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35. sz. Műhelytanulmány
HU ISSN 1786-3031

2003. december

Budapesti Közgazdaságtudományi és Államigazgatási Egyetem
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The Boundary of the Firm in Transition: Evidence from Four Post-Socialist Countries

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Abstract

A spectacular rearrangement of firm boundaries took place in post-socialist countries in the early 1990s, a period during which the socialist enterprise structure dismantled in a relatively short time. This paper investigates the boundary changes of companies in four countries: the Czech and Slovak Republics, Hungary, and Romania. A database of 336 companies from the four countries including data for ten years (1989 – 1998) serves as a basis for the analysis. The split-ups in the sample data are analyzed separately according to whether the structural change happened before or after privatization, as the underlying motivations might have been different depending on whether the company was controlled by managers appointed by the state, with associated ambiguous incentives and uncertain career prospects, as opposed to private owners with clearly defined property rights.

Keywords: firm boundaries, split-up, restructuring, transition

Összefoglalás

Az 1990-es évek elején viszonylag rövid idő alatt végbement a centralizált szocialista vállalati struktúra szétbomlása, és látványosan átrendeződtek a vállalatok határai. A vállalatok működési kereteinek módosulása természetes és szükséges folyamat volt, hiszen a bürökratikus tervgazdasági irányítás céljait szolgáló, összevont vállalati szerkezetben működő cégek a piaci koordináció megjelenésével újra kellett, hogy gondolják működésüket, belső szerkezetüket és külső kapcsolatrendszerüket. Ez a folyamat azonban igen sajátos körülmények között zajlott le, egy kiszámíthatónak és tisztán piacinak nem nevezhető, bizonytalan környezetben. Felvetődik a kérdés, hogy milyen erők határozhatták meg, mely szervezeti egységek váltak külön, fel lehet –e fedezni valamilyen törvényszerűséget a vállalatok határainak átrendeződésével kapcsolatban? A tanulmány egy 330 elemből álló, cseh, szlovák, magyar és román vállalatokból álló minta adatai alapján próbál a kérdésre választ keresni.

Kulcsszavak: vállalati határok, szétválás, szerkezetátalakítás, gazdasági átmenet

[1] This research was undertaken with support from the European Union's Phare ACE Programme 1998. We thank Scott Gehlbach, Martin Goerojo, Csaba Kucsera, Dana Lup, and Almos Telegdy for their many contributions to the database. The content of the paper is the sole responsibility of the authors and it in no way represents the views of these individuals, the Commission, or its services.

Introduction

The predominant pattern of industrial organization during the period of central planning, or state socialism, was concentrated production in large entities, known as state enterprises. The rationale was both to exploit economics of scale and to improve bureaucratic coordination, by minimizing the transaction costs related to central planning (Swaan, 1994). It is the evaluation of most observers that this process resulted in an over-centralized company structure, at least from the point of view of the market economy. The disintegration of firms formerly forced to merge as a result of central planning would then seem to be a natural adjustment process of enterprises placed under some efficiency constraints, as business relationships formed through central planning are not likely to be the best alternatives in a market environment.

Regarding boundary changes that happened simultaneously with firm restructuring in the beginning of the 1990s the following questions arise: What were the driving forces behind the split-ups? What factors determined which units or plants became independent? What were the consequences of the split-ups for subsequent firm performance? We examine these questions similarly to Lizal, Singer and Svejnar (1994), who try to explain these spontaneous boundary changes in a bargaining framework. We suppose, moreover, that split-ups and mergers before privatization may have been motivated by the possibility for managers to take control of the more valuable assets in their enterprise, rather than being value-enhancing overall. After privatization, the split-ups may be more likely to be the result of decisions made on the basis of efficiency considerations. Therefore a key hypothesis is that boundary changes may not improve performance before the firm is privatized, while they may do afterwards.

The structure of the paper is the following: The first section examines standard theories of the limits of firm boundaries, and assesses how much and in which ways these theories can contribute to the understanding of post-socialist boundary changes. The following section describes the data and variables used in the analysis. In the next part of the paper the hypotheses relevant for an empirical examination of firm boundaries in transition are sketched out. The fourth section includes some initial empirical results.

1. Theoretical Approaches to Changes in Boundaries

Economic literature provides a variety of approaches attempting to explain the forces that determine organizational boundaries. The question of how much activity should be carried out within an organization under hierarchical coordination, as opposed to the purchase of goods from outside the firm, reaches back to Coase's article on "The Nature of the Firm" (Coase, 1937). The school of New Institutional Economics can be traced back to his observations, as well as to the book "Modern Corporation and Private Property" published in 1932 by Berle and Means, which points to agency problems in firms where ownership and control are separated. The three main branches distinguished within the school of new institutional economics (Kieser, 1995): the theory of property rights developed by Grossman, Hart and Moore (1986, 1990) (Kieser, 1995), the agency theory originating in the above mentioned book of Berle and Means, and the theory of transaction costs worked out by Williamson (1975, 1985) might all have some relevance to

examining structural changes in post-socialist countries, although their underlying assumptions hardly apply to firms in the period of restructuring.

Holmström and Roberts draw attention to the role of organizational knowledge in relation to the boundaries of firms, which seem to have a definite role in the large number of mergers taking place in today's globalized economy (Holmström, Roberts, 1998). This approach builds on the ideas of evolutionary theory, which refers to the common knowledge possessed by a firm as its competence, having the same role in „retention" of characteristics as genes do in biology. (Alrdrich/McCalvey call this set of mostly tacit knowledge as „comppool" to the analogy of „genepool" (Kieser, 1995)). Studies attempting to establish links between business strategy and economic theory use the concept of „corporate coherence" (Teece et al., 1994 in Foss, Christensen, 1996).

