# Impacts of the coopetitive networks on the Hungarian territorial structures[1]

**Abstract**

The paper scrutinizes empirically on one hand the structural characteristics of the coopetitive networks of SMEs, on the other hand analyzes the effects of the coopetitive networks on economic development at nodal regional level. Altogether three Hungarian coopetitive networks were found and examined longitudinally embracing 127 entrepreneurs thus 127 interviews and 127 questionnaires were conducted as well. The primary datasets were investigated by combining the methods of network science and spatial econometrics. The key findings show that the coopetitive networks determine significantly the new jobs creation and pay raise, in general, the accumulation of territorial capital.

**Keywords**

Social responsibility, regional economic development, coopetitive networks, scale-free property, focal firm

**Introduction**

The paper theoretically and empirically concentrates on scrutinizing the Hungarian coopetitive networks of SMEs (hereinafter coopetitive networks) and their effects on the regional economic growth. The coopetition has occurred as a new category in the terminology system of social sciences. It refers to the special dynamic interplay between same firms in which the competitors collaborate and compete with each other simultaneously so as to reach higher profit (Bradenburger-Nalebuff 1996, Czernek–Czakon 2016). By applying coopetition, the market automatisms do not disappear from economic structure, of course. The competition remains in hegemony in the economic setting but in only some place of business life the rivals collaborate to achieve effectively their purposes.

Moreover, well-known fact that every coopetitive network has territorial extension so a territory which is covered by a network is has to be named as a *nodal region* (Thilenius-Havila-Dahlin-Öberg 2016). Since economic networks, economic relationships and the territorial concentration of economic activities create nodal region, it must be scrutinized by combining toolkits of network science and spatial econometrics. Taken together, the paper thus describes impacts of the coopetitive networks on the economic development of nodal

regions (hereinafter: regions). Spatial extensions of the coopetitive networks are illustrated by maps in the paper. The paper is organized as follows.

In the first chapter, on one hand the theoretical underpinning and empirical overviews of the SMEs' networking is demonstrated and, on the other hand, short Hungarian socioeconomic background is presented as well. After that, I show how the network dataset is collected and analyzed. Fundamentally, three Hungarian coopetitive networks were mapped locating on (1) Tihany-Budapest, (2) Nyíregyháza and (3) Budapest including 127 entrepreneurs all together. The study combines quantitative and qualitative methods of the network science as well in order to understand deeply the architecture and impacts of the coopetitive networks in the real business life. Actually, interviews and questionnaires are conducted as well with every entrepreneur thus 127 sociological, semi-structured interviews and 127 questionnaires are studied. The last chapter deals with how the coopetitive networks have impacted on the Hungarian regional economic development.

In the next theoretical chapter the paper demonstrates the functions of inter-firm relationships in the business life. After that, the focus of the paper is narrowed down analyzing the coopetitive network that is a new type of the business network.


**Theoretical underpinnings and empirical overviews**

Empirical results of the concept of territorial capital suggest (Jóna 2015) that the Hungarian regional economic growth and development have been determined by networking of the small- and medium-sized enterprises. At first time Hakansson (2015) concentrated on examining the evolving of the business networks theoretically and empirically, the basic information and characteristics of the entrepreneurial networks were mustered by him. Hakansson stresses that a firm is not 'an island but a multiple system' encompassing human being with emotion, regional past, traditions, special socialization, etc. It is clear, the entrepreneurial decisions, performances and the networking are defined by on one hand exogenous and endogenous assets and on the other hand regional proximities as well (Bernela-Levy 2015); these usually have to be taken into account by the regional economic analysis.

Furthermore, as the network structure is analyzed intensively in the next chapters, the scale-free architecture of network has to be understood adequately. Obviously, the random graph theory cannot describe the network scheme in the nature but the Barabási-Albert model can grab it highlighting that the real networks usually follow scale-free property (Barabási 2016). Fundamentally, the scale-free network structure can be defined as power-law degree

distribution. In principle, the degree distribution illustrates how often nodes occur with varying edges in a network. Simply put, usually one or only some nodes have a large number of connections in the network, in so doing, the most of agents have only a few links thus hubs (high degree nodes is called hub) are formed that guarantee the robustness and integration of the network. The power-law degree distribution system is usually evolved by preferential attachment automatisms referring to the more connected players, the more likely it is to receive new and new ties. Consequence of the scale-free network topology is that the robustness of network becomes high. More precisely, in the coopetitive network a focal firm is known by everyone in the network, playing cruical role in the allocation of information, organizing, coordinating and integrating the actors of network. Lastly, the dominant firm (the hub) is defined as the Achilles Heel of network of SMEs (Barabási 2016) since it is the main actor in the network.

