characteristics of Italian activities.

The database comprises 333 *Contratti di Rete* for a total of 1,800 firms. We devised a matrix deriving information for the administrative region (NUTS-2 level of the European Statistical Territorial Nomenclature) and the province (NUTS-3) in which each firm is located, and classifying each firm into one of four technology-intensity groups (High Technology, Medium-High Technology, Medium-Low Technology and Low Technology) based on 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).

Table 1. The main divisions used in this study to classify firms into homogeneous economic sectors according to technology intensity.

High-technology industries

Aircraft and spacecraft
 Pharmaceuticals
 Office, accounting and computing machinery
 Radio, TV and communications equipment
 Medical, precision and optical instruments

Medium-high technology industries

Electrical machinery and apparatus
 Motor vehicles, trailers and semi-trailers
 Chemical excluding pharmaceuticals
 Railroad equipment and transport equipment
 Machinery and equipment

Medium-low technology industries

Building and repairing of ship and boats
 Rubber and plastics product
 Coke, refined petroleum products and nuclear fuel
 Other non-metallic mineral products
 Basic metals and fabricated metal products

Low-technology industries

Manufacturing, Recycling
 Wood, pulp, paper, paper products, printing and publishing
 Food products, beverages and tobacco
 Textiles, textile products, leather and footwear

In order to include the service sector in this classification we referred to the Knowledge Intensity Business Services (KIBS) (IReR, 2010). In the case of economic activities not present at all in previous divisions we proceeded with interpretation of the activity and by similarity with others. By adopting this classification, each firm in the matrix was assigned to a specified level of technology. In this study we consider technology intensity to be a proxy to cognitive proximity, and in strategic alliances there will be diversification only in the case of firms cooperating in different classes.

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 Milan (MI%) and Rome (RM%), the two major metropolitan areas in the country, in eight administrative regions belonging to the southern Italy division (SUD%), and in the following central and northern Italy regions: Emilia Romagna (ER%), Lombardia (LO%), Marche (MA%), Tuscany (TO%), Veneto (VE%) and 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 high technology (AT%), medium-high technology (MAT%), low technology (BT%) and medium-low

technology (MBT%). Finally, four other variables were considered relating to the density of firms in each contract (IMPR), the share of firms participating in strategic alliances in each province (DenPro) and in each region (DenReg), the total number of firms participating in strategic alliances at a national scale, the proportion of inactive firms (IN%), and finally the standardized frequency of Ateco codes (DenAtec), indicating company diversification in each contract.

Table 2. List of variables used in the current study (only firms included in the database of strategic alliances in Italy were 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

The resulting data matrix was analysed using descriptive statistics and multivariate analysis including Principal Components Analysis (PCA) and hierarchical Clustering (CA) using Euclidean distances and Ward's agglomeration method. The PCA allows information to be extracted from a data matrix, reducing redundancy of information and investigating similarities between variables and/or cases. Significant components with eigenvalue > 1 were considered in the analysis, and related to the studied variables with the aim of investigating different components of the analysis, such as

geographical location, technology density, and agglomeration factors. The number of input variables and extracted components allows us to discuss multiple levels of analysis, among which specialization of economic activities, agglomeration dynamics, geographical location, and company networks on a provincial or regional scale are those taken as the most significant. Dendrograms produced by hierarchical clustering were used to analyze the similarity between variables.

5. Results

According to data shown in Table 3, the number of firms participating in strategic alliances in Italy follows a well-defined spatial distribution, with the highest number of firms concentrated in northern Italy, slightly decreasing in central Italy, and markedly declining in southern Italy. The absolute number of alliances follows the same spatial pattern, with more than half of the sample made up of firms exclusively located in northern Italy. By considering companies participating in strategic alliances in Italy, company density is slightly higher in central Italy than in northern Italy, with a lower value in the south. By analyzing the distribution of companies according to technological level, it is worth noting that the highest proportion of high-tech firms was found in southern Italy, while in central Italy alliances are mainly formed by medium-high-tech firms.

