



## Ownership and control in Central and Eastern Europe



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### ABSTRACT

The unique natural experiment of the fall of the iron curtain led to large institutional and governance differences across countries. This allows us to observe the evolution of ownership and control after an initial shock. We utilize this cross-time/cross-country variation in institutions and privatization methods to analyze the determinants and effects of individual investor control in a large sample of firms in 11 CEE countries over the period 2000–2007. Controlling for possible endogeneity and firm effects, we find that large individual investors add value to the firms they control. They do so predominantly compared to state controlled firms but also compared to other privately controlled firms. If large individual investor firms employ professional managers and (only) supervise them actively, they achieve the better performance improvements in Tobin's  $q$  than the firms managed by their controlling shareholders. Concerning the determinants of ownership, large individual shareholders substitute for missing good country governance institutions, and ownership is very sticky, since initial conditions (privatization methods) still matter. It appears that secondary markets do not converge on the same ownership equilibria as primary markets do.

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### 1. Introduction

The extant literature on ownership structures around the world documents that a significant part of the largest public companies are controlled by a family or an individual.<sup>1</sup> However, there are significant cross-country differences in the prevalence of controlling shareholders, as documented in La Porta et al. (1999). The analysis of the determinants of controlling shareholders is difficult, since country characteristics and ownership structures evolve jointly over long periods of time and thus the issue of endogeneity is particularly severe. Similar issues arise when the effect of controlling shareholdings on firm performance is analyzed.

In this paper we shed new light on these questions by providing the first cross-country evidence on ultimate ownership in Central and Eastern European Countries (CEEC). The unique natural experiment of the fall of the iron curtain led to large institutional and governance differences across countries. This allows us to observe the evolution of ownership and control after an initial shock.

The main goal of this paper is twofold. First we systematically identify the ultimate owners of the largest listed companies in Central and Eastern Europe as they have evolved after nearly two decades of transition, and analyze the determinants of large individual investor control. We deliberately do not speak of “family”-control but instead of “large individual investor”-control,

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<sup>1</sup> La Porta et al. (1999) provide evidence that the largest companies in 27 developed and developing countries tend to be controlled by a family/individual or the state. Claessens et al. (2002) find that more than half of East Asian corporations are controlled by a family. Faccio and Lang's (2002) work reveals that most of the largest companies in Western Europe are controlled by a family followed by widely held firms.

since the classical family-founded and -controlled company would not be an appropriate description of the firms encountered in CEE countries. The large individual investor controlled firms we analyze are mostly formerly state-controlled firms, which were privatized in the 1990s.

Second, we explore the effects of large individual investor control on performance, accounting for potential endogeneity of control. Claessens et al. (2002), Amit and Villalonga (2006) and Anderson and Reeb (2003) conclude that the relation between family control and performance cannot be well understood without distinguishing between ownership, control, and management. Therefore, we further analyze the determinants and the effects of the concentration of large individual investor control versus cash flow rights, and the participation of the large individual investor on the management or the supervisory board. Our analysis on determinants of ownership closely relates to Boubakri et al. (2005), who explore the post privatization ownership structure and its determinants in 25 emerging markets. However, we further consider the impact of the large individual investor on performance and the determinants of his role in the firm.

Our interest in CEE firms is due to the specific legal and economic environment in which they operate. These countries underwent a transition process from planned to market economy. The transition process and the privatization led to dynamic changes and adjustments in the control and ownership structures of companies as well as country institutions, a process which is still continuing. The development of the capital markets in these countries is intrinsically associated with the privatization process, since a significant part of the listed companies are privatized former state-owned companies. The capital markets in CEE countries are rather illiquid, characterized by a limited number of actively traded companies. Moreover, the number of listed companies has decreased significantly after the mass privatizations. After two decades of transition, the legal and regulatory framework of most transition countries is as good as in Western European countries, however the quality of law enforcement is still rather low. CEE countries rank better in corporate governance than countries with similar income but lower than the countries in Western Europe (Stulz, 2005). With respect to the rule of law and corruption the countries in Central and Eastern Europe rank slightly better than countries with similar income. Berglöf and Pajuste (2005) find that firms in a number of CEE countries disclose less than the law requires them to disclose, so the disclosure laws do not seem to be well enforced. The privatization process, lax legislation and low transparency may have created favorable conditions for the concentration of ownership and control. In such an environment large individual investors may play an important role in providing funds and solving informational problems. Hence, the CEECs provide a unique opportunity to utilize the resulting unique cross-firm, cross-country, and cross-time variation, and test for the effects of institutional and market evolution as well as the initial conditions (privatization methods) on large individual investor control incidence. We use a data set which encompasses the largest public companies in eleven CEE countries reported in Amadeus. The predominant shareholders of the largest public companies in CEECs are firms ultimately controlled by a family or an individual (34.62%). A distinct feature of the sample is the still significant control of the state (32.9%).

