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**Enterprise Performance and Ownership Changes
in Polish Firms**

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# Contents

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# Abstract

The paper consists of two parts. In the first part, the authors briefly summarize the results of previous analyses devoted to such issues of relevance as the ownership structure of privatized companies in Poland and how it changed over the course of the 1990s, what factors seemed to have influenced those changes, the economic performance of these companies, and the composition of corporate governance organs such as supervisory and executive boards. In the second part, the authors present the results of econometric analysis of the relationship between performance and ownership structure evolution, focusing on concentration and the respective roles of three types of owners – managers, non-managerial employees, and strategic outside investors. In reference to the debate about whether ownership variables are exogenous or endogenous for performance, they test both hypotheses concerning the effect of ownership on performance and concerning the effect of performance on ownership change.

# 1. Introduction

Much has been written about privatization in the transition economies. However, little has been written about post-privatization ownership changes in privatized companies and what relation such changes might have to corporate performance. In this paper we examine the question of post-privatization ownership changes, or "secondary privatization" – to use a term coined by Barbara Blaszczyk – in two groups of Polish companies. The first group consists of over 84 companies from the subset of Poland's 500 largest companies which have been privatized.

The second group consists of companies privatized by what are often called, for simplicity's sake, employee (or management-employee) buyouts.[1] This is a privatization method by which a state enterprise is liquidated and its assets leased to a company which by law is to include at least half of the employees of the liquidated enterprise. By 31 December, 1998, about one thousand state enterprises had been privatized by this method, most of them small- to medium-sized firms, usually with less than 500 employees (CSO, 1999; Kozarzewski et al., 2000).

In this paper we will refer to the two groups of companies as the 84 large companies and employee-leased companies, respectively.

We proceed as follows. First, we briefly summarize the results of previous analyses presented in the paper entitled "Corporate Governance and Secondary Privatization in Poland," where we discussed such issues of relevance as the ownership structure of privatized companies and how it changed over the course of the 1990s, what factors seemed to have influenced those changes, the economic performance of these companies, and the composition of corporate governance organs such as supervisory and executive boards (that is, what sorts of organizations are represented on supervisory boards, and what the previous occupations of executive board members were). In the following section, we present the results of econometric analysis of the relationship between performance and ownership structure evolution, focusing on concentration and the respective roles of three types of owners – managers, non-managerial employees, and strategic outside investors. In reference to the debate about whether ownership variables are exogenous or endogenous for performance, we test both hypotheses concerning the effect of ownership on performance and concerning the effect of performance on ownership change. Finally, we conclude with a summary of our results.

The data used in the analysis presented here is described in the annex. An explanation of these labels and the variables is found in the appendix.

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# 2. Brief overview of ownership, performance and corporate governance

## 2.1. Eighty-four large companies

The ownership structure of these companies is highly outsider-dominated: on the average[2], insiders possessed only 12.7% of shares at the beginning of 1998, and this fell to 11.4% two years later. In two thirds of the companies, managers held no shares at all, and other employees held no shares in almost half of the companies in the sample. Managers and other employees had majority stakes in only 5% of the firms. Foreign investors were the largest shareholders, and they were the only shareholder type that gained significantly in 1998-2000 (their average share rose from 19.8% at the beginning of 1998 to 26.1% at the beginning of 2000). The second largest type of dominant shareholders were domestic private individuals; however, their shares were slowly decreasing. The average share of domestic industrial companies grew from 9.2% at the beginning of 1998 to 10.5% at the beginning of 2000, while that of financial institutions (banks and investment funds) fell from 14.6% at the beginning of 1998 to 11.1% at the beginning of 2000. Finally, the state continued to hold an average share of about 8%.

Ownership concentration was very high and growing. On average, the single largest shareholder held a majority stake, and the five larger shareholders held over 80% of shares. The number of companies in which the single largest shareholder held a majority stake was slowly growing during the whole period under review. The concentration level was highest in companies in which the largest shareholder was a foreign investor. The lowest ownership concentration was observed in insider-dominated firms.

In 2000, companies controlled by foreign investors had the largest revenues, assets and employment, as well as the highest gross and net profits and investments. Their exports and research and development (R&D) expenditures were twice as high as the average for the whole sample. Companies held by domestic institutional shareholders were also among the largest in terms of employment, but their revenues were relatively small, and on the whole they were unprofitable. However, they were not too far behind foreign companies in investment and R&D spending. Companies controlled by domestic outside individuals were smaller than the previous group, but basically they were in the same condition. Insider companies were the smallest in terms of employment, and had the most consumption-oriented policies, with the largest wage funds, the highest dividends, and the lowest level of investments, R&D expenditures and exports. A preliminary analysis suggested the hypothesis that performance is more closely related to dominant owner type than to the level of concentration (a similar result, based on rigorous econometric analysis, was found in a study of a sample of Czech firms; see Kocenda, Valachy, 2003).

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[2] The averages referred to here are not weighted.