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

Variable	Northern	Central	Southern
# 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 ²	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

The distribution of firms and alliances on a regional and province scale was analyzed in Table 4. The majority of firms involved in such an agreement are located in only one region (69%), and there was even a plurality in a single province (42%). 20.4% of alliances was made up of firms active in two regions, while 23.5% of alliances includes firms located in just two provinces. The remainder of strategic alliances in Italy are constituted by firms distributed across more than two regions and provinces, and represents a limited part of the sample.

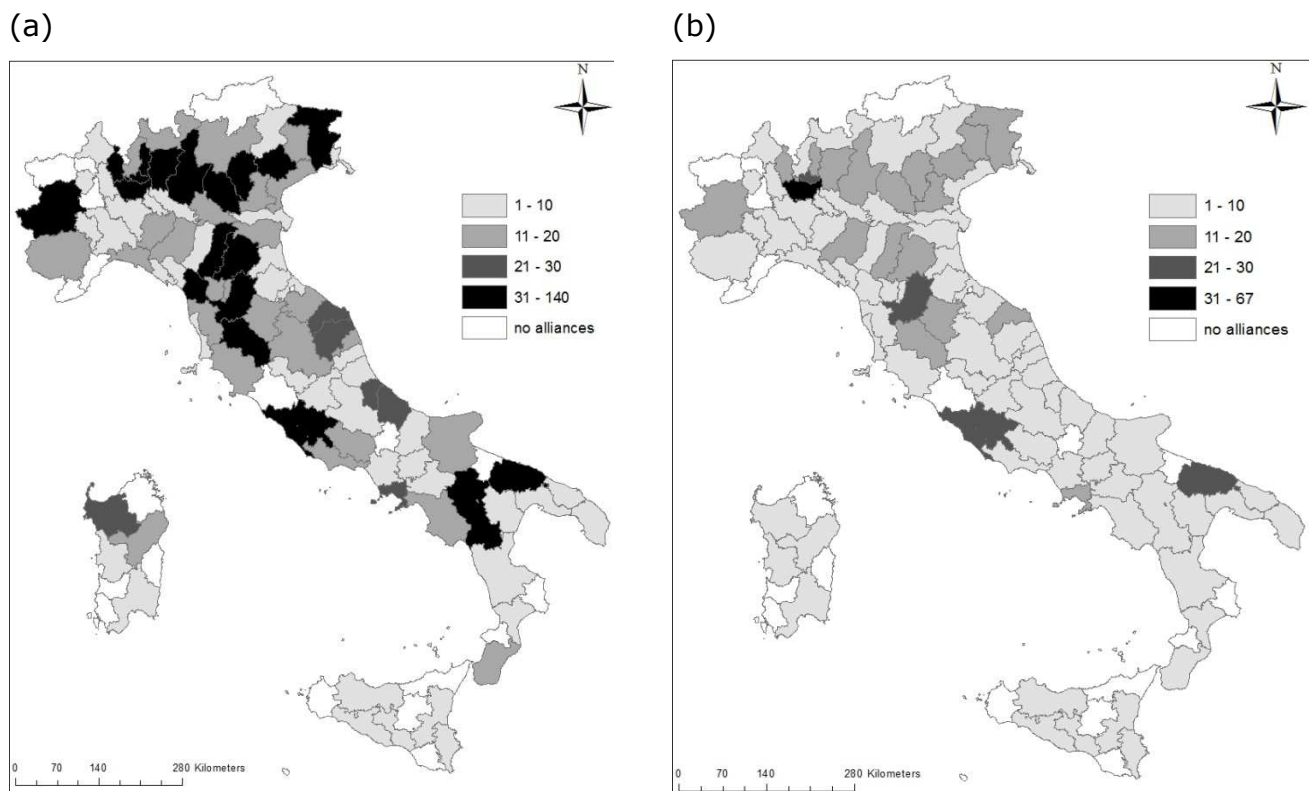
Table 4. Distribution of firms and alliances by spatial domain (regions or provinces) in Italy.