The role of common knowledge is difficult to be incorporated in the analysis of firm boundaries at the beginning of transition, as its cohesive force was mangled due to a number of different factors. Technologies and related skills became obsolete in most of the firms by the beginning of the 1990s, the cease of COMECON resulted in the break-up of much of the earlier international commercial relations, necessary layoffs of excess labor force damaged the common pool of knowledge, while the rationalization of production brought along necessary changes in the product structure, requiring the introduction of new skills and technologies. Although personal connections played an important role in retaining and rebuilding economic relationships, this type of "knowledge" usually reached beyond the boundaries of the existing companies (Swaan, 1994, Vedres, 1998).

As regards transaction cost theory, one has to remember that restructuring was to be performed in a rather chaotic environment, where companies did not have the cognition of market transactions, the institutional environment was only partially developed, and new contracting relations were immature (Swaan, 1994). It is, however, important to find out, whether transaction costs are relevant in analyzing structural changes after privatization, in firms held by private owners.

Privatization and the evolution of property rights must have had a strong affect on the disintegration of firms. It is, however, quite difficult to formulate clear hypotheses for the period before privatization, given that property rights were divided in an unclear and peculiar way between the state and the management of state companies. From among the four categories of property rights traditionally distinguished in the property rights approach (Kieser, 1995, p. 254.) there were almost none possessed exclusively by the governing boards of the firms (BKE, 1990).

Examining the break-ups in a bargaining framework similarly to Lízal et. al (1994) appears to be a more relevant approach to the problem. Many researchers looked at the conflict of managers and the state in the course of restructuring and privatization in a principal-agent context.[2] However, in addition to the state - management conflict, one also has to look at the bargaining process between the managers of central units and managers of divisions over company assets, similarly to the bargaining over company resources in the theory of internal capital markets, what has an extensive, mainly empirical literature in developed countries (Bolton, Scharfstein, 1998).

The availability of empirical research results related to organizational changes in transitional countries is quite limited. Zemplinerová and Stíbal (1994) looked at effects of company break-ups to the structure of industry in the Czech Republic. Lízal, Singer and

[2] See for example Aghion et al. (1994), Shleifer and Vishny (1994).

Svejnar (1994) worked out a game theoretic model on the behavior of managers of enterprise units, and tested their hypotheses on Czech manufacturing firms breaking up in years 1991-1992.

2. Data and Variables Used in the Analysis

The data used for the analysis was collected by the Labor Project of the Central European University in two waves, in years 1995 and 1998. The time period of the data embraces the 1989 – 1998 period, and includes a large number of variables on each important aspect of company restructuring, among which we have interesting information related to the changes in firm boundaries. Data were provided by 336 firms in 4 countries: the Czech Republic, Slovakia, Hungary and Romania. The distribution of firms by branch can be seen in Table 1, which reveals that most of the firms analyzed belong to the manufacturing sector in all countries, except Romania, where more than half of the firms operate in the construction and services.

In order to trace back the changes in firm boundaries and capture the magnitude of changes in establishments, the questionnaire asked for information on the employment and establishments for what we defined as the "legal entity", and what referred to the company that included the establishments of the analyzed firm in the actual year. This means that in the beginning of the period this might be different from the legal entity of the firm interviewed, in case it split from its legal predecessor, or a new company was formed through a merger. According to Table 2, the number of employees in legal entity fell dramatically between years 1989-1998. One has to keep in mind that this huge negative change reflects changes due to both employment loss and spin-offs. The average and median values decreased to less than a third of the 1989 value in all countries, the largest drop is observable in the Czech and Slovak Republics.

The numbers in Table 3 differ from those included in the previous table in that they relate to the set of establishments we defined as the "current firm". This relates to the premises that the interviewed firm consisted of in each year back to 1989, meaning that in the beginning of the period it could belong to a different legal entity, its legal predecessor. Again, we can observe an almost monotonic fall in the number of employees in the whole time period, especially when we look at the medians.

Table 4 provides statistics for the number of establishments in the legal entities. Except for Romania (for which we miss data for most years in the first period), a spectacular change is observable in the boundaries of the firms of the analysed companies. The average number of establishments decreased from 6.4 to 2.0 in the Czech and Slovak Republics and from 5.4 to 3.6 in Hungary. The descriptives for Romanian firms do not reflect any notable change, although from the results showed in Table 6.a we will see that numerous splitups happened among them. *(Note: This fact of course questions the validity of these data*.)

Table 5 shows the number of employees per establishment - again a monotonic decrease - suggesting that the drastic change we observed in the level of employment of the legal entity is due not only to spin offs, but also to a substantial fall in the employment levels at the different establishments.

Tables 6.a and 6.b include frequencies for split-ups and mergers for all countries by year. Most split-ups happened in the period of 1990 – 1995. Mergers were not frequent in the observed period, although a little bit more happened towards the end of the decade in

Hungary. The numbers again prove that a substantial disintegration took place among the firms in the sample.

Table 7 shows how the number of privatized firms (defined as having any private share) increased during the years. Because in 1995, the year of the first survey, our objective was to approach privatized firms, almost all the companies were at least partially private by that time.

3. Hypotheses

Break-ups of firms in the analyzed countries happened in two distinct waves. Firstly, there were some spontaneous or regulated split ups with spontaneous elements in each country. Later, decentralization was usually connected to the privatization process, or was a result of the actions of new private owners.

In the Czech and Slovak Republics, the first splits happened in the early 1990s, as a spontaneous activity, that had to be approved by the relevant Ministry, and in which plant management played a vital role. This process was stopped by the privatization program, which, however, created the opportunity for further split-ups by providing all juridical and physical units the legal right to submit competing privatization projects for any part of the enterprise. (Charap, Zemplinerova, 1993, p. 3-4.)

In Hungary, the 33rd Government Decree Amending the 1977 Enterprise Act, parent companies enjoyed complete freedom of action in creating affiliates, although the creation of corporations with only Hungarian parties had to be approved by the Council of Ministers, and forming joint ventures needed the consent of the Minister of Finance (Matolcsy, 1988). Than, from 1989 the Transformation Act conceptualized the so called "right of initiation" that created the possibility for the companies, trusts, or the member companies of trusts as well as some economic functional or sector governing institutions to initiate the separation of economic units and form a new, separate company. (BKE, 1990).