The average supervisory board composition roughly corresponds to the average ownership structure of the companies, with some divergences. If we compare the supervisory board representation of insiders to their ownership shares, top managers seem to be underrepresented (understandable given the nature of the supervisory board as an organ monitoring top management), while other employees are overrepresented. Foreign investors are underrepresented in companies they control, while in other groups of companies they are rather overrepresented. Banks are overrepresented, especially in companies controlled by domestic outsiders – both individual and institutional. Thus, in general, the two most powerful groups – top managers and foreign investors – tend to be underrepresented, while employees and outsiders are overrepresented. This could be interpreted as evidence that the supervisory board fulfills a function of representation of stakeholders as well as shareholders.

Finally, we look at whether top management (executive board members) were recruited from within the companies or from outside. One would expect insider elites to be firmly entrenched in insider-owned companies, with foreign owners more frequently bringing new expertise to executive boards by appointing outsiders. However, the results observed in this sample were very surprising. The relatively small number of insider managers in insider-owned companies is astonishing – company presidents in insider-owned companies were as a rule outsiders, and in one third of these companies there were no insiders in the executives boards at all. By contrast, in more than half of the foreign-owned companies, company presidents were of insider origin.

## 2.2. Employee-leased companies

Immediately following privatization, insiders possessed, on the average, 92% of the shares in the sample of employee-leased companies, and in 95% of those companies, insiders owned over 50% of the shares. The share of non-managerial employees in ownership has steadily decreased, from 58.7% immediately after privatization to 31.5% in 1999. It is worth noting, however, that despite widespread selling of their shares by non-managerial employees, by 1999 only in 6% of firms had this group of owners vanished completely. In most companies, non-managerial employees retained at least minor blocks of shares. While non-managerial employees were losing their shares, the number of shares in the hands of outsiders increased fivefold (from 7.6% to 38.5%). Almost all of them are domestic investors; only three firms have foreign investors (in two cases, strategic investors). A large portion of the outsider shares represent concentrated holdings: 44.4% of the outsider shares were held by owners whom respondents referred to as strategic investors. There is also a large group of private firms and entrepreneurs (18.7%).

Strategic owners were generally involved in the privatization of smaller than average companies, while the percentage of shares belonging to non-managerial employees at the time of privatization was generally higher in larger firms. By 1999 the situation had changed: while strategic investor presence tended to be noted in smaller firms at the time of privatization, in 1999 they tended to be present in larger firms. It is interesting to note that in companies that found

strategic investors after privatization, top management owned much fewer shares at the time of privatization than in the case of those that did not find strategic investors later.

Earlier studies show that in the first half of the 1990s managers were actively buying shares from non-managerial employees and increasing their holdings.[3] More recently, the position of managerial staff has stabilized, and in fact they have even begun to lose ground.

In the average company, the single largest shareholder held over one quarter of all the company's shares by 1998. This indicates a fairly large degree of concentration on the average. As in the sample of 84 large companies, concentration is growing.

A number of factors influence the direction and the dynamics of ownership changes, among others sector affiliation, company size, initial ownership structure, etc., but on the basis of a preliminary analysis we concluded that the most powerful factor determining the dynamics of ownership changes in the companies is their economic condition. When a company is doing well, the internal relations in the company are stable, and none of the main actors has an incentive to undermine this stability. When a company encounters severe economic problems, the actors begin to look around for solutions. The most obvious one is to find an external investor who brings an injection of fresh capital. When major inside shareholders have to choose between survival of the company and preservation of their shares, they tend to choose survival, at the same time trying to keep some shares for themselves. When the future prospects of the company are threatened, however, non-managerial employees lose every possible motivation to hold on to their shares. In earlier studies, a strong positive correlation was discovered between lack of dividends and selling of shares by non-managerial employees (Kozarzewski, 1999). In other words, there is preliminary evidence for what we refer to as the endogeneity of ownership (see Section 3.2 below). Moreover, given the evidence of certain well-known cases of highly successful industrial employee-owned companies which were sold to foreign investors or whose shares were quoted on the Warsaw Stock Exchange, one might hypothesize the non-linear nature of this endogenous relationship, with very good and very poor performance stimulating ownership changes.

Management ownership on the average appears in relatively small companies, while strategic investors appear in companies whose average employment is above the sample average. This is probably due to the fact that, given low levels of personal savings at the beginning of the transformation, it was more difficult for an individual or small group of individuals to buy a large block of shares in a large company than in a small firm.

The financial results of employee-owned companies seem to be generally fairly sound. Profitability indices for the average Polish employee-leased company have been close to – and sometimes even better than – the average indices for firms privatized by commercial methods, and are much higher than those of state enterprises and firms participating in the NIF program. It is, however, worth noting that this profitability index has been consistently falling from year to year.

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[3] For more, see Gardawski (1996) and Kozarzewski (1999).

A rather surprising result is the complete absence of any correlation between various measures of strategic investor shares and their growth on the one hand and investment variables or paying off the lease on the other. In other words, there is no statistical evidence that the presence of a strategic investor actually leads to more investment! In contrast, for 1999 (but not for 1997), there is a positive correlation between concentration in the hands of management and investment spending.