Significant close connection can be gauged between the business network and regional economic growth; it can be proved by not only conceptually but also by empirically as well. Tangible examples of the economic networking occur both the Silicon Valley and Hollywood (Cohen-Fields 1999); 80 percent of the Italian agricultural sector based on small family business and almost whole Danish economic structure bases on the networks of SMEs (Chetty-Partanen-Rasmussen-Servais 2014).

As above mentioned, the driving force of the Hungarian regional economic growth is the networking of SMEs. However, establishment of private ownership companies was forbidden in the socialist area indicating private ownership companies did not exist formally and there were no networks of firms, of course (Kornai 2008). After the regime change the Hungarian local residents could establish firms but they did not have economic links and enough relational capital; SMEs were allowed to be formed but the SMEs networking was restricted on account of early wrong political and social experiences (Berend 1996). This multiple situation determined significantly both the fluctuation of entrepreneurship and the networking of SMEs. In a nutshell, after 1989 numerous enterprises were established in Hungary but these had to functionalize almost total alone because entrepreneurs did not believe in each other, the inter-firm nexus has not been configured easily. The social network of entrepreneurs has been specified by the communist heritages. The communism had been over but the socialist socio-cultural and personal effects have remained in the Hungarian patterns of connections.

Notwithstanding, I managed to find three bottom-up, supply-oriented coopetitive networks that have been operating as real networks.

In the next sections the paper demonstrates how datasets of the three networks were collected and analyzed. Afterwards, the chapter of result on one hand characterizes above mentioned three Hungarian coopetitive networks and on the other hand explains how coopetitive networks impact regional economic growth.

**Method, database and the models of networks**

The primary network datasets were assembled as follows. Employing my informal friendship including so many enterprises I found four collaborating same firms. Firstly I fixed up and conducted interviews separately with them and after that I asked entrepreneurs for telling me who else belong to this informal network. By following snowball method, three bottom-up, coopetitive networks were revealed. Nevertheless, quantitative (questionnaires) and qualitative (sociological semi-structured interviews) methods were applied simultaneously in order to the characteristics of the coopetitive networks can be understood in-depth (Paula 2015). Basically, the primary graph database includes 127 interviews and 127 questionnaires. In general, the questionnaire consists of basic information of firms such as postal code, street, house number of firm location, number of employees, annual income, etc., besides, the interviews map out the nature of links between rivals. The interviews lasted 110 minutes on average, the longest one is 4 and a half hours, the shortest one is 55 minutes. The dataset was mustered between April and September 2015.

Nevertheless, the paper accepts statement that almost every coopetitive network has spatial extension thus toolkits of network science and spatial econometrics are needed to combine. The first coopetitive network is located from Tihany to Budapest (network of Budapest and Tihany: NTHBP), the second one exists in Nyíregyháza (network of Nyíregyháza: NNYH), and the last one is situated in Budapest (network of Budapest: NBP). NTHBP embraces 72 firms, NNYH consists of 14 firms, and NBP includes 41 firms, all together (72+14+41=127) 127 enterprises belong to the network model. In a nutshell, $NTHBP = \{1,2,3 \ldots 72\}$, $NNYH = \{1,2,3, \ldots 14\}$, and $NBP = \{1,2,3, \ldots 41\}$. Moreover, these have to be defined as disjoint sets, so $NTHBP \cap NNYH \cap NBP$, meaning that the networks can be analyzed separately and compared to each other in the next sections.

All of three unintentional coopetitive networks are regarded as unweighted and undirected graphs referring to the interaction is mutual among firms, nodes are in symmetric relationship. In this model: $N_{NTHBP,NNYH,NBP} = (V, E)$, where N is network, V are vertices and E is edge. In this case V means firms and E means link among firms. More precisely, the vertices mean premises of firms and the edge refers to coopetitive interactions between competitors.

The structural properties of the coopetitive networks are gauged by degree centrality, betweenness centrality, closeness centrality, the Duranton-Overman index, geodesic distance, average degree, small world, graph density, scale-free network topology and the large of network (Jackson 2016). The details can be found in Table 1.