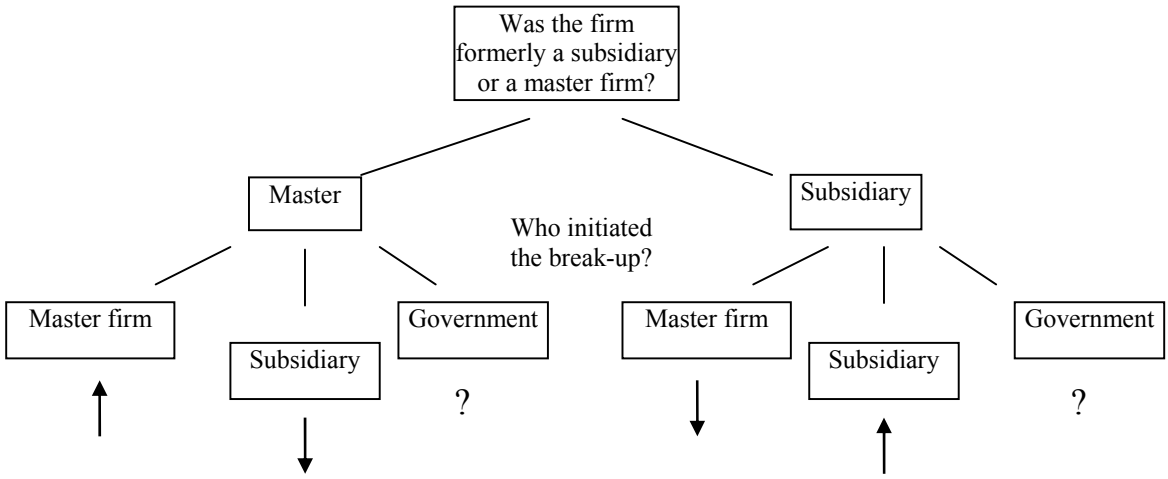
In Romania break-ups of companies were first launched on the basis of Law No. 15/1990 on the Reorganization of State-Owned Enterprises into Commercial Companies or *regies autonomes*. The law placed the right to initiate the incorporation and split-up of enterprises in the hand of the state and local governments. In practice, however, often the managers or employees requested the separation of their own units and transformed them into a joint stock or limited liability company. (Frydman, Rapaczynski, Earle, 1993).

Whether the spit-ups in our sample happened before or after privatization, can be seen in Table 8, according to which out of the 327 total number of splits, 96 happened after privatization, and 231 happened before or together with privatization. Because we assume that the nature of the possible motivations behind the boundary changes were different in these periods, we are going to analyze the two sub-samples separately.

The first set of break-ups is to be examined in a bargaining framework, similarly to Lízal, Singer and Svejnar (1994). The difference in our analysis is, that the database used includes variables that make it possible to identify the initiators of spin-offs, therefore, a relationship between the likely motives and resulting performance change can be tested directly. A first step is to differentiate companies which were former master enterprises (M - master firm) from former sub-units that broke away from a larger enterprise (S - subsidiary). The initiator of the boundary change could be either the manager of the master firm, the manager of the subsidiary or the state privatization agency/branch ministry (the government). Table 9. identifies the initiators of the split-ups in the sample, according

to the former status of the surveyed firm. It turns out from the last part of the table, that out of the 266 firms that went through a boundary change, 203 are parent companies, and only 63 are former divisions of larger firms. The mother company initiated the break up in 158 cases, the subsidiary wanted to break away from the mother firm in 34 cases, while the government forced the firms to split in 74 cases.

The following diagram depicts the hypothesized outcomes, where the arrows show the possible direction of change in performance as a result of the spin-off.



In case the firm in question is a former master company, three outcomes are possible according to who initiated the split-up. If it was the master company itself, the break-up should result in an increased performance, as the central unit probably tried to get rid of a division that drew back its performance. In case the split-up was initiated by the separated subsidiary, there should be a negative effect on the performance of the master company, because the separated unit was most likely a profitable division that aimed to keep all its profits, which could be otherwise reallocated by the central management to less profitable parts of the enterprise. The outcome is uncertain when the government initiated the split-up, as those split-ups were most probably connected to the sale of assets in a privatization program. A further inclusion of relevant variables is needed to formulate a specific hypothesis for this case, but the outcomes might also reveal some common patterns. If the company was a former subsidiary, the same hypotheses should hold, except that the signs of the effects are the opposite.

The database allows us to measure logarithmic change in performance within a two years period (between years *t-1* and *t+1*) instead of looking at yearly changes, which is a more reasonable indicator for the purpose of the research, given that effects of boundary changes on performance are more likely to appear in a longer period of time. Moreover, it is not possible to detect whether the spin-off happened in the beginning or towards the end of year *t*.

4. Empirical Analysis – Initial Results

The empirical analysis starts with an investigation of whether privatization really made any difference in the effects of boundary changes on firm performance. The following equation is estimated by OLS:

$$ln(\pi_{t+1}/\pi_{t-1}) = \alpha + \beta_0 * ln(\pi_{t-1}) + \beta_{1i}(EMP_t) + \beta_{2i}SPLITED + \beta_{3i}AFTERPR + \beta_{4i}SPLITED*AFTERPR + \beta_{5i}Controls,$$

where

- π denotes variables measuring relative performance: real *revenues* over employment, real *value added* over employment, real *profits* over employment and over revenues, and real *investments* over employment and revenues, and π_{t-1} and π_{t+1} refer to performance mesures for the years before and after the structural change happened
- EMP_t stands for the average employment of the firms in the year of the split-up
- *SPLITED* specifies whether a split-up happened at the firm in year t
- *DPRIV* is a dummy denoting whether the firm is privatized
- *SPLITED*DPRIV* is an interaction term of the two previous variables
- *Controls* mean different dummy variables controlling for branch, country, region and year effects.

Results for the first specification with the six dependent variables are reported in Table 10. Privatization has a definite effect on performance change, except when we use investments over employment as a measure. Split-ups seem to influence performance change in a negative direction when looking at labor productivity, while the interaction effect of splits and privatization does not show that there would be any difference in the results of splitups on performance according to whether they happened before or after privatization.