There is consistently a positive correlation between the value of investment projects and the use of credit as a means of financing them, which would tend to support the claims that lack of access to credit is one of the main explanatory factors for the low rate of investment in employee-owned companies in Poland. Interestingly, use of credit is not correlated with size. However, investment spending was positively correlated with the size of the firm (measured in terms of employment).

The membership of the executive boards is dominated by persons who had managed the companies before privatization, when they were still state enterprises. Contrary to what one might expect in view of the process of ownership "outsiderization," the position of insiders on supervisory boards (measured by numerical dominance in the composition of the boards) remains generally strong. At the same time, we do observe a kind of polarization into purely "insider" and purely "outsider" boards.

The supervisory boards tend not to use all the powers given to them by the law and provisions of company by-laws. Extension of the supervisory boards' activities is observed most frequently in companies in economic distress. Generally speaking, the small role of owners in the decision-making process is striking. The owners most frequently act as decision makers where ownership is concentrated in the hands of a strategic outside investor. The role of owners in decision-making also grows in loss-making companies (at the expense of the powers of the executive and supervisory boards). Thus, we see that on the whole, the authority of top management is usually very strong in these companies, with no other actors challenging them.

# 3. Performance and ownership: econometric analysis

## 3.1. Productivity and ownership structure

We analyze productivity here using an augmented production function framework that has been used in several earlier studies analyzing the relation between employee participation and productivity. Ideally, the logarithmized production function estimated is a Cobb-Douglas function:

$$\ln V_{it} = \alpha_0 + \alpha_1 \ln K_{it} + \alpha_2 \ln L_{it} + \alpha_3 Z_{it} + \alpha_4 X_{it} + \mu_{it}$$

where *V* denotes value added, *K* and *L* represent capital and labor inputs, respectively, *X* is a vector of industry and enterprise-specific variables such as dummies for the year of production, *Z* is a vector of ownership variables, firms are denoted by the subscript *i*, the time period in years by *t*, and the residual by $\mu$. However, because of difficulties in constructing a measure for value added based on the data available, and because in a number of studies of labor productivity in transforming economies, researchers have found sales revenues to yield better results than value added in econometric analyses of productivity[4], we use revenues instead of value added. (We use total revenues rather than sales revenues because sales revenues were not available for the 84 large companies.)

We estimate the models using Ordinary Least Squares (OLS) techniques. Table 1 contains the results for the entire panel, the 84 large companies separately, and the employee-leased companies separately. The dependent variable is the natural logarithm of total revenues (LNREV).

As one would expect, the coefficients of labor (LNLAB) and capital (LNAS) are positive and significant. The coefficient for CON1 (i.e., the percentage of a company's shares held by the single largest shareholder) is positive everywhere but significant only in the case of employee-leased companies. The coefficient for presence of a strategic investor (SI) is negative except in the case of the 84 large companies; however, this coefficient is nowhere significant. We see mixed signs for top management ownership (EB) and employee ownership (EMP); here again, however, the coefficients are not statistically significant. For the employee-leased companies, we have dynamic ownership variables showing shifts to states of concentrated ownership, management ownership, and ownership by strategic investors. However, none of these coefficients are significant. Similarly, none of the coefficients for corporate governance variables (measuring the relative dominance of insiders and outsiders on supervisory and executive boards) are significant. Therefore, the only reasonably strong result seems to be the positive relationship between revenues and ownership concentration in employee-leased companies.

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[4] See, for example, Brada, Singh (1995), Grosfeld, Nivet (1998), Woodward (1999).

