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Irena Grosfeld and Iraj Hashi

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Irena Grosfeld, *Delta-Fédération Jourdan, CNRS*
Iraj Hashi, *Faculty of Law and Business, Staffordshire University*

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Summary

Mass privatization offers a particularly suitable framework to study the change in ownership concentration as the extent of change is unusual for a stable market economy. Focusing on two different mass privatization schemes in two transition economies, Poland and the Czech Republic, we find that despite important differences in the design of the two programmes and despite different quality of legal and regulatory framework, ownership structure in the two countries has rapidly evolved and the emerging ownership patterns are remarkably similar. This suggests that private benefits of control are large and the quality of investor protection regime is low in both countries. However, looking at the relationship between the change in ownership concentration and firm performance, we find an interesting difference between the two countries: in the Czech Republic the increase in ownership concentration seems to be less likely in poorly performing firms while in Poland the quality of past performance does not affect investors' willingness to increase their holdings. This effect may be interpreted in the light of the theory stressing the importance of the quality of investors' protection. It could be argued that if Czech investors are more risk averse and more concerned with diversification this is largely due to the weakness of the legal protection they face.

Keywords: Ownership concentration, Mass privatisation, Corporate governance, Transition

JEL Classification: G3, L2, P3, P5

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Address for correspondence:

Irena Grosfeld
Delta-Fédération Jourdan, CNRS
48, Boulevard Jourdan
75014 Paris
France
Phone: +331 4313 6328
Fax: +331 4313 6310
E-mail: grosfeld@delta.ens.fr

1. Introduction

Privatisation in Central and Eastern Europe strongly relied on 'wholesale' methods to transfer assets from the state to the private sector. These strategies, often qualified as 'mass privatization', consisted of a free transfer of equity of a large number of firms to large segments of the population. Since the beginning of transition, mass privatization has been strongly criticised as being 'artificial' and unable to provide firms with 'real owners' or to improve firm performance. One of the main criticisms concerned the dispersed ownership structure that mass privatisation was expected to generate. Some countries, e.g. Poland, sensitive to this argument, chose to impose a concentrated ownership structure on privatized firms. The main concern was avoiding excessive dispersion of ownership and providing companies with 'effective owners', capable and willing to enforce control over management and undertake profound firm restructuring. In other countries, such as the Czech Republic, where privatization was understood as the key element of the process of radical institutional change and was expected to create important synergies, the main concern was the speed of the process and less attention was paid to the emergence of a specific ownership structure.

Several years after the initial distribution of firms' equity, it is still largely believed that mass privatization schemes were plagued with inefficiencies mostly due to rigid and/or inefficient ownership structure. However, if we look at the actual change at firm level it turns out that the effective reallocation of property rights has been quite extensive and that the ownership concentration has significantly increased.[1] Therefore, it becomes interesting to describe this evolution in detail and to explore if and how ownership structure adjusted to firm specific characteristics and to factors characterizing the firm's environment.

It should be stressed that the objective of this paper is quite modest. We do not try to assess whether and how ownership structure affects performance. Neither have we distinguished the managerial ownership dimension of ownership structure. These are important questions that have been studied by a number of authors and also need to be investigated further.[2] In focusing on the determinants of ownership concentration we follow the literature initiated by Demsetz (1983) and Demsetz and Lehn (1985) who argued that ownership structure should be viewed as the result of shareholders' optimizing decisions.[3] Considering the determinants of ownership concentration may be viewed as a first step. The next and an important extension of this paper would be to consider the relationship between ownership and firm performance in a simultaneous equation framework: in such framework with firm performance and ownership concentration being the two dependent variables, we could consider potential causality running form ownership to performance.

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[1] Berglöf and Pajuste (2003) document high ownership concentration in a number of transition economies.

[2] For important theoretical contributions see Jensen and Meckling (1976), Shleifer and Vishny (1986), Bolton and von Tadden (1998), Burkart et al. (1997). Some of recent empirical papers include McConnell and Servaes (1990), Himmelberg, et al. (1999), Miguel, et al. (2001). Works on transition economies include Claessens and Djankov (1999), Kocenda and Svejnar (2003), and Simoneti, et al. (2003).

[3] For recent contributions, see Bebchuk (1999), Demsetz and Villalonga (2001), Lamba and Stapledon (2002). Jones and Mygind (1999) and Jones, et al. (2003) deal with the determinants of ownership structure in a transition economy.

We focus on firms privatized through two different mass privatization schemes in two transition economies, Poland and the Czech Republic. Mass privatization offers a particularly suitable framework to study the change in ownership concentration as the extent of change is unusual for a stable market economy. We find that despite important differences in the design of the two programmes and despite different quality of legal and regulatory framework, ownership structure in the two countries has rapidly evolved and the emerging ownership patterns are remarkably similar. Ownership concentration has significantly increased and we can observe an important reallocation of ownership claims between different groups of shareholders. In the Czech Republic, starting from a highly dispersed ownership structure, in almost half of companies a majority of shares is held by a single block holder. Similarly in Poland, starting from a particular ownership structure imposed by the National Investment Funds (NIF) programme, the majority of companies involved in the scheme have been freed of NIFs' control and almost half of them have found a single block holding entity with a majority of shares. Ownership concentration, defined as the presence of a majority shareholder or the increase in the share of the largest owner, seems to be mainly determined by firms' past performance and by the identity of the largest owner.