Split-ups that happened before and together with privatization are analyzed using the sub-sample of the relevant firms. The sample includes mostly former master firms, while the number of former divisions is too small to draw statistically valid conclusions. (A significant number of observation was lost as a result of using variables indicating efficiency change between years t-1 and t+1). Therefore, testing the hypotheses related to the first period has to be limited to the following OLS model:

$$ln(\pi_{t+1}/\pi_{t-1}) = \alpha + \beta_0 * ln(\pi_{t-1}) + \beta_{1i}(EMP_t) + \beta_{2i}INIT + \beta_{5i}Controls,$$

where

- $INIT_i$ are dummy variables denoting the type of initiator

Table 11 summarizes the results according to the six performance measures. When the dependent variable is labor productivity, the dummy variable denoting subsidiaries as an initiator for splitting from the master firm cause a negative change in performance. This result supports our initial assumptions. Using other measures of efficiency, the sign of the effect of this dummy is variable, however, and the estimates are not statistically significant.

As we discussed above, the influence of the state is hard to determine. However, the results suggest that splitups initiated by the government to effected the level of investments negatively. These two findings are in line with the hypotheses sketched up above, although the results do not seem to be underlined by more efficiency measures.

For the period after privatization, the equation takes the following form:

$$ln(\pi_{t+1}/\pi_{t-1}) = \alpha + \beta_0 * ln(\pi_{t-1}) + \beta_{1i}(EMP_t) + \beta_{2i}OWN + \beta_{3i}\,SPLITED + \beta_{4i}SPLITED*OWN + \beta_{5i}Controls,$$

where

- *OWN* denotes the largest owner in the company (with a share no fewer than 10 percent), to test for the possible differences in the effects of boundary changes according to ownership types.

Results are presented in Table 12. Although the ownership dummies prove privatized firms to perform better than state companies (especially foreign owned comanies), results for the interaction terms between splits and ownership types suggest that there are no differences between the effects of splitups according to which type of owner the companies have. If we run the same specification to check for the possible effects of mergers, we get basically the same, neither the dummy MERGED, nor the interaction terms between ownership dummies and MERGED show any statistically significant result.

According to Eva Voszka (1993), managers of firms during the period of spontaneous transformations were often forced to seek compromise with the managers of subsidiaries, in order to survive. She lists a wide range of possible reasons for creating separate legal entities using the assets of firms, for example, a debt-equtiy swap could be used to convert credits into shares, taking rid of the financial burden paralysing the operation of the company, which could result in debt-free subsidiaries. To see whether there is any difference in firm performance according to they were master firms or subsidiaries, we estimated the following model:

$$ln(\pi_{t+1}/\pi_{t-1}) = \alpha + \beta_0 * ln(\pi_{t-1}) + \beta_{1i}(EMP_t) + \beta_{2i}INCLHQ + \beta_{3i}\,SPLITED + \beta_{4i}SPLITED*INCLHQ + \beta_{5i}Controls,$$

where

- *INCLHQ* is a dummy variable indicating whether the company includes the former headquarters of the former state company.

Because we were interested in the long run effects of occurent spontaneous restructuring of establishments, we ran the regression on the observations for the post-privatization period. The regression results in Table 13 imply that former parent companies perform worse than subsidiary companies.

To explore further the determinants that could affect decisions on boundary changes, we also examined the information on the business relationships of the splited partners. The results provided in Table 14 include probit estimations with the dummy MAST used as a dependent variable to see what kind of business relationships split-ups initiated by the managers of master firms more likely resulted in: whether the split partners

had a vertical relationship, became competitors of each other, or produced independent products. Logarithmic level of the current year performance variables were also included in the analysis, to see whether the splits tended to effect better or worse performing firms. Results show, that the two dummies for competitors and independent companies are statistically significant with negative marginal effects, suggesting that master firms were less likely to creat rivals for their own companies.

5. Conclusion

The definition of the firm and its boundaries is one of the fundamental issues in all of economics, as well as one of the most vexing and interesting in the economics of socialism and transition. As emphasized in a number of studies of socialist economies (e.g., Kornai, 1992), the principal coordination mechanism in the classical "centrally managed" economies was bureaucratic - commands and negotiations - with little scope for markets or other coordinating devices. The relationship of the branch minister to the director of a subordinated enterprise differed little from the relationship of the director to a worker in his/her factory: both involved hierarchical giving and receiving of orders and continual bargaining over terms, timing, and quality. Moreover, when one considers the multi-layered nature of economic organization, for instance the presence in the socialist economy of a variety of intermediate organs, such as trusts, kombinats, directorates and so forth, that grouped production establishments, it becomes even less clear how the "boundaries of the firm" should be defined. The sudden arrival of economic transition resulted in these somewhat arbitrary collections of assets – the state enterprises – suddenly forced with the necessity to re-organize. At the same time, the insiders in these entities and in the ministries and other organs that had controlled them and the incentives and the ability, in the murky legal environment of the time, to re-organize according to their own interests.

The confluence of these developments with changes in firm governance (privatization) thus provides an interesting setting for investigating the determinants of firm boundaries. Our preliminary analysis has attempted to uncover differences in the patterns of split-ups in the pre-privatization compared to the post-privatization period. Some of the results provide some support for the notion that boundary changes were more likely to be value-enhancing after privatization than before. Overall, however, the results are quite mixed, and further investigation is necessary before firm conclusions can be drawn.

