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INTER-ENTERPRISE OWNERSHIP LINKS IN HUNGARY

I. J. TÓTH

In this study the author examines the appearance and characteristics of cross-ownership links in Hungary on the basis of the company tax returns and the data of surveys which included various company groups. The results obtained make it possible to make some empirically established statements concerning the inter-enterprise ownership links and the characteristics of the given enterprises and to compare these with the results of other examinations. On the basis of the results the author criticizes the concept of recombinant property with regard to the transforming Hungarian economy and questions the relevancy of the theory of post-communist managerialism regarding diffuse and impersonal property.

Introduction[1]

In the process of the transformation of the Hungarian economy we can observe not only the radical transformation of the inner structure and market orientation of the enterprises, but also the appearance of new enterprises and the restructuring of business and ownership links between enterprises already in operation. Statistical data on the distribution of Hungarian companies as to size confirm that the structure of Hungarian industrial companies has also transformed since the change of the political system and the so-called "reversed pyramid" has disappeared. This process is accompanied by the formation of links between firms established from the former state-owned companies and newly formed companies among which the ownership (a) and supplier-buyer (b) links of the companies occupy a special place. In the following study we shall examine the first type of these links.

First we will discuss the interpretation of the inter-enterprise ownership links and the background of their appearance, then we will introduce the databases and indicators used and

[1]This article is a short and revised version of a longer study. For the original study see Lengyel (1998). The study is closely related to the research which was carried out by the author in the Central European University Privatization Project between 1995-1997. The writing was supported by the OTKA (T013497) and the Department of Sociology of the Budapest University of Economics (FKFP 0040/1997). I would like to thank *Attila Bartha, György Lengyel, József Péter Martin, Zoltán Szántó* and *Éva Voszka* for their valuable remarks regarding the previous version of this study. I had learned a lot at the Central European University from conversations with my former colleagues, *Gabrialla Pál* and *Joel Turkewitz*. I am grateful to the late *László Csontos*, whose encouragement contributed to completion of this study.

define the limits of the analysis. In the third part of the study we will estimate the odds for each group of companies and entrepreneurs invest in other companies.

Interpretations of inter-enterprise ownership links

It was David Stark who called the attention to the role that inter-enterprise ownership links, or one of their forms, the so-called *recombinant property*[2] plays in the transformation of the Hungarian economy (Stark, 1996). From his and others' results (Móra, 1991 and Voszka, 1997) we know that the corporization or privatization of large state-owned companies often meant that from the large state-owned companies, which were the results of the big wave of centralization in the 60's and 70's, company networks were formed which were connected by ownership links. Very often the transformation and privatization happened through the disintegration of the given firm into companies, and the ownership structure of the newly formed company was determined by the combination of state-owned and private properties. But the formation of ownership links is not a phenomenon which stays within the boundaries of former state-owned companies. Several signs indicate that company ownership links have become general not only among former state-owned companies but also among newly formed, privately owned companies[3].

Three chains of ideas can be drafted during the interpretation of investments in other companies, a phenomenon which could be observed during the transformation of the Hungarian economy.

According to the first, company investments and company networks resulting from these are phenomena which accompany economic transformation and, as such, do not last for long. The multiplication of inter-enterprise ownership links can be observed at the micro-level and can be considered as a specialty of privatization during the transformation. It means nothing else but "blowing up", that is cutting up former state-owned companies[4]. During this

[2]In the followings the concepts 'inter-enterprise cross-ownership' and 'inter-enterprise ownership links' will be treated as synonyms but 'recombinant property' will be interpreted differently. This latter refers to a special relationship and means that state properties and private properties are linked together through companies or company groups.

[3]Among others, this is confirmed by the fact that the owners of large enterprises who have been building up their existence as enterpreneurs since the change of the political system often establish holdings. Several examples have been collected for this by *Gábor Juhász* (Juhász, 1996).

[4] Voszka (1997) describes this in detail in relation to the transformation of the so-called "selected companies".

companies established using the equipment of the former state-owned company became partly private properties, often indirectly or directly owned by the management of the formerly state-owned company, and by this strengthened the decisional position of the managers[5]. In accordance with this, company investments can be unambiguously related to state-owned companies and in firms, where state ownership plays some role, they are more likely to appear than in any other company.

However, there might be another version, independent of privatization, for the explanation related to economic transformation. According to this, after the very concentrated restructuring and amalgamation campaigns of the sixties and seventies (Schweitzer, 1982 and Voszka, 1984) a way to return to the more effective company size is the radical change of the company structure which can be characterized as a "reversed pyramid"[6], the disintegration of the formerly established company conglomerates[7]. And, as a result of the decentralization activities of the management of state-owned companies which were supported by the contemporary economic policies, this process already started in the second half of the 80's, before privatization had even been mentioned (Tóth, 1991)[8]. According to this approach, the activities of large (state-owned) companies were divided up and some of them were restructured in new companies. This meant the establishment of vertical networks which depend on a central company, as structural innovation, and can be considered as the first step of adjustment to the market requirements (Laki, 1994).

The explanation is entirely different if the question of cross-ownership is considered as a phenomenon existing for a long time, which may characterize the Hungarian economy at the level of the enterprises and their long-term relationships. This phenomenon is a specialty of the Hungarian transformation and, besides the free market and the state control, it can be considered as the appearance of a new, a third coordinating mechanism (Bruszt - Stark, 1996).

These where companies where the problems, due to their business role or political importance, were dealt with in a special way by the communist leaders after 1968.

[5]Naturally, a manager's position in a company can be firm even without a share in the ownership if the weak owners (e.g. state-owned companies or governmental institutions) dominate the company. But the fact that we cannot show the decisive role of the management's direct ownership in the company does not mean that the management cannot be real owners of the given company. If we only ask a manager "How big a share do you or your family have in the company you manage?", we underestimate the actual ownership role of managers.

[6]On the restructuring campaigns and the changes in the distribution of companies according to size see Voszka (1984) and Schweitzer (1982).

[7]Besides the cutting up of state-owned companies the fast rate of the foundation of private enterprises also supports the radical change of the previous company structures.

To assume the long-term existence of inter-enterprise ownership links it is not necessary to consider it as a specialty of Hungarian or East European transformation. If the sectors of the Hungarian economy are at all characterized by cross-ownership links and if these are characteristic links between the individual enterprises, then we are not stating anything else but that in this area the situation in Hungary is the same as in the Western European frameworks. With the establishment of holdings the structural division of the enterprises is becoming similar to the model which is more or less characteristic of Western European economies. In North America, for example, besides integrated companies the conglomerates and integrated companies made up of divisions are more characteristic, while in Western Europe and Japan various types of holdings are characteristic, that is, a system of subcontractors connected to the companies, or networks of small companies which depend on each other (Perrow, 1992). Ownership links between the various segments of Hungarian companies can also mean that in the Hungarian industry it is not the integrated types of companies which are dominant, like in the USA, and not the model based on the symbiosis of small and large companies, as in Japan, but holding-like companies or sets of companies carrying out diverse activities, like in Western Europe[9].

If the empirical basis for the special coordinating mechanism based on recombinant property and characteristic of post-socialist economies is only a result of the existence of inter-enterprise ownership links then it is obvious that we are on the wrong way. To realize this it is enough if we look at the complicated network of company investments and cross-ownership links in Western European countries. On the other hand, we are reminded of this phenomenon's

[8]An example for this is MEDICOR, a firm manufacturing medical instruments, establishing a company structure in 1985-86 based on profit-centers and independent divisions.