The weak institutional environment is one of the factors that explains concentrated ownership (Boubakri et al., 2005; Burkart et al., 2003; La Porta et al., 1997, 1999). Recent papers found contradicting evidence on the effect of the institutional environment. Masulis et al. (2009) show that market development is an important factor for the existence of family business groups, while the institutional environment only has an indirect effect. Amit et al. (2009) document that institutional efficiency has a positive impact on the formation and survival of family firms in China. In a cross-country, time series regression framework, we find that large individual investors are more prevalent in countries characterized by a weaker legal environment and less developed financial markets. Controlling for possible self-selection biases as well as firm and industry characteristics, we find that large individual investors enhance firm value (Tobin's  $q$ ). They do so not only compared to state controlled firms, which with the exception of anonymously controlled perform worst, but also compared to all other firms such as foreign controlled firms. We further document that the relation between large individual investor control rights and firm value is non-monotonic.

There are competing arguments on whether concentrated management ownership is beneficial or detrimental to a firm's value to outside investors. Some papers highlight that founder CEOs solve problems associated with the separation of ownership and control, and have a positive impact on corporate performance (e.g. Amit and Villalonga, 2006; Anderson and Reeb, 2003; Morck et al., 1988; Palia and Ravid, 2002). Morck et al. (1988), however, also show that the relation between Tobin's  $q$  and management ownership is non-monotonic, since after a threshold of management ownership the entrenchment effect outweighs the incentive effect. Peng and Jiang (2010) find that family-CEOs are only value enhancing in underdeveloped countries, while they do not have significant effects in more developed countries. We go one step further and analyze the circumstances when, large individual investors increase performance most. Our analysis reveals that firms in which the large individual investors are part of the management board underperform the other firms controlled by individual investors, where he sits either only on the supervisory board or is formally passive.

The individual investor firms in CEECs use various control enhancing mechanisms, the most important ones are pyramids. Claessens et al. (2002) investigate the role of pyramids in Asian firms, and find that firm value falls when the control rights of the largest shareholder exceed his cash flow rights (i.e. if there is a "wedge"). Mitton (2002) finds similar results for returns to shareholders. Lins (2003) further shows that effects are weaker in countries with better legal protection and in pyramids with large outside shareholders. Consistent with prior research we confirm that the wedge between family control and cash flow rights has a detrimental impact on firm value.

Finally, one important finding of this study is that ownership and control structures are path dependent. We find that initial (i.e. in the early 1990s) primary privatization methods still determine ownership and control structures more than one decade later. It appears, therefore, that initial conditions are very important for the evolution of ownership and control structures. Put differently, once countries are trapped in sub-optimal ownership structures, they remain trapped for a long period of time.

The remainder of the paper is organized as follows. Section 2 discusses the construction of the sample. Section 3 discusses the hypotheses. Section 4 provides summary statistics and regression results, and Section 5 concludes.

## 2. Sample construction

To construct the database, we initially select all the listed Eastern European<sup>2</sup> companies included in version 158 of Amadeus.<sup>3</sup> The sample is further restricted to those countries for which ownership and market capitalization data are available. Our final sample includes 416 listed companies from 11 Central and Eastern European Countries (Russia, Slovenia, Slovakia, Romania, Bulgaria, Croatia, Czech Republic, Lithuania, Latvia, Estonia and Poland), during the period 2000–2007, this results in 1987 firm-year observations.

For our analysis we need to identify the ultimate owner of every company in every year. In order to accomplish this task we hand-collected data from different sources. These sources include: 1) Amadeus for direct ownership, 2) Annual reports, 3) Information contained in the local press and business reviews, 4) Factiva, and 5) Corporate web pages and web searches about company histories, family and personal relations.

