



**Doctoral School of
Sociology**

THESIS SYNOPSIS

Ágnes Győri

Cooperative Activity of Small and Medium-Sized Enterprises

**Exploration of the networks of associations of SME's operating in a micro
region of Hungary**

titled Ph.D. dissertation

Supervisor:

Ágnes Czakó CSc
associate professor

Budapest, 2014

Institute of Sociology and Social Policy

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1. Research antecedents and justification of the topic

The dissertation studies the cooperative activities of SMEs. My research topic is relevant because the shaping and efficiency of the set of relations of small enterprises is of outstanding significance for national economies. Expectations towards the sector of small and medium enterprises are particularly great in general and further enhanced at the time of economic depression. They are expected to solve employment problems, the improvement of competitiveness and also technological innovation. Now, at the time of crisis, the release of additional energies hidden in cooperation has an eminent role or can have such function in promoting emergence from crisis.

Essentially the importance of the topic is hidden in the significance of the sector. Supporting the finances, information and cooperation of small and medium-sized enterprises regarded by the related literature as the basic pillars of the economy, and regionally developing them has been acquiring growing emphasis within the community assistance policy of the European Union, but, for the time being, however, as reflected by empirical experience, innovation-based cooperation encouraged by specific policies has been functioning with little efficiency (Bartha et al. 2009; Bartha–Matheika 2009; Inzelt 2011).

Antecedents of the current research include surveys conducted by Dr Ágnes Czakó, into which I had an opportunity to join during my PhD studies. The survey, entitled "Financial Culture in Hungary", conducted in 2006 first, and then repeated in 2010, focused on offering the possible deepest information on the uses of money and the financial skills of SMEs, their behaviour concerning investments and taking loans and about factors influencing the latter ones, but the survey also extended over mapping their contacts established with the actors of the financial sector as well. Results of the analyses based on the two surveys have shown that it is the inter-corporate cooperation and interests in other enterprises that play one of the major roles in the rational market behaviour of small enterprises and in the promotion of their ability for renewal (Gyóri 2012, 2013). When I expanded these experiences the need has emerged for studying not only the economic cooperation of the enterprises of the SME sector but also their activities directed outside the economic sphere.

Hence, based on these antecedents, the central issue of the present thesis is to study cooperation of SMEs as well as forms of cooperation realised with other enterprises and developmental and coordinating organisations outside the economic sphere.

By now a series of theoretical and empirical works have been produced about the issue of cooperative relations among enterprises that support the usefulness of the cooperation of economic actors in market growth and in successful innovation (such as Bougrain–Haudeville 2002; Buzás 2003; Camagni 1991; Inzelt 2011; Porter 2001; Thurik–Wennekers 2004). Surveys are modest that are expressly focusing on the cooperative activities of small enterprises, on exploring their set of relations, and particularly those focusing on mapping the emergence of cooperation among local economic actors and the factors in the background compared to the plethora of international and domestic studies oriented towards understanding entrepreneurial networks, clusters, and cooperation. During the past decades eminent attention has been dedicated to the study of the network-based cooperation of the so-called small enterprises of industrial zones, such as the North-eastern and Central Italian region, or the enterprises of the industrial districts in Baden-Württemberg in Germany (Bagnasco–Pini 1981; Cooke–Morgan 1998; Herrigel 1993; Putnam 1993; Sengenberger–Pyke 1990; Trigilia 1989, 1992).

However, no such efforts are found in the practice of Hungarian research. The related local literature contains writings only rarely that deal with the study of the SMEs of a region, with mapping specificities deriving of regional differences and with their deeper understanding, though their occurrence is becoming more frequent. Tibor Kuczi and Csaba Makó (1993), for instance, studied the cooperation of entrepreneurs in a village near Budapest in the early 90s and reported on a highly efficient socio-economic organisation developed out of the network of small enterprises in their paper. Lilla Tóth (1999, 2003, 2004) studied the role of success and trust among the entrepreneurs of a village in Pest County, and Aida Vadasi (2009) of a micro region in Northern Hungary. Katalin Kelemen (1999) produced a comprehensive analysis of the possibilities of inter-company cooperation of regions dominated by large-scale industry by the example of small enterprises of Győr, and Magdolna Leveleki (1993, 1998) did the same for those of Székesfehérvár.

Theoretical and empirical foundations of the research topic

Part of the research concept of my thesis owes a great deal to the works of Grabher (1993), Jarillo (1995), and of Nohria and Eccles (1992), all of which argue for continuous cooperation as the most important specificity of inter-company networks. Based on the literature under the concept of inter-company network of relations, such a cluster of organisations is understood the participants of which are linked together by cooperation realised by informal and/or

formal relationships and existing for longer periods of time, where the emphasis is on the mutual impact, influence and commitment of members (such as Grabher 1993; Jarillo 1995; Nohria–Eccles 1992).

In my paper I distinguish between the *more traditional (business) relations* and such partnerships that are characterised by joint problem-solving, and joint developmental, applications and other closer forms of cooperation assuming closer and longer-term collaboration on the basis of various theories. I call the latter one '*modern cooperation*' after Mohr and Spekman (1994), or using Kálmán Köhegyi's (2005) term '*network bonding*'.