[9]We must add that the Japanese industrial structure is significantly different from that of Western Europe. On the one hand, in Japan holdings are more extensive and more frequent than in Western Europe and companies belonging to the same network are not inferior or superior, rather they are mutually dependent of each other (Whiltey, 1992: 25-42). We can differentiate between two types of Japanese company groups, the vertically structured *keirecu* and the horizontal *kigyo shudan*. The wide use of these types is well characterized by the fact that in 1980 65 of the 100 largest Japanese companies belonged to the 16 largest holdings and these controlled 26% of the capital of all companies (not financial), supplied 33% of industrial production and 50% of those working in industry were employed in these companies (Hamilton et. al, 1990). Because of the smaller companies which do not legally belong among the largest companies but, because of their market links, depend on them, statistics do not reflect that, regarding both output and employment, Japanese industry is less concentrated than the industries of the USA of the Western European countries (Scherer - Ross, 1990). Fukuyama calls the attention to the fact that this is closely related to the vertical kirecu links of the large companies: "...it is more important that Toyota commissions subcontractors to do most of the assembling tasks, while GM is a vertically integrated company which is the owner of many of the component manufacturers. Toyota is the leading company in a so-called vertical keirecu and only carries out the designing and the final assembly. On the other hand, it is related to hundreds of subcontractors and component manufacturers within a

existence in developed countries by the fact that, since the beginning of the 80's, research on cross-ownership links between companies has been in the center of research related to economics, management and orgalizational studies, as it is shown by Grandori's survey study (Grandori et al., 1995). Among Western European countries, in France for example, where there is a relatively large public sector, ownership links are very frequent between the largest state-owned and the private companies (naturally, their intensity varies). These relationships played an important role in the privatization decisions of the eighties (Hamdouch, 1989). Furthermore, the large French (state-owned and private) companies formally still belong to such a complicated network of company cross-ownership (Morin, 1996) as what can be described in the case of Hungary on the basis of the data of the 200 largest companies and the 30 largest banks (Bruszt - Stark, 1996 and Stark - Kemény, 1997).

Considering that we are talking about networks made up of inter-enterprise ownership links, it can't hurt to clarify the meaning of these links. It is Stark's achievement that he called the attention to the establishment of company networks and their role in privatization, and took steps to determine the various types of these networks. We must add, however, that the networks described by him (Stark, 1996) have two essential deficiencies and because of these it is impossible to determine what the relationships examined mean with regard to those business actors which are parts of the network. Thus, we can not attach any relevant economic or sociological interpretation of Stark's networks. The first problem is that ownership links are characterized as directed relationships, not as undirected[10]. (If company A owns B, then A's relationship with B is different than B's with A.) According to this transitivity, which occupies a central place in Stark's recombinant property concept, does not occur in every case when there is any kind of relationship between companies A, B and C. But as Stark usually describes ownership links by indirect graphs[11] and in the case of indirect graphs transitivity is a general rule, there is no reason why the networks of owners should not be considered as supporters or generators of the transfer of production factors or as the appearance of a new coordinating mechanism. On the other hand, still considering graph theory and network analysis, ownership links can be described by a special type of direct graphs, the so-called valued graphs. Since we are talking about relationships between companies, due to economic considerations we do not

network of informal but continuous co-operation" (Fukuyama, 1997).

[10]We talk about directional relations if it is decisive whether it is directed from 'A' to 'B' or from 'B' to 'A'. However, it is non-directional f it is not decisive and we only care whether they exist or not. It is an example for the first case if 'A' lends money to 'B', while for the second if 'X' is a relative of 'Z' or works with 'K'.

attribute as much influence to 0.1% of shares as to 25.1%, or to 75% which would indicate a relationship of very different quality[12].

Stark's recombinant property theory, therefore, overestimates the strength of the relevant relationships which have an effect on the lives and decisions of the business actors and, by this, the role of inter-enterprise networks in the Hungarian economy[13]. We can reach this conclusion not only by logic but, as we will see later, empirically, as well.

All these don't mean that approximation through network analysis is not important in understanding the operation and role of relationships between companies and getting to know the various types of company networks. On the contrary. It is a significant characteristic of the group of entities, in our case this is the set of Hungarian companies, how dense their graphs and sub-graphs are[14]. It makes a difference if there is a definite group within a company which is usually in central position within the given graph, or the percentage of the companies not related to any other companies. Why? To understand it better, let us imagine that only three companies make up a set and there are only non-directed relations between them (see Figure 1). Here we can distinguish between four basic cases of relationships between the companies (Wassermann - Faust, 1994: 100) which provide different meanings for the networks formed by these companies.

In the first case (i) none of the three companies are linked to the others, that is, according to the terminology of network analysis these are considered as isolated points or disconnected points[15]. In the second case (ii) two companies are linked and the third is an

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[11]See Stark, 1996, Bruszt - Stark, 1996 and Stark - Kemény, 1997.

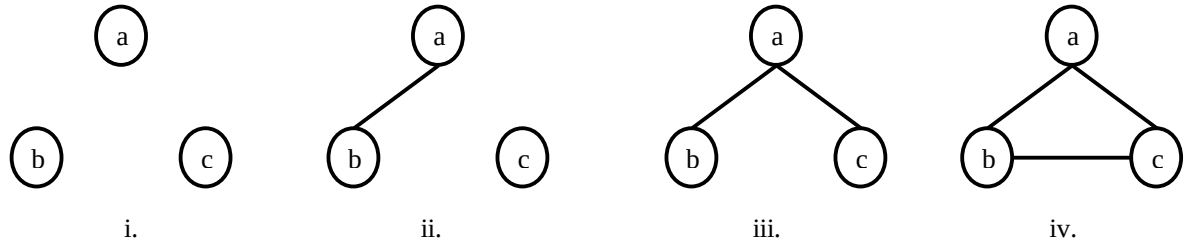
[12]If we take into consideration both absent factors in the case of ownership links, we can see that, considering only certain ownership shares, e.g. over 25%, networks previously considered to be closely connected may disintegrate into sub-graphs and sets of disconnected points. According to the research investigating the cross-ownership links between the companies of the ÁV Rt which existed in December 1993, using the respective network data (Ungár, 1996) in 40% of the companies with ownership links the proportion of shares was less than 10%.

[13]The same conclusion was reached by Szanyi who, taking a sample of 23 companies from the population examined by Stark (Top 200 companies), examined such types of relationships between companies as ownership and business links, as well as overlapping management (Szanyi, 1996).

[14]We do not wish to become absorbed in the discussion of indicators used in network analysis to measure the graph characteristics or their exact definition. Interested readers can find their definition and formulas in handbooks dealing with network analysis (Wasserman - Faust, 1994 and Scott, 1991). We should say as much, however, that one of the most important indicators of the quality of networks is density, which is measured by the ratio of actual and possible links. In the case of non-directional relations $D_{nd} = l/(g(g-1)/2)$, and in the case of directional relations $D_d = l/(g(g-1))$, where 'l' is the number of acrual links, and 'g' is the number of entities or points in the graph (in our case these are companies).

[15]Ownership links are interpreted as directional relations. In this case we can talk about isolated points in the

isolated point, while in the third case (iii) all three companies are related but from B to C we can only get through A, thus among the three companies A is in a central position. In the fourth case (iv) each company can be reached from each company, there are no isolated companies, and none of them are in central position. Naturally, if we have more companies and we examine the directed relations between them, as in our case, then the situation is more complicated[16] but it is very important that from among the possible relationships between the points (companies) how many are realized, what is the proportion of the isolated points within all points, what is the number of points in central positions, or how many points can be reached from each point directly or indirectly.



Source: Wasserman - Faust, 1994 p. 100.
Notes: The circles represent the actors, the lines show the relations existing between them. In the first case we can only see isolated points while the fourth is a full graph where each actor is related to all of the others. In accordance with this, in the first case the graph density is 0, and in the fourth it is 1.