The difference between the two countries appears when we consider how past performance affects the increase in ownership concentration: it turns out that the impact of past performance is positive in the Czech Republic and insignificant or even negative in Poland. This suggests that in Poland shareholders believe they can obtain some benefits of control and do not fear increasing their holdings in less profitable firms while in the Czech Republic less profitable firms are considered as too risky and shareholders prefer increasing their equity holdings in better performing firms. Such result may be interpreted in the light of "law matters" theory due to La Porta, et al. (1998).[4] The difference in the shareholders' attitude towards risk in the two countries may indeed be due to the differences in the quality of the legal framework. Poland is usually praised for high standards of its regulation while the Czech Republic, especially in the early and mid-1990s, has been blamed for its weaknesses (see Glaeser, et al., 2001)

The evidence of a dynamic adjustment of the ownership structure provided in this paper suggests that, contrary to the concern of the critics of mass privatisation programmes, they were not the most inefficient way of transferring assets from the state to the public sector. The initial ownership structure they created was transitory and rapidly gave way to new configurations. This evidence may help to explain the apparently surprising result of Bennett, et al. (2004). Analyzing the impact of various privatization methods on economic growth in a cross-country setting, they find that mass privatization was the only method with a significantly positive effect. Although we do not consider here the relationship between privatization and performance, the fact that ownership structure in our firms has become highly concentrated may provide an element of explanation.

The plan of the paper is as follows. In section 2 we present the two mass privatization schemes in Poland and in the Czech Republic and show how ownership concentration and the type of the controlling shareholders have changed since the beginning of the process. In

[4] Looking at cross-country variations, La Porta, et al. (1998) find that concentration of ownership (measured by the stake of the three largest shareholders) is negatively correlated with the quality of investors' legal protection. In other words ownership concentration becomes a substitute for legal protection of investors.

section 3 we consider the potential determinants of ownership concentration. Empirical model is presented in section 4, the results in section 5 and we conclude in section 6.

2. Mass Privatisation and after: reallocation of equity stakes in the Czech Republic and Poland.

Despite broad similarity of their reform programme, Poland and the Czech Republic embarked on two different variants of mass privatisation (briefly described in Appendix 1). Various political and social considerations played a role. Most importantly, the choice was determined by the policy makers' understanding of the role of privatisation in market processes. In Poland privatisation was seen as a means of improving firm incentives and its real objective was firm restructuring. More orthodox methods of privatisation (IPOs, negotiated sales, auctions, etc.) were seen as more efficient from that point of view, but it soon became clear that privatisation would be too slow if it were to rely exclusively on such methods. Therefore, the National Investment Funds (NIF) programme was initiated to supplement other methods and speed up the process. The design of this programme was dominated by the concern about corporate governance arrangements favouring enterprise restructuring. In particular, a concentrated ownership structure was imposed on firms and the funds were to be managed by highly experienced Western specialists.

In the Czech Republic (and before that in Czechoslovakia) privatisation was understood as the precondition for the emergence of a market environment. Voucher privatisation was seen as the most rapid and the least unfair way of transferring assets from the State sector. It was expected that under competitive pressure the initial ownership structure would gradually evolve towards a more effective structure.

The two different philosophies underlying the two mass privatisation programmes are reflected in the design of the regulations of securities markets in the two countries. Poland is usually given as an example of a good regulatory strategy while the Czech Republic is blamed for the weakness of its regulatory framework (Glaeser, et al., 2001). Indeed, the Polish authorities were concerned with the proper development of financial markets in general, and the stock exchange in particular, and focused on the creation of a well established legal system and enforceable laws. In the NIF programme, the remuneration scheme for NIF managers and the stock exchange listing requirements were carefully designed to ensure the transparency of the process and to avoid expropriation of minority investors. The main concern was to avoid excessive dispersion of ownership and to provide companies with 'effective owners'. But the authors of the programme were also concerned with the potential danger of private benefits of control and therefore imposed the limit of 33 percent on the lead fund's holdings in each company.

Such guarantees were deemed unnecessary in the Czech Republic: there was a fear that state intervention would create impediments to a rapid development of market institutions. The Company law and the laws governing the operation of securities markets were very lax and the supervision of securities trading and the associated agents were, until 1998, left to a Securities Office in the Ministry of Finance. Privatised companies were listed on the stock exchange without having to publish a prospectus and to obtain the approval of the securities regulator. The increasing number of financial scandals and opportunistic behaviour involving funds and enterprise managers (later called 'tunnelling') reflected the weakness of the regulatory framework.[5] The pressure from the opposition parties and the press eventually forced the government to establish the Securities Commission.

The Data

The data for Czech companies is provided by a Czech commercial company, Aspekt (www.aspekt.cz) who use official company accounts filed by joint stock companies (for financial information), Prague Securities Centre (for ownership information), and company reports for employment and other information. The financial data covers the period of 1993-1999 while the ownership data covers the period 1996 to 1999. The data-set was purchased in early 2000 and consequently the information for 1999 is not complete for all companies. The ownership data includes the identity and the equity holdings of up to seven largest shareholders of each company since 1996. There are five types of owners: industrial and commercial companies (corporations), investment funds, financial institutions,[6] individuals and the state. The database does not identify foreign ownership.