Table 1. Some calculations of the coopetitive network

| Name | Formula | Describe of formula |
|---|---|---|
| degree centrality ($C_D$) | $$C_D = \frac{\sum_{i=1}^{g}[C_D(n^*) - C_D - (n_i)]}{[(n-1)(n-2)]}$$ | $C_D(n*)$ is the highest degree, g expresses the number of players |
| closeness centrality $C_C$ | $$C_C(n_i) = \left[\sum_{i=1}^{g} g(n_i, n_j)\right]^{-1}$$ | it highlights that a firm has central position in the graph if a company can be accessed easily thus it can gather and distribute market information |
| betweenness centrality $C_B$ | $$C_B(n_j) = \frac{\sum g_{ij}(n_j)}{g_{ij}}$$ | it expresses that those player has power in the graph who is located among numerous other actors, where i≠j, l≠j and $g_{ij}(n_j)$ expresses the number of the shortest edges between i and j |
| Duranton-Overman index [$\hat{K}$(d)-index] | $$\hat{K}(d) = \frac{1}{Eh}\sum_{i=0}^{n} \sum_{j,e(i,j \in E)}^{n} f\left(\frac{g-g_{i,j}}{h}\right),$$ | f is a Kernel function, h stands for the optimal bandwidth, i and j show the distance between firms |
| clustering coefficient ($C_i$) | $$C_i = \frac{number\ of\ pairs\ of\ neighbors\ connected\ by\ edges}{number\ of\ pairs\ of\ neighbors}$$ | ($C_i$) refers to 'the extent to which one's friends are also friends of each other' |
| average path ($AP$) | $$AP = \frac{\sum_{i=1}^{n} \sum_{j=1}^{n} g_{ijt}}{N(N-1)}.$$ | |
| small word ($SW$) | $$SW = \frac{CL_t}{AP_t}$$ | |

The qualitative dataset is elaborated by both the structured content analysis and qualitative input-output analysis. The dimensions of interviews are classified as follows:

- introduction,
- network evolution,
- collaborating with competitors,
- horizontal and vertical network structure,
- business model,
- the network effect on the income and establishing of new jobs.

The next chapters provide insight into the empirical results focusing on the topology of three Hungarian coopetitive networks and effects of the coopetitive networks on the regional economic growth.

**Empirical findings**

*The coopetitve network between Tihany and Budapest*

Tihany has always been a typical ecclesiastical and historical middle-sized town in Hungary; it is located in a peninsula of the north-Balaton Lake approximately 140 km far from Budapest (capital of Hungary). The local society of Tihany can be called special too, consisted of few members of elite and a large number of citizens who had been living under the Hungarian average living standards (Horváth 2015). Nevertheless, this sad socio-economic circumstance has been reshaped basically by a very successful entrepreneur of Budapest who was born in Tihany. He decided on establishing a new local market in Tihany where the poor local inhabitants could sell their old and handmade products, odds and ends, vegetables and fruits from home gardens etc. Put another way, because of the new local market overwhelming of unemployed local people started working at new market and became entrepreneur and taxpayer citizens, moreover, they have been able to sign on further unemployed people of Tihany. Spread of the local entrepreneurship and the new marketplace have led to eliminate both the poverty and regional inequalities.

It has to be emphasized that the local market was formed in 2008 but the solvent demand missed therefore owner of new market managed to invite his VIP friends from Budapest so that they could purchase local residents' productions and as a result the local market has expanded; relational capital of the owner has been converted into economic capital. As a consequence, some successful enterprises of Budapest have been interested in selling products at new market of Tihany so nowadays approximately 20% of the NTHBP come from Budapest.

Indeed, the NTHBP has to be defined as an unintentional coopetitive network because its counterparts collaborate with each other in the field of mutual transportation of goods. Since the mutual transportation, a typical form of coopetition, prevails in the all three Hungarian coopetitive networks, the mechanisms of mutual transportation have to be demonstrated thoroughly at this point.

Initially, members of the coopetitive network understood that the price of transportation (expenditure) can be reduced by mutual transportation. So, when products start running out, an entrepreneur (the focal firm of the network) books orders and musters the list of needed goods. Just as many trucks are used for transporting goods that is enough for delivering the ordered volume of products hence savings can be realized collectively. For example, in the NTHBP usually 57 tracks deliver goods for 72 firms thus the cost of transportation and

amortization of 57 tracks have to be paid by 72 enterprises. By sharing and reducing transportation cost, firms can save financial resources to establish new workplaces or to increase income of their employees.

Arguable, the focal firm has core function in the coopetition in Hungary. The role of dominant firm (sometimes it is called broker by Pathak-Wu-Johnston 2014) can be identified adequately by scrutinizing architecture of the NTHBP. As Figure 1 shows, the NTHBP has scale-free property referring to that only one agent (namely the focal firm) in the network has a large number of coopetitive connections, conversely, numerous nodes have only a few coopetitive links.