**Table 1. OLS estimates of productivity effects (using revenues instead of value added)**

| Variable | Whole panel | | 84 large | | Employee-leased (1) | | Employee-leased (2) | |
|---|---|---|---|---|---|---|---|---|
| | Beta | t-statistic | Beta | t-statistic | Beta | t-statistic | Beta | t-statistic |
| YEAR | .026 | .954 | .022 | .277 | .021 | .964 | -.020 | -.694 |
| YP | .016 | .724 | .084 | .910 | .021 | .803 | .065 | 1.858 |
| E15 | -.010 | -.424 | .200* | 2.553 | -.059* | -2.301 | -.081* | -2.642 |
| E17 | -.061* | -2.685 | -.137 | -1.868 | -.053* | -2.140 | -.056* | -2.011 |
| E18 | -.004 | -.194 | -.014 | -.187 | .000 | .005 | -.012 | -.515 |
| E20 | .002 | .109 | -.011 | -.153 | -.002 | -.079 | -.017 | -.660 |
| E21 | | | .070 | 1.052 | | | | |
| E22 | | | .060 | .975 | | | | |
| E24 | | | .141* | 2.022 | | | | |
| E25 | -.089* | -4.604 | .002 | .026 | -.160* | -7.577 | -.087* | -3.383 |
| E26 | -.040* | -2.009 | -.011 | -.158 | -.036 | -1.736 | -.057* | -2.283 |
| E27 | | | -.006 | -.098 | | | | |
| E28 | -.033 | -1.453 | .047 | .617 | -.034 | -1.421 | -.011 | -.368 |
| E29 | -.023 | -1.128 | .036 | .558 | -.009 | -.421 | -.022 | -.878 |
| E31 | -.020 | -1.001 | | | -.029 | -1.381 | -.047 | -1.788 |
| E32 | -.036 | -1.775 | -.091 | -1.386 | -.036 | -1.681 | -.011 | -.426 |
| E33 | | | | | | | -.008 | -.351 |
| E34 | .055* | 2.605 | .116 | 1.671 | -.006 | -.244 | -.078* | -2.750 |
| E35 | .014 | .702 | -.044 | -.671 | | | -.011 | -.458 |
| E36 | | | .010 | .164 | | | | |
| E37 | | | -.027 | -.419 | | | | |
| E45 | .026 | .934 | | | .009 | .306 | -.043 | -1.161 |
| E50 | .086* | 3.909 | .268* | 3.538 | .114* | 4.854 | .067* | 2.329 |
| E51 | .133* | 5.473 | .186* | 2.994 | .182* | 6.775 | .131* | 4.253 |
| E74 | -.003 | -.109 | .010 | .164 | -.012 | -.406 | -.055 | -1.555 |
| LNLAB | .044 | .958 | .101 | 1.000 | .148* | 3.279 | .164* | 3.021 |
| LNAS | .925* | 17.994 | .666* | 7.114 | .802* | 17.766 | .772* | 15.211 |
| CON1 | .025 | .946 | .063 | .787 | .132* | 3.688 | .141* | 3.360 |
| SI | -.014 | -.460 | .094 | 1.011 | -.057 | -1.610 | -.078 | -1.875 |
| EB | -.002 | -.076 | .005 | .088 | .013 | .473 | -.005 | -.139 |
| EMP | .028 | .891 | .130 | 1.081 | .019 | .633 | .004 | .125 |
| SBINS | .036 | .472 | | | .028 | .381 | -.090 | -.924 |
| SBOUT | .093 | 1.309 | .068 | .508 | .057 | .814 | -.052 | -.564 |
| TRCON | | | | | .088 | 1.075 | .081 | .751 |
| TRSI | | | | | -.082 | -1.377 | -.104 | -1.306 |
| TRM | | | | | -.028 | -.437 | -.014 | -.170 |
| CHAIR | .030 | 1.097 | | | .037 | 1.309 | .049 | 1.422 |
| PRES | .020 | .675 | | | | | .016 | .583 |
| EBINS | -.100 | -1.541 | | | -.090 | -1.659 | | |
| EBOUT | -.102 | -1.510 | | | -.067 | -1.183 | | |
| | N=193 | | N=129 | | N=160 | | N=219 | |
| | adjusted $R^2$ = .936 | | adjusted $R^2$ = .665 | | adjusted $R^2$=.945 | | adjusted $R^2$=.889 | |

Asterisks indicate coefficients which are statistically significant at the 95% confidence level.

## 3.2. The endogeneity of ownership: The effect of performance on ownership change

In Section 5.1 we examined the evidence for effects of ownership structure and changes in that structure on performance (productivity). However, it is just as likely that performance should be on the right-had side of the equation and ownership changes on the left-hand side – that is, that new owners emerging or consolidating their shares in the process of "secondary privatization" are motivated to do so by the performance of the enterprises in which they acquire control. In this section, we attempt to test for the endogeneity of ownership – that is, the hypothesis that economic performance determines the ownership structure – by regressing ownership concentration on a number of enterprise variables as well as testing a probit model in which the probability of the emergence of various types of dominant ownership (dominant ownership by a strategic investor, by top management, or by employees) in a given firm is estimated.

What are the factors which we hypothesize to affect changes in ownership structures? Based on previous research on this subject (Demsetz, Lehn, 1985; Himmelberg et al., 1999; Grosfeld, Hoshi, 2003), we hypothesize that the following factors affect ownership changes in the following ways:

*Size*. We have observed that the larger the firm, the less likely it is to have a concentrated ownership structure. On the other hand, certain measures of size – in particular, revenues – can provide an indication of the size of the firm's market, and we hypothesize that the larger that market is, the more likely it will be able to attract a strategic (particularly foreign) investor. We use total revenues as our measure of size.

*Risk and uncertainty*. Demsetz and Lehn (1985) argue that in a risky market environment, monitoring of managers is more difficult, and therefore owners are more highly motivated to acquire controlling stakes in order to have greater control over managers. On the other hand, it can be argued that in a riskier environment, investors are more likely to take a portfolio approach, investing only in small stakes and thereby minimizing their risk. We use the standard deviation of total revenues as the measure of uncertainty.

*Performance*. Stated in a simple way, the hypothesis is that the better the performance of an enterprise, the more attractive it is for potential investors. However, this statement needs to be qualified. Thus, for example, an enterprise experiencing financial difficulties but with a large market may be an attractive investment. We have used profitability (the ratio of gross profit to revenues) as the measure of performance. Of course, if in analyzing employee-owned companies, we use concentration as our measure of ownership transformation, then the positive relationship between performance and the attraction of outside investors may appear ambiguous, as these investors may appear in the form of strategic investors, increasing concentration, but may also enter the company via its quotation on the stock exchange, which may actually decrease the level of ownership concentration.