The data set contains financial information on the bulk of mass privatised companies but the ownership information is limited to a smaller number of companies because many mass privatised companies have left the stock exchange, changed their legal status or have been taken over by other companies. After careful cleaning of the data base (involving the deletion of observations containing obvious errors) we established a balanced panel of 652 companies for which full ownership information is available for the 1996-1999 period.[7] The sample is well distributed across 12 sectors of economic activity.[8]

The Polish data set, containing all 512 mass privatised companies and covering the 1995-2000 period, was collected from several sources. The Ministry of State Treasury (Department of Privatisation) keeps some basic data on the 512 companies in the National Investment Fund Programme, largely for the period before their privatisation. The Department keeps a record of major changes in the status of these companies. Additional information was collected from the annual reports of NIFs and their portfolio companies through the publication *Monitor Polski*, NIFs' annual reports and the reports of the Association of National Investment Funds. For companies that have been floated on the stock exchange, further information was obtained from the Warsaw Stock Exchange. In the final sample analyzed in this paper we do not include firms that went bankrupt or for some reasons were deleted from the registry kept in the Ministry of State Treasury. We also exclude observations with missing data. The number of firms in the sample was therefore reduced to 439.

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[5] For examples of opportunistic behaviour by managers and large shareholders, see Hashi (1998); Johnson, et al. (2000) and Glaeser, et al. (2001).

[6] The data set contained two sub-groups of financial institutions: portfolio companies (which are engaged primarily in buying and selling of shares) and banks. However, as the number of firms in these two sub-groups was small, they were combined together under 'financial institutions' in order to make the empirical work more meaningful.

[7] There are occasionally missing observations for individual variables which lowers the number of observations to 610 in the regressions presented in Section 5.

[8] Originally firms were grouped into 19 activities based on Prague Stock Exchange classification of sectoral activity (which closely resembles NACE classification) but as the number of firms in some sectors was very small, for reasons of empirical feasibility, we grouped firms in similar activities and formed 12 industrial sectors.

Unlike in the Czech Republic, the initial ownership structure of the companies in the mass privatisation scheme was uniform and fixed by the scheme (the lead fund had 33 percent of shares; other 14 funds 27 percent; employees 15 percent and the state 25 percent). The information on ownership change throughout the period 1995-2000, collected from the variety of sources described above, allows identifying the largest owners of the companies. It shows the extent of the divestiture by NIFs. The distinction is made between foreign and domestic shareholders; among the latter there are companies, NIFs, employees, individuals and the state.

Changes in the ownership structure

We focus on two dimensions of the change in the ownership structure. First, we look at ownership concentration, measured by the share of the largest owner. Second, we consider the reallocation of block holdings between different types of owners. The evidence from both Poland and the Czech Republic points to an unambiguous increase in concentration of ownership in both countries. Table 1 highlights the broad picture of this evolution.

The average holdings of the largest shareholder in the Czech sample increased rapidly from 38.8 percent in 1996 to 51.9 percent in 1999 and in the Polish sample from 33.9 percent in 1996 to 50.3 percent in 2000. In the Czech Republic the median figure indicates that by 1999 in half of the sample firms the largest owner held almost 50 percent of the firm's equity. The number of firms in which the largest shareholder controls more than 50 percent of shares increased indeed from 189 in 1996 to 289 in 1999.

The Polish scheme, due to its cautious design, had a degree of inertia built into it. Dominant owners, i.e., the ‘lead funds’ holding 33 percent of company shares initially, could not increase their share in portfolio companies until they were floated on the stock market or their capital was increased. At the same time, companies could not be floated on the stock market until they could meet (as any listed company) the stringent listing criteria set by the regulatory agency. Despite these restrictions, a significant reallocation of equity holdings, triggered by a combination of the NIFs' incentive system and the competitive pressure from the product and factor markets, occurred quite rapidly. NIFs have withdrawn from managing a large number of portfolio companies. Some firms were floated on the stock exchange, others were sold to strategic (domestic or foreign) investors, and some were put into liquidation. NIFs proved to be the agents of privatisation rather than agents of restructuring. The net results, as panel (b) of Table 1 shows, were that by the year 2000, the largest shareholders were, on average, in absolute control of their companies. The differences in the initial ownership structure notwithstanding, the process was very similar to that in the Czech Republic.

The second dimension of the change in the ownership structure is the reallocation of ownership rights between different types of largest shareholders. This process was different in the two samples because of the particularities of the privatization process in the two countries and the initially uniform ownership structure of the Polish firm. In Poland, the reallocation of ownership was first dominated by the transfer from the state to NIFs and then from NIFs to other types of owners. While in 1994 all firms were state-owned, by 2000 the state had reduced its holdings to zero in 99 firms and to about 20 percent (on average) in the remaining firms. About 15 percent of the companies in the scheme went bankrupt or entered the bankruptcy or liquidation processes. 36 companies (about 7 percent of the companies in the scheme, 25 of them with strategic investors) have satisfied the listing conditions set by the Warsaw Stock Exchange and were quoted on the WSE in 2000.

Tables 2 and 3 show how equity held by different types of the largest owner has evolved in Poland between 1998 and 2000 and in the Czech Republic between 1996 and 1999.

In Poland NIFs have withdrawn from 240 firms leaving the companies to the new owner, with over 20 percent of them (52 companies) having been sold to foreign investors. Concerning the concentration of ownership stakes, it is striking that, on average, most strategic investors have gained majority control of the firms' equity. Only NIFs, on average, hold 37 percent of shares of their portfolio companies. The employees, who were given special privileges in the Polish mass privatization, have acquired control of 13 companies. The highest ownership concentration (75 percent) can be observed in firms bought by foreign investors.

Similarly, in the Czech Republic we can observe a gradual process of reallocation of large block holdings between different types of owners. In the immediate post-privatization period, the state, financial institutions and investment funds were the most important large shareholders. A couple of years later we can observe the emergence of individual entrepreneurs and industrial and commercial companies as the largest shareholders. All categories of largest owners have increased their equity stakes. Industrial and commercial companies and financial institutions have increased their average holding to over 56 percent while individuals and investment funds have increased their average holding to around 45-46 percent.