Fig. 1 Four possible triadic states in a graph

All these are included in the characterization of the given network and the entities it contains (in our case these are Hungarian companies). From the aspect of economic and sociological interpretation it makes a difference whether the company networks are mainly networks without centers (in an extreme case each company is directly related to all other companies) or each of these networks are organized around some companies and to this are linked a multitude of companies among which there are no relevant relationships. The Japanese *keirecu* is the closest to the first type in which the companies are cross-owners of each other while the other is the *holding-type company network* which characteristically occurs in Western Europe and North America.

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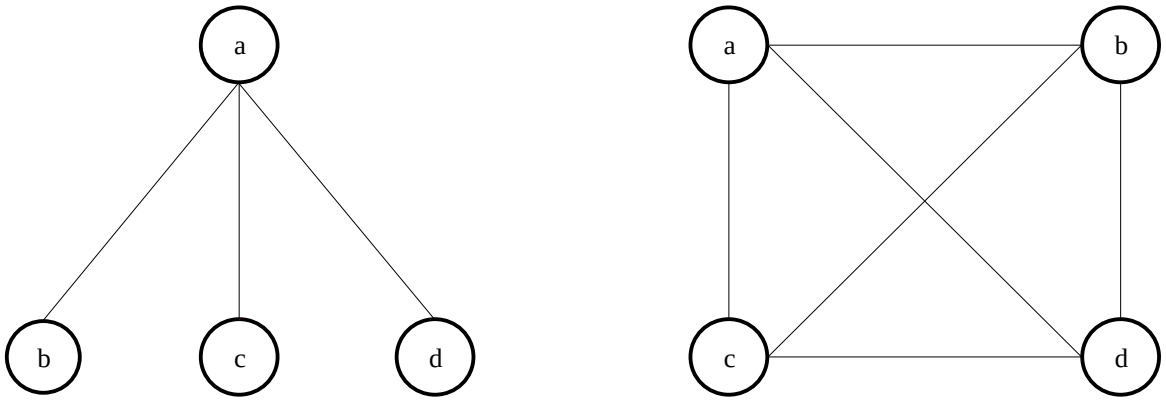
case of points 'i' for which both the outdegree and the indegree are equal to zero (Wasserman - Faust, 1994: 128)

[16]In the case of three actors and digraphs (directed graphs) the relationship between the actors can only be classified according to the 16 basic types (Wasserman - Faust, 1994: 244).



Wheel (or star) shape Complete graph

Notes: One of the actors in the wheel, or star shaped graph ('a' in our case) is in a central position as all other actors of the graph can only reach each other through him. If we take this actor out of the graph, then it disintegrates into a multitude of disconnected points. In the case of a complete graph there is no such central actor: if any one of the actors falls out, the relations between the other actors stay intact. The wheel-type graphs can also be called simple graphs or trees in which the number of relationships is one less that the number of actors. According to the definition, in the full graph all possible relationships are realized, thus, it's density is 1.

Fig. 2 Wheel (or star) shape and complete graph in the case of non-directed relations

In the case of four actors, for the sake of simplicity we represented these types by non-directional relations, we can talk about wheel (or star) pattern, or full graphs (see Figure 2). In these two case the positions occupied by the companies in the network are quite different, as are their chances to take advantage of their position within the network. If company A of the wheel formation is the owner of companies B, C and D, then it can establish a relationship between them with regard to the production or transfer of income and it is always A who determines the measure and direction of the process. In the case of a full graph (in case of cross-ownership links) the companies included in the graph are equal and the members, as a team, determine the market behavior and business relations of the company group. The reasons for the establishment of company ownership networks can be the same at company level, but the above described network types can result in the different positions of the companies they include. In economies based dominantly on one or the other type, the subjects of business transactions will be different and the role of market can be different, too. In economies based on holding-type company networks the subjects of business transactions are usually the member companies of the holdings and they have a distinguished role in the determination of the prices while, if most of the companies belong to some business groups, then the market,

which expects autonomous actors, is narrowed down to transactions between company groups.

Until now we have been talking about ownership networks mainly as a phenomenon effecting the whole economy. However, we cannot evade the analysis of inter-enterprise ownership links in relation to the conditions and aims of business actors responsible for their formation. First of all, we need to give an answer as to what are the rational considerations on the basis of which the business actors decide to invest in other enterprises[17] The aim of this study, however, is not this but a more exact and comprehensive description of the situation and we will only mention the possible causes if they are related to the results of our examinations.

Thus, the research has a dual aim. On the one hand, we think that it is necessary to analyze the databases representing the various groups of enterprises in order to check the results of research related to recombinant property which were mainly based on field work, case studies, as well as the survey of the ownership links of large companies. Thus, we will examine the frequency of ownership links between the companies of the various groups of enterprises. The most simple way to do this is to include all companies in the investigation and to select a representative sample from each group of enterprises[18].

On the other hand, beyond this critical approach, we aim to examine the character of the ownership links. We would like to find out what type of companies and entrepreneurs characteristically invest in other enterprises and what are the tendencies regarding investment in other enterprises. We will also mention a few assumptions as to what the decisions of the business actors are based on regarding investment in other companies, that is, establishing

[17]We must agree with the representatives of methodical individualism in that when investigating the reasons for a phenomenon occurring in the society the viewpoint of the doer (actor) and the examination of the alternative decisions must be of central importance (Boudon, 1979 and Coleman, 1990). According to this, to understand the general use and economic role of investing in other companies and building a network structure we must try to find out the rational motives of the business actors bringing about these conditions.

[18]The analysis of inter-enterprise ownership links is interesting not only because it helps us to define the inner structure of the Hungarian industrial sector but also because it may help shed light upon the limits of empirical research based on individual company data. That is, if inter-enterprise ownership links are as widespread as it is stated by the theory of recombinant property, then the observation unit of a realistic economic and sociological analysis should not be a company, but the company group to which the given company belongs. The importance of this aspect is confirmed by the new economic-sociology (Granovetter, 1994). From this aspect, the researcher is in a more comfortable situation than an actor of the business life. The former will have no financial disadvantages due to the inaccurate description of the subject of the observation while the latter can loose large amounts if he is not cautious and makes decisions concerning planned business risks on the basis of the financial and business conditions of the potential business partner, without taking into consideration that the future business partner is a part of a company group connected by ownership links.

ownership links between the two companies.

The limits of analysis

During the examination of ownership links we will review the frequency of investments in other companies and its relationship to other characteristics of the given enterprise[19]. The deed of investment will be measured by nominal variables and we will use the tax returns of Hungarian companies and surveys related to the companies as sources of data.

The questionnaires included the following questions: "Do you have shares in other companies or banks?", "If yes, in how many firms and what is the proportion of your shares in these?" and "Are there Hungarian companies among your owners?", "If yes, what is their proportion?".

In the tax return database (CTAXRET), which is based on the tax return data, we use the 'interests' indicating the investments of the observed company in other companies and the distribution of the observed company's capital among the owners and we can follow through the appearance of domestic companies as owners among the owners of the company examined. According to the study, which is a comprehensive analysis of the consistency and reliability of Hungarian tax returns database (Rózsahegyi, 1996), 'interests' are among the reliable economic data and the data related to the ownership structures of companies can also be considered reliable. Hungarian companies, apart from a few exceptions, consider investments in the capitals of other registered firms as 'interests' [20].

After all this we think it is necessary to call the readers' attention to the two limits of the analysis.