When the shareholders are other domestic corporate entities we trace their shareholders until we are able to determine the unique identity of the ultimate controlling shareholder. This allows us to determine whether the company is ultimately controlled by an individual (the individual ultimately controls at least 10% of the voting rights)<sup>4</sup>, the “state” (the state, federal and regional governments or municipalities control at least 10% of the voting rights) or whether it is “widely held” (no ultimate shareholder holds more than 10% of the voting rights). We define “foreign firms”<sup>5</sup> as well as “financial institutions” as ultimate control categories (and do not follow them further up in the pyramid), since we believe that these categories are of interest per se. Finally, we define (domestic) “industrial company” as an ultimate control category, if we cannot trace the ultimate shareholders due to data limitations. See Fig. 1 and Table 1 for a sample company, controlled by an individual shareholder, as well as for definitions of all our variables used.

The data collection process revealed the presence of two anonymous types of shareholders: foreign offshore companies and nominees. While offshore companies are present in all countries, nominees are typical only for Russia. There are many motives for the ultimate owners to mask their identities behind nominees and foreign offshore companies. Some of the dominating motives include tax optimization, insider trading, market manipulation, related party transactions, concealing profits and capital, and corruption. We performed additional investigations in order to determine ultimate ownership. Following Chernykh (2008)<sup>6</sup> we checked the registration addresses of the offshore companies in order to determine whether the same shareholders stay behind different offshore companies. Very often the ultimate owners are unofficially known but there is no official information about their shareholdings, therefore we searched for all available information about the controlling shareholders in the local press.

For the firms which we have classified under the broad definition of large individual investor owned, we collect additional information on the composition of the board of directors and the supervisory board from the sources listed above. We record whether the controlling shareholder is a member of the governance bodies.<sup>7</sup> Further, we collect data on the most important control enhancing mechanisms including pyramids, cross-holdings, and dual class shares.

## 3. Hypotheses

### 3.1. The determinants of large individual investor control

#### 3.1.1. Country, industry level, and time factors

3.1.1.1. *Formal institutions.* One explanation for the existence of family firms is that family ties serve as a second-best solution in countries with weak legal institutions, since trust between family members and active large shareholder monitoring are substitutes for missing governance and contractual enforcement mechanisms, such as investor protection (see Bertrand and Schoar, 2006; La Porta et al., 1997, 1998, 1999, 2006). Burkart et al. (2003) formalize this idea of substitution between family or large individual investor control and investor protection. Given weak institutions, direct monitoring and control may be the most efficient way of governance. This implies that we should expect a negative relation between the incidence of large individual investor control and measures of the quality of institutions in a country.

We evaluate the quality of a country's institutions using the Worldwide Governance Indicators (WGIs) of the World Bank. Various institutions (e.g. Freedom House, the Heritage Foundation, the Business Environment Risk Intelligence (BERI), Gallup International, the World Economic Forum, the International Country Risk Guide (ICRG) compiled by the Political Risk Services group) construct measures of institutional quality. Drawing on the data sources provided by the institutions mentioned above and other sources, Kaufmann et al. (2008) estimate six different dimensions of institutional quality: (1) voice and accountability (VA), government effectiveness (GE), rule of law (RL), regulatory quality (RQ), control of corruption (CC) and political stability (PS).

<sup>2</sup> The definition of Eastern Europe in the Amadeus database refers to Central and Eastern Europe.