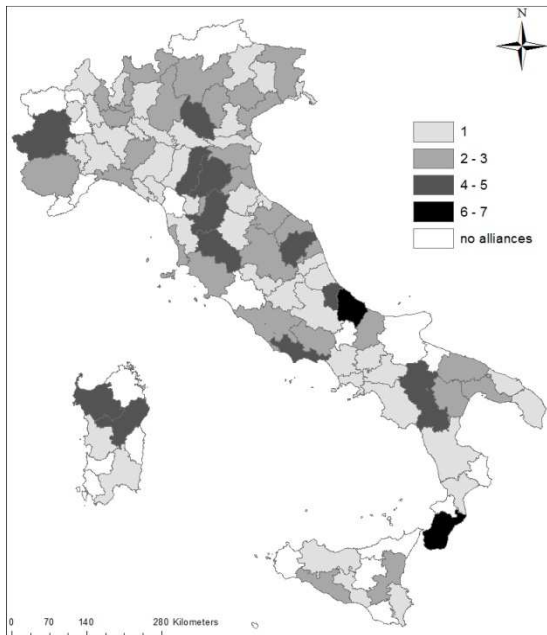
# spatial units	Administrative (NUTS-2) regions					NUTS-3 provinces				
	Alliances		Firms		Firms/alliance	Alliances		Firms		Firms/alliance
	#	%	#	%		#	%	#	%	
1	231	69.4	1118	62.1	4.8	139	41.7	607	33.7	4.4
2	68	20.4	377	20.9	5.5	94	28.2	423	23.5	4.5
3	17	5.1	96	5.3	5.6	54	16.2	314	17.4	5.8
4	10	3.0	114	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

As previously discussed, the majority of firms involved in strategic alliances are located in northern and central Italy (Figure 1a); southern Italian provinces are less involved in this phenomenon, with the exception of Potenza and Bari provinces. In terms of the number of strategic alliances signed, the province of Milan results in the largest proportion of agreements, and on average northern provinces showed a higher alliance density than southern ones (Figure 1b). The average number of firms per alliance indicates a substantial similarity between Italian provinces (Figure 1c). The

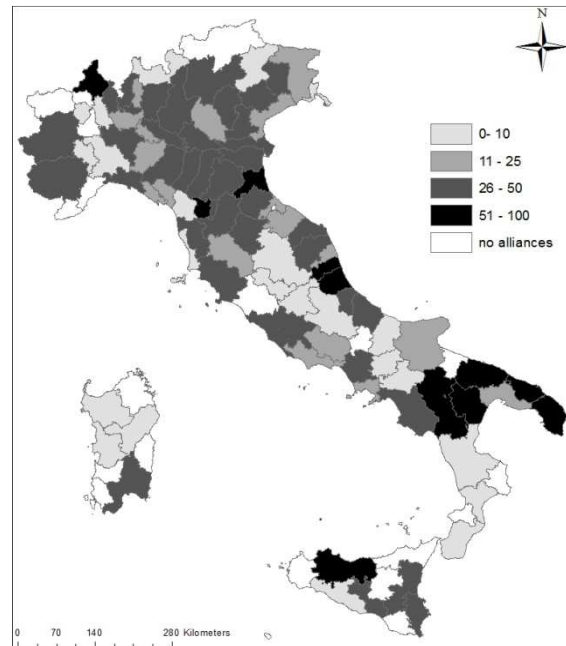
proportion of high-tech firms in southern alliances shows that high levels of technology are more common there than in the north (Figure 1d).

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





(c)



(d)