*Type of shareholder*. Certain types of shareholders are more likely to become strategic investors than others; for example, a company in the same industry as the company whose shares

are being acquired is much more likely to acquire a majority share than a financial institution. For this reason, we include a dummy variable for each of the following types of dominant shareholders at the time of privatization: top management, strategic investors, and employees.

***Length of time since privatization***. Obviously, the more time has elapsed since privatization, the greater the chance that a new investor has appeared or incumbent owners have consolidated their holdings. We therefore include the number of years since privatization in the analysis.

Finally, we include industry dummies (based on two-digit NACE classification), as well as the level of indebtedness (measured by leverage, i.e., the ratio of debts – short- and long-term – to assets) and the ratio of investment spending to assets as well.

For each of the variables, the average values for the period 1993-1996 are calculated. Each of the financial variables is expressed in constant prices, using CPI deflators for final goods industries and PPI indicators for intermediate goods industries.

In a study of endogeneity of ownership changes in privatized Czech companies, Grosfeld and Hoshi (2003) found that one of the key determinants of concentration is the riskiness of the firm's activity; the proxy they used to measure this was the ratio of tangible assets to total assets (based on the assumption that the lower the share of intangibles in total assets, the more stable the firm's performance can be expected to be). They found a significant positive relationship between this ratio and concentration; in other words, the greater the riskiness, the lower the concentration. They also found that larger firms were less likely to have concentrated ownership structures, and that corporate investors were more likely to have larger stakes.

Unfortunately, lack of data prior to 1998 does not allow us to carry out this analysis for the 84 large companies. We therefore restrict our analysis to the employee-leased companies.

We estimate two sets of models. In the first the dependent variable is a measure of concentration, in the second it is a set of dummy variables indicating transitions from a lack of dominant shareholdings by particular types of shareholders at the time of privatization to their dominance in the years covered by the analysis (1997-1999). The first model is specified as follows. In an OLS regression, the dependent variable is the natural logarithm of the share of the single largest shareholder (CON1/100). The independent variables are:

- industry dummies (NACE classification);
- the natural logarithm of revenues, in constant 1993 prices;
- the standard deviation of revenues, in constant 1993 prices;
- the number of years since privatization;
- the averages of the following over the previous period since 1993: the investment-to-assets ratio, leverage (total obligations over total assets), and a measure of enterprise performance based on profitability (different measures were used in two different models; see below), and
- shares of following types of owners at time of privatization: strategic investor, Executive Board member(s), and other employees.

In Table 2, we present the estimates of the regressions of the natural logarithm of CON1 on enterprise characteristics and performance. In Model 1, for our measure of enterprise performance, we use the simple ratio of gross profits to total revenues. In Model 2, in an attempt to identify possible non-linear effects of performance about which we speculated in Section 2.2, we use the square of the ratio of gross profits to total revenues. On the basis of the results presented here, it seems reasonable to conclude that the effects of the initial ownership structures are much stronger determinants of subsequent ownership changes than are financial performance and other economic characteristics of the firms in the sample. Looking at coefficients which are significant at the 95% confidence level, we observe positive and significant effects on the concentration measure CON1 for the number of years since privatization and the initial shares of strategic investors and executive board members. The only economic characteristic which has a significant effect at this confidence level is leverage in model 2 (interestingly, the sign is positive!). If we extend the analysis to include variables whose coefficients are significant at 90% confidence level, we can add leverage in Model 1 and the riskiness indicator, SDREV, for both models to the list. The signs are also positive here. It is worth noting that the implied conclusion concerning the effect of riskiness on concentration contradicts the aforementioned finding of Grosfeld and Hoshi (2003), though we must remember that the measures – both imperfect proxies – used in the two analyses were different.

Models in the second group (probit models) are specified as follows. The dependent variables are dummy variables representing the following transitions:

- there was no strategic investor with at least 20% share at the time of privatization, but there was one at the time of the observation;
- there was no Executive Board member with at least 20% share at the time of privatization, but there was one at the time of the observation, and
- there was neither a strategic investor nor an Executive Board member with at least 20% share at the time of privatization, but there was at least one at the time of the observation.

The independent variables are the same as those reported above for the OLS regressions.

Tables with the results of the regressions are contained in Appendix 2. As in the case of the OLS regressions, for each of the three dependent variables we test two models, one with the simple ratio of gross profits to total revenues, and one with the square of that ratio. We will discuss the results which are statistically significant.