The unusually rapid changes in ownership structure in firms included in the mass privatisation programmes in the Czech Republic and Poland give us the opportunity to empirically investigate the determinants of these changes. The owners' desire to change the initially imposed (Poland) or inefficient (the Czech Republic) ownership structure reflected, and certainly responded to, a variety of firm specific characteristics and factors representing the environment in which firms operate. In what follows we try to identify the determinants of the increase in ownership concentration in the group of Czech and Polish firms.

3. What makes ownership more or less concentrated?

We look at within country variations in ownership structure which means that we do not consider here the important issue on which the work by La Porta, et al. (1998) focused:[9] legal and regulatory constraints are held constant. We try to identify the determinants of ownership concentration at the level of the firm. We use two dummy variables for ownership concentration: 1) the increase/decrease of the share of the largest owner since the initial allocation of property rights, and 2) the presence/absence of a majority shareholder (holding more than 50 percent of shares).

In line with several previous studies investigating the determinants of ownership concentration, we expect the following factors to influence our two dependent variables:

[9] Looking at cross-country variations, La Porta, et al. (1998) find that concentration of ownership (measured by the stake of the three largest shareholders) is negatively correlated with the quality of investors' legal protection. In other words, ownership concentration becomes a substitute for legal protection of investors.

Performance

Owners' decision to increase their holding may depend on firm performance. It is possible that in less profitable firms shareholders want to increase their holdings in order to better control the management and obtain some of the benefits of control. On the other hand, such firms may be less attractive for risk-averse shareholders looking for risk diversification. The impact of performance on owners' decision to concentrate their holdings is therefore ambiguous.[10]

It is difficult to choose an ideal performance indicator for non-listed firms in transition economies. We use profit before taxes and depreciation which is the commonly used measure. Alternatively, we use the growth of sales as a measure of performance: it is sometimes argued that it is less subject to accounting manipulations. Additionally, we include investment which may be considered as a proxy for the future prospects of the firm. We expect that higher investment activity leads current and potential shareholders to increase their holdings in the firm.

Size

It is usually expected that ownership in larger firms is less likely to be highly concentrated. Purchasing large equity shares in a large company is more expensive than doing the same in a smaller company. Moreover, the concern for diversification also suggests that owners will be careful and refrain from committing a larger fraction of their wealth to one firm. In some previous studies (e.g. Demsetz and Lehn, 1985) firm size was inversely related to ownership concentration. On the other hand, in the highly uncertain conditions of transition economies, larger, older and better known firms may be perceived by some shareholders as less likely to go bankrupt. In this case, such shareholders would increase their shareholding in larger firms. The overall impact of size on ownership structure may thus be ambiguous.

Leverage

Also the effect of leverage on ownership concentration may be ambiguous. Highly leveraged firms are more risky and risk averse owners may prefer avoiding excessive concentration in such firms (Stulz 1988, Demsetz and Lehn, 1985). Similarly, if leverage is seen as a control instrument used to reduce agency costs and creditors substitute owners in their monitoring activities, we would expect ownership concentration to be lower in more leveraged firms. But debt may also be viewed as complementary monitoring device: in that case higher ownership concentration may appear in more indebted companies.

Identity of the dominant shareholder

[10] This ambiguity appears in the previous works. For instance, Demsetz and Villalonga (2001) find that performance has a significant and negative effect on ownership concentration while in Jones, et al. (2003) previous profitability does not affect ownership structure in a significant way.

The degree of ownership concentration may strongly depend on who the largest shareholder is. It is therefore important to distinguish between different types of block holders. For example, a corporation may have stronger motivation than a financial institution to acquire large stakes in a firm. The state and the National Investment Funds in Poland are supposed to wither away as owners and we expect that their equity will progressively diminish. The nationality of the dominant owners may also affect ownership concentration: foreign owners may be more willing and capable of acquiring larger stakes in order to control the company. In Poland we can distinguish between foreign and domestic investors; and among the latter between corporations, individuals, employees, NIFs and the state. In the Czech Republic we can distinguish between corporations, individuals, investment funds, financial institutions, and the state.

Industry

Ownership concentration may vary across industries. Some industries are more likely to have dispersed ownership than others. One of the possible explanations of these differences would be that different types of activities require different level of monitoring.[11] In some industries closer monitoring may bring about gains to shareholders[12] while in others, especially those regulated by the state, additional monitoring by large shareholders may not yield any benefits.[13] Hence, we have to control for the type of the industry in order to take this effect into account.

4. The model

We analyse the determinants of ownership concentration using two dependent variables. First, we estimate the probability that the share of the largest owner has increased since the initial allocation of equity stakes (Y_1). This was the case in 491 firms in the Czech Republic and in 219 firms in Poland. Secondly, we estimate the probability that a company has a majority shareholder at the end of the considered period (Y_2). In our samples, 44 percent of firms in Poland in 2000 and 49 percent in the Czech Republic in 1999 have a shareholder with more than 50 percent of shares.

We use the following general model to identify the factors that affect our dependent variables:

$$P\,(Y_j=1/X) = \frac{\exp(X\beta)}{1+\exp(X\beta)}$$

Where j=1, 2.

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[11] See Carlin and Mayer (1999) and Allen (1993).

[12] Demsetz and Lehn (1985) call it 'control potential' and Bebchuk (1999) speaks about private benefits of control.

[13] Demsetz and Lehn (1985) and Demsetz and Villalonga (2001, e.g., control for regulated industries (financial and utilities).