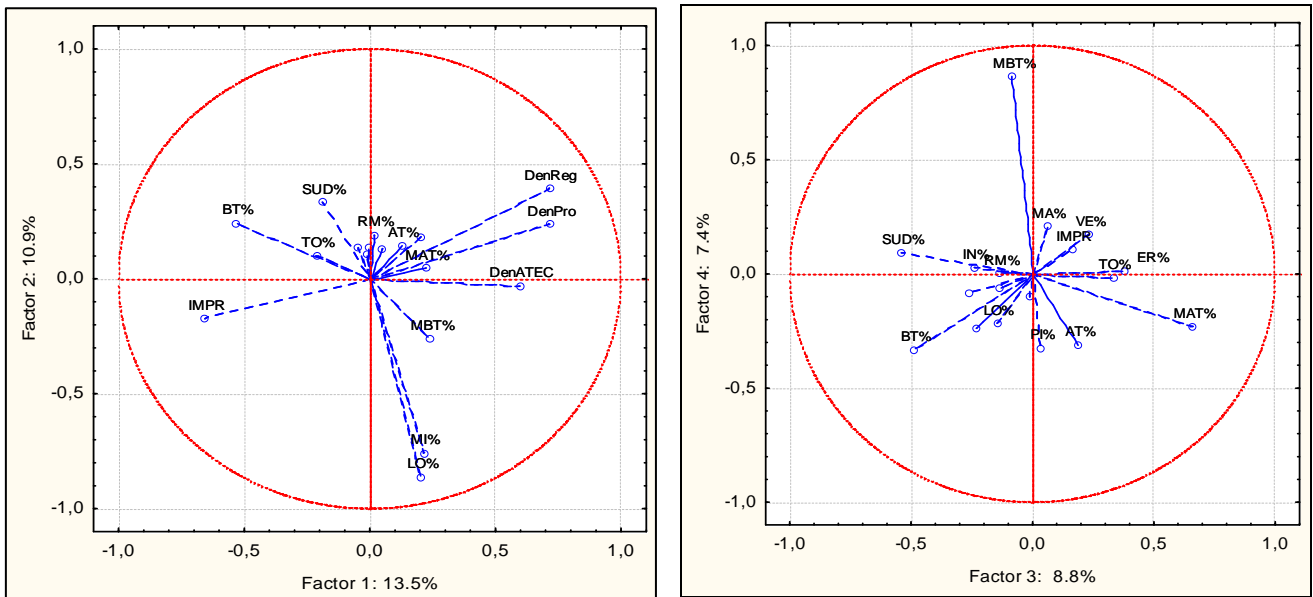
A Principal Components Analysis (PCA) was then applied to the available data set. Eight components were extracted with eigenvalues > 1 , which explain about 65% of the total variance. Results indicate that the variables analyzed illustrate multiple dimensions relating to both geographical distribution of firms, different levels of firm specializations related to area, agglomeration factors, and networks formed at the local scale in Italy. Two principal components (Figure 2) illustrate the relationship between firm participation rate to alliances at both provincial and regional scale, and firm diversification. Firms are generally located in the same region, frequently in the same province, and are often working on similar activities and performing the same technological specialization. Consequently the main distribution of strategic alliances shows that most alliances share a low level of diversification. A good example of this correlation is shown by characteristic patterns seen in the province of Milan and the region of Lombardy. The concentration of firms in a few regions may indicate that in some parts of Italy, relevant agglomeration factors are still significant. It follows that in these regions firms find it convenient to make alliances with partners in the same area and in the same activity sector.

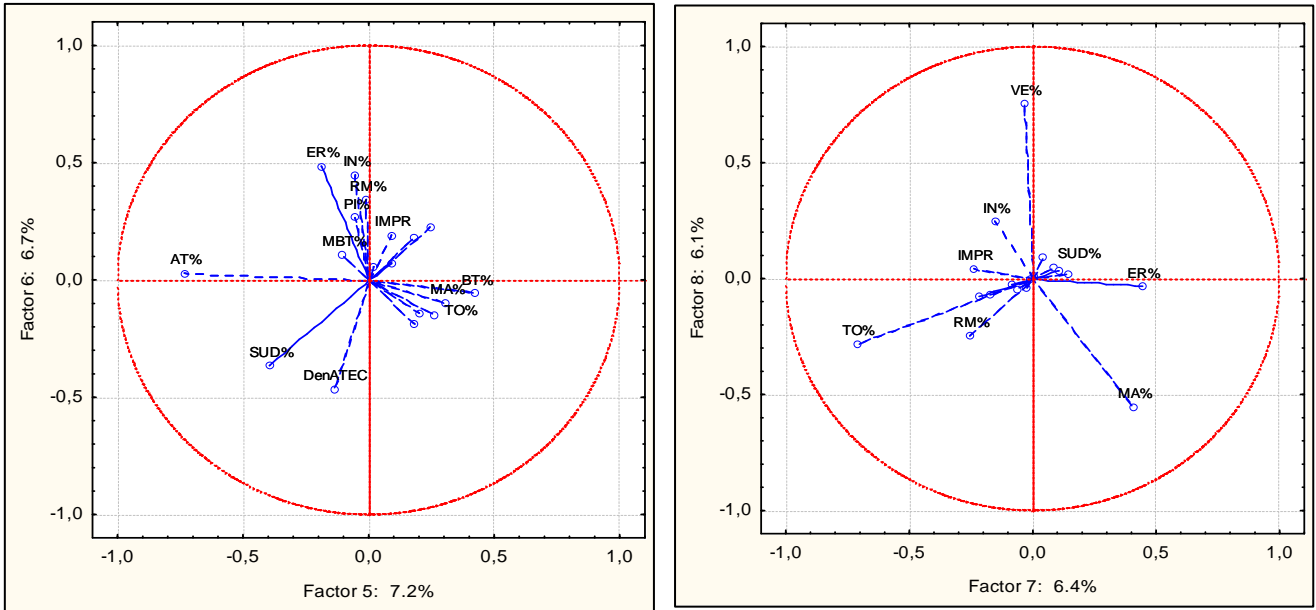
A different relationship shows contracts based mainly in Rome province and southern Italian regions. These agreements are composed of firms with medium-high technological specialization at medium-low distances (e.g. in neighbouring provinces).