Figure 1. The topology of the NTHBP
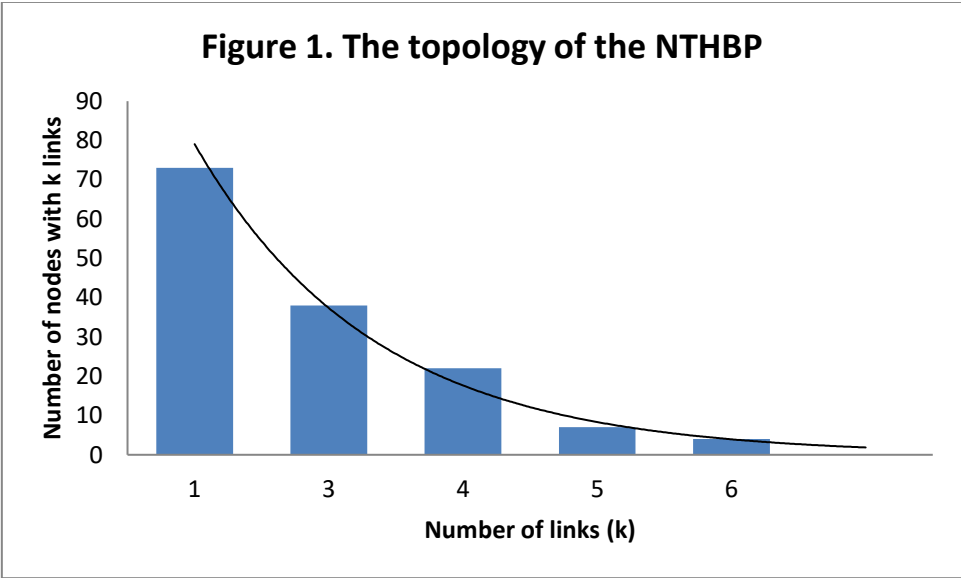
Simply put, the dominant firm, owner of new marketplace, is known and trusted fully by everybody in the NTHBP but the entrepreneurs do not trust in each other. As already indicated, it is because on one hand these entrepreneurs have been socialized in distrustful milieu of communism, on the other the rivals' relationships are not friendly. Therefore, the focal firm mediates among firms in the network and can build bridge among competitors; this hub is the Achilles Heel in the coopetitive network. It can be lighted by a part of an interview.

*'I hate C. J. (name of an entrepreneur was mentioned) because she deceived me a lot earlier. We hate each other. But I know A. P. (name of focal firm of the NTHBP was mentioned) who also knows C. J. I know that mutual transportation always brings me huge profit but I cannot negotiate with her so A. P. manages transportation between us. A. P. is a really good man, I trust him. He asks me and C. J. what we need next weekend and these are transported for us.*

*But I never negotiate with C. J. but the mutual transportation works because A. P. helps and mediates between us! ' (121st interview)*

Basically, the focal firm guarantees integration and robustness of the coopetitive network (Pachura 2010). Formally, the central firm organizes mutual transports so that price reduction and profit maximization can be reached by all entrepreneurs in the NTHBP.

The NTHBP is defined territorially because it consists of 72 enterprises (57 from Tihany and 15 from Budapest) but only some firms of Budapest have coopetitive nexus with enterprises of Tihany. More specifically, the NTHBP might be divided into two sub-graphs territorially. The first subgraph can be found in Budapest, another one is revealed in Tihany and the two sub-networks are integrated by the focal firm (red point in Figure 2) therefore the NTHBP become a connected network.

Figure 2. Spatial extension of the NTHBP
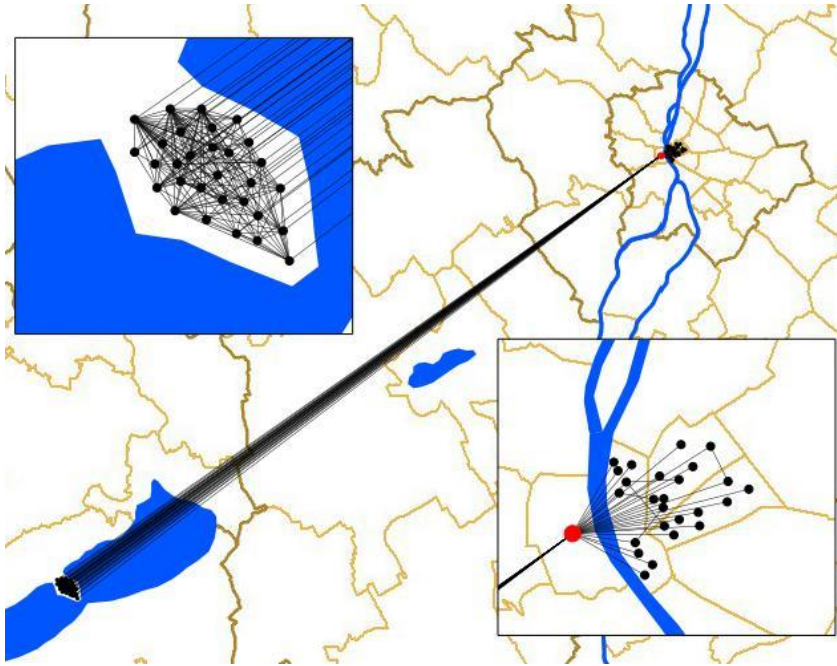
Besides, the Table 2 indicates adequately the architecture of three coopetitive networks.