**Table 2. OLS estimates of effects of enterprise performance and characteristics on ownership concentration**

| | Model 1 | | | Model 2 | |
|---|---|---|---|---|---|
| Variable | Beta | t-statistic | Variable | Beta | t-statistic |
| YP | .188* | 2.589 | YP | .186* | 2.640 |
| E14 | .018 | .317 | E14 | .017 | .299 |
| E15 | .105 | 1.640 | E15 | .101 | 1.575 |
| E17 | .038 | .491 | E17 | .040 | .527 |
| E18 | -.121* | -2.092 | E18 | -.121* | -2.081 |
| E20 | -.101 | -1.673 | E20 | -.102 | -1.713 |
| E22 | -.016 | -.154 | E22 | -.183 | -.777 |
| E25 | -.218* | -3.643 | E25 | -.229* | -3.768 |
| E26 | .073 | 1.249 | E26 | .072 | 1.238 |
| E28 | -.053 | -.797 | E28 | -.056 | -.840 |
| E29 | .050 | .702 | E29 | .048 | .684 |
| E31 | -.026 | -.375 | E31 | -.048 | -.677 |
| E32 | -.009 | -.138 | E32 | -.013 | -.210 |
| E33 | .036 | .597 | E33 | .038 | .637 |
| E34 | .048 | .680 | E34 | .050 | .715 |
| E35 | -.122* | -2.104 | E35 | -.122* | -2.112 |
| E50 | -.006 | -.082 | E50 | -.002 | -.027 |
| E51 | -.132 | -1.846 | E51 | -.125 | -1.758 |
| E52 | .015 | .231 | E52 | .021 | .321 |
| E55 | .004 | .067 | E55 | .008 | .130 |
| E60 | .038 | .612 | E60 | .041 | .672 |
| E72 | .035 | .576 | E72 | .037 | .616 |
| E73 | .121 | 1.705 | E73 | .124 | 1.751 |
| E74 | -.118 | -1.534 | E74 | -.116 | -1.560 |
| E80 | -.087 | -1.142 | E80 | -.148 | -1.406 |
| PSI | .222* | 2.568 | PSI | .216* | 2.499 |
| PEB | .196* | 2.139 | PEB | .189* | 2.071 |
| PEMP | -.098 | -.971 | PEMP | -.104 | -1.037 |
| LEV | .153 | 1.663 | LEV | .139* | 1.991 |
| GP | .027 | .180 | GPSQ | .201 | .801 |
| INV | .089 | 1.105 | INV | .085 | 1.054 |
| LNREV | .093 | 1.013 | LNREV | .098 | 1.074 |
| SDREV | .127 | 1.865 | SDREV | .121 | 1.781 |
| N=246 | | | N=246 | | |
| Adjusted $R^2$ = .250 | | | Adjusted $R^2$ = .252 | | |

Asterisks indicate coefficients which are statistically significant at the 95% confidence level.

Transition to dominance by a strategic investor (TRSI) is positively affected by the amount of time elapsed since privatization (YP) in both models, but only at the 90% confidence level in model 1. It is also positively affected by the share of employees at the time of privatization (PEMP)[5], and by leverage (LEV) in model 2, and is negatively affected by gross profitability in model 1. The last two results (for leverage and gross profitability) may be indications of a tendency for poor performance to stimulate sales of shares by non-managerial employees, as discussed in Section 2.2.

Transition to dominance by Executive Board members (TRM) is positively affected by the amount of time elapsed since privatization (YP) and by investment intensity (INV).

TRCON is a sort of combined measure of TRM and TRSI, reflecting transitions to dominance by either one of these groups, and therefore the results here reflect those for the previous two variables. This variable is positively affected by the amount of time elapsed since privatization (YP), the share of employees at the time of privatization (PEMP) – albeit only at the 90% level of confidence, by leverage (LEV) in model 2, by investment intensity (INV), and by size, as measured by LNREV (but only at the 90% confidence level in model 2), and negatively by gross profitability (GP) in model 1.

Finally, if we compare the $R^2$ statistics for the tests of ownership endogeneity with those for productivity, we note that the estimations based on production functions are much better predictors of performance than the endogeneity models are of changes in ownership structures. While there would seem to be some substance underlying the endogeneity hypothesis, we clearly need to refine our theory about the determinants of ownership changes (as well as our measures of different kinds of ownership transformations, given the possibilities for non-linear and seemingly ambiguous relationships discussed above).

# 4. Conclusions

The ownership structure of Polish employee-leased companies, especially immediately after privatization, was characterized by large holdings of dispersed insider owners. Subsequently, the shares of non-managerial employees gradually decline, while those of outsiders grow. Concentration of shares in the hands of managers can be seen from the very moment of privatization. Later, however, managerial holdings stabilize and even decrease somewhat in favor of outsiders.

The sample of employee-leased companies is gradually becoming more and more heterogeneous. We observe three chief directions of ownership structure changes:

– perpetuation of a dispersed shareholding structure, with dominance of insiders (an approximation of an egalitarian, worker cooperative ownership structure);

– consolidation of ownership in the hands of insider elites;

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[5] As we noted in Section 2.2, strategic investors tended to appear in companies in which managers held small stakes (and consequently in those companies in which non-managerial employees strongly dominated the ownership structure).

– concentration of ownership in the hands of outside investors.

In general, however, change is incremental. Radical changes in the ownership structure are rare, and ownership structure seems to be fairly inert. It would, nevertheless, be wrong to conclude that significant change is not possible when it is in the interests of the incumbents, as new strategic investors had appeared in about 10% of the sample by 1998. (It is, however, worth noting that there is a negative relationship between the size of top management's share and the appearance of strategic investors; it appears that once managers have decisive control over the ownership structure of a company, they are reluctant to relinquish it.)