The first stems from the character of the databases used. In the study we will not use databases from which we could draw the actual system of relations of each company (network data) but databases including the characteristics of the surveyed enterprises and companies

[19]A short description of the databases used in this study can be found in the Appendix.
[20]Exceptions exist because during the establishment of the dual-level banking system state-owned companies were obliged to subscribe for shares of the newly established banks. These investments usually represented small ownership ratios and state-owned companies still existing during the examined period could have kept

which do not supply information on companies they are connected with[21]. Thus, we examined the deed of investing in enterprises and the ownership structure of the observed company. We cannot analyze the types of networks formed by the links connecting the companies. We can analyze, however, how many investments the observed company has in other enterprises and what their ratios are, as well as how the frequency of investments in other enterprises[22] has changed in the Hungarian economy. This frame of analysis enables us to examine one of the important characteristics of the network, the proportion of isolated points within the networks. From this we can determine the proportion of companies within the observed population which have ownership links with at least one company and the proportion of companies which belong to networks connecting at least three companies.

The other limit of the analysis is related to the aim of focusing on ownership links. Using the terminology of network analysis, inter-enterprise links can be interpreted as multiple relations and ownership links are just one of these, although probably not the most important. A close relationship can form between two companies even without ownership links when the former is based on formal personal (e.g. interlocks between members of the board of directors and supervisory board) or formal impersonal relationships; they can be based on technological links[23], can be determined by inter-enterprise links based on contracts or without contracts (ad-hoc alliances) or informal personal links. We can assume a close positive relationship between the above but it is also possible that the formal and informal links are complements of each other. The joint appearance of the various types of links as well as their absence, e.g. in the case of ownership and business links, can contribute significantly to the understanding of the character of Hungarian inter-enterprise networks. It is very important to clarify how and to what extent the business actors can depend on the advantages of actual and formally existing networks when making their decisions. But the examination of this exceeds the limits of this study.

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them recorded among their bonds.

[21]The reason for this is that, in order to map the networks, for each company included in the sample we would have to know which companies they are related to. Only in the knowledge of this would we know how many and what type of networks the companies of the sample belong to.

[22]By not being able to take into consideration the intensity of ownership links we are not making a mistake if we are aware of the interpretation limits of the results of this observation.

[23]The relationships between the personal links of large Hungarian companies and banks and the characteristics of the firms are analysed by Vedres (1998) using network data on interlocking management memberships. The Hungarian characteristics of strategic alliances, which is one of the types of business links, are reviewed by Szanyi (1997) based on case studies and empirical surveys.

Results

Characteristics and likelihood of the inter-enterprise ownership links

It can be said that ownership structures formed after the privatization of state-owned enterprises in Hungary are such that, with the exception of about 50 companies on the stock-market and the OTC, three-quarters of the firms are in the possession of three owners and in about 81% of the companies one owner has the majority (above 50%) of shares (see Table 1). As a result of this in most of the larger Hungarian companies the management would have limited power to enforce ideas or intentions different from that of the owners. We must add, however, that in almost half of the large manufacturing companies (48.1%) members of the management or the employees are directly present as owners. And where they are present their average ratio of ownership is over 50%. On the other hand, here we should take into consideration cases where the management are not directly owners but through their own companies or company groups[24].

These data call our attention to the fact that among the owners of large Hungarian manufacturing companies the roles of the managers were not insignificant in 1995 (behind the scattered employee ownership we can presume the strong position of the management). That is, by 1995 in Hungary we can talk about not only of business decisions centered in the hands of the management, but they are also assuming responsibilities as owners. These results, while confirming the importance of the economic role of managers, also question the relevance of statements of post-communist managerialism (Szelényi et al., 1996) concerning diffusive ownership and the absence of private property in the post-communist economies.

On the other hand, due to the fact that only a small number of owners have a relevant part in decisions determining the business lives of larger companies, ownership links between the companies can only have a real function if there are other Hungarian enterprises among

[24]The source of the data is the survey entitled "Corparate Governance in Central Europe and Russia" which was carried out in 1995 by the Privatization Project of the Central European University and the World Bank and included the data of 255 Hungarian enterprises, where the number employees was between 100-2000 heads in December 1994. Within the framework of the related OTKA research (T 013497) we investigated the ownership structure of the companies in question, as well as changes in their ownerships since their foundation or formation. The case studies supplied several examples where the management's share of ownership in the companies they managed were insignificant, while they had a decisive influence as owners through companies

these owners.

Let us examine what a Hungarian company is like as an owner of another Hungarian company, first among companies with legal entities, then among the representative sample of the large manufacturing companies.

The CTAXRET database includes data suitable for our purposes from the year 1992, when the new law of accountancy (Law No.XVIII of 1991) came into effect. According to this, between 1992 and 1995 every tenth Hungarian company had a share in another Hungarian company. This proportion increased somewhat in the first three years we examined (from 8.1% to 11.6%) which was followed by an almost one percent decrease.

Most of these investments cannot be explained by the fact that during the establishment of the dual-level banking system the more significant Hungarian companies were obliged to buy shares of the newly formed state-owned banks[25]. We are not satisfied by the explanation that the stimulating or active role of the ministries, the management of state-owned companies or the first institution to privatize state properties (the State Property Agency) is confirmed by decisions regarding investments in other enterprises. In companies which had no investments in 1992 in two-thirds of the cases there was no state ownership and in 63.9% of them state ownership was not in majority. This, on the one hand, could mean that by 1992 the dispersion of state property reached a state when all corporations formed at the end of the eighties as well as the central company have already ceased to exist or had been privatized and, on the other hand, it could indicate that important part of the inter-enterprise ownership links may have been established independent of the privatization of state properties. In the CTAXRET database the number of companies with investments increased to more than double (from 3084 to 6554) between 1992 and 1995 while, within the same group, the number of companies owned mainly by the state or the local government have decreased radically (from 30.3% to 5.2%).

No significant difference can be seen in the number of investments between the various sectors of the economy. But it is closely related to the size of the enterprises: the larger the

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they owned.

[25]These shares enabled the management of the given company to obtain information on the financial conditions of the given bank at the yearly general assembly. This explains why the legal successors of the companies in question did not hurry to get rid of these shares in the 90's.

company, the more likely that it has a share in another firm. With regard to this there are extreme differences between the 600-1200 largest and the rest of the companies (see Table 2 and Figure 3). We can also see that during the examined period the number of investments small, medium-size or large companies had in other enterprises changed in the opposite direction. While among the former this increased to almost double in three years, among the latter there is a decrease of almost 30%. This tendency calls the attention to the fact that the reasons and characteristics of investments in enterprises can be different among the 600-1200 largest companies from those of small and medium-size firms.

Among companies owned by various groups of owners (public, Hungarian private, foreign) we find significant differences if we examine the number of investments on the basis of the CTAXRET database: among companies with majority public ownership both in 1992 and in 1995 the number of companies which had shares in other firms was higher (34.7% and 35.9%), while those with foreign private ownership refrained from this (6.1% and 9.1%)[26]. If we represent the odds for investing in a company and the existence of state ownership according to the size of the company then we can see that with the increase of the company size the odds for the appearance of state ownership increases with the number of investments (see Figure 3).

Along data related to all companies with legal entities (CTAXRET) we must state the same for the largest manufacturing companies (EXPORT96). In the FIRM96 dataset which is considered to be the most up-to-date data source and is related to other types of companies (medium-size and large companies), however, there is no difference in the number of investments in other companies as to any of the ownership categories. The reason for this could be, on the one hand that, by 1996 privatization was almost over and as a result most of the formerly state-owned companies became private properties while the new owners have not yet sold ownership shares resulting from earlier decisions or, on the other hand, it may be that among Hungarian individual owners the need to establish ownership links has increased.

The effect of company size, as a decisive factor, can be shown by comparing the examined samples. The percentage of company investments is the highest in the EXPORT96 sample (40.1%) which included the answers of the larger companies while it is lower in the

[26]This fact corresponds to the observation that in developed market economies the actors will favor enterprises which are transparent and have controllable company structures. This can prompt the given company to get rid

FIRM96 (34.7%) which contains the medium-size enterprises. There are big differences between the sectors of manufacturing industry regarding investments in other companies (EXPORT96). In companies of the food industry this phenomenon is almost twice as frequent (57%) than in machinery production (30%)[27]. And, according to the type of majority ownership, we can see that in the case of companies owned by Hungarian individuals or foreigners the odds for investing in other companies is only half (28% and 36%) of what it is in the case of companies under state or mixed ownership (59% and 61%).