Table 2. Some structural values of three coopetitive networks

|  | N | L | $\langle k \rangle$ | $C_{DF}$ | $C_B$ | $C_C$ | $\widehat{K}$(d)-index | D | $AP_t$ | $CL_t$ | $SW_t$ | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NTHBP** | 72 | 1742 | 48,38 | 0,73 | 1,93 | 0,82 | 0,19 | 0,69 | 1,36 | 2 | 0,4264 | $1,6314T^{-2,135}$ |
| **NNYH** | 14 | 91 | 13 | 1 | 4 | 1 | 0,41 | 1 | 1 | 1 | 1 | - |
| **NBP** | 41 | 431 | 21,02 | 0,64 | 1,11 | 0,71 | 0,23 | 0,53 | 1,44 | 2 | 0,2361 | $1,4871T^{-2,018}$ |

To date, the NTHBP possesses domestic and international reputation showing a large number of the elites, VIPs and celebrities have already visited to purchase and meet friends at local market. The solvent demand and urban milieu can be improved intensively and the NTHBP promotes to the value creation, values capture and value appropriation at regional level.

*The coopetitve network in Budapest*

Actors of the NBP sell wine establishing in 2008 and encompass 41 same firms. The unintentional coopetition of NBP was constituted for mutual transportation so the NBP similars to the NTHBP. A central firm of the NBP manages mutual transport thus wine has not been needed to transport separately so the rivals of the NBP could save price of fuel to invest in creating new workplaces (Thornton-Henneberg-Naudé 2015). Basically, partners of

the NBP compete fiercely on quality, price and value but collaborate in the sphere of mutual transportation simultaneously so it has to be called a dynamic coopetitive network.

By dissecting architecture of the NBP, scale-free network topology can be found again. Dominant firm in the NBP is the Achilles Heel so robustness of the NBP is so high (see Figure 3).



Figure 3. Topology of the NBP
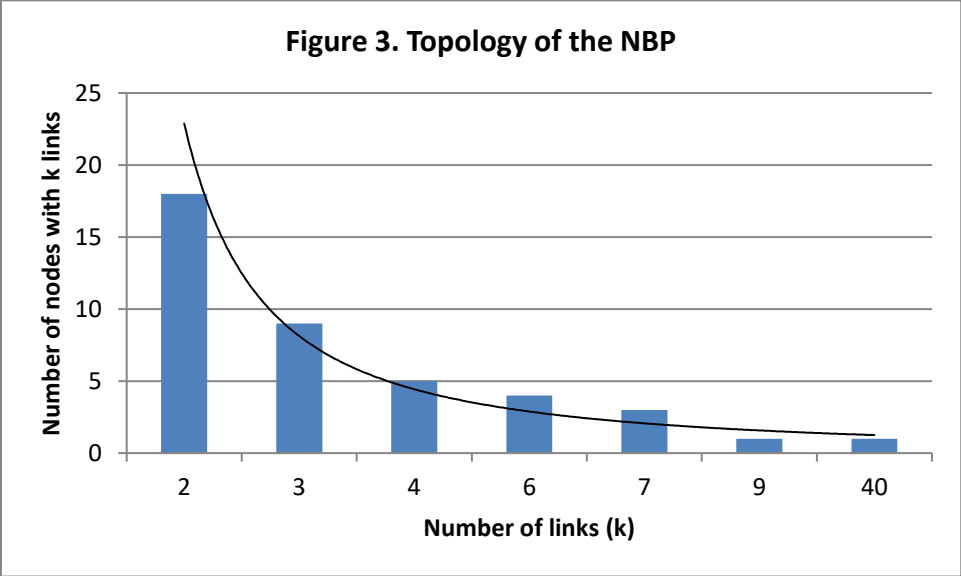
The NBP is determined territorially meaning that actors of the network locate in the 5th, 6th and 9th (the most developed) districts. Besides, the focal firm (red point in Figure 4) is situated in the 2nd district, the richest place of Budapest. In this respect, the Hungarian élite has prominent function in the regional economic development nowadays. Irrespective of salient tension, the NBP can functionalize because the central firm brings so strong cohesion power and high robustness in the entrepreneurial graph.