We found little evidence of an effect of ownership structure on performance (measured by total revenues). The only statistically significant result is the positive relationship between concentrated ownership and revenue performance in employee-leased companies.

We found little evidence for the effects of economic characteristics of companies on changes in the concentration of their ownership structures. The initial ownership structures and the amount of time elapsed since privatization seem to have much stronger effects on changes in the level of concentration. As for the emergence of strategic owners or dominance of the ownership structure by top management, again, the time elapsed since privatization is an important factor positively affecting such changes, as is a large non-managerial employee stake for the appearance of strategic investors. The negative relationship between gross profitability and the appearance of strategic investors may be an indication of a tendency for poor performance to stimulate sales of shares by non-managerial employees. Interestingly, leverage and investment intensity seem to positively affect the emergence of strategic investors and managerial dominance, respectively. The level of riskiness does not seem to be a factor behind these types of ownership changes.

In short, with respect to ownership endogeneity hypotheses and the hypotheses concerning the effects of ownership structure and its changes on performance, the results here tend to point to the following conclusion: that productivity is affected most strongly by the standard components of the production function (capital and labor), while ownership structure is most strongly determined by ... ownership structure.

# APPENDIX 1. Data and variables

## Data

The data for the 84 large companies were gathered in a survey conducted in 2001 as part of a project entitled "Corporate Governance, Relational Investors, Strategic Restructuring and Performance in Hungary and Poland" financed by the European Union's Phare ACE Program (contract no. P98-1048-R). The companies were selected from among Poland's 500 largest companies and had been privatized in the years 1990-2001.

The data for employee-leased companies were gathered during research conducted by the interdisciplinary team headed by Professor Maria Jarosz of the Polish Academy of Sciences in a four-year study (1997-2000) devoted to direct privatization (the sample for this study included about 160 employee-leased companies).[6]

The sample was representative with respect to sector (manufacturing, construction, services, trade), size (measured by number of employees) and region, and consisted of 110 firms privatized between 1990 and 1996. This constituted 12.9% of the total number of companies privatized by the leasing method through the end of 1996. Data were collected using two methods: interviews with the main actors in the companies and collection of hard data by questionnaire (these included data from the balance sheets and financial statements, as well as information on ownership and corporate governance issues, employment, restructuring, investments, etc.).

## Definitions of variables

E##     dummy variables for industry (NACE classification, two digit level)

LNREV   natural logarithm of total revenues (in constant 1993 prices for the endogeneity analysis)

SDREV   standard deviation of total revenues (in constant 1993 prices) over the period of 1993-1996 for 1997, 1993-1997 for 1998 and 1993-1998 for 1999

LNLAB   natural logarithm of employment

LNAS    natural logarithm of total assets

LEV     average value of leverage (i.e., the ratio of total debts and other obligations to total assets) over the period of 1993-1996 for 1997 and 1998 and 1993-1998 for 1999 (we were unable to use data for 1997)

GP      average value of the ratio of gross profit to total revenues over the period of 1993-1996 for 1997, 1993-1997 for 1998 and 1993-1998 for 1999

GPSQ    square of GP

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[6] For detailed discussions of the results of these studies, see Jarosz (1994, 1995, 1996, 1999, 2000).

INV      average value of the ratio of investment spending to total assets over the period of 1993-1996 (we have no data on investment spending for 1997 and 1998)

CON1      percentage of shares held by the single largest shareholder

LNCON1    natural logarithm of CON1/100

SI      percentage of the company's shares held by the strategic investor

EB      percentage of the company's shares held by members of the Executive Board

EMP      percentage of the company's shares held by employees (not belonging to the Executive Board)

PSI      percentage of the company's shares held by the strategic investor at the time of privatization

PEB      percentage of the company's shares held by members of the Executive Board at the time of privatization

PEMP      percentage of the company's shares held by employees (not belonging to the Executive Board) at the time of privatization

TRCON      dummy indicating whether neither Executive Board members nor a strategic investor had a share of more than 20% at time of privatization and one or both of these types of owners had over 20% in mid-1997

TRSI      dummy indicating whether strategic investor had a share of less than 20% at time of privatization and over 20% in mid-1997

TRM      dummy indicating whether Executive Board members had a share of less than 20% at time of privatization and over 20% in mid-1997

SBINS      the percentage of supervisory board members who are employed by the company

SBOUT      the percentage of supervisory board members who are not employed by the company

CHAIR      a dummy variable with a value of 1 if the chairperson of the supervisory board is employed by the company

EBINS      the percentage of executive board members who are employed by the company

EBOUT      the percentage of executive board members who are not employed by the company

PRES      a dummy variable with a value of 1 if the president of the company was employed by the company prior to becoming an executive board member in the 84 large companies or employed in the liquidated state enterprise before privatization in the case of the employee-leased companies

YEAR      the year for the data (1997, 1998, and 1999 for the employee-leased companies; 1998, 1999, and 2000 for the others)