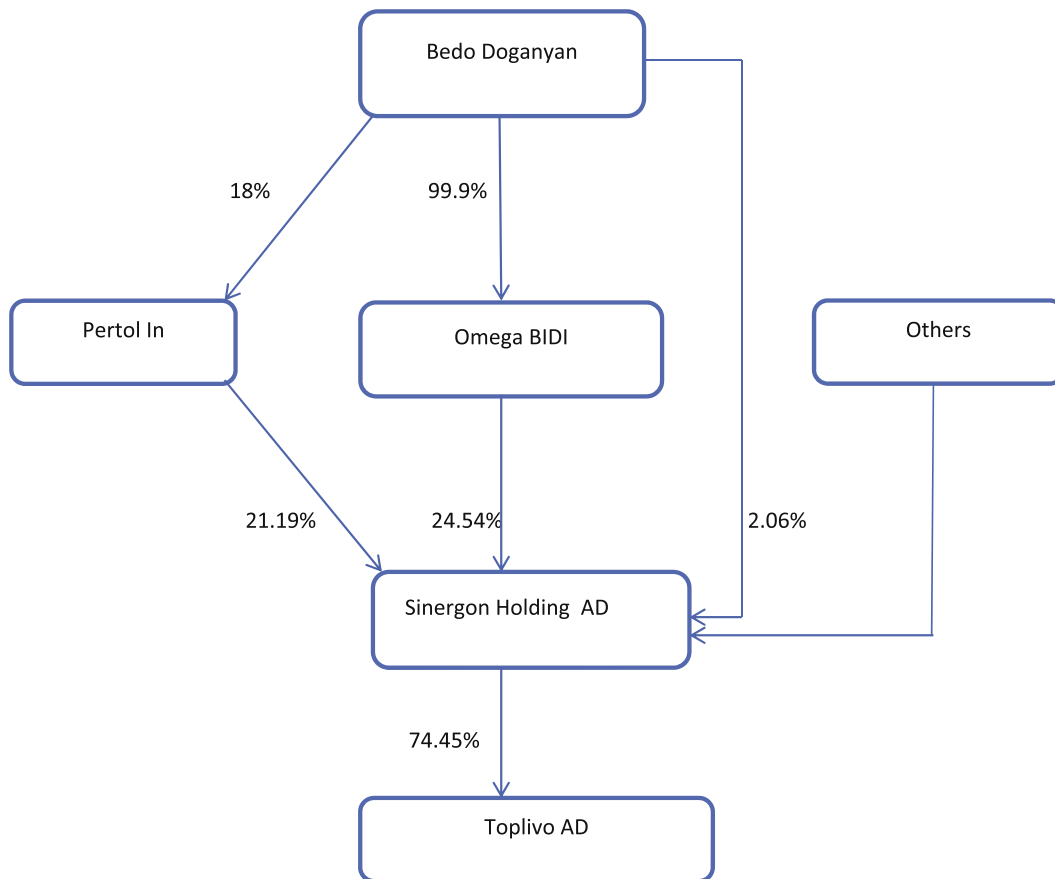
<sup>3</sup> Amadeus is a pan-European database, containing balance sheet information on over 250,000 private and public companies. The companies included in this dataset must satisfy one of the following requirements: turnover of over 100 million Euros, more than 150 employees or total assets greater than 10 million Euros.

<sup>4</sup> Following La Porta et al. (1999) and Amit and Villalonga (2009) we measure cash flow rights as the product of the ownership stakes along the control chain and the voting (control) rights as the weakest link in the control chain.

<sup>5</sup> Foreign institutional investors are included in the foreign ownership category.

<sup>6</sup> Chernykh (2008) reports that 85% of publicly traded companies in Russia have at least one offshore company or nominee in their control chains.

<sup>7</sup> All the firms in the sample have dual board structures.



**Fig. 1.** Example of Pyramid: Toplivo AD ownership structure in 2006. The arrows indicate direction of ownership. The ultimate owner of Toplivo AD is Bedo Doganyan, the chairman of the board of directors. The cash flow rights of Bedo Doganyan in Sinergon Holding AD are equal to:  $21.9\% * 18\% + 99.9\% * 24.5\% + 2.06\% = 30.39\%$  and his control rights are respectively equal to:  $\min\{18, 21.19\} + \min\{99.9, 24.54\} + 2.06\% = 44.6\%$ . His ultimate cash flow and control rights in Toplivo AD are respectively equal to:  $30.39\% * 74.45\% = 22.63\%$ ,  $\min\{44.6, 74.45\} = 44.6$ . The wedge between control and cash flow rights is calculated as the difference between cash flow rights and voting rights and is equal to: 21.97%.

The indicators are constructed using unobserved components methodology and are measured in units ranging from  $-2.5$  to  $2.5$ , with higher values corresponding to better governance. The WGIs are used either separately as an individual category such as the rule of law (Brockman and Emre, 2009; Rodrik et al., 2004) or corruption (Faccio, 2006), or are combined into a more general index of institutional quality (Easterly and Levine, 2003).

In the determinants of large individual investor control regressions, we (1) average these six indexes to arrive at an overall Worldwide Governance Index (wb) as a regressor as well as (2) include the six indexes individually in turn to see which dimension of institutional quality is most important. See Table 1 for definitions of all the variables.