Table 1
Distribution of Firms by Branch

	Czech and Slovak Republics		**Hungary**		**Romania**		**All**	
	N	%	N	%	N	%	N	%
Food	19	13.57	28	28.57	18	18.37	65	19.35
Light industry	28	20.00	23	23.47	20	20.41	71	21.13
Heavy processing	30	21.43	26	26.53	5	5.10	61	18.15
Machines	46	32.86	19	19.39	0	0.00	65	19.35
Construction	9	6.43	1	1.02	28	28.57	38	11.31
Services	4	2.86	0	0.00	27	27.55	31	9.23
Other	4	2.86	1	1.02	0	0.00	5	1.49
Total	140	100.00	98	100.00	98	100.00	336	100.00

Table 2
Total Employment in Legal Entity

	Czech and Slovak Republics			Hungary			Romania			All		
	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N
1989	3,698.6	1,700.0	97	2,349.8	1,042.0	234	1,563.6	1,004.0	91	2,349.8	1,042.0	234
1990	2,601.3	1,454.0	103	1,650.1	882.0	263	1,214.7	872.5	92	1,650.1	882.0	263
1991	1,678.1	743.0	116	1,165.6	597.5	298	954.9	662.0	94	1,165.6	597.5	298
1992	1,087.1	551.5	126	865.5	492.0	313	800.6	533.0	97	865.5	492.0	313
1993	874.9	459.5	130	714.1	414.5	320	658.3	453.5	98	714.1	414.5	320
1994	743.9	421.0	131	631.6	400.5	322	595.5	465.5	98	631.6	400.5	322
1995	636.7	389.0	117	580.6	382.0	301	529.2	399.5	98	580.6	382.0	301
1996	695.8	383.5	86	560.6	326.0	262	489.8	363.0	85	560.6	326.0	262
1997	598.0	339.5	86	505.3	294.0	261	498.4	351.0	84	505.3	294.0	261
1998	521.0	309.0	85	460.3	262.5	260	489.0	335.5	84	460.3	262.5	260

Table 3
Total Employment at the Firm

	Czech and Slovak Republics			Hungary			Romania		
	Mean	Median	Valid N	Mean	Median	Valid N	Mean	Median	Valid N
1989	1,286.5	807.0	107	1,037.9	754.0	79	1,623.9	500.0	51
1990	1,159.5	723.0	115	917.1	677.0	83	1,175.0	405.0	81
1991	885.3	552.0	129	781.5	600.0	89	941.6	401.5	90
1992	792.5	490.0	138	670.2	503.0	95	815.3	402.0	91
1993	702.8	440.0	139	610.1	443.0	98	730.6	342.0	91
1994	663.7	400.0	134	566.8	434.0	98	615.8	296.5	98
1995	671.5	380.0	116	475.5	385.0	84	530.8	290.0	91
1996	695.8	383.5	86	489.8	363.0	85	499.1	246.0	91
1997	612.3	344.0	84	498.4	351.0	84	424.1	190.0	91
1998	533.6	342.0	83	489.0	335.5	84	377.0	156.0	91

Table 4
Number of establishments

	Czech and Slovak Republics			Hungary			Romania		
	Mean	Median	Valid N	Mean	Median	Valid N	Mean	Median	Valid N
1989	6.4	4.0	121	5.4	3.0	94			
1990	5.5	3.0	124	4.9	3.0	94	7.3	4.0	82
1991	3.5	1.0	125	4.4	2.0	96			
1992	2.6	1.0	131	4.1	2.0	98			
1993	2.4	1.0	134	3.4	2.0	98			
1994	2.2	1.0	133	3.2	2.0	98			
1995	2.6	1.0	93	3.5	2.0	87	7.8	4.0	97
1996	2.3	1.0	93	3.5	2.0	87	7.6	4.0	97
1997	2.2	1.0	93	3.6	2.0	86	7.4	4.0	97
1998	2.0	1.0	93	3.6	2.0	85	6.7	4.0	97

Table 5
Number of employees per establishment

	Czech and Slovak Republics			Hungary			Romania		
	Mean	Median	Valid N	Mean	Median	Valid N	Mean	Median	Valid N
1989	995.2	568.3	96	498.2	336.3	91			
1990	906.8	633.0	101	461.4	312.0	91	260.8	102.7	67
1991	730.7	422.0	115	385.2	251.0	93			
1992	649.0	375.3	125	328.1	200.0	97			
1993	575.2	312.0	129	318.4	209.6	98			
1994	543.9	313.5	126	309.1	190.8	98			
1995	473.5	275.0	87	240.4	165.5	84	114.6	57.5	90
1996	430.0	271.0	85	252.7	155.5	85	110.4	56.2	90
1997	391.4	248.0	84	262.0	136.9	84	93.6	51.0	90
1998	357.2	220.0	83	251.9	143.5	84	83.1	39.7	90

Table 6.a
Occurrence of split-ups

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Czech and Slovak Republics										
split-ups	5	24	35	38	17	15	5	9	6	9
N	120	128	127	131	131	132	131	92	92	92
Hungary										
split-ups	2	16	19	16	21	19	4	10	6	6
N	92	92	95	97	98	98	87	87	85	85
Romania										
split-ups	1	4	27	11	5	3	2	4	5	5
N	62	72	93	94	94	95	98	97	97	97
All										
split-ups	8	44	81	65	43	37	11	23	17	20
N	274	292	315	322	323	325	316	276	274	274

Table 6.b
Occurrence of mergers

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Czech and Slovak Republics										
mergers	1	0	2	2	1	0	2	0	1	1
N	120	128	127	131	131	132	131	92	92	92
Hungary										
mergers	0	0	3	3	0	5	3	7	9	8
N	92	92	95	97	98	98	87	87	85	85
Romania										
mergers	0	0	1	0	1	1	0	0	0	0
N	62	72	93	94	94	95	98	97	97	97
All										
mergers	1	0	6	5	2	6	5	7	10	9
N	274	292	315	322	323	325	316	276	274	274

Table 7

Number of privatized companies by year

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Czech and Slovak Republics		1	5	24	90	95	109	112	114	114
Hungary	3	8	17	36	63	85	96	97	97	97
Romania				1	39	74	77	90	92	94
TOTAL	3	9	22	61	192	254	282	299	303	305
N	305	305	305	305	305	305	305	305	305	305

Table 8
Split-ups and Mergers before and after Privatization

	After Privatization			
Splited		**no**	**yes**	**total**
	no	1248	1194	2442
	yes	231	96	327
	total	1479	1290	2769