YP      the number of years elapsed since privatization

# APPENDIX 2. Probit results

## Dependent variable: TRSI

| | Model 1 | | | Model 2 | |
|---|---|---|---|---|---|
| **Variables** | **Beta** | **Standard Error** | **Variables** | **Beta** | **Standard Error** |
| YP | .3717176 | .201455 | YP | .4684056* | .186662 |
| E45 | -.2659213 | .6018546 | E45 | -.3417664 | .5599125 |
| E51 | -1.582521* | .8024448 | E51 | -1.672695* | .7813665 |
| E74 | -.3455331 | .8236787 | E74 | -1.158343 | .7165571 |
| PEB | -.034628 | .0383634 | PEB | -.0347124 | .0344332 |
| PEMP | .0328783* | .0136793 | PEMP | .0331589* | .0135857 |
| LEV | .116659 | 1.900133 | LEV | 3.243445* | 1.391894 |
| GP | -15.47208* | 6.472068 | GPSQ | -36.59613 | 27.68459 |
| INV | 2.037201 | 3.008095 | INV | 1.521701 | 2.586592 |
| LNREV | .4508864 | .3125053 | LNREV | .250005 | .269997 |
| SDREV | 9.31e-06 | .0000485 | SDREV | .0000175 | .0000447 |
| CONSTANT | -9.230995* | 3.835046 | CONSTANT | -10.33248* | 3.710879 |
| N = 157<br>Log likelihood = -27.293086<br>Pseudo $R^2$ =.5442 | | | N = 157<br>Log likelihood = -30.142578<br>Pseudo $R^2$ =.4966 | | |

Asterisks indicate significance at the 95% level of confidence.

## Dependent variable: TRM

| | Model 1 | | | Model 2 | |
|---|---|---|---|---|---|
| **Variables** | **Beta** | **Standard Error** | **Variables** | **Beta** | **Standard Error** |
| YP | .195153* | .107075 | YP | .209071* | .1044268 |
| E45 | .3226083 | .632006 | E45 | .3458331 | .6584329 |
| E51 | 1.157239* | .6713477 | E51 | 1.202858 | .7382229 |
| E52 | 2.147117* | .6804387 | E52 | 2.166592* | .7395924 |
| E72 | 1.940535* | 1.152297 | E72 | 1.983586 | 1.185735 |
| E74 | .5714299 | .6520921 | E74 | .5426281 | .664081 |
| PEB | -.0114917 | .0146358 | PEB | -.0125818 | .0145694 |
| PEMP | .0008641 | .0091852 | PEMP | .0006461 | .0093046 |
| LEV | -.6308196 | 1.320719 | LEV | -.330077 | 1.09091 |
| GP | -1.920322 | 4.726457 | GPSQ | -.3344572 | 27.18271 |
| INV | 4.884594* | 2.020344 | INV | 4.829957* | 2.021605 |
| LNREV | .2573309 | .1569174 | LNREV | .2502569 | .1564342 |
| SDREV | -.0001043 | .0000844 | SDREV | -.0001088 | .000085 |
| CONSTANT | -5.114228* | 2.11536 | CONSTANT | -5.395114* | 2.042708 |
| N = 180<br>Log likelihood = -59.695586<br>Pseudo $R^2$ = 0.2327 | | | N = 180<br>Log likelihood = -59.778568<br>Pseudo $R^2$ =.2316 | | |

Asterisks indicate significance at the 95% level of confidence.

**Dependent variable: TRCON**

| Model 1 | | | Model 2 | | |
|---|---|---|---|---|---|
| **Variables** | **Beta** | **Standard Error** | **Variables** | **Beta** | **Standard Error** |
| YP | .22135* | .0940813 | YP | .283986* | .0909822 |
| E45 | .1592096 | .480547 | E45 | .1851834 | .4615085 |
| E51 | -.0746151 | .5425913 | E51 | -.1077107 | .5554177 |
| E52 | 1.170059* | .5589208 | E52 | 1.00814 | .5603349 |
| E72 | .7716108 | 1.050993 | E72 | .7425104 | 1.052649 |
| E74 | .2229696 | .5341435 | E74 | -.1425281 | .4906152 |
| PEB | -.0090501 | .0149918 | PEB | -.0130646 | .014418 |
| PEMP | .0138286 | .0080055 | PEMP | .0137306 | .0080533 |
| LEV | -.0103815 | .9979478 | LEV | 1.782148* | .7949507 |
| GP | -10.68851* | 4.01597 | GPSQ | -12.18949 | 19.25507 |
| INV | 3.99472* | 1.757969 | INV | 3.285604* | 1.633644 |
| LNREV | .2796222* | .1423512 | LNREV | .2290985 | .1387386 |
| SDREV | .0000206 | .0000351 | SDREV | .0000114 | .0000333 |
| CONSTANT | -5.682625 | 1.820558 | CONSTANT | -6.971307* | 1.765485 |
| N = 180<br>Log likelihood = -73.206408<br>Pseudo $R^2$ = .2917 | | | N = 180<br>Log likelihood = -76.970407<br>Pseudo $R^2$ =.2553 | | |

Asterisks indicate significance at the 95% level of confidence.

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