**3.1.1.2. Capital market development.** Measures of institutional quality have the advantage that they capture truly exogenous factors at least with respect to firm level control. However, most often these indexes are obtained from questionnaires, and they might therefore suffer from measurement errors, aggregation problems, and subjective evaluations. Often used direct measures of capital market development, like the stock market capitalization or private credit to GDP ratios, as outcome variables do not suffer from these kinds of problems. The substitution hypothesis from above carries over, and we expect a negative effect of capital market development on the incidence of large individual investor control, since private benefits of control are lower in more developed capital markets and/or other than direct monitoring technologies are available, e.g. legal institutions, takeovers (market for corporate control) or incentive compensation.

However, direct outcome measures of capital market development might suffer from potential endogeneity problems. For example, reverse causality between large individual investor control and stock market development might induce a positive correlation between the two variables, if large individual investor control enhances firm value. Moreover, the simple correlation coefficient between institutional quality as measured by the World Bank index and the stock market capitalization to GDP ratio is minus 0.6 and highly significant. Thus, stock market capitalization also measures quite different phenomena than mere “institutions” in a country, e.g. the investment opportunities of the listed firms in a country. For example, Russia scores best in terms of stock market capitalization to GDP (65.2%), but by far worst in terms of any of the World Bank indexes. Of course, the

**Table 1**  
Variable descriptions.

Variable	Description	Source
individual	Dummy variable equal to one if the firm's largest shareholder is a large individual investor holding at least 10% of the voting rights.	Annual Reports, Web Search, Business Reviews, Local Press, Amadeus
ind_con	Percentage of the large individual investor's voting rights.	Annual Reports, Web Search, Business Reviews, Local Press, Amadeus
ind_own	Percentage of the large individual investor's cash flow rights.	Annual Reports, Web Search, Business Reviews, Local Press, Amadeus
wedge	Difference between controlling large individual investor's voting and cash flow rights.	Annual Reports, Web Search, Business Reviews, Local Press, Amadeus
pyramid	Dummy variable equal to one when the company is controlled through a pyramid	Annual Reports, Web Search, Business Reviews, Local Press, Amadeus
dual	Dummy variable equal to one when the company uses dual-class shares	Annual Reports
ind_sup	Dummy variable equal to one if the large individual investor together with family members are sitting only on the supervisory board.	Annual Reports
ind_man	Dummy variable equal to one if the large individual investor together with family members are either only on the management board or on both management and supervisory board.	Annual Reports
ind_not	Dummy variable equal to one if the large individual together with family members are neither sitting on the management nor on the supervisory board.	Annual Reports
foreign	Dummy variable equal to one when the company is ultimately controlled by a foreign company or foreign institutional investors.	
rest	Dummy variable equal to one when the company is ultimately controlled either by an industrial company which ultimate ownership cannot be traced, or by a financial company or is widely held.	
anonymous	Offshore companies	
VA	Extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media	World Bank
CC	Extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	World Bank
RL	Extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	World Bank
GE	The quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	World Bank
RQ	The ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	World Bank
PS	The likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism	World Bank
wb	The average of the World Bank Governance Indexes (VA, CC, RL, GE, RQ, PS).	World Bank
capGDP	Ratio of market capitalization to GDP.	World Bank Development Indicators
voucher	Dummy variable equal to one if voucher privatization was the primary method of privatization.	EBRD
mebo	Dummy variable equal to one if MEBO was the primary method of privatization.	EBRD
tq	Tobin's q calculated as the ratio of book value of total debt plus market value of equity to book value of total assets	Amadeus
roa	Return on assets.	Amadeus
roe	Return on equity.	Amadeus
size	Logarithm of total assets.	Amadeus
leverage	Ratio of total liabilities to total assets.	Amadeus
risk	Standard deviation of return on assets.	Amadeus
intangibles	Ratio of intangible assets to total assets.	Amadeus

reason for the high ratio of stock market capitalization to GDP in Russia is not that it has particularly strong institutions to protect minority shareholders and enforce contracts, but the good investment opportunities and inframarginal rents in the oil and gas industries. Thus, we include the stock market capitalization to GDP ratio as a regressor, but we are cautious in its interpretation.

**3.1.1.3. Methods of privatization.** The primary methods of privatization in a country in the early years of transition might have long lasting effects on the structure of ownership, and therefore on the prevalence of large individual investor control. CEEC may have started out with sub-optimal ownership structure, since mass or voucher privatizations were designed to find owners quickly rather than to find optimal owners.