The EXPORT96 and FIRM96 data sets make it possible to examine how many companies are affected by the above discussed investments (see Table 6). The differences between the companies can be seen not only in the differences in the number of their investments in enterprises but also in the average number of companies they own: 37-42% of the companies examined only own one company. From this we can deduce, on the one hand, that the density of the network of the sets of Hungarian companies is low; companies with ownership links belong to a set of star or wheel shaped sub-graphs, and it is highly unlikely that they would form full or almost full sub-graphs[28].

Besides the number of companies owned, the proportion of shares the owners have in these also makes a difference. If the ownership share is under 25% then, knowing that four-fifth of the large Hungarian companies have majority owners, it is highly unlikely that this owner could have any influence on the life of the enterprise. Accordingly, through the numbers of Table 7 we can take a closer look at the ownership links between Hungarian companies. According to this, in the case of about 27-29% of the companies with shares their shares are under 25% in every company they own. It is likely that in these cases the owner company does not have much influence on the life of the company it partly owns. The percentage of parent companies with strong links, which have majority shares in all companies they own, is estimated to be 21-29% of the companies with investments.

Until now we only discussed the investments of the companies. But ownership links

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of firms which are in its possession but do not fit into its profile.

[27]As a result of the crisis of the structural system of Hungarian agricultural production and the collapse of the steady supply links, most companies in the food industry had to procure shares in agricultural companies in order to ensure continuous production (Mohácsi, 1996).

[28]As in a full graph each company is linked to all others. For this most of those with investments would need to have shares in six or more companies. But, as we can see from the table, only 14-16% of the companies observed can be classified as such.

can be observed if, instead of looking for enterprises owned by the observed firm, we try to find out if there is another Hungarian company or bank among the owners of the observed firm. The data of the CTAXRET indicate that this occurs in 15-16% of Hungarian enterprises and 27% of the large manufacturing companies. The proportion of banks' shares is small (see Table 8). After privatization Hungarian banks own only an insignificant number of Hungarian companies[29] and because of this they cannot influence their lives by control through ownership, but it is usually done through other channels (Fogarassy - Szántó, 1996 and Fogarassy, 1996).

Ownership links initiated by the observed companies supply important information on how ownership relations directed to and from the given company correspond to each other. Besides this, it is worth to examine the likelihood for the appearance of ownership links as to company size, industrial sector and output and, within this, the proportion of its exports, as well. The reason for this last aspect is that the higher proportion of exports assumes more stable supplier and buyer links and decreases the need for the company to counterbalance the resulting instabilities by establishing ownership links, as we saw in the case of companies in the food industry.

On the basis of the results (see Table 9) we can see that the two indicators of ownership links are closely related: those companies are more likely to have ownership shares in other companies, where there are other Hungarian companies among the owners. Almost 20% of the latter have shares in other enterprises, which is almost twice what we observed in the whole sample.

From among the various sectors, more Hungarian firms as owners are present in the manufacturing industry and, if we consider company size, mainly in those with more than 50 employees. But there is no significant difference between companies selling at home or abroad.

Bank ownership occurs more frequently in the manufacturing industry, among larger companies and among those, where the proportion of foreign sales within the turnover is not exclusive but significant. On the other hand, almost half of the companies owned by banks have shares in other companies. According to this, by examining the properties of banks we could find the company group where the cross-ownership links are frequent. The 200 companies with the largest turnover which were observed by Stark are a good example for this.

[29]The main reason for this is that valid laws regulating banks and their activities (Law No. LXIX of 1991) put a

The next step of mapping ownership links is to simultaneously examine investments in other companies and the presence of other Hungarian companies among the owners. If we look at this using the sample of Hungarian companies operating in 1995 (CTAXRET), then we can see that 76.7% of Hungarian companies do not have any shares in other companies and there are no other companies among their owners, that is, they can be considered as isolated points in a graph which is made of ownership links (see Table 10). Only 3.1% have ownership links in both directions, that is, they are parts of a network for which it can be stated that it has at least three members[30].

As it is more likely that larger companies are the parts of company networks it is not surprising that both in the sample of the largest exporters and among the medium size and large enterprises (FIRM96) the proportion of isolated companies is smaller (47-49%); and the ratio of companies with ownership links in both directions is almost 18% (see Table 11).

But we still need to be cautious to interpret of ownership links. We can assume that in more than 50% of the companies ownership links play some kind of a role but we have no proof as to their intensity. If, however, only the presence or absence of these links is the only information, then we obviously underestimate the measure of cross-ownership relevant from the viewpoint of the decisions of the economical actors. But, as we could see from the results published, we can still find a lot of companies where even these, very loosely defined company ownership links appear[31].

Let us narrow down the definition of ownership links by considering a relationship relevant only if the companies are majority owners of each other. In this case the number of companies which are related decreased by more than 30%, while the number of isolated companies increases to 64-67% both within the large manufacturing companies and within the medium-size and large companies. The proportion of companies in which Hungarian companies are among the majority owners but which also have majority ownership in

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very strict limit on the corporate ownership of banks.

[30]This 3.1% includes an insignificant number of cases where two companies are owners of 100% of the other.

[31]These conclusion can be read from the data published by *David Stark*. Among the owners of the 200 companies with the largest turnover and the 20 largest banks we find Hungarian corporations in 40% of the cases. This proportion decreased by more than 50%, to 19% of the cases, when we only considered those companies where the Hungarian company was the majority owner (Bruszt - Stark, 1996). According to this, in 60% of the examined sample company cross-ownership has no role, we can only talk about holding-type company formations. About 23% of the companies in the TOP 200 are owned by a company which belongs to a company group (Stark - Kemény, 1997), that is, 77% of the largest companies are not connected directly by

Hungarian companies is a little over 3% (see Table 12).

These results call the attention to the fact that some of the large companies belong to a minority whose ownership links are such that, through direct ownership they can influence the allocation of resources and incomes within the company group. According to this, effective company cross-ownership links between Hungarian companies are considered to be uncommon phenomena, rather than dominant, not only in the Hungarian economy but among medium-size and large firms, as well[32].

Estimations

In the followings we will examine the relationship between the characteristics and market orientation of the companies and the likelihood of ownership links, on the basis of the CTAXRET database. We aim to find out in which groups of Hungarian enterprises did investments in other enterprises play a role between 1992-1995. The results of case studies and surveys of small samples show that in the beginning of the 90's the existence of these investments was closely related to the disintegration of state-owned companies (Voszka, 1997). Our previous results confirm this. We expect, therefore, that majority state ownership has a positive effect on the existence of an investment even when comparing companies which belong to the same sector and are of the same size.

It follows from the nature of things that larger companies, due to their larger capitals, can have more extensive ownership links than the smaller ones. Empirical researches related to the inter-enterprise ownership links confirm the validity of this relationship (Stokman et al., 1985: 267). And, because of this, we have no reason to expect something else in the case of Hungary than what is indicated by the analysis of the inter-enterprise links of developed countries.

The establishment of company networks can be closely related to the risks caused by

ownership relations.