Figure 4. Spatial extension of the NBP
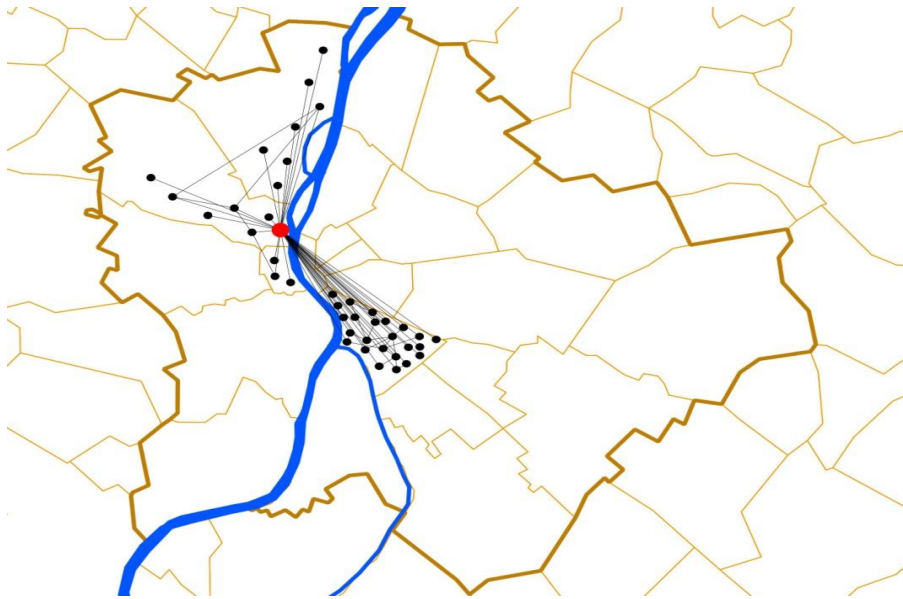


Finally, the Marshall-Arrow-Romer specialization externalities (so-called the localization economies of scale) has been revealed on territory of the NBP because of coopetition.


*The coopetitve network in Nyíregyháza*

The entrepreneurs of NNYH sell perfumes, establishing with 14 members in 1993, so far the number of entrepreneurs has not been changed and the NNYH has been operating without any formal contracts. The NNYH can be named as very special coopetitive network due to rivals of the NNYH are Christians following strongly the dogmas of Church thus it should be called a closed coopetitive network. This closeness has to be explained by the religion since Christian entrepreneurs of the NNYH do not cooperate with non-Christians. The results of structured content analysis and qualitative input-output analysis of interviews suggest clearly that non-religious entrepreneurs attempted to engage in coopetition but the Christian entrepreneurs did not trust them. Nowadays, two coopetitive activities can be distinguished in the NNYH such as mutual transportation and allocation of market information.

For the first time, the NNYH had scale-free property indicating a focal firm had been organizing mutual transportation and allocating market information among competitors. Notwithstanding, after a short time all rivals started cooperating with each other intensively in some fields of business life hence they did not need more dominant firm. The central firm disappeared because all entrepreneurs of the NNYH trusted in each other and could make coopetitive interactions. Trust-building of the NNYH has been motivated by mutual faith therefore the role of central firm was marginalized gradually and the NNYH became a

complete graph. In the complete network every actor is connected to every other actor; every entrepreneur has coopetitive interaction with every entrepreneur in the NNYH. In general, the NNYH might have become complete graph so quickly because its entrepreneurs have been Christians preferring reciprocal trust and respect as well.

Indeed, the NNYH has been effective but a static and closed network with only 14 nodes it has not scale-free scheme. The complete graph (see Figure 5) determines functionalizes of network (Knieps 2015), on one hand the robustness of NNYH is relatively low, and on the other hand it works democratically as horizontal bonds emerged among them.

Figure 5. Adjacency matrix of the NNYH

$$NNYH = \begin{bmatrix} 0 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 1 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 & 1 & 0 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 & 1 & 1 & 0 & 1 & 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 0 & 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 0 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 0 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 0 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 0 \end{bmatrix}$$

Simply put, vertical competition and horizontal cooperation can be revealed and merged among rivals of the NNYH and these have brought financial success to them. The cooperation of rivals significantly contributes to appear the localization economies of scale (Marshall-Arrow-Romer specialization externalities) on territories of the NNYH.

*The networks' effects and regional economic development*

Now paper focuses on quantifying longitudinally how the coopetitive networks define trajectory of regional economic growth. To date, there is no standard spatial econometrics method how the effects of the coopetitive networks can be operationalized on regional economic development. In this vein, the paper now attempts to quantify network effects. In developed network model, the effect of the coopetitive networks on the regional economic development is defined by (1) pay raising and (2) new jobs creating (Boucher-Fortin 2016). Actually, the applied network model answers the question how and to what extent the

coopetition strategy defines the change of income and employment rate on a certain network territory.

Basically, the gauging is divided into two components such as quantitative and qualitative ones (Thomason-Simendinger-Kiernan 2013). On one hand the quantitative research focuses on employment and income data of the networks, on the other hand the qualitative dataset depicts how the regional milieu and atmosphere have been shifted in studies phase.

The sharp question is how the gross costs of pay rise (PR) and the gross costs of creation new workplace (NW) can be financed by saving (S) that comes from coopetitive activities. On one hand, the coopetitive activities of firms can be expressed by saving (S), and on the other hand $PR+NW=GCRD$ where GCRD is the gross cost of regional development. On condition that $S \geq GCRD$, then saving can finance absolutely the gross cost of regional development. Of course, if $S < GCRD$, then $S$ is not enough to cover $GCD$. Moreover, $GCRD = \frac{S}{NW+PR}$ where GCRD [0,1] shows what proportion the gross costs of pay rise and creation new workplace can be covered by saving. The global value of GCRD within a time period: $\sum_{i=1}^{n} GCRD$. The Figure 6 reports the longitudinal changing of GCRD, obviously, the NNYH is the most successful in savings.



Figure 6. What proportion can the gross costs of pay rise and creation new workplace be financed by savings? (%)
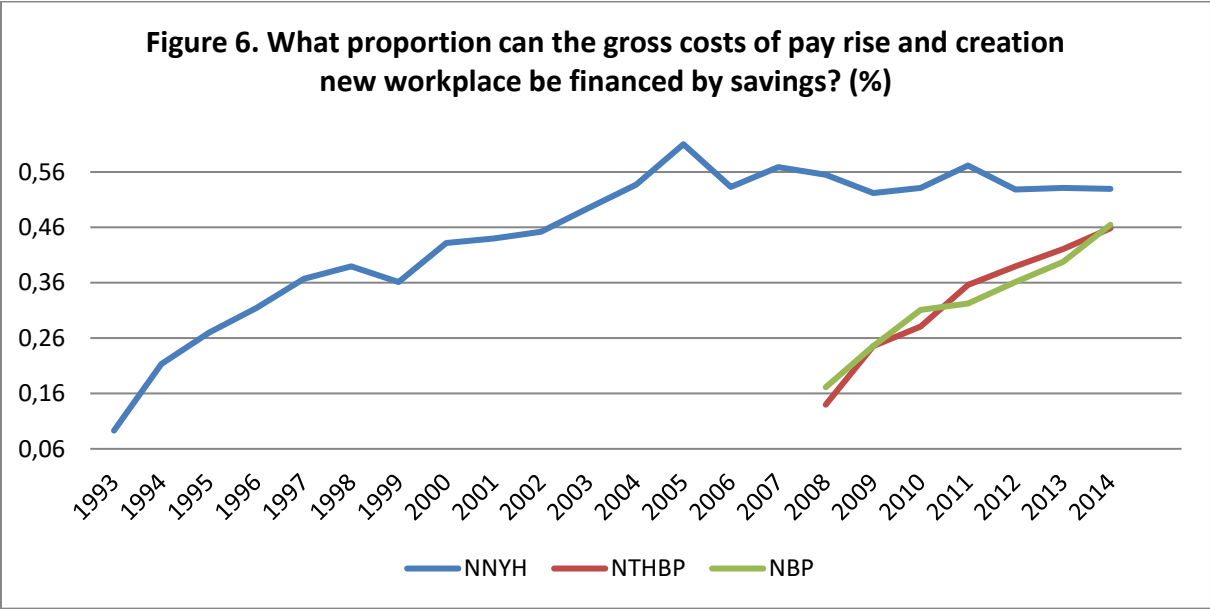
The Figure 6 demonstrates that in 2014 the 52.98% of pay rise and new job creation could be financed by the savings in the NNYH. Moreover, in same time the 45.83% of the regional economic development were covered by coopetitive accomplishment in the NTHBP. Lastly, the 46.47% of regional economic development could be financed by the coopetitive business

strategy in the NBP. It is clear that coopetition in the practice has provides economic possibilities so that firms could expand market or create new marketplace, raise income and improve employee rate.

The quantitative data collection provides insight into the employment rate of three coopetitive network separately. According to the data, 136 new workplaces were created by savings of NTHBP, 54 new jobs have been established by coopetition actions of NBP and 94 new workplaces were constituted by the savings of NNYH in 2014. In brief, the coopetitive actions of rivals significantly contribute to the job creation.

Interestingly, the influence of financial economic crisis of 2008-2009 was not strong on accomplishment of the coopetitive networks. The coopetitive capacities of NTHBP and NBP were picking up sharply while the coopetitive performance of NNYH was falling slightly under the period of economic crisis. Put another way, the coopetitive network effects were stable on the regional economic development irrespective of the global financial crisis.

In parallel, the qualitative results show that the regional milieu and atmosphere were reshaped in Tihany. The local attitude has been changed and urban habit was emerging representing that local residents have started following modern life style meanwhile retaining their traditions and past simultaneously. In a nutshell, qualitative research findings demonstrate that the new local marketplace has been able to modify the conservative image in Tihany by forming a special mixed form of the modern and historical conventions with local folklore. As a whole, the coopetitive networks have a qualitative spillover-effect namely these contribute to the strengthening of the local social integration.

**Conclusion**

Entrepreneurs of the Hungarian coopetitive networks have already increasingly started understanding and exploiting both collaborative and competitive advantages thus contributing to the regional economic development directly. It means that relatively developed business culture has been appeared and evolved among the Hungarian small enterprises and competitors. In the practice, entrepreneurs of coopetitive network share risks, cost and market information in order to maximize their profit. On one hand, the localization economies of scale emerged on territories of the NBP and NNYH, and on the other hand the urbanization economies of scale revealed on territory of the NTHBP.

Obviously, savings could be accumulated in every coopetitive network by coopetitive activities so as to be able to finance both creation of new workplaces and pay rising. In particular, the coopetitive networks of same local entrepreneurs have established peculiar

economic ecosystem and pleasant atmosphere through exploiting both local endogenous and exogenous assets as well.

Finally, the accomplishment of coopetitive networks might provide a new message to the Hungarian regional policy and territorial planning. The local competitors can increasingly organize and contribute to the regional economic growth therefore activities of coopetitive network ought to be taken into account within a framework of the formal Hungarian regional economic development policy in the future. Formally, the economic sector and political stakeholders should collaborate more intensively with each other to strengthen the regional economic growth.

## Literature

Barabási, A. L. (2016): *Network science*. Cambridge University, Cambridge.

Berend T. I. (1996): *Central and Eastern Europe 1944-1993, Detour from the periphery to the periphery (1944-1993)*. Cambridge University Press, Cambridge.

Boucher, V., Fortin, B. (2016): Some challenges in the empirics in the effects of networks. In.: Bramoullé, Y., Galeotti, A., Rogers, B. W. (eds.): *The Oxford handbook of the economics of networks*. Oxford University, Oxford, pp. 277-303.

Bradenburger, A. M., Nalebuff, B. J. (1996): *Co-opetition*. Doubleday Currency, New York.

Chetty, S. K., Partanen, J., Rasmussen, E. S., Servais, P. (2014): Contextualising case studies in entrepreneurship: A tandem approach to conducting a longitudinal cross-country case study. "*International Small Business Journal*", 32(7): pp. 818-829. **https://doi.org/10.1177/0266242612471962**

Cohen, S. S., Fields, G. (1999): Social capital and capital gains. "*California Management Review*", 41(2) pp. 108-130.

Czernek, K., Czakon, W. (2016): Trust-building process in tourist coopetition: The case of a Polish region. "*Tourism Management*", 52: pp. 380-394.

Hakansson, H. (2015): *Corporate technological behavior, co-operation and networks*. Routledge Revivals, London.

Horváth, Gy. (2015): *Spaces and places in Central and Eastern Europe: Historical trends and perspectives*. Routledge, London.

Jackson, M. O. (2016): The past and future of network analysis in economics. In.: Bramoullé, Y., Galeotti, A., Rogers, B. W. (eds.): *The Oxford handbook of the economics of networks*. Oxford: Oxford University. pp. 71-83.

Jóna, Gy. (2015): Determinants of the Hungarian sub-regions' territorial capital. *European Spatial Research and Policy*, 1: pp. 101-119.

Knieps, G. (2015): *Network economics*. Springer, Heidelberg.

Kornai, J. (2008): *From socialism to capitalism*. Central European University Press, Budapest.

Panne, G. (2004): Agglomeration externalities: Marshall versus Jacobs. "*Journal of Evolutionary Economics*", 14(8) pp. 593-604.

Paula, Á. (2015): *Econometrics of network models*. London: CWP52/15 Working Paper.

Qu, X., Lee, L. F. (2015): Estimating a Spatial Autoregressive Model with an Endogenous Spatial Weight Matrix. "*Journal of Econometrics*", 184(2): pp. 209-232.

Scott, J. (2000): *Social network analyzes*. London: SAGE.

Thilenius, P., Havila, V., Dahlin, P., Öberg, C. (2016): Business netquakes: analyzing relatedness of events in dynamic business networks. In.: Thilenius, P., Pahlberg, C., Havila, V. (eds.): *Extending the business network approach*. McMillian, London, pp. 315-331.

Thomason, S. J., Simendinger, E., Kiernan, D. (2013): Several determinants of successful coopetition in small business. "*Journal of Small Business and Entrepreneurship*", (26)1: pp. 15-28.

Thornton, S. C., Henneberg, S. C., Naudé, P. (2015): An empirical investigation of network-oriented behaviors in business-to-business market. "*Industrial Marketing Management*", 49: pp. 167-180.

Watts, D. J. (2016): Small-world networks. In.: Bramoullé, Y., Galeotti, A., Rogers, B. W. (eds.): *The Oxford handbook of the economics of networks*. Oxford University, Oxford, pp. 358-376.

Yin, R. K. (2011): *Qualitative research from start to finish*. The Guilford Press, New York.