At the same time, the highest concentration of inactive firms was observed in Southern Italy.

Some northern Italian regions, such as Piemonte, are characterized by the high technological level of cooperative firms. In this case a strong correlation between geographical diversification and sectoral specialization was also observed. Simultaneously firms in cooperation in Emilia Romagna show a rather homogeneous medium-high technological level. By analyzing components 5 and 6, the relationship between geographical location (the prevalence of agreements based in southern Italy) and diversification in the Ateco codes in each agreement was observed. Based on this evidence, agreements in southern Italy are characterized by a higher diversification of firms in comparison to both Central and Northern Italy.

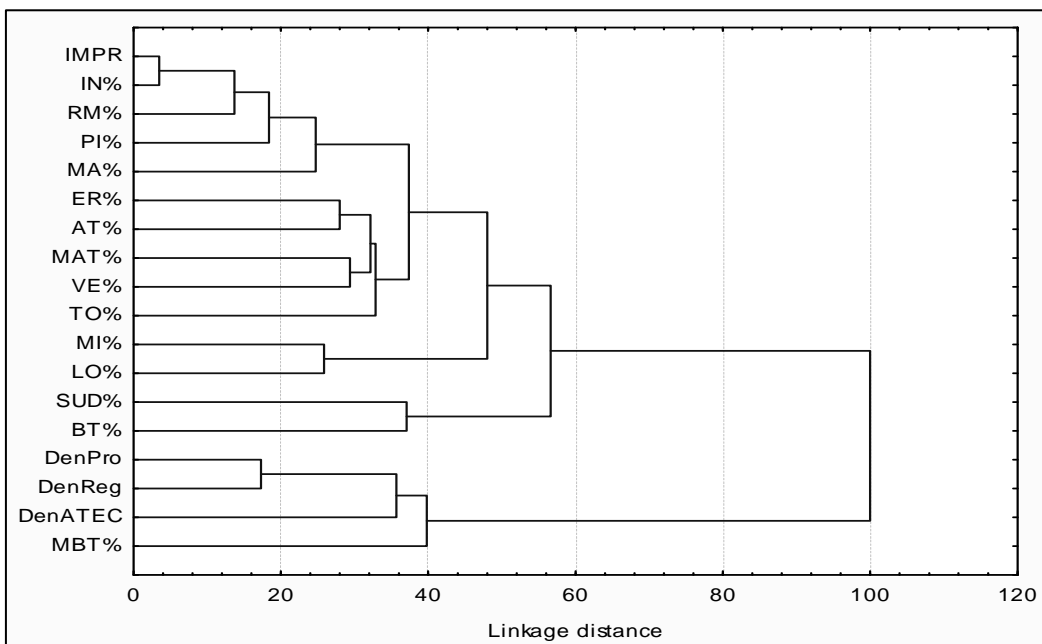
Figure 2. PCA factor loading plots by component.