	After Privatization			
Merged		**no**	**yes**	**total**
	no	1467	1252	2719
	yes	12	38	50
	total	1479	1290	2769

Table 9
Splitups by Initiators

Czech and Slovak Republics

Does the firm include the headquarters of the legal predecessor?	Who initiated the split-up?					
		Mother comp.	**Subsidiary**	**State**	**Total**	
	no	14	6	12	32	*28.6%*
	yes	38	16	26	80	*71.4%*
	Total	52	22	38	84	*100.0%*
		46.4%	*19.6%*	*33.9%*	*100.0%*	

Hungary

Does the firm include the headquarters of the legal predecessor?	Who initiated the split-up?					
		Mother comp.	**Subsidiary**	**State**	**Total**	
	no	18	4	4	26	*23.0 %*
	yes	60	5	22	87	*77.0 %*
	Total	78	9	26	75	*100.0%*
		69.0%	*8.0%*	*23.0%*	*100.0%*	

Romania

Does the firm include the headquarters of the legal predecessor?	Who initiated the split-up?					
		Mother comp.	**Subsidiary**	**State**	**Total**	
	no	1	1	3	5	*12.2 %*
	yes	27	2	7	36	*87.8 %*
	Total	28	3	10	41	*100.0%*
		68.3%	*7.3%*	*24.4%*	*100.0%*	

All

Does the firm include the headquarters of the legal predecessor?	Who initiated the split-up?					
		Mother comp.	**Subsidiary**	**State**	**Total**	
	no	33	11	19	63	*23.7 %*
	yes	125	23	55	203	*76.3 %*
	Total	158	34	74	266	*100.0%*
		59.4%	*12.8%*	*27.8%*	*100.0%*	

Table 10
Pooled File: Does Privatization Make Difference? (OLS estimates)

	ln change in revenues over employment		ln change in value added over employment		ln change in profit over employment		ln change in profit over revenues		ln change in investments over employment		ln change in investments over revenues	
	coeff.	**t**	**coeff.**	**t**	**coeff.**	**t**	**coeff.**	**t**	**coeff.**	**t**	**coeff.**	**t**
ln lagged perf. var.	-0.282	-17.53	-0.412	-16.48	-0.439	-15.95	-0.501	-18.18	-0.449	-16.00	-0.542	-1.40
ln employment	-0.280	-2.00	0.017	0.63	0.354	0.59	0.237	0.42	-0.046	-1.01	-0.084	-1.54
splited (dummy)	-0.125	-2.41	-0.097	-1.04	0.150	0.59	0.019	0.09	-0.092	-0.52	0.238	1.05
after privatization (dummy)	0.136	3.19	0.265	3.48	0.566	3.01	0.464	2.66	-0.044	-0.31	-0.482	-3.19
interaction of splited and after privatization	0.066	0.73	0.013	0.08	0.363	0.84	0.280	0.74	0.384	1.35	-0.014	-0.04
Hungary	0.574	13.17	0.759	10.36	0.792	4.77	0.146	0.97	0.620	5.84	0.076	0.58
Romania	-0.796	-14.82	-0.882	-10.07	-0.820	-4.23	0.660	3.12	-0.271	-7.97	0.106	0.59
Constant	2.049	13.64	1.984	8.57	0.536	1.17	-1.427	-3.13	1.741	4.55	0.476	1.04
$\overline{R}^2$	0.254		0.301		0.515		0.522		0.229		0.017	
N	1413		967		908		1012		1039		876	

Note: years and the following branch groups were controlled for: food, heavy, light, machine, construction, services, other.

Table 11
Before and together with Privatization: Who Initiated the Splitup? (OLS estimates)

	ln change in revenues over employment		ln change in value added over employment		ln change in profit over employment		ln change in profit over revenues		ln change in investments over employment		ln change in investments over revenues	
	coeff.	**t**	**coeff.**	**t**	**coeff.**	**t**	**coeff.**	**t**	**coeff.**	**t**	**coeff.**	**t**
ln lagged perf. var.	-0.149	-1.66	-0.567	-7.15	-0.613	-2.80	-0.516	-2.25	-0.372	-2.14	-1.158	-0.35
ln employment	0.120	1.43	0.180	1.80	0.343	1.24	0.013	0.05	-0.009	-0.04	-0.157	-0.47
initiated by subsidiary (dummy)	-0.382	-1.73	-0.277	-0.95	0.212	0.25	-0.010	-0.01	-0.295	-0.47	0.517	0.67
initiated by state (dummy)	0.044	0.27	-0.016	-0.09	-0.176	-0.34	-0.163	-0.36	-0.862	-2.03	-1.26	-2.57
Hungary	0.314	1.38	0.966	3.87	0.953	1.34	-0.117	-0.21	0.356	0.72	0.046	0.06
Romania	-0.692	-2.03	-1.143	-3.10	1.904	1.23	2.606	1.40	-1.836	-1.64	-0.116	-0.10
Constant	0.657	0.59	2.14	2.58	0.141	0.08	-2.206	-1.00	2.168	1.28	2.29	0.89
$\overline{R}^2$	0.182		0.561		0.404		0.223		0.179		0.200	
N	86		63		46		49		65		47	

Note: years and the following branch groups were controlled for: food, heavy, light, machine, construction, services, other.