P ($Y_1 = 1/X$) is the probability that the share of the largest owner has increased since the beginning of the process and
P ($Y_2 = 1/X$) is the probability that the largest owner holds more than 50 percent of shares, both conditioned on the realization of X, which represents the vector of explanatory variables and β is the corresponding vector of coefficients.

The vector of explanatory variables X includes the following variables: performance, size, leverage, investment, type of the largest owner, industry, and a set of variables representing specific features of mass privatisation in the two countries.

Performance is defined as ratio of earnings before taxes and depreciation to total assets (the growth of sales is used as another proxy for performance); size is measured by natural logarithm of sales in constant prices; leverage is defined as total liabilities over total assets; investment is the ratio of net investment in fixed assets to total assets. In order to alleviate the problem of potential endogeneity of ownership concentration, the four variables (performance, size, leverage and investment) are averaged over the period ending one year earlier than the year for which ownership is considered. (i.e., 1996-1998 for the Czech sample and 1995-1999 for the Polish sample). Type of owner is a set of dummies representing different types of the largest shareholder. Industry represents a set of dummies for industries to which the firm belongs (12 for Czech firms and 20 in Poland).

In the case of the Czech Republic we want to distinguish between firms that were privatised in the first and in the second wave of the voucher scheme. We also include the initial level of ownership concentration (in 1996).[14] We obviously expect that the increase in ownership concentration will be less likely in firms that were initially already highly concentrated. Such firms are also more likely to have at the end of the process a majority investor. In Poland, the initial level of ownership concentration was by design the same for all firms so we do not include this variable in the regressions. In the case of Polish mass privatised firms we distinguish between listed and non-listed firms by using a dummy variable for firms that are listed on the Warsaw Stock Exchange (WSE). It may be expected that firms listed on the stock exchange are more likely to have widely held share ownership structure. We also want to distinguish between various National Investment Funds and we include a set of dummies representing the lead National Investment Fund of each company (15 NIFs altogether). We know that these funds differed in their strategies towards firms in their portfolios: some funds behaved more like venture capital funds while others chose strategies of purely financial intermediaries. Firms' ownership concentration might have been influenced by these strategies. The full list of variables is presented in Table 4.

5. The results

Tables 5 and 6 show respectively the results for Poland and for the Czech Republic. For each of the two dependent variables we present two sets of regressions: with and without dummies representing the type of the largest shareholder. For Poland additionally, before adding all types of domestic owners, we show, in columns 2 and 5 the results of the regression in which only foreign versus domestic owner is considered.

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[14] Ownership concentration is measured by the share of the largest shareholder. In the regression analysis, we use a logistic transformation of this measure. See table 4 for the exact definition.

The inclusion of the type of the largest owner significantly improves the explanatory power of the regressions, particularly in Poland. In both countries most of the coefficients of the dummies representing the type of the largest owner are significant.[15] In particular, in Poland the firm is significantly more likely to be majority controlled if it has a foreign largest shareholder. The presence of a foreign dominant shareholder also significantly influences the probability of an increase in its equity holdings. Interpreting the coefficients of various dummies representing the types of owners we should remember that the reference group is the state in the Czech Republic and the state together with NIFs in Poland .These types of owners are supposed to wither away and therefore it is not surprising that other categories are more likely to increase their equity holdings and to take majority control.

We do not observe a significant relationship between ownership concentration and either leverage or investment. But some of the privatisation-related variables turn out to be quite important. Firms listed on the Warsaw Stock Exchange are less likely to experience increasing concentration and are less likely to have a majority owner. It could be argued that ownership dispersion is safer in listed firms as investors have access to a much greater amount of information and also a certain amount of monitoring is undertaken by the financial market itself. So the opportunities for reaping the benefits of control by increasing ownership concentration and monitoring are more limited. Moreover, according to the regulation of the WSE, beyond a certain level of ownership concentration, the dominant shareholders have to make compulsory purchase offers to other shareholders, which may require a prohibitively large amount of resources. In the Czech Republic, as expected, the higher the initial level of ownership concentration, the lower the probability that the share of the largest shareholder has increased and the higher the probability that the firm has found a majority owner.

The evidence about the importance of firm size is mixed: it becomes insignificant in Poland when all types of largest owners are included and only slightly positive in the Czech Republic. This result suggests that the desire of diversification and the search for a safe investment (which large firms may offer in an uncertain environment) counteract each other. More importantly, we get a contrasting result comparing the correlation between firms' past performance and ownership concentration in the two countries. In Poland firm's past performance does not seem to affect the probability of the increase in the share of the largest owner (it is even slightly negative if we do not control for the type of the largest owner). Also, the presence of a majority shareholder is more likely in firms characterized by poor past profitability. In contrast, in the Czech Republic the coefficient of past profitability is positive and affects very strongly the probability that the share of the largest owner has increased. This result may reflect the owners' willingness to avoid increasing their equity holdings in the Czech poorly performing firms. In Poland, investors appear more likely trying to reap some benefits of control.[16]

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[15] Only in the Czech Republic the presence/absence of a majority shareholder is not affected by the largest shareholder being an individual or an investment fund. These two categories of owners were the main players in the auctions of the voucher scheme and their behaviour might not differ significantly from the state, which is here the base group.

[16] Grosfeld and Tressel (2002) show that the performance of Polish listed firms improves when the largest owner has a majority stake in the company.