If ownership and control structures are sticky, the way the privatizations were executed in the years 1990 until 1996 still co-determine the ownership and control structures in the years 2000–2007 (our sample years). We group countries according to whether the primary method of privatization was (1) direct sales, (2) voucher (mass) privatization or (3) management or employee buy-out (MEBO),<sup>8,9</sup> Since direct sales represent a way to immediately reach the optimal ownership and control structure as compared

<sup>8</sup> Primary methods of privatization are those methods that have been used most frequently since the start of transition.

<sup>9</sup> Another potential method of privatization is the share issue privatization. Due to the underdeveloped capital markets this method is not common for the countries in our sample.



to mass privatization or MEBOs, we hypothesize that, due to the path dependency of ownership, large individual investor control in 2000–2007 is less prevalent in countries that used voucher or MEBO privatization in 1990–1996 as their primary method of privatization.<sup>10</sup>

**3.1.1.4. Industry level factors.** Some countries (e.g. Russia) may be reluctant to privatize firms in “sensitive” or “strategic” industries like in the oil, gas, telecom or electricity sectors. Thus, private control and therefore large individual investor control would be systematically lower in these industries than in others. Systematic differences across industries with respect to the incidence of large individual investor control might also be expected if external financing needs (Rajan and Zingales, 1998) and/or minimum efficient scales differ. We expect a lower incidence of large individual investor control if external financing needs and minimum efficient scales are large. We control for these factors by including a full set of 1-digit SIC industry dummies in all our regressions.

**3.1.1.5. Time.** We additionally include a full set of year dummies to control for year fixed effects. These serve a dual purpose. First, the transition process still continued during the sample years (2000–2007), and year fixed effects capture this secular trend towards a new ownership and control equilibrium. Second, the data sources we used to determine ultimate owners become better as time progresses. Thus, ultimate large individual investor firms, which require very detailed and comprehensive ownership data on various pyramidal levels, may be under-sampled in the early years of our sample. Year fixed effects correct for that.

### 3.1.2. Firm level factors

**3.1.2.1. Size.** Several arguments favor a negative relation between large individual investor control incidence and firm size. Stronger reliance on family members in the ownership and management is associated with smaller size, (1) if the survival of control to the next generation is one focus, thereby foregoing some growth opportunities, (2) large individual investors are sub-optimally diversified, thus they are risk averse and choose less risky growth strategies, (3) reliance on family members as managers rather than professional managers may lead to inefficiencies and slower growth, (4) assets may be split among heirs (Bertrand et al., 2005), and (5) financial constraints may be more severe in large individual investor firms than in other firms forcing them to forgo some growth opportunities. We measure firm size by the natural logarithm of total assets and hypothesize a negative coefficient.

**3.1.2.2. Performance.** We include a measure of performance as an additional variable, although we acknowledge the ambiguous nature of sign and causality. On the one hand, causality runs from performance to large individual investor control and we expect a positive coefficient of performance in a determinants regression, if large individual investors are better than other owners at selecting well performing firms. On the other hand, causality runs from large individual investor control to performance and we expect a positive coefficient of large individual investor control in an effects regression, if large individual investor firms solve the corporate governance problem better than other owners given the institutional environment. Therefore, we estimate a two stage model, where we estimate the effects of large individual investor control on performance, explicitly controlling for the endogenous nature of large individual investor control (see below).

**3.1.2.3. Leverage.** The effects of leverage on the prevalence of large individual investor control are ambiguous. Leverage is causally negatively associated with large individual investor control if leverage solves the free cash flow problem and thus there is less need of direct shareholder monitoring in more levered firms. Leverage might however be endogenous, if large individual investors systematically choose a different capital structure than other owners. For example, large individual investors may choose larger leverage to retain control or they may choose lower leverage to reduce the overall riskiness of the firm. Indeed, Ellul (2010) shows that leverage is used strategically by control motivated blockholders. We abstract from these problems here, since our focus is on the determinants and effects of large individual investor control, and include leverage as a control variable.<sup>11</sup>

**3.1.2.4. Intangible assets.** Ownership concentration could be a function of a firm's asset tangibility (Himmelberg et al., 1999). Intangible assets are harder to monitor and therefore subject to managerial discretion, which individual investors as controlling owners can curb. Therefore, we expect a positive relation between prevalence of large individual investor firms and intangible assets.

**3.1.2.5. Risk.** Firm riskiness should be negatively associated to large individual investor control incidence, since large individual owners are sub-optimally diversified and should choose either less risky firms to invest in (also less risky industries) and/or less risky investment projects. We include the standard deviation of the return on assets.