This analysis also shows a contrast between alliances in the Marche and the percentage of inactive firms: this region has the lowest observed rate of inactive firms in agreements. Additionally, the Veneto region differed from other regions such as Emilia Romagna, Marche and all southern Italian regions due to the geographical proximity of firms participating in the agreements. The complex system is even more clear in Figure 4, which illustrates a hierarchical clustering dendrogram that identifies groups of variables characterized by similar spatial patterns.

Figure 3. Hierarchical clustering between the attributes of alliances.



6. Discussion

Although strategic alliances are fundamental tools for improving competitiveness, little attention has been given by existing literature to the spatial patterns between collaborating firms. This paper analyzed the relationship between spatial location of strategic alliances and other relevant dimensions including geographical proximity, sector specialization, and technological diversification. In order to shed light on the complexity of spatial networks, in this paper we have used a database which allows us to trace the spatial network of firms in combination with other variables at the company level. This statistical analysis has allowed us to estimate the role of geographical and cognitive proximity in the process of network creation.

The spatial distribution of strategic alliances shows a particular pattern on a national scale, and offers a complex picture of the dimensions of other variables such as economic specialization, diversification, and the technological intensity of firms.

Firms in cooperation in northern Italian regions are characterized by stronger geographical proximity and lower diversification than those found in southern Italy. Large alliances in northern Italy were mainly found among firms with the same Ateco code, a similar level of technological specialization, and located in the same region (or even in the same province). Cooperating firms in southern Italy are more diversified in terms of geographical location and economic activity and show a higher level of technology. The analysis also highlights the unique situation of Emilia Romagna in northern-central Italy with mostly high-tech, diversified firms participating in medium-size and large agreements. It therefore follows that Italian firms share different typologies of alliance according to their geographical location. The difference is relevant in term of economic performance, but also with regard to the derived spatial networks and intimate structures of these alliances. Our findings suggest an uneven distribution of strategic alliances according to the economic context in which they operate.

Alliance distribution in Italy also confirms the fragmentation and division of the country's economic system. The Italian production system – when considered in the context of the studied agreements – shows a marked north-south divide, with more

specific characteristics observed at the local scale, confirming the importance of territorial specialization. Moreover, southern Italian firms participating in such agreements demonstrate that they are attempting to counter structural issues and the effects of the recent economic crisis by promoting more diversified alliances, both at the geographical and specialization level. Southern Italian firms are seemingly obliged to extend beyond their geographical and cognitive proximities in order to find partnerships. This is indicated by the number of firms participating in a strategic alliance per 100 km², amounting to 0.28 in southern Italy, increasing to 0.80 in northern Italy, and to 0.86 in central Italy. It thus follows that firms initially tend to search for partners locally, in the same sector, and with a similar technological level, because it is less costly in terms of time and money. If a standalone firm does not have a favourable environment (low specialisation and low agglomeration) only then, as second option, will it search for partners in other regions.

Studies into different forms of proximity (Balland, 2012; Balland *et al.* 2013; Boschma, 2004; Boschma, 2005) highlight the importance of integrating firms and actors over long distances in order to achieve a common goal. In line with this, long-distance alliances, most commonly found in southern Italy and in Emilia Romagna, are examples of a more complex and diversified way of collaboration. Unfortunately the variables in the database do not allow us to estimate the role of other kinds of proximity, such as organizational, institutional and social proximity. Our future research will back up the database with qualitative research in order to collect additional information about firms within strategic alliances. Another limitation of the database concerns the relationship between Italian and international companies, which is not included.

In conclusion, the analysis of strategic alliances provides a new interpretation of Italian SMEs, which indicates a strong diversification between regions in terms of inter-firm networks. Despite strategic alliances being a defence strategy to survive the difficulties caused by the global competition, particularly in a period of economic crisis, we noted interesting differences in the way in which northern and southern Italian firms respond to these challenges. However the traditional economic divide found in Italy is not totally reflected in our analysis, and this provides the basis for a novel analysis of territorial disparities in divided countries, with a focus on the geo-economic profiles of strategic alliances and cooperative firms. The geo-economic base of strategic alliances in Italy may thus stimulate new debates for deeper examination of

previously unexamined forms of proximity that guide relationships and exchanges between firms.

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