The results are robust to the use of an alternative measure of firm performance: the growth of sales, and an alternative measure of firm size: the natural logarithm of the value of assets.[17]

6. Conclusions

In firms privatized in the framework of mass privatization programmes in Poland and the Czech Republic we observe a significant increase in ownership concentration measured by the share of the largest owner. This evidence goes against the main argument of the critics of mass privatization programmes who were convinced that these programmes would bring about dispersed ownership structure at firm level. The fact that the evolution of ownership concentration is similar in Poland and in the Czech Republic suggests that private benefits of control are large in both countries (see Bebchuk, 1999). If we refer to 'law matters' theory, this suggests that the quality of investor protection regime is rather low in both countries. So we do not get a confirmation of the usual view that the Polish legal and regulatory framework is much better than the one in the Czech Republic. However, although the direct comparison of ownership concentration in the two countries does not provide a confirmation of the main prediction of 'law matters' theory, we find indirect evidence in its favour.

Looking at the relationship between the change in ownership concentration and firm performance, we find an interesting result: in the Czech Republic the increase in ownership concentration seems to be less likely in poorly performing firms while in Poland the quality of past performance does not affect investors' willingness to increase their holdings. This contrasting effect may be interpreted in the light of the theory stressing the importance of the quality of investors' protection. It could be argued indeed that if Czech investors seem to be more risk averse and more concerned with diversification this is largely due to the weakness of the legal protection they face.

[17] The results are available on request.

APPENDIX

Mass Privatisation in the Czech Republic

The main method of privatisation in the Czech Republic was 'voucher privatisation' through which some 1700 companies were privatised in two 'waves' in 1991–92 and 1992–94. [18] The shares of these companies were transferred to either individuals or privatisation investment funds (PIFs) in exchange for vouchers. PIFs set up by manufacturing companies, private individuals and institutions as well as state-owned banks and insurance companies, actively participated in the process as financial intermediaries. Adult citizens received vouchers which they could exchange for the shares of companies in the scheme either directly or indirectly through privatisation investment funds. In the latter case, they could entrust their vouchers to investment funds and become shareholders of these funds (which were joint stock companies) or unit holders in unit trusts. The funds, in turn, could use vouchers collected from their members to bid for shares of their preferred companies. Understandably, given the prevailing information asymmetry and risk aversion, the majority of citizens opted for the second alternative and entrusted their vouchers to investment funds. In the first wave, 72 percent of investment points available were used by funds and 28 percent by individuals directly. In the second wave, the percentages were 64 percent and 36 percent respectively. The bulk of investment points controlled by funds were concentrated in the hands of a small number of funds set up by banks and financial institutions (Hashi 1998). In the first wave, these funds were all close-end funds but in the second wave many of them took the form of unit trusts. Later on, as part of the reform of the financial system, close-end funds were required to convert themselves to open funds by 2002. Initially, the funds were allowed to hold up to 20 percent of the shares of each company in the scheme, though they quickly found ways of bypassing this constraint. The funds' maximum holding in each company was later reduced to 11 percent.

The shares of mass privatised companies and privatisation investment funds were immediately listed on the stock market without the requirement of prior approval and the publication of a prospectus. The process of buying and selling of shares, and the reorganisation of funds' portfolios, quickly followed the two waves – a process generally referred to as the 'third wave' of privatisation. Investment funds, despite their large overall stakes, were generally not in a controlling position in their portfolio companies. Many funds had ended up with shares of too many companies and wanted to reduce the size of their portfolios. Many individual shareholders, preferring cash to risky shares, also entered the secondary market, selling their shares, thus further pushing down share prices.[19] A major feature of the so-called third wave of privatisation was the take-over of investment funds. Given that PIFs (especially those set up in the first wave) were joint stock companies with a large number of shareholders, they were easy targets for aggressive bidders.

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[18] For details of the Czech privatization see Mejstrik (1997).

[19] It was estimated that in the early post-privatization period up to one-third of individuals who had obtained shares in the voucher scheme sold their shares. See The Economist Intelligence Unit, *Country Report,* 2nd Quarter 1995, p. 15.

Mass Privatisation in Poland

The scale of the Polish mass privatisation was less spectacular than the Czech scheme. It included 512 companies and 15 National Investment Funds (NIF), which were set up by the Government.[20] The management of these funds was initially entrusted to special consortia of Western and Polish partners (commercial banks, investment banks, consulting firms) selected through an international tender offer. The implementation of the programme was delayed by at least four years (1991-95) for political reasons, mainly the absence of a consensus in the government and the parliament about the final list of companies in the scheme, the precise share of different beneficiaries and the specific arrangements concerning corporate governance of the NIFs. The equity of 512 companies was transferred from the state to new owners according to a common scheme: the majority of shares of each company (60 percent) were given to the 15 National Investment Funds, with the remaining 40 percent going to employees (15 percent) and the Treasury (25 percent). For each company, one of the 15 NIFs received 33 percent of shares and thus became the 'lead fund' for that company. The remaining 27 percent were divided between the other 14 funds (each holding just under 2 percent of shares). This uniform scheme sharply contrasted with the Czech programme where the outcome of the bidding process was completely unforeseeable and any number of funds, individuals and other beneficiaries could end up as new owners of the companies.

Foreign financial institutions were invited to participate in the programme and, together with Polish institutions, bid for the management of NIFs under lucrative remuneration arrangements. The aim was to bring in the fund management know-how and expertise and ensure that Polish institutions learn from their foreign partners. At the same time, foreign institutions with international reputation were expected to follow the same practice as in their own countries, and not to engage in opportunistic behavior, insider dealing and shareholder expropriation which their inexperienced Polish counterparts may have been tempted to embark on. Many foreign institutions did take part in the programme and most NIFs started to be managed by consortia of foreign and Polish institutions.