In the next Section we explore the determinants of the controlling shareholder's decision to be actively involved in the firm's management (as a member of the management board) or in monitoring the firm's activities (as a member of the supervisory board) or as a formally passive shareholder (see Table 9).

<sup>10</sup> We have re-estimated our regressions using the primary method of privatization at the end of 1999. Our results are robust to this change.

<sup>11</sup> In the regressions on the determinants of the individually controlled firms the coefficient of leverage is insignificant and our results are not affected if we exclude it from these regressions.

**Table 2**

Distribution of ultimate control. 1 = large individual investor, 2 = industrial company, 3 = widely held, 4 = financial institution, 5 = state, 6 = foreign.

Panel A. Distribution of ultimate control across countries								
Country	Ultimate control						Companies	Observations
	1	2	3	4	5	6		
Bulgaria	0.424	0.255	0.121	0.036	0.164	0.000	28	165
Croatia	0.330	0.000	0.113	0.038	0.283	0.236	33	106
Czech Republic	0.250	0.000	0.000	0.000	0.350	0.400	13	60
Estonia	0.318	0.250	0.000	0.000	0.250	0.182	10	44
Latvia	0.382	0.273	0.000	0.018	0.018	0.309	20	55
Lithuania	0.212	0.124	0.176	0.047	0.306	0.135	29	170
Poland	0.415	0.116	0.091	0.017	0.087	0.274	48	241
Romania	0.233	0.083	0.306	0.000	0.294	0.083	29	180
Russia	0.326	0.082	0.000	0.000	0.568	0.025	142	562
Slovakia	0.000	0.000	0.000	0.000	0.000	1.000	31	79
Slovenia	0.000	0.320	0.025	0.132	0.372	0.151	51	325
Total firms	144	53	29	13	137	59	416	

Panel B. Distribution of ultimate control across industries								
Industry	Ultimate control						Companies	Observations
	1	2	3	4	5	6		
Consumer non-durables	0.283	0.139	0.070	0.004	0.189	0.316	48	244
Consumer durables	0.224	0.158	0.112	0.000	0.373	0.132	60	303
Manufacturing	0.375	0.158	0.105	0.015	0.204	0.142	63	323
Gas, coal extraction products	0.051	0.192	0.000	0.000	0.577	0.179	16	78
Chemicals allied products	0.267	0.000	0.079	0.059	0.485	0.109	17	101
Business equipment	0.288	0.247	0.082	0.000	0.000	0.384	14	73
Telecommunications	0.083	0.000	0.000	0.000	0.750	0.167	16	96
Utilities	0.063	0.000	0.007	0.000	0.746	0.183	40	142
Wholesale	0.293	0.188	0.040	0.087	0.322	0.069	61	276
Health care	0.439	0.195	0.000	0.000	0.195	0.171	9	41
Finance	0.313	0.208	0.035	0.160	0.243	0.042	36	144
Other	0.271	0.157	0.187	0.042	0.163	0.181	35	66
Total firms	144	53	29	13	137	59	416	

a: Industries are defined according to the Fama and French 12 industry classification.

### 3.2. The effects of large individual investor control

#### 3.2.1. The effects relative to other control types

As already mentioned, causality also runs from large individual investors to performance, e.g. Tobin's q, although the sign of the effect is ambiguous.<sup>12</sup> We expect a positive coefficient of large individual investor control, if these firms solve the corporate governance problem better than other owners in the given institutional environment.<sup>13</sup> We may, however, see a negative effect of large individual investor control on performance, if large investors expropriate minority shareholders e.g. via excessive consumption of private benefits of control or tunneling. To unambiguously determine the effects of large individual investor control on performance, we estimate a treatment effects model. Because the entire sample of individually and non-individually controlled firms is used, there are no sample-selection issues. Of course, individual control is itself endogenous if shareholders self-select into individual control, thus we instrument for large individual investor control status. Upon fitting the model, the large individual investor control dummy coefficient answers the following question: "Conditional on the Xs (e.g. size, leverage, industry effects and country institutions), what is the average effect of large individual investors on performance?"

Obvious candidates for drivers of Tobin's q are the leverage, intangible assets or firm size. These are, however, also plausible determinants of large individual investor control (see above). We exclude country level variables from the Tobin's q equation, like the World Bank indexes, stock market capitalization to GDP ratio, and primary methods of privatization, and use them to identify the exogenous effects of large individual investor control on Tobin's q.