Table 12
After Privatization: Effects of Splitups according to Ownership Type (OLS estimates)

	ln change in revenues over employment		ln change in value added over employment		ln change in profit over employment		ln change in profit over revenues		ln change in investments over employment	
	coeff.	**t**	**coeff.**	**t**	**coeff.**	**t**	**coeff.**	**t**	**coeff.**	**t**
ln lagged perf. var.	-0.217	-9.13	-0.317	-9.16	-0.666	-19.06	-0.736	-21.28	-0.485	-12.03
ln employment	-0.014	-0.73	0.018	0.59	-0.004	-0.06	0.059	0.92	0.001	0.01
worker own	0.023	0.26	0.099	0.74	0.464	1.35	0.290	0.93	0.438	1.39
manager own	0.002	0.03	0.200	1.62	0.763	2.33	0.548	1.87	0.281	0.93
collective own	0.102	1.32	0.232	1.97	0.631	1.99	0.309	1.09	0.486	1.73
foreigner own	0.224	2.74	0.285	2.26	0.837	2.42	0.286	0.95	0.608	2.04
domestic own	0.033	0.40	0.206	1.63	0.343	0.99	0.101	0.34	0.302	1.02
splited (dummy)	-0.005	-0.03	-0.138	-0.40	0.380	0.40	-0.578	-0.93	0.865	1.23
splited*worker			0.117	0.26	-0.450	-0.40	0.398	0.47	-1.725	-1.42
splited*manager	-0.069	-0.27	-0.054	0.13	-1.267	-1.08			-0.882	-0.97
splited*collective	0.027	0.08					-0.315	-0.30		
splited*foreigner	0.023	0.10	0.171	0.42	0.333	0.31	1.195	1.52	-0.388	-0.47
splited*domestic	-0.085	-0.36	-0.360	-0.09	-0.093	-0.08	0.426	0.51	-1.181	-1.43
Hungary	0.366	5.00	0.553	4.97	1.463	5.64	0.411	1.87	0.441	2.14
Romania	-0.569	-5.90	-0.648	-4.50	-0.911	-2.80	0.661	2.32	-1.539	-4.99
Constant	1.567	7.11	1.49	4.72	1.758	2.79	-3.331	-5.96	2.108	3.74
$\overline{R}^2$	0.164		0.165		0.520		0.556		0.226	
N	589		461		409		424		498	

Note: years and the following branch groups were controlled for: food, heavy, light, machine, construction, services, other.

Table 13
After Privatization: Effect of Mergers according to Ownership Type (OLS estimates)

	ln change in revenues over employment		ln change in value added over employment		ln change in profit over employment		ln change in profit over revenues		ln change in investments over employment	
	coeff.	**t**	**coeff.**	**t**	**coeff.**	**t**	**coeff.**	**t**	**coeff.**	**t**
ln lagged perf. var.	-0.217	-9.16	-0.317	-9.14	-0.664	-18.95	-0.737	-21.22	-0.487	-11.94
ln employment	-0.017	-0.86	0.012	0.39	0.003	0.05	0.059	0.92	0.005	0.07
worker own	0.026	0.30	0.095	0.72	0.456	1.33	0.269	0.86	0.433	1.37
manager own	-0.007	-0.09	0.182	1.50	0.715	2.18	0.514	1.76	0.277	0.94
collective own	0.112	1.43	0.231	1.96	0.641	2.01	0.288	1.01	0.544	1.93
foreigner own	0.225	2.77	0.286	2.29	0.896	2.59	0.331	1.09	0.679	2.29
domestic own	0.015	0.19	0.182	1.44	0.352	1.01	0.100	0.33	0.249	0.83
splited (dummy)	-0.251	-0.98	-0.104	-0.30	-0.347	-0.36	-0.011	-0.01	-410	-0.50
splited*worker										
splited*manager	0.314	0.63	-0.196	-0.03	0.286	0.17	0.110	0.07	0.790	0.49
splited*collective										
splited*foreigner	0.234	0.77	0.185	0.43	0.641	0.57	0.363	0.36	0.172	0.17
splited*domestic	0.377	1.24	0.303	0.71	0.380	0.33	-0.032	-0.03	0.749	0.76
Hungary	0.362	4.89	0.542	4.82	1.445	5.46	0.40	1.80	0.428	2.02
Romania	-0.579	-5.98	-0.649	-4.48	-0.922	-2.81	0.666	2.32	-1.567	-5.01
Constant	1.587	7.21	1.515	4.76	1.731	2.72	-3.353	-5.96	2.127	3.75
$\overline{R}^2$	0.167		0.166		0.517		0.553		0.223	
N	589		461		409		424		498	

Note: years and the following branch groups were controlled for: food, heavy, light, machine, construction, services, other.

Table 14
Pooled file: former headquarters

	ln change in revenues over employment		ln change in value added over employment		ln change in profit over employment		ln change in profit over revenues		ln change in investments over employment	
	coeff.	**t**	**coeff.**	**t**	**coeff.**	**t**	**coeff.**	**t**	**coeff.**	**t**
ln lagged perf. var.	-0.219	-8.06	-0.330	-8.88	-0.593	-13.09	-0.690	-15.63	-0.473	-11.39
ln employment	-0.005	-0.23	0.030	0.87	0.001	0.01	0.094	1.21	0.003	0.04
splited (dummy)	-0.194	-0.73	-0.598	0.87	-1.772	-1.79	-1.262	-1.41	-0.197	-0.07
former headquarters (dummy)	-0.914	-1.81	-0.167	-1.41	-0.459	-2.39	-0.511	-3.08	0.220	1.33
interaction of splited*headquarters	0.187	0.67	0.527	1.19	2.175	2.06	1.457	1.53		
private shares	0.002	1.72	0.004	2.38	0.0122	2.68	0.008	2.20	0.006	1.76
Hungary	0.473	6.00	0.687	6.07	1.657	6.12	0.613	2.75	0.707	3.70
Romania	-0.531	-5.90	-0.636	-4.91	-0.697	-2.37	0.805	2.95	-1.546	-5.64
Constant	1.452	4.63	1.103	2.28	0.486	0.45	-4.034	-4.14	3.567	2.27
$\overline{R}^2$	0.141		0.219		0.473		0.513		0.237	
N	488		385		324		343		420	

Note: years and the following branch groups were controlled for: food, heavy, light, machine, construction, services, other.