The citizens did not become direct shareholders of companies in the scheme but received vouchers (or certificates) which entitled them to one share in each of the 15 Funds, thus becoming indirect shareholders of privatised companies. The stated aim of the programme was for NIFs to restructure their portfolio companies, turn them into market oriented firms and sell them to either strategic owners or on the stock exchange. The Funds themselves were floated on the Warsaw Stock Exchange in June 1997 and the citizens' certificates had to be converted to Funds' shares by the end of 1998. Following a buoyant initial market, and the large-scale sale and purchase of shares, the role of the government began to decline and private owners began to dominate the NIFs. After the first general meetings of shareholders, members of the supervisory boards initially appointed by the government were replaced by members elected by new private shareholders. The direct role of the state in the funds came to an end.

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[20] For details of the Polish mass privatisation, see Hashi (2000) and Mickiewicz and Baltowski (2003).

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Table 1: Average shareholdings of the largest owner in mass privatised firms

(a) Czech Republic

	1996	1997	1998	1999
Mean	38.8	42.8	48.6	51.9
Median	36.3	42.0	47.5	49.7
Std. Dev.	19.3	20.4	21.5	21.8
Number of firms	652	652	652	652

(b) Poland

	1996	1997	1998	1999	2000
Mean	33.9	36.7	42.1	47.7	50.3
Median	33	33	33	33	33
Std. Dev.	5.5	10.1	15.8	20.6	22.6
Number of firms	441	440	439	439	439

Source: Own calculation

Table 2: Poland: The largest shareholder in mass privatized firms, 1998-2000

For each type of the largest shareholder the first row shows the number of firms, the second the average equity holdings and the third its standard deviation

1998

1999

2000

Foreign investor
Average equity in percent
Standard Deviation

Domestic investors
Average equity in percent
Standard Deviation

Of which:

employees

Average equity in percent
Standard Deviation

individual

Average equity in percent
Standard Deviation

corporation

Average equity in percent
Standard Deviation

National Investment Fund

Average equity in percent
Standard Deviation

State

Average equity in percent
Standard Deviation

Total

33
61.27
27.40
406
49.46
21.95
9
43.29
16.01
15
63.01
17.61
75
58.09
22.63
298
46.56
21.28
9
57.00
24.26
439
44
64.87
26.61
395
48.73
21.53
13
65.81
22.16
29
54.20

23.80
100
56.07
22.85
243
44.65
19.29
10
36.29
19.74
439
52
75.11
22.14
387
47.02
20.5
13
55.3
17.36
39
57.52
21.89
124
61.25
20.30
199
37.25
12.38
12
18.7
7.54
439

Table 3: Czech Republic: the largest shareholder in mass privatised firms, 1996-1999

For each type of the largest shareholder the first row shows the number of firms, the second the average equity holdings and the third its standard deviation

	1996	1997	1998	1999
Individual	89	92	104	108
Average equity in percent	35.12	36.40	39.39	44.77
Standard Deviation	15.18	16.70	18.56	22.74
Industrial or commercial company	295	371	372	404
Average equity in percent	46.60	47.95	53.90	55.62
Standard Deviation	19.15	20.48	21.05	20.93
Investment fund	148	127	116	96
Average equity in percent	27.97	32.73	42.03	46.27
Standard Deviation	15.41	18.25	20.92	21.16
Financial institution	58	33	41	27
Average equity in percent	38.03	42.44	47.70	51.27
Standard Deviation	18.51	17.16	20.16	22.61
State	62	29	19	17
Average equity in percent	33.05	40.64	37.07	42.99
Standard Deviation	18.26	20.47	20.32	20.43
Total	652	652	652	652
Average equity in percent	38.75	42.75	48.59	51.94
Standard Deviation	19.26	20.38	21.49	21.82

Table 4: Definition of variables

Variable	Definition
Return on assets	Ratio of earnings before taxes and depreciation to total assets.
Size	Natural logarithm of sales (in constant prices)
Leverage	Ratio of total liabilities to total assets
Investment	Ratio of net investment in fixed assets to total assets
Type of the largest owner	Dummies for different types of the largest shareholder in 1999 in the Czech Republic and in 2000 in Poland. In Poland we have foreign versus domestic investors, among which we distinguish between corporations, individuals, employees, the state and National Investment Funds. In the Czech Republic, there are five types of the largest owners: corporations, individuals, investment funds, financial institutions, and the state.
First wave of voucher privatisation in the Czech Republic	Dummy variable taking the value of 1 for companies included in the first wave of voucher privatisation, and 0 otherwise
Share of the largest owner in 1996	Logistic transformation of the percentage share of the largest shareholder (C1) of a company: ln [C1/(100-C1)]
National Investment Fund dummies	Dummies for each of the 15 lead NIFs
Industry dummies	Dummies for industries to which firms belong. There are 12 industries in the Czech Republic and 20 in Poland

Table 5: Determinants of ownership concentration in Poland (probit regressions)

In columns (1), (2) and (3) the dependent variable is equal to one if in 2000 the firm has an owner with at least 50% of shares and zero otherwise. In columns (4), (5) and (6) the dependent variable is equal to one if the share of the largest owner has increased between 1995 and 2000 and zero otherwise. All independent variables, except dummies, are averaged over 1995-1999. The type of the largest owner refers to 2000. Standard errors are in parentheses; * significant at the 10 percent level; ** significant at the 5 percent level; and *** significant at the 1 percent level. All regressions include a constant term; the reference group for the 'type of the largest owner' is the combined category of State and National Investment Fund.
See Table 4 for detailed definitions of variables.