[32]About 8% of the small and medium-size firms (FIRM96) and 11% of the largest manufacturing companies (EXPORT96) own at least two Hungarian companies with a 25% share and, besides the former, in about 5% in both samples there are other Hungarian companies among the owners, as well.

the unstable business conditions and the unpredictable supplier links[33]. Behind this action we can see the intention of the companies to minimize risks resulting from the instability of the market[34]. If the management of a company do not invest in their own company but in another company, they buy or establish it, then, through this seemingly irrational step they want to improve their own market possibilities, serve the strategic interests of their own company. As a result of this, we expect that investing in other enterprises is less characteristic of companies which depend less on Hungarian companies as suppliers either because they work with foreign suppliers or due to the fact that because of the amount of their capital they have been able to work with dependable suppliers. Companies with foreign majority ownership and companies mostly producing for foreign markets can be categorized as such. They are less likely to have problems related to undependable supplier links than those under Hungarian ownership and producing only for domestic markets[35].

The decision to invest in another company could be the result of the shortage of capital necessary to start new activities, produce and circulate new products. If this cannot be realized from private resources (profits and/or depreciation) or loans and shares cannot be issued either, then the obvious solution is to find a business partner and establish a joint company[36]. In this aspect companies with foreign majority are in a special position as they can depend on the capital of the foreign owners, which is usually higher than that of Hungarian private companies, and their chances of obtaining foreign loans to finance their investments are a lot better than that of Hungarian private companies (Toth, 1997c) and, because of this, they should have significantly less investments than other companies[37].

The above assumptions were tested in two models (using data of 1992 and 1995). They

[33]This is assumed by Grabher - Stark, 1997 and Stark - Kemény, 1997.

[34]In other words, in order to minimize the increased transaction costs resulting from their instable business relations the business actors decide to establish a hierarchy, that is, inter-enterprise ownership links (Williamson, 1985).

[35]It can be proved that the proportion of foreign ownership within this company has a significantly negative relationship with the share of Hungarian suppliers in the purchases of the given company (Tóth, 1997b).

[36]At the beginning of the 90's, having a two-digit and unpredictable inflation and transformational recession, Hungarian companies could not even consider issuing bonds. Increasing the capital is not only a more expensive and longer procedure than establishing a new company, but sometimes it is not the best solution for the owners of the company as it does not leave the original ownership structure of the company intact.

[37] Foreign-owned companies are usually quite reserved regarding the establishment of ownership links with domestic companies. The empirical analysis of the inter-enterprise links and interlocks in the boards of directors indicates that the affiliated companies of foreign-owned corporations and multinational companies operating in a country are only loosely connected to the networks of the domestic companies of the given country (Stokman et al. 1985: 272).

can be generally described as follows:

Prob (IC=1) f(SECTOR, SIZE, EXPRO, OTYP) where

IC = interest in any domestic company (its value is 1, if there are any interests, otherwise it is 0)

SECTOR = sector

SIZE = number of employees

EXPRO = share of exports in the net turnover

OTYP = type of majority owner (public, domestic private, foreign or mixed)

The effects of these factors were summarized in a logistic regression model. In this, using the characteristics of the given company, we estimate the odds for the company to have investments in other companies. The model can be described as:

$$\text{Prob}\,(IC=1) = 1 / (1 + e^{-Z}),$$

where, in the case of an *n* number of factors (i =1 ...n)

$$Z = B_0 + B_1X_1 + B_iX_i + ... + B_nX_n$$

supplies the estimation of the log odds of the dependent variable (IC, in our case).

The results (Table 14) accurately show the previously described role of the size and ownership structure of the companies in the odds for investments. When considering company size we must note that it is not the largest companies (those with more than 250 employees) where the odds for having investments are the highest, but among those which are smaller than these but their number of employees are still high enough. With the increase of the number of employees the odds for ownership links also increase in every case.

The effect of the share of exports within the net turnover is not unambiguous: on the

basis of the 1992 data we can see, on the one hand, that if a company does not export or exports only a small amount, then the odds for investments are lower than if it sold abroad but, if the ratio of exports is above 10% and below 100% the effect is the opposite. Estimations for 1995 show the same results[38]. The results, therefore, do not confirm the assumption regarding the relationship between the market orientation of the companies and their decisions related to investment in another company.

The assumption regarding the type of majority ownership, however, can be confirmed on the basis of the results obtained. Public-owned companies both in 1992 and 1995 had positive parameters. That is, if a company was owned by the state or the local government during the years examined, then its odds for investments in another company were better than for the other companies. If out of two otherwise similar companies one had majority public ownership, then this fact increased the odds of ownership links by 29% in 1992 and by 41% in 1995 (this is indicated by the 1.29 and 1.42 parameters related to public ownership) as compared to those with other types of ownership. In accordance with the expectations, this was decreased by majority foreign ownership (by 55% in 1992 and 36% in 1994) thus, this phenomenon, which is also characteristic of Western European countries, can also be found in Hungary.

The parameter related to companies owned by domestic private companies call the attention to a possible new interpretation of investments and inter-enterprise networks. In the case of domestic private companies we can observe that if these were the majority owners then the odds for investments increased by 36% in 1995. Thus, we can confirm the assumptions that investments are positively related to not only and not exclusively to state ownership: companies with a majority of domestic private ownership were more likely to invest into other companies than the rest of the sample. Behind this we suspect the fact that among them the need to reduce risks related to suppliers is greater than usual or that they need this fund-raising method more than companies with foreign or mixed ownership.

In the case of companies owned by individuals this effect cannot be demonstrated: if a company is owned by individuals this negatively influences the odds for investments. However,

[38] During the evaluation of the results we must take into consideration that companies which were selected as references with only export sales were usually companies doing inward processing, that is, these are companies with stable supplier and buyer links. Those which are not exporting products of inward processing do not necessarily have such links.

we don't think that this is due to the difference between the behaviors of individuals and private companies. It is probably because individuals own companies directly as individuals, not through their companies. But these relationships can only be found in databases where the units of observation are the entrepreneurs themselves.

Conclusions

The results obtained have several consequences as to the characterization of the ownership structure of Hungarian companies after the privatization and the determination of the role of inter-enterprise ownership links appearing in the Hungarian economy.

The analysis of the ownership structure of the important Hungarian companies show that by 1995-1996 - the end of privatization - the Hungarian economy was characterized by the concentrated ownership structure of companies and the dominance of individual private property. Most of the companies are owned by a relatively small number of owners and in most of the cases there are owners with majority shares. On the other hand, by 1995 the role of state ownership in the ownership structure of companies in operation and worth mentioning decreased to the minimum and the number of companies with majority ownership of Hungarian individuals is estimated to be almost 70% (see Table 1 of the Supplements). According to this, in the case of Hungary we cannot say that in the transforming economy there are no individual private owners and the property relations of the transforming economy are characterized by diffuse ownership as it is stated, for example, in the theory of post-communist managerial capitalism (Szelenyi et al., 1996)[39]. On the contrary, as opposed to coupons and various distribution techniques, one of the greatest achievements of Hungarian privatization was that it helped the rightful owners to gain the ownership of enterprises[40]. This fact should be taken into consideration when discussing the micro-level adaptability (flexibility) and the improving efficiency indices of the Hungarian economy (Kornai, 1996).

The data published in the study also call the attention to the fact that the probability of ownership links between companies is very different in the various groups of Hungarian companies: this effects not only the partly state-owned companies, as it follows from

[39] The researchers who set up the theory in question wish to formulate relevant statements regarding the subject '*in statu nascendi*'. Due to the nature of this, however, it is not the same if they do it based on empirical data from 1993 or using data obtained two, three or five years later.
[40] In this sense, Kornai's suggestions preferring individual private property were finally accepted in the case of

statements related to recombinant property (Stark, 1996). Hungarian privately owned companies also have shares in other enterprises, but not as frequently as we saw in the case of companies still owned by the state. Furthermore, we can observe that if a company was owned by domestic private companies in 1995, this increased the odds that the given corporation invested in another corporation or in corporations.