Probit Regression Results
Before and together with Privatization:
The management of the master company as initiator and the business relationship of the splited companies

	Initiator: management of mother com.		Initiator: management of mother com.		Initiator: management of mother com		Initiator: management of mother com	
	marg. effect	**t**	**marg. effect**	**t**	**marg. effect**	**t**	**marg. effect**	**t**
ln employment	-0.015	-0.23	-0.270	-0.34	0.031	0.38	0.032	0.39
ln perf. var.	0.175	2.33	-0.002	-0.03	0.007	0.17	0.126	2.59
competitor (dummy)	-0.417	-2.38	-0.592	-2.68	-0.737	-2.90	-0.479	-2.01
independent comp. (dummy)	-0.324	-1.83	-0.426	-1.78	-0.644	-2.47	-0.356	-1.53
Hungary	-0.039	-0.33	-0.07	-0.53	0.022	0.15	-0.058	-0.38
Romania	0.717	2.18	-0.226	-0.40	0.114	0.52	0.557	1.87
$\overline{R}^2$	130		93		92		95	
N	0.197		0.177		0.209		0.276	

Note: years and the following branch groups were controlled for: food, heavy, light, machine, construction, services, other.

References

Aghion, P., O. Blanchard, R. Burgess (1997) The behavior of state firms in Eastern Europe, pre-privatization, *European Economic Review*, No. 38, pp. 1327-1379.

Berle, A. and G. Means (1933) The Modern Corporation and Private Property, Macmillan, New York, reprinted in W.S. Hein, Buffalo, New York.

BKE, Gazdasági Jogi Tanszék (1990) Az állami vállalatok jogának alapjai, kézirat, ideiglenes tansegédlet, *(The Basics of Legislation on State Enterprises, manuscript),* BKE, Budapest.

Boltna, P., D. S. Scharfstein (1998) Corporate Finance, the Theory of the Firm, and Organizations*, The Journal of Economic Perspectives*, Volume 12, No. 4, Fall 1998, pp. 95-114.

Claessens, S., S. Dhankov, G. Pohl, "Determinants of Performance of Manufacturing Firms in Seven European Transition Economies", The William Davidson Institute Working Paper Series, Working Paper No. 74., The University of Michigan Business School, February, 1997.

Dobák, M. (1996) Szervezeti formák és vezetés, (*Organizational Forms and Management*), Közgazdasági és Jogi Könyvkiadó, Budapest.

Earle, J.S., R. Frydman, and A. Rapaczynksi (1993) Privatization in the Transition to a Market Economy, Studies of Preconditions and Policies in Eastern Europe, Pinter Publishers, London.

Fletcher, C. E. (1995) Privatization_and the Rebirth of Capital Markets in Hungary, McFarland & Company, Inc., Publishers, Jefferson, North Carolina.

Frydman, R., A. Rapaczynski and J. S. Earle et al (1993) The Privatization Process in Central Europe, CEU Press, Budapest.

Foss, N. J. and J. F. Christensen (1996) A Process Approach to Corporate Coherence, DRUID Working Paper, No. 96-7, Copenhagen.

Gerard, R. and K. Sekkat (2000) Managerial Career Concerns, Privatization and Restructuring in Transition Economies, *European Economic Review*, December, 2000. Volume 44, Issue 10, pp. 1857-72.

Holmström, B., and J. Roberts (1998) The Boundaries of the Firm Revisited*, The Journal of Economic Perspectives*, Volume 12, No. 4, Fall 1998, pp. 73-94.

Kapás J. (1999) Szükséges –e a többdimenziós vállalatelmélet? Az evolúciós vállalatelmélet kritikai összefoglalása, (*Is there a Need for a Multi-dimensional Firm*

Theory? A Critical Summary of Evolutionary Firm Theory), *Közgazdasági Szemle*, XLVI. Évf., 1999. szeptember, pp. 823-841.

Kieser, A. (1995) Szervezetelméletek, (*Organizational Theories*) Aula, Budapest.

Lízal, L.; M. Singer and J. Svejnar (1994) Manager Interests, Breakups and Performance of State Enterprises in Transition, CERGE-EI Working Paper, No. 51, Prague.

Matolcsy, Gy. (1988) Az állami vállalattól a társulásig, (*From the state firm to the corporation*) *Valóság*, 1988. 6. sz., pp. 67-77.

Shleifer, A. (1998) State versus Private Ownership, *The Journal of Economic Perspectives*, Volume 12, No. 4, Fall 1998, pp. 133-150.

Shleifer, A. and R. W. Vishny (1994): Politicians and Firms, HIER Discussion Paper, No. 1686, Cambridge.

Stark, D. (1994) Recombinant Property in East European Capitalism, World Bank and CEU Privatization Project conference on Corporate Governance in Central Europe and Russia, Washington DC, December, 1994.

Swan, W. (1994) Tudás, tranzakciós költségek és transzformációs válság, (*Knowledge, Transaction Costs and the Transitional Crisis*), *Közgazdasági Szemle*, 10. sz. 845 – 858.

Tóth, I. J. (1991) A spontán privatizáció mint kormányzati politika, (*Spontaneous Privatization as a Government Policy*) *Külgazdaság*, 1991, 9. szám, 35-52.

Vedres, B. (1998) Egy csapatban, (*In one Group – Evidence on Cross Company Interests*), *Figyelő*, XLII. évf., 38. szám, 1998. szeptember 17.

Voszka, É. (1997) A dinoszuruszok esélyei, Nagyvállalati szerkezetátalakítás és privatizáció (*The Chances of Dinosaurs, Restructuring and Privatization of Large State Enterprises*) *Közgazdasági Szemle*, XLIV. évf. 1997. január, pp. 31- 41.

Voszka, É. (1993) Spontaneous privatization in Hungary, in Earle, J.S., R. Frydman, and A. Rapaczynksi (1993) Privatization in the Transition to a Market Economy, Studies of Preconditions and Policies in Eastern Europe, Pinter Publishers, London, pp.89-107.

Williamson, O. E. (1975) Markets and Hierarchies: Analysis and Antitrust Implications, Free Press, New York.

Williamson, O. E. (1985) The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting, Free Press, New York.

Zemplinerová, A. and J. Stíbal (1994) Evolution and Efficiency of Concentration: Manufacturing Industries in the Czech Economy 1989 – 1992, CERGE EI Working Paper, No. 52, Prague.