	Increase in the share of the largest owner 1995 - 2000			*Presence of a majority shareholder in 2000*		
	(1)	(2)	(3)	(4)	(5)	(6)
Return on assets	-0.731*	-0.685	-0.369	-1.078**	-1.048**	-0.685
	(0.428)	(0.436)	(0.427)	(0.481)	(0.495)	(0.467)
Size	-0.056	-0.160	0.119	-0.162**	-0.295***	-0.166
	(0.081)	(0.088)	(0.102)	(0.083)	(0.092)	(0.109)
Leverage	-0.017	-0.019	-0.014	-0.016	-0.019	-0.008
	(0.020)	(0.019)	(0.047)	(0.017)	(0.016)	(0.023)
Investment	0.054	0.084	0.021	0.088	0.123	0.063
	(0.188)	(0.196)	(0.229)	(0.190)	(0.198)	(0.234)
Firms listed on the WSE	-0.487*	-0.610**	-0.730**	-0.599**	-0.798**	-0.970***
	(0.263)	(0.280)	(0.306)	(0.281)	(0.314)	(0.367)
Type of the largest owner						
Foreign investor		1.722***	2.353***		1.834***	2.681***
		(0.285)	(0.290)		(0.279)	(0.300)
Domestic investor , of which:						
Corporation			1.850***			1.994***
			(0.200)			(0.210)
Individual			1.455***			1.772***
			(0.281)			(0.294)
Employees			1.351***			1.590***
			(0.437)			(0.445)
NIF dummies	yes	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes	yes
Number of observations	434	434	434	434	434	434
Pseudo R^2	0.160	0.237	0.415	0.183	0.274	0.475

Table 6: Determinants of ownership concentration in the Czech Republic (probit regressions)

In columns (1) and (2) the dependent variable is equal to one if in 1999 the firm has an owner with at least 50% of shares and zero otherwise. In columns (3) and (4) the dependent variable is equal to one if the share of the largest owner has increased between 1996 and 1999. All independent variables, except dummies, are averaged over 1995-1999. The type of largest owner refers to 1999. Standard errors are in parentheses; * significant at the 10 percent level; ** significant at the 5 percent level; and *** significant at the 1 percent level. All regressions include a constant term; the reference group for the 'type of the largest owner' is 'State'.
See Table 4 for detailed definitions of variables.

	Increase in the share of the largest owner 1996 – 1999		Presence of a majority owner in 1999	
	(1)	(2)	(3)	(4)
Return on assets	1.875*** (0.652)	1.819*** (0.663)	0.870 (0.584)	0.754 (0.597)
Size	-0.001 (0.038)	0.013 (0.040)	0.067 (0.037)	0.073* (0.039)
Share of the largest owner in 1996	-0.383*** (0.063)	-0.394*** (0.065)	0.649*** (0.068)	0.647*** (0.070)
Leverage	-0.089 (0.250)	-0.065 (0.253)	0.000 (0.240)	-0.035 (0.241)
Investment	0.493 (0.383)	0.502 (0.387)	-0.045 (0.346)	-0.055 (0.344)
Firms privatised in the first wave of voucher privatisation	0.104 (0.179)	0.079 (0.181)	-0.234 (0.176)	-0.256 (0.180)
Type of the largest owner				
Corporation		1.034*** (0367)		0.921** (0.381)
Individual		0.826** (0.395)		0.526 (0.408)
Investment fund		1.033*** (0.390)		0.652 (0.402)
Financial institution		1.207** (0.488)		0.981** (0.464)
Industry dummies	yes	yes	yes	yes
Number of observations	610	610	610	610
Pseudo R^2	0.092	0.107	0.158	0.174

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(lxii) This paper was presented at the ENGIME Workshop on “Communication across Cultures in Multicultural Cities”, The Hague, November 7-8, 2002
(lxiii) This paper was presented at the ENGIME Workshop on “Social dynamics and conflicts in multicultural cities”, Milan, March 20-21, 2003
(lxiv) This paper was presented at the International Conference on “Theoretical Topics in Ecological Economics”, organised by the Abdus Salam International Centre for Theoretical Physics - ICTP, the Beijer International Institute of Ecological Economics, and Fondazione Eni Enrico Mattei – FEEM Trieste, February 10-21, 2003
(lxv) This paper was presented at the EuroConference on “Auctions and Market Design: Theory, Evidence and Applications” organised by Fondazione Eni Enrico Mattei and sponsored by the EU, Milan, September 25-27, 2003
(lxvi) This paper has been presented at the 4th BioEcon Workshop on “Economic Analysis of Policies for Biodiversity Conservation” organised on behalf of the BIOECON Network by Fondazione Eni Enrico Mattei, Venice International University (VIU) and University College London (UCL) , Venice, August 28-29, 2003
(lxvii) This paper has been presented at the international conference on “Tourism and Sustainable Economic Development – Macro and Micro Economic Issues” jointly organised by CRENoS (Università di Cagliari e Sassari, Italy) and Fondazione Eni Enrico Mattei, and supported by the World Bank, Sardinia, September 19-20, 2003
(lxviii) This paper was presented at the ENGIME Workshop on “Governance and Policies in Multicultural Cities”, Rome, June 5-6, 2003
(lxix) This paper was presented at the Fourth EEP Plenary Workshop and EEP Conference “The Future of Climate Policy”, Cagliari, Italy, 27-28 March 2003
(lxx) This paper was presented at the 9th Coalition Theory Workshop on "Collective Decisions and Institutional Design" organised by the Universitat Autònoma de Barcelona and held in Barcelona, Spain, January 30-31, 2004

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