It can be questioned, furthermore, whether we are facing a pervasive phenomenon which, in some way, has an influence on most companies effected by Hungarian transformation. As we could see, nine-tenth of the companies do not have any shares in other firms, there are no domestic firms among 85% of the owners, and for 77% both of these statements are valid. Thus, those belonging to this 77% can be interpreted as isolated or disconnected points within the inter-enterprise network of Hungarian companies.

If, for the examination of inter-enterprise ownership links, we first select a specific group of firms and we would choose these large firms, then the situation will be different. For example, in the group of manufacturing companies with more than 100 employees only 36% of the companies can be listed as isolated companies, and we can assume that 64% of them have ownership links. Thus, if we examine the ownership links between these companies we will have the impression that Hungarian enterprises are interwoven with cross-ownership links . This, however, is a simple optical illusion.

Cross-ownership of various strength between firms is characteristic of a specific group of companies, usually the large companies, but even among them it is not general (as we could see earlier, almost half of those companies are isolated points) and the odds for this decrease with decreasing company size.

Thirdly, from the yearly changing of the possible inter-enterprise links we can neither deduce that we are facing a phenomenon effective for a long time (due to the short time which has passed since the economic transformation) nor can we acknowledge the relevance of universal explanations regarding the general existence of company investments. Among the smaller and generally privately owned enterprises the increasing number of investments in other firms can be attributed to other factors (we might say, they result in other types of company networks) than their establishment and maintenance among the large companies. This justifies

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Hungary (Kornai, 1990).

the separate examination of the phenomenon of smaller firms investing in other enterprises.

It is another matter that the companies are connected by ownership links of different strengths and the general existence of ownership links of different intensity vary in each company group. We don't know what characteristic networks Hungarian companies usually form or the proportion which belongs to each network type.

In other words we can say that in this study we examined evidence regarding the formal existence of cross-ownership. But the fact that we can show formal relationships between companies does not provide any information as to their role in the decisions of the business actors. From this point of view we can insist that it is not worth while, or even necessary to examine the direction or intensity of ownership links as the information flow between the firms and the strength of weak ties emphasized by Granovetter (Granovetter, 1973) are the essence of these relationships. And the possibility of information flow is independent of the direction and intensity of formally existing ownership links, and what is more, the information surplus resulting from these weak ties can help companies most effectively to adapt to the market. This train of thought, however, implicitly states what it should be proving, that is: when making decisions concerning the companies the owners and/or management of companies connected by ownership links depend on information supplied by this network. However, regarding this we do not have any empirical data which could be refuted by statistical methods, thus, we can only make a trivial statement: "As company *A* has ownership links with company *B*, it is possible that there is a flow of important information between the management or owners of company *A* and the management and owners of company *B*, which are necessary for the business decisions of the two companies." But the question is related to the odds regarding the word "possible": do the economic actors make use of the possibilities resulting from the ownership networks? If the answer is yes and often, then these must be considered as important means of economic integration during the examination of the Hungarian transformation. With regard to this, is there a difference between the behavior of the companies of transforming economies and those of the developed countries? If the answer is yes, then we can talk about a special type of ownership links valid only in the case of transforming economies.

It can be seen, that here we are talking about not only recombinant property but about the existence and role of inter-enterprise ownership links, and a special type of these is the

result of recombinant property. The empirically and theoretically based investigation of both the micro-level (from the aspect of business actors) and the macro-level (in relation to the economic structure) roles that inter-enterprise links play in the Hungarian economic transformation are tasks to be carried out in the future.

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Table 1

Distribution of medium-sized and large manufacturing firms by number of owners and whether they had majority owner in 1995, %[*]

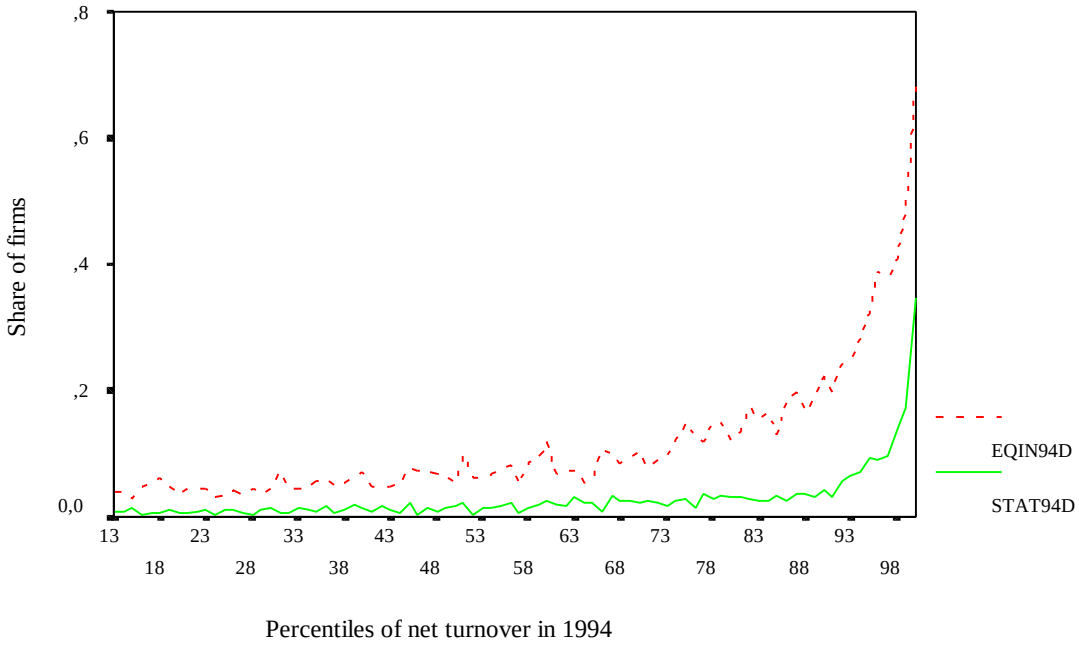
Number of owners	Percentiles of firms	Percentage of firms within all firms where there's a majority owner[1]
One	19,0	19,0
Two	31,0	29,0
Three	25,2	19,0
Not more than three	75,2	66,2
More than three	24,8	14,8
N	210	210

*: Among firms where the number of employees was between 100 and 200 in 1995

1: There's an owner whose share of ownership is more than 50% of the initial capital. Source: Ábrahám, 1996

Figure 3

Average percentage of ownership links and the appearance of public property in percentiles of firm according to the net turnover in the CTAXRET data set in 1995, %



Notes:EQIN94D: investments in other enterprises in 1994-ben. Its value is 1, if the company has such any investment like this, otherwise it is 0.
STAT94D: state ownership in 1994. Its value is 1 if the state has a share in the company, otherwise it is 0. The horizontal axis of the figure shows the percentages of firms as to their net turnover, the vertical axis the proportion of state ownership or investments in other enterprises among the companies included in the given percentage.

Table 2.

The share of firm with ownership links in two segments of Hungarian firms and in the entire sample, % *

Groups of firm according to extent of their net turnover	1992	1993	1994	1995
Lower 98%	6.5	9.8	10.7	9.8
Upper 2%	77.9	66.3	62.1	58.2
Total sample	8.1	10.8	11.6	10.8
N=	39,084	45,879	52.378	61,184

*:We exluded the firms where the net turnover or the amount of total assets equal zero.