<sup>12</sup> In a recent survey, Estrin et al. (2009) provide a survey of 34 empirical studies, which show that privatization has had positive effects on performance in Central Europe, but that the effects were often conditional on various factors like the type of the new private owners, corporate governance institutions, and access to know-how and markets.

<sup>13</sup> One competing explanation would be that large individual investors are better politically connected than the other owners. Boubakri et al. (2008) find that newly privatized firms that are politically connected have poorer accounting performance than non-connected ones. Faccio (2006) documents that company's stock prices increase when officers or large shareholders enter politics. Due to data limitations we cannot follow this line of research.

**Table 3**

Structure of control in firms controlled by large individual investors. Panel A presents the number of firms controlled by large individual investors, the mean and the median of cash-flow and control rights, of controlling individual investors, across countries. The variables *ind\_con* and *ind\_own* measure respectively the percentage of control and cash-flow rights of controlling individual investors. Panel B: *ind\_man* is a binary variable which equals one if the large individual investor is sitting on the management board. *ind\_sup* is a binary variable which equals one if the large individual investor is represented on the supervisory board. *ind\_not* is a dummy variable which equals one if the large individual investor is sitting neither on the management nor on the supervisory board. *Pyramids* is a binary variable which equals one when the company is controlled through a pyramid. *Dual* is a binary variable which equals one if the company has used dual-class shares.

Panel A. Large individual investor cash flow and control rights					
Country	N (observations)	mean ( <i>ind_own</i> )	med ( <i>ind_own</i> )	mean ( <i>ind_con</i> )	med ( <i>ind_con</i> )
Bulgaria	65	39.37	39.95	47.74	44.60
Croatia	35	58.19	67.92	60.09	67.92
Czech republic	15	32.98	37.27	44.48	58.00
Estonia	14	24.56	16.24	37.61	38.05
Latvia	21	42.18	45.30	42.18	45.30
Lithuania	32	32.08	27.96	34.85	29.13
Poland	95	35.82	34.20	40.38	42.32
Romania	34	44.47	43.67	53.19	60.22
Russia	152	44.49	36.54	48.83	48.08
Total	463	41.09	37.40	46.37	44.6

Panel B. Management and control enhancing mechanisms					
Country	<i>ind_man</i>	<i>ind_sup</i>	<i>ind_not</i>	<i>pyramid</i>	<i>dual</i>
Bulgaria	0.8286	0.1714	0.0000	0.8143	0.0000
Croatia	0.1143	0.5714	0.3143	0.3143	0.0000
Czech republic	0.4667	0.0000	0.5333	0.8000	0.3333
Estonia	0.5714	0.4286	0.0000	0.7143	0.0000
Latvia	0.1905	0.7619	0.0476	0.0000	0.0000
Lithuania	0.9167	0.0000	0.0833	0.3611	0.0000
Poland	0.4400	0.4100	0.1500	0.3400	0.2200
Romania	1.0000	0.0000	0.0000	0.6905	0.0000
Russia	0.4536	0.3880	0.1639	0.4536	0.0984
Average	0.5465	0.3217	0.1318	0.4826	0.0872

### 3.2.2. Active versus passive management

Individuals as ultimately controlling shareholders can be either (1) active in the day-to-day management of the firm and sit on the management board, (2) more passive as controllers and be present on the supervisory board, or (3) just holding the controlling stake and delegate both active management and oversight to third parties.<sup>14</sup> Active participation in company management mitigates the agency conflict between the owners and the management, since there is an alignment of interest. However, family members as managers may be less talented and skillful than professional managers (see e.g. Chandler, 1990). Moreover, large individual investors may have better opportunities for expropriating minority shareholders (rent extraction and tunneling), if they sit on the management board. Thus, a large individual investor employing professional managers but exerting direct monitoring via a representation on the supervisory board may generate the largest gains. We test for those hypotheses below.

## 4. Regression results

### 4.1. Summary statistics

Table 2, panel A presents the shares of our ultimate control categories (individual investor, industrial company, widely held, financial institution, state and foreign) by country. Out of the total of 416 firms, 144 firms (34.6%) are controlled by a large individual investor in at least one year during 2000–2007, which makes large individual investor control the most prevalent control category in CEE. While Poland displays a share of more than 40% large individual investor controlled firms, there are no