Works aiming at the systematisation of network-based cooperation with the participation of SMEs have an important role in the theoretical antecedents of the present thesis, and particularly of the study of possible forms of cooperation between SMEs and big companies on regional level. Distinction can be made regarding the *direction of cooperation* (Child–Faulkner 1998; Imreh–Lengyel 2002; Sprenger 2001; Tari–Buzády 2000) on the one hand, and typology by *geographical considerations* (Kocsis–Szabó 2000; Pilotti 1999; Storper–Harrison 1991) on the other, and not the least by types differentiated on the basis of *sub- and super-ordination and the extent of autonomy given up* (Penn 1992).

Theories of social structure approaching inter-firm cooperation from the angle of sociological issues have eminent significance for my research. The social network of relations as a mode of approach underlines the role of factors of social structure in promoting inter-firm relations, and it deduces the appearance of cooperation from the conditions and social context of the entire environment surrounding firms (Gulati et al. 2000). Therefore, when studying the cooperative activities of SMEs I set out from the *thesis of social definition and embeddedness* (Granovetter 1985), according to which enterprises are not isolated from the social structure (in contrast to organisations treated as atomistic actors by the discipline of economy), but they have been embedded in the network of social relations. The structure of relations among organisations is the pile of such resources which may promote or hinder the development of sets of relations to be shaped in the future (Burt 1992; Granovetter 1985). Essentially what is involved here is a kind of capital, an *invisible and secret resource* (Czakó–Sik 1994), which has its impact on the decisions, operation and efficiency of organisations (such as Bourdieu 1983, 1998; Coleman 1988, 1994; Putnam 1993, 1995, 2000; Fukuyama 1995). Some authors underline that trust may promote or assist the development of social capital (Fukuyama 1997, 1999, 2000; Gambetta 1988; Sako 2000). Fukuyama (1997) posited that clustering of enterprises into networks was not independent of the degree of trust present in the society as a

whole and of social capital, in other words, a high degree of trust strengthened the formal or informal network of relations of the economic actors in a given region.

Research investigating the emergence of cooperation among local economic actors and their success has constituted an important empirical antecedent of my research. The networks of SMEs of regions in western Germany and in Northeast and Central Italy, mentioned above, belong to the exemplary zones of the related literature (Herrigel 1993; Cooke–Morgan 1998; Sengenberger–Pyke 1990; Trigilia 1992). Researchers of cooperation emerging among companies of the region that utilise opportunities due to geographic concentration attribute an eminently important role to the highly advanced institutional background and/or to the historical and cultural roots (Deakin et al. 2000; Gambetta 1993; Putnam 1993). In regions where no historical traditions supporting civic cooperation are available, the proper level of trust would not develop, hence mutual commitment among various groups or enterprises cannot emerge, and as a result the low level or lack of social capital may result in failures of cooperation. Classic examples of such regions are those of Southern Italy, where the vacuum produced by the lack of weak, bridging linkages, keeping the different social and economic groups together was filled by a mediating network, by the network of Mafia based on mistrust (Gambetta 1993; Putnam 1993).

Kuczi's paper (1998) also proves that the spatial proximity of enterprises would not always lead to cooperation. His research into Hungarian industrial parks has revealed that the foreign companies settling down in those parks create so-called islands, and no matter how logical it would be for them to cooperate with domestic suppliers, they would rather cooperate with spatially more distant foreign firms. Foreign companies operate contacts of R&D or with suppliers to an insignificant degree in their immediate environment, beyond which there is a lack of trust, in other words they assume that the elimination of factors of uncertainty related to deadlines, labour discipline and quality would entail bigger transaction costs than maintaining their well-tested contacts. From this Kuczi draws the conclusion that the emergence of cooperation based on the physical proximity of companies has a chance only in places where the cultural background of the entrepreneurs is identical and they interpret problems similarly (Kuczi 1998). The same way Deák's study (2002) could not find cooperation either among enterprises within the majority of industrial parks and the results of the study show that spatial proximity can only promote the emergence of inter-firm cooperation, but uncertainties related to the other's behaviour and the lack of social embeddedness and the lack of trust may hinder it.

Researches studying inter-firm cooperation realised in the attractive sphere of big industry report both on the horizontal as well as vertical practices of cooperation (Herrigel 1993; Cooke–Morgan 1998; Sengenberger–Pyke 1990; Trigilia 1992). The networks of small enterprises in Central Italy, mostly owned and managed by families that have specialised in the production of one or two phases of small-series quality products are characterised by a low level of vertical integration (Trigilia 1992), whereas horizontal cooperation among this type of competitors has been less prevalent in the West German region, which does not mean that they do not occur (like *coordinated specialisation*, Herrigel 1993), but what is dominant is rather cooperation among supplier and purchaser companies (*enterprises depending on mediators*, Cooke–Morgan 1998).

Of researches done into Hungarian small enterprises the paper of Tibor Kuczi and Csaba Makó (1993) reports on horizontal cooperation that has evolved among the joiners of villages along River Galga, which is comparable to the Italian industrial cooperatives. At the same time, the experience of the majority of researchers engaged in Hungarian small enterprises shows that the practice of horizontal cooperation of enterprises (*independent cooperation*, Penn 1992) is extremely rare and it is explained (also) by the specificities of the structure of large industrial firms of the region and by their industrial branch (Kelemen 1999; Leveleki 1993, 1998). The case studies within research in Székesfehérvár have justified the fact that large industry cooperating with small enterprises primarily strives to maintain its classic contacts with suppliers that is *with dependent sub-contractors*, which had been developed in the early 90s, at the same time such efforts of big companies oriented towards *active linkages* can be observed when the large company joins into the production processes, their organisation and quality control of supplier small enterprises (Leveleki 2002, 2008).

Several international and Hungarian researches have pointed out that the specificities of enterprises (also) could positively as well as negatively influence association with inter-firm cooperation. Putnam (1993) and Trigilia (1992) among others have found a positive interrelationship between the size of enterprises, their ownership composition and the cooperative behaviour of companies. According to their research results it is mostly small-size firms under family management and possessing modest capital which participate in the networks of companies in Central Italy (Putnam 1993; Trigilia 1992). At the same time, Fukuyama (1997) called attention to the fact that in certain cultures, such as in Hong Kong and China where trust is limited and characterises relations only among relatives and as a result the most typical form of company is the 'tiny' one owned and managed by families the enterprises do not employ labour from outside the family because of the vigorous lack of

trust. All this, however, unfavourably influences the economic achievement of enterprises and the extent of inter-firm cooperation (Fukuyama 1997).

Hungarian researches exploring the role of family and relatives in the operation of enterprises also underline that mixing the structure of the household and the business, a basic feature of the Hungarian sector of SMEs, may also significantly hinder the market growth of small enterprises and the emergence of larger-size economic organisations (Czakó 1997, 1998; Czakó et al. 1994; Kuczi 1996, 1998, 2000; Laki 1994; Laky 1998; Scharle 2000).

The study of the various aspects of inter-firm trust is relatively frequent in the international literature of sociology (such as Fukuyama 1997, Gambetta 1988, Helper 1996, Helper–Sako 1995, Sako 1992, Zucker 1986), at the same time few studies have been conducted in Hungary into the extent of trust characterising Hungarian inter-firm connections and what factors would influence them. The first such, pioneering research was conducted by Whitley et al. (1996) in the early 90s, in the sphere of large Hungarian industrial companies and found that the connections of the Hungarian large industrial companies with suppliers and customers were rather closer to *obligational contractual relation* (Sako 1992), though the researchers had found that their relations with their customers were more based on formal contracts and lower degree of interdependence compared to the ideal type of Sako's *obligational contractual relation*. The research group has pointed out that changes in the level of trust of inter-firm relations, and hence of the emergence of inter-firm cooperation were negatively influenced by general mistrust towards bureaucratic procedures and by the lack of institutions mediating between the state and individuals (Whitley et al. 1996). According to later analyses utilising the data bases of the Company Panel Surveys of 1999 and 2003 it could be stated about approximately one third of the Hungarian enterprises of processing industries that *contractual trust* in Sako's sense was present in their relations with customers, in other words, they were closer to the type of *obligational contractual relations* (Csabina–Leveleki 2000, 2003; Csabina et al.; Kopasz 2003, 2005). Further on, it was also verified that the ownership structure (majority ownership of not employed private individuals), of the activities of the firm (small series production of goods supplying for individual demand), and of business environment considered as safe have significant roles in the functioning of inter-firm obligational connections (Csabina–Leveleki 2000, 2003; Csabina et al. 2001; Kopasz 2003, 2005).

Interviews-in-depth done by Tóth (1999, 2003, 2004) have called attention to a high degree of the lack of trust among small entrepreneurs and to the extensive practice of formal contracts. *Contractual trust* could only be identified in the contacts of certain circles of

entrepreneurs when the parties concerned started work already before concluding the contract (for instance, if an old and tested client was involved). Vadasi (2009) studied trust and its non-existence in the operation of networks of entrepreneurs in a micro region in northern Hungary. She has pointed out that the relationships of SMEs under survey were mostly characterised by fairness and not trust, which is 'a treasure that is missing' from this region, and such high degree of mistrust, avoidance of risks and averting responsibility jointly represent a serious obstacle in the development of economic networks (Vadasi 2009).

Objectives of the thesis, research issues and hypotheses

The thesis embarks on exploring the practice of cooperation of micro-, small and medium-sized enterprises (henceforward SMEs) in Hungary, and studies the dimension of network cooperation of the sector and also the factors influencing the development of those connections. In my paper I attempt at giving a comprehensive picture of the extent and nature of cooperation that can be linked to the operation of small enterprises, but all this is done within a delineated space of a specific region, and I venture to explore the actual situation of the set of connections of SMEs operating in the settlements of the micro region of Dunaújváros.

The basic issue of research

During the course of my study I have set out from theories on the embeddedness of economic processes positing that economic activity is socially determined (Polányi 1976; Granovetter 1973, 1985, 1988), whereas social connections may make the achievement of economic objectives more effective or they can also hinder it (Coleman 1998). On this basis relationships that can be linked to the operation of enterprises in the region under survey are embedded into the social structure, but this interrelationship is not precisely known. Though international and domestic literature often refers to the impact of social networks upon company behaviour in a given region as a factor encouraging or hindering cooperation, a more profound analysis of this mechanism of effects has not yet been done in the region I have studied.

Consequently it is this analysis of types of partnership relations of small enterprises and the factors affecting them in the given region that was put into the focus of my research. *I have investigated the problem on the basis of three groups of issues:*

1. What is the set of relationships of SMEs operating in the micro region like, through how complex and extensive connections are they embedded into their environment? To what extent the so-called modern factors of cooperation related to inter-firm connections are present? In other words: how big is the 'networking' of the enterprises?

2. What factors influence the cooperative activities of SMEs, the content and regularity of cooperation? How big is the role of the individual economic and organisational factors of enterprises?

3. What role does social capital as a resource play in the emergence and efficiency of cooperation developing in economic life? What types of enterprises are being embedded into the social relations of the region and into the structure of networks based on them?

The elaboration of the research concept served the purpose of obtaining such information as an outcome of the analysis by which the results of earlier researches investigating company and small enterprise cooperation could be supplemented and extended. Thus, the first issue offers a description of the cooperative relations of SMEs of the region and of the related features. The descriptive analysis investigating the relationships of enterprises offers a starting point to the study of the second and third issues which aim at the exploration of causal relations.

The appearance of *modern factors of cooperation*, of *network bonding* related to company connections acquires outstanding significance in the study of all the three issues of the research, under which *I understand quality features associated with company partnership relations* based on Mohr and Spekman (1994).

As the areas indicated and the issues mentioned also show, I have embarked on a possible multi-layered exploration of the set of relations of the SME sector with the claim of offering possible explanations for the existence (or lack of) inter-firm cooperation. In keeping with my objectives (exploration of the existing situation) the work produced has been essentially a descriptive one.

Due to the descriptive nature of the investigation I had the opportunity of hypothesising only within limitations, yet I have produced some assumptions after having considered international and Hungarian researches into inter-firm networks related to my topic as well as the findings and questions raised by works on the changes of relations among small enterprises, and further on the basis of possible interrelationships outlined by my preliminary researches (Győri 2007, 2012, 2013).

I have drawn up the following hypotheses:

In parentheses I refer to those works that have offered a starting point to the wording of the hypotheses.

H1. I suggest that the set of connections of SMEs is less characterised by cooperation presuming closer partnership relations based on mutuality, and that they are rather active in the establishment of traditional, business-based connections (Cooke–Morgan 1998; Mohr–Spekman 1994).

H1.1. On the one hand, it can be assumed that cooperation pointing beyond the traditional contracts of sale and purchase in which such special elements have eminent significance like mutual commitment and dependence, regular and repeated interactions (so-called modern cooperation), would more probably occur among the SMEs and local governments, professional and other coordinating as well as developmental institutions (Czakó–Györi 2013; Inzelt 2003, 2011; Inzelt–Szerb 2003).

H1.2. On the other hand, I assume that elements of modern cooperation, representing closer partnerships are present to a limited extent in the set of relations developed by the sector of SMEs and other enterprises, consequently there is a higher probability of the appearance of such 'seller–purchaser' networks in which the SMEs are suppliers or customers for one (or a few) big companies, and in which it is rather the market elements of relations that dominate (Kelemen 1999; Leveleki 1998, 2002). In other words: beside the suppliers' networks called *satellite cooperation* such connections built of SMEs have a moderate presence where an integrating enterprise (Penn 1992) is missing and which can be described with the concept of *independent cooperation*.

H2. I assume that the cooperating activity of SMEs and the contents of inter-firm cooperation are related to the economic and organisational features of the given enterprise (Czakó 1997, 1998; Fukuyama 1997; Kuczi 1996, 1998, 2000; Putnam 1993; Trigilia 1992).

H2.1. The smaller size young enterprises of local market sphere, offering commercial and servicing activities in the form of individual enterprise are rather active in developing homogenous and primarily business-like entrepreneurial connections involving only a few firms (Czakó 1997; Czakó et al. 1994; Putnam 1993; Trigilia 1992).

H2.2. Larger company size and market sphere, activities in the branch of industry, longer operational experience, company legal form and favourable business prospects suggest the occurrence of a heterogeneous set of connections of several actors as well as the openness of the enterprise and closer cooperation presuming cooperation in joint development,

applications and innovation (Inzelt–Szerb 2003; Leveleki 2002, 2008; Sengenberger–Pyke 1990).

H3. In view of the fact that social capital as a resource hidden in social networks has a role in the development and functioning of inter-firm cooperation (Coleman 1988, 1994; Granovetter 1985; Putnam 1993, 1995, 2000) as well as the extent of trust characterising inter-firm relations (Helper 1996, Helper–Sako 1995, Sako 1992, Zucker 1986), I assume that the SME sector is highly differentiated in this respect as well (Laky 1998; Gyóri 2012). More elaborately: enterprises of the SME sector, interested in network solutions and having a complex, multi-actor partnership are more embedded and rely less on trust in their business relations (but rather on formal contracts), whereas, in contrast to them enterprises having homogeneous and small-size connections have less embedded relations and their business relations are more characterised by contractual trust (Csabina–Leveleki 2000, 2003; Csabina et al. 2001; Tóth 1999, 2003).

2. Data and methods used

During the study of the cooperative activities of SMEs I have done a major empirical work of exploratory nature besides processing the relevant literature. The empirical basis of the dissertation is offered by the survey conducted among SMEs operational in the micro region of Dunaújváros, which was done between August 2010 and March 2011. The entire survey was done under my own coordination with the help of the financial assistance of the BKTE Foundation. The questionnaire, searching for enterprises included in the sample, questioning and the analysis were all done alone under the professional guidance of my consultant Dr Ágnes Czakó.

Data

The sample was assembled by random sampling from the settlement series database of the Central Statistical Office (henceforward KSH) placed at my disposal. A decisive factor of sampling was to differentiate the sample by region (location within the micro region) and the frequency of occurrence of the field of activity. Further on, I had also kept in mind to 'push' the proportions of enterprises questioned towards medium size richer in contacts instead of the actual 95:5 proportion of small and medium enterprises. In other words, I have decided upon the under-representation of micro enterprises in the sample of the survey and applied the

restriction that 50 per cent of the small enterprises to be selected in the region should have at least ten or more employees. As the research deals with the creation of the typology of the relationships of SMEs I believe that this decision is justified. It is known that the smallest enterprises by employment such as local individual enterprises of one or two employees or deposit associations, namely self-employed ones and not firms, are presumably connections attached to persons both in their business as well as social relations. More complex relationships can be expected in the case of larger enterprises employing ten or more people (the Newtonian *law of gravitation* also applied in social geography, and explaining the description of spatial spheres of attraction means that a larger social mass, in this case a bigger enterprise, would exercise greater attraction over the environment, it would attract more connections than the smaller ones [Nemes-Nagy 2007]). Ultimately I have interviewed 263 SMEs during the course of my research, which represents 5.8 per cent of all the SMEs registered as functioning ones in the micro region of Dunaújváros by the KSH. Thus the survey covers 263 cases of which the sub-sample of enterprises of 1 to 9 employees contains 131, and the sub-sample of the firms of 10 to 249 employees contains 132 cases.¹

I have considered the overrepresentation of enterprises above ten employees where it was justified, and I present the results separately on the two sub-samples (for instance, when testing the sub-hypotheses concerning elements of cooperation), and I applied weights wherever it appeared to be necessary (such as the isolation of groups of enterprises on the basis of the indicators of cooperative relationships with the method of cluster analysis).

Methods of analysis

I have applied several methods to the analysis of data. At first the study of the cooperative activities of SMEs was done within the framework of descriptive analysis (*hypothesis 1*). I have measured *cooperative activity* with the help of four variables: *direction of cooperation* (Has the enterprise developed partnership with any other organisation?);² *complexity of the set of cooperative relations* (How many kinds and direction of parallel cooperative relations does the enterprise possess?); *the size of the set of relations* (How many cooperating partners does

¹Thus the sample is one of the indicators of company size and it distorts by the number of employees, whereas by the other indicator, namely return from sales the spatial location, branch and size of company it can be regarded representative. As to the latter one I had no requirement whatsoever when the sample was assembled, but the distribution of the enterprises belonging to the different categories by employment by their net returns almost perfectly represents proportions characteristic in this regard of the SMEs operating in the micro region.

² The two main directions are: other enterprises and organisations of coordination or of the developmental environment.

the enterprise have?); *occurrence of networking-type cooperation* (Does the enterprise participate in cooperation based on mutuality presuming closer partnership relations in which there are elements of network pointing beyond the market such as granting assistance, counselling, advertisement, joint events, application projects, R&D, financing relations, etc.?)

Next the kinds of organisational specificities influencing the cooperative relations of enterprises were explored. I have investigated the various parameters of cooperation as variables considered as independent ones with the help of correlation analysis, next I have tested the connections between the explanatory variables³ and the dependent variables with the help of tabulation analysis, variance analysis and multi-variance regression analytical procedures⁴ (*hypothesis 2*).

I have also analysed ties representing *social resource* (Kuczi 1996) and cooperation as well as the interrelationships of trust characterising inter-firm relations with the help of simple two-variable analysis (cross tabulation) and of multi-variable logistic regression (*hypothesis 3*). I have approached the phenomenon of social capital by taking an account of the various assisting social relations (personal acquaintance in a partner organisation, a person helping informally; the use of 'weak' and 'strong' bonds in the case of averting disturbance), and the strength of relationships of trust by measuring the formal framework of the relationship (informal agreement, production/service provided before the conclusion of a written contract, formal contract).

Finally, I have applied cluster analysis to see what types of the enterprises of the SME sector can be isolated on the basis of their cooperative and social-assistance relations.

3. Results of the thesis

Characteristics of the cooperative relations of the SME sector

During the course of the empirical analysis at first I have dealt with the study of the cooperative activities of SMEs in the given region.

I have found that a *typical enterprise of the sector had four cooperating partners in the average* during the period between 2008 and 2010, covered by the research. Essentially

³ Explanatory variables included in the models are: the size of the enterprise (based on the number of employees), location within the micro region, branch, legal form, age (by the year of foundation), proportion of foreign ownership, organisation of the sphere of owners, future orientation (business expectations), the market sphere of acquisition and sales.

⁴ When looking for models best fitting in I have applied the entry procedure of the BACKWARD: WALD method of logistic regression.

half of the micro enterprises had 2 to 6 cooperating partners, whereas half of the enterprises employing 10 to 249 persons had cooperation with 3 to 10 organisations. The study of the *direction of cooperation* of companies reflected the market actors, namely suppliers, consumers as well as financial institutions from among the organisations of the coordinating and developmental environment as cooperating partners of the greatest weight. The study of the *complexity of the set of relations* (with how many types of organisation they cooperate) has shed light on the fact that the set of relations of small enterprises was not really complex: almost half (48.8%) of firms of one to nine employees, whereas one third of firms of 10 to 249 employees (34%) had cooperated with maximum two types of organisations, and only one tenth of them was characterised by a more complex network of partners consisting at least of five actors.

Next I attempted to verify my propositions worded in *hypothesis 1(H1)* (and in the related sub-hypotheses). Apparently the hypothesis is partially justified within the framework of the research. Based on the results, more than half of both the sub-samples (52% of the first, and 56% of the second sub-sample) had more special and stronger linkages going beyond the traditional contracts of purchase and sale, in other words, they did participate in some kind of informal and/or formal continuous cooperation based on mutuality. I have considered various forms of assistance (informal cooperation), such as counselling, advertisement, transfer of information, business acquisition, exchange of material, tools and machines, or sending customers to one another, as well as such formal cooperation that could be ownership mixes, financing relations, joint events, or may be realised through joint acquisition, sale, production, development or joint applications were all considered as *elements of networking nature*, pointing beyond market relations (Czakó–Sik 1987; Kóhegyi 2005). At the same time, the networking activity of the sector can be considered low on the basis of finding out through how many parallel networking contacts the enterprises are embedded in their environment, as the majority of them (69% of the SMEs employing 1 to 9 people, and 62% of those employing 10 to 249 persons) had one such cooperation at the most, and one could find activity in networking cooperation involving at least two such bonding in the case of one third of them. Within this finding what is outstanding is that 7 per cent of enterprises employing maximum 9 people, and about 17 per cent of those employing more than 10 people participated in at least four cooperations of networking nature. They can be called *elite of networking cooperation* as they are the enterprises that are more probably members of truly complex, multi-actor networks of developmental cooperation.

The verification of *sub-hypothesis H1.1* corresponds to the expectations in literature (Czakó–Györi 2013; Inzelt 2003, 2011; Inzelt–Szerb 2003): *the SMEs of the region primarily maintain such cooperation with organisations of coordination and development of the region (primarily with professional organisations and research institutes) which are characterised by requiring networks*, whereas the weight of economic organisations is rather low.

As to the *relations between the sectors of large and small companies* the results have validated *sub-hypothesis H1.2*. Almost half of the SMEs have reported on a big enterprise partner (42% of enterprises of 1 to 9 employees, and 53% of those having 10 to 249 employees), but the survey has also pointed out that it is primarily the bigger firms of the SME sector, employing at least ten people that cooperate with big companies of at least 250 employees, and these relationships are mostly those of classical suppliers. It is a special feature of the relationships of the SMEs surveyed with big enterprises that they are mostly oriented towards partners outside the branch which are typically big industrial companies in the case of the firms of 1 to 9 as well as of 10 to 249 employees.

Results of grouping the enterprises under survey by cluster analysis support the experiences of earlier empirical researches done in regions dominated by big industry (Kelemen 1999; Leveleki 1998, 2002), according to which local big industry strives to cooperate with small enterprises only to a limited extent. The results of my research show that one sixth of the SMEs of the region (15%) can link to the big manufacturing companies operating in the region. A further, much smaller group of the SMEs under survey, 7.5 per cent of all also had big companies among their partners but they were not local ones, instead they were foreign big industrial partners or with headquarters in the country. The cluster linked to these two sectors of big enterprise, the compound proportion of which is 22 per cent, can be characterised by *"classical satellite relations"* (Penn 1992) along the typology in the literature, in which the small enterprises offer services to the big company, or supply them with various products.

At the same time, and in contrast to my expectation, a rather significant proportion of the SMEs in the region, 78 per cent of them as a result of cluster analysis, did not cooperate with big firms either inside or outside the micro region, but made efforts to develop horizontal relations within the sector. Within this group the bigger portion of enterprises, almost 60 per cent of them cooperated with SMEs within the smaller and bigger region, whereas 17 per cent would cooperate with SMEs located outside the given region, in other parts of the country. The partnership relations of this group of small enterprises of the region can be called 'independent cooperation' by Penn's terminology but it is important to underline that multi-

actor, network-like cooperation is not characteristic of the enterprises of the micro region under survey, and they only have concentrated on business-like connections affecting only one or two partners.

Consequently, the results clearly suggest that a pile of entrepreneurs, consisting typically of SMEs has been evolving in the economic structure of the given region, which is independent of big companies, though it obviously cannot compete with the companies of the Dunaferr corporation or other big industrial companies of the location regarding its economic strength and weight as employer, but it can be an autonomous actor as a network. Results of the research have also called attention to the fact that the opportunity to join into cooperation outside the region and particularly into international cooperation of companies is extremely little among the SMEs (international partners can be found in about 7 per cent of the set of relationships of SMEs) and that locality largely determines the shaping of cooperation. All this indicates a kind of closed situation and may contribute to the 'functional locking up' of the region. It can influence the opportunity of renewal for the SMEs and they may lag behind the introduction of leading procedures because they are not in contact with such markets that could exercise 'impulses' on them.

Factors influencing the cooperative relationships of the SME sector

Hypothesis 2 (H2) as well as the related sub-hypotheses (*H2.1, H2.2*) has proved to be right, as the significant effect of the majority of the economic and organisational variables of companies under survey has been confirmed (Czakó 1997, 1998; Czakó et al. 1994; Inzelt–Szerb 2003; Putnam 1993; Trigilia 1992). The various parameters of cooperation, namely the various directions of cooperation, the heterogeneity of relations, the size of the set of relations and the occurrence of network bonding are closely related to the organisational features of enterprises.

At first I have studied factors influencing cooperative activities of firms by two-variable and next by logistic regression methods, and the results have been mutually confirmed. According to the results the *main area of activity of the enterprise* has one of the strongest influencing effects: it is industrial and service providing enterprises that have proved to be most open to develop cooperation with various organisations and to participate in partnership networks, whereas commercial enterprises mostly cooperate with financial institutions. The other company characteristic which has a rather strong influence is the *size of enterprise approached by the number of employees*: cooperative activities are the lowest in

the group of enterprises of the 'smallest' size of the sector, whereas the probability of finding financial institutions, professional organisations, local governments, civic organisations, research establishments and institutions of higher education, or supplier companies as partners is higher in the set of relations of companies of bigger size, employing more than 10 people, and the structure of their set of relations is even more complex regarding the directions of cooperation. In the case of the 'smallest' size enterprises cooperation evolved with institutions of the cooperative and developmental environment is rarer and a more heterogeneous set of relationships is also rarer than in the group of the 'bigger' ones. The *ownership background* is a further determinant, the role of which is significant in the case of all the parameters of cooperation under survey. In case the circle of owners of an enterprise is exclusively organised on professional basis it would enhance the probability of cooperation of the enterprise, in other words, its set of relations is more heterogeneous, the size of its sphere of partners and the probability of its participation in network-type cooperation is more likely in comparison to enterprises organised on the basis of relatives and acquaintances. The *age* of the enterprise also has a significant effect on the emergence of cooperation though it is weaker than the size, sphere of activity and ownership: in the case of enterprises operating for a longer time cooperation with financial institutions and civic organisations has greater chances, their sphere of partners is bigger than the average together with their participation in cooperation of networking type. Based on the results obtained, the cooperative activities of SMEs are also influenced by their favourable *business prospects*: there are more frequent participants in networking type of cooperation among enterprises of good business position ready to grow, there are more of them having complex sets of connections as well as those cooperating with professional organisations and financial institutions compared to those who have not indicated growth of any kind (development, extension of activity in the market, or changes in employment) in the short run. The *legal form of the enterprise* is also a factor of significant influence though basically it is not too significant or strong: enterprises functioning in company form of legal entity or without it are more likely to cooperate with professional organisations, financial institutions and clients, and they are more likely to have a more complex than the average circle of partners, covering more types of organisations, than the enterprises of individuals (self-employed ones). Finally, and in addition a significant difference was found by the *market effectiveness* of the enterprise as well: SMEs operating in the national and international markets have more favourable parameters of networking connections than those producing for the local market.

At the same time the *results have also pointed out that parameters of cooperation, strengthening competitiveness are present even in the circle of the 'smallest' of SMEs*, and that too in the group of those who cooperate with their competitors in the branch. It is an important result that while the bigger enterprises of the sector, employing more than 10 people, are more 'active' practically in respect of all the parameters of cooperation, the micro enterprises of 1 to 9 employees are more inclined to cooperate with their competitors, in other words, the *'small ones' are active in developing cooperation with competitors*. What may be guessed in the background is that they create the company size necessary in the market by this networking cooperation which is a given condition in the case of larger size enterprises. It can be presumed that this type of cooperation among competitors is frequent when a virtual growth of size may mean competitive advantage in the market (for instance, in the case of winning applications, if the size of company or a broader profile of service provision matters).

Connections of cooperation of the sector of small and medium sized enterprises and social resources

Social capital, as a resource that can be operated as a bill of exchange, and trust permeating relations have an eminent role in the functioning of enterprises (Coleman 1988, 1994; Gambetta 1988; Granovetter 1985; Putnam 1993, 1995, 2000; Sako 2000). In this context I was in search of an answer to the main question which of the linkages representing social resource is the most important one when all the other factors are kept under control. Results have shown that the *role of social resources varies depending on the nature of cooperation*.

The strongest influence is exercised by the variables of personal acquaintance in the partner organisations (and particularly in local public administration and in the research institutes). Studying the role of relying on strong contacts has revealed that significance could be seen by the 'strength' of linkages as they did not uniformly exercise their impact on shaping the cooperative connections of a SME: The involvement of the family into business matters in shaping its cooperative connections would result in the reduction of cooperative activity, whereas relying on friendly connections and those with close acquaintances would enhance the cooperative opportunities of the firm. Reliance on weak connections also has positive effect on cooperation: asking for advice and help from professional and financial institutes relevantly enhances the occurrence of the heterogeneous set of relations involving several partner organisations as well as cooperation in networks. Further on, regression estimates have also shown that the variable of the inter-firm relations based on formal contracts has

strong positive relationship with the possibility of cooperation: enterprises that can be described as less relying on trust and as 'keeping distance' are characterised by significantly more complex and larger size of a set of connections. In other words, SMEs showing a higher level of trust, having 'confidential' ties like family relations, inter-firm cooperation based on verbal accords (on commitment) rather characterise SMEs cooperating only with a few partner organisations and following bilateral solutions. Thus the results have verified *hypothesis 3 (H3)*.

I have *isolated four groups* of the SMEs in the region on the basis of the existence of connections of different directions and types of cooperation, namely: those of *professional cooperation*, *protective builders of trust*, *pragmatic builders of network*, and those of *non-active mistrust*. The biggest cluster (48.2%) of these groups of enterprises belongs to the group of those of *non-active mistrust* who, besides their expressly weak activity in cooperation hardly mobilise their social resources and possess a homogenous, small-size set of connections. The smaller group of *pragmatic network builders* (19% of the SMEs) is well separated from the former one, its members intensively utilise their social resources and particularly their weak connections, their circle of partners is complex and has multiple actors, and they are also active in developing networking cooperation. The group of *protective builders of trust* is somewhat bigger (25.7% of the SMEs); the members of which possess favourable parameters of social connections, they mostly utilise their strong connections of family, friends and close acquaintances in the case of business problems, and verbal accords also play a prominently important role in their economic relations. Further on, their set of relations is heterogeneous and large above the average, while their networking cooperation is weak. The group of *professional cooperation* is the smallest (7.1%) and has the most favourable indicators of cooperation but its members hardly mobilise their social resources.

An important result drawn from this chapter of my research is that the cooperative connections of the enterprises and the utilisation of social capital are often intermingled in the life of individual SMEs. Apparently those SMEs that cooperate with other organisations possess heterogeneous or extensive systems of connections, and participate in networking cooperation, more probably utilise these resources during their cooperation, and are more strongly embedded in their organisational environment through these connections, or vice versa. In fact it may happen that these indicators show joint occurrence instead of causal relations therefore I consider the further study of the issue necessary by all means so that the real causal connections should also be explored.

Further directions of research

Issues studied by the present thesis have also left several questions unanswered or have identified further directions of research.

The present thesis has offered a snapshot to the reader, but I had no opportunity to explore the dynamics of mutual effects within the framework of this research. Therefore it would be absolutely necessary to study the topic further so that real causal relations may also be exposed but which would be made possible only by time series data.

On the other hand, it would be interesting to find out if the crisis just about to unfold in 2010 had some effect, and if yes then in what direction on the cooperation activities of enterprises and on the intensity of the utilisation of their social connections.

A further direction of research could be a comparative empirical survey which would be directed towards regional differences in the various directions of relations of cooperation of the SMEs, leading to other enterprises and established with developmental and coordinating organisations outside the economic sphere. My investigation may be regarded as a pilot study because it had to set out from a question of what forms do the various kinds of cooperation of the SME sector take in the given region. Similar Hungarian surveys dealing with other regions were missing which could have facilitated the interpretation of results. This kind of study should not only be extended over more regions but over the entire country. Such a research work could analyse the regional specificities of the set of connections of SMEs, at the same time a bigger number of elements would also allow for the implementation of more complex explanatory models.

Finally, all those results that have been explored during the survey of the cooperative connections of SMEs, requiring networking activity may offer important additions to the respective professional policy.

My results prove the fact that a small sample survey with questionnaire, focusing on local factors may be a useful supplement in the study of the context of a given problem to all-round national or large-sample data collections.

4. Main references

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5. Publications of the author in connection with the theme

Publications in Hungarian language

Book chapter:

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