Table 3

Distribution of firms according to the number of their own enterprise,%[*]

Number of enterprises	Distribution of medium-size and large enterprises (FIRM96) with given amount shares			Distribution of the largest manufacturing companies (EXPORT96) with given amount of shares		
	They have ownership shares	Their share is over 25%	Their share is over 50%	They have ownership shares	Their share is over 25%	Their share is over 50%
None	-	27,0	43,0	-	28,4	40,0
One	36,6	34,0	25,0	42,1	30,2	35,1
Two	21,8	13,0	13,0	16,6	15,6	12,4
Three	13,9	6,0	4,0	13,7	11,3	6,1
Four	4,0	6,0	5,0	6,2	5,7	0,9
Five	6,9	3,0	2,0	5,8	0,8	0,0
Six of more	13,9	11,0	8,0	15,7	8,0	5,5
Total	100,0	100,0	100,0	100,0	100,0	100,0
N	101	100	100	102	95	96
Average number of firms	3,38	2,1	1,6	3,62	2,1	1,2
Standard deviation	3,71	2,7	2,2	4,52	3,3	1,6

*: among firms which had investments in other companies and answered the questions regarding their ownership shares

Table 4

Distribution of firms according to the share of ownership in their own firms,%

The firm owned	FIRM96		EXPORT96	
	more than 25% share	more than 50% share	more than 25% share	More than 50% share
There is all firm ownerd with...	48,0	29,0	37,2	21,0
There is at least one firm with...	25,0	28,0	34,3	39,0
There is not a firm with...	27,0	43,0	28,4	40,0
Total	100,0	100,0	100,0	100,0
N	100	100	95	96

Table 5

Domestic firms and banks as owner, %

	CTAXRET			FIRM96	EXPORT96
	1993	1994	1995		
Domestic firm as an owner of the observed firm	16,0	16,5	15,4	20,1	27,3
Bank as an owner of the observed firm	n.a.	0,6	0,5	1,0	7,5
N	46.263	53.443	61.184	291	295

Table 6

Distribution of firms owned by banks or domestic firms according to sectors, size and share of export in the CTAXRET in 1995, %

	Domestic companies as owner	Bank as owner	Total number of enterprise surveyed
Does the firm own a domestic enterprise?			
Not	80,5	51,3	89,2
Yes	19,5	48,7	10,8
Sectors			
Manufacturing	30,6	38,4	23,8
Construction	9,0	4,4	11,0
Trade	37,6	26,1	43,1
Services	22,8	31,1	22,1
Size (number of employees)			
- 10	64,0	31,1	77,6
11 – 20	11,0	6,3	9,0
21 – 50	11,1	15,7	7,2
51 – 100	5,0	7,9	2,9
101 – 250	4,9	13,2	2,0
251 -	4,1	25,8	1,3
Share of export in the net turnover (%)			
- 10	85,9	71,7	87,7
10-50	6,8	17,3	5,1
50-99	6,0	10,7	5,3
100	1,3	0,3	1,9
N	9.393	318	61.184

Table 7

Frequency of ownership links among the firms in the CTAXRET in 1995, %[*]

		Is there a domestic firm among the firm's owners?		
		No	Yes	Total
Does the firm own a domestic enterprise?	No	76,7	12,5	89,2
	Yes	7,7	3,1	10,8
	Total	84,5	15,5	100,0 (N= 61.184)

*: The shaded cells show the percentage of disconnected firms

Table 8

Frequency of ownership links among the two sample of Hungarian firm in 1996, %[*]

		Is there a domestic firm among the firm's owners?					
		FIRM96			EXPORT96		
		No	Yes	Total	No	Yes	Total
Does the firm own a domestic enterprise?	No	46,7	18,6	65,3	49,3	10,4	59,7
	Yes	21,0	13,7	34,7	26,5	13,7	40,3
	Total	67,7	32,3	100,0 (N=291)	75,9	24,1	100,0 (N=289)

*: The shaded cells show the percentage of disconnected firms

Table 9

Frequency of majority ownership links among the two sample of Hungarian firm in 1996, %[*]

		Does a domestic enterprise own more than 50% of share of the firm?					
		FIRM96			EXPORT96		
		No	Yes	Total	No	Yes	Total
Does the firm own more than 50% of share of a domestic enterprise?	No	63,6	16,8	80,4	67,2	11,6	78,9
	Yes	16,2	3,4	19,6	17,6	3,6	21,1
	Total	79,7	20,3	100,0 (N=291)	84,8	15,2	100,0 (N=289)

*: The shaded cells show the percentage of disconnected firms.

Table 10

Logistic regression estimations of interests in any domestic company (IC) in the CTAXRET in 1992 and 1995[1]

Variables	1992	1995
Sectors (SECTOR)		
Manufacturing	0,6082***	0,7677***
Construction	0,6358***	0,7472***
Trade	1,4905***	1,0595*
Services (refrerence)		
Number of employees (SIZE)		
-10	0,0770***	0,1664***
11-20	0,2461***	0,4005***
21-50	0,5745***	0,7372***
51-100	1,5809***	1,4841***
101-250	4,2791***	2,3733***
251 - (reference)		
Share of export in the net turnover (EXPR5O)		
-10%	0,4684***	1,0926
10-50%	1,7039***	1,6915***
50-99%	1,4469**	1,1304*
100% (reference)		
Type of majority owner (OTYP)		
Public	1,2880**	1,4181**
Foreign	0,4519***	0,6421***
Domestic company	-	1,3612***
Hungarian individual	-	0,8540*
Private	0,7289***	-
Other (reference)		
N	37.226	60.536
- 2 Log Likelihood	13.210,097	35.851,453
Modell Chi^2	8.058,175	5.661,096
Pseudo R^2	0,3789	0,1364

1: The cells show the effect of a unit change of the explanatory variables (Exp(b)) on the odds of the dependent variable*: $p < 0,05$
** : $p < 0,01$
***: $p < 0,001$

Appendix

Data used

The analysis was built on four sources of data which belong to two categories. On the one hand, these are company surveys and, on the other hand, information obtained from the tax returns of companies.

a) Surveys of companies conducted using questionnaires. These are the following:

- Sample of medium-size companies (FIRM96): this contains the data of 293 enterprises with over 50 employees, operating in the manufacturing and construction industries as well as in trade (except for the trade of public transportation vehicles and fuels) and their plants are located in Budapest or in county towns. The survey was carried out in 1996. The survey and the concept of the research were elaborated by András Semjén and the author. The sample necessary for the survey was supplied by the KSH and the survey was conducted by Tárki between November 2-30, 1996.

- Sample of large companies (EXPORT96): The survey included the data of 295 enterprises. The companies were selected from among 1000 manufacturing companies which had the largest exports in 1996. The companies questioned, after weighting, represent the multitude of the 1000 largest exporters according to sector and staff categories. The concept of the research and the questionnaire were elaborated by the author, the survey was conducted between October 1996 and January 1997.

b) Balances and tax return data (CTAXRET). The 1992-1995 tax return data of companies which submitted tax returns, used dual-accounting, and belonged to the manufacturing, construction, trade and servicing sectors.

During the surveys the questioners visited the owners or managers of each enterprise and asked them regarding the actual data of the companies (e.g. number of employees, net turnover, balance of account), their expected changes and other characteristics of the company's management (exports, business links, ownership structure) as well as their subjective opinion on the company's conditions. In this study we used the answers given to questions regarding investments in other companies and ownership structures.

Table A1

The distribution of firms by variables analysed in the CTAXRET (%)

Variables	1992	1995
Sectors (SECTOR)		
Manufacturing	26,0	23,9
Construction	12,3	11,0
Trade	42,0	43,0
Services	19,7	22,1
Employment (SIZE)		
-10	71,2	77,6
11-20	9,5	9,0
21-50	9,2	7,2
51-100	4,2	2,9
101-250	3,2	2,0
251 -	2,8	1,3
Share of export in the net turnover (EXPR5O)		
-10%	94,5	87,6
10-50%	3,1	5,2
50-99%	2,1	5,3
100%	0,3	1,9
Type of majority ownership (TTIP)		
Public	7,2	1,6
Foreign	10,2	14,4
Domestic company	-	11,5
Hungarian individual	-	68,6
Private	70,4	-
Other	12,3	3,9
N	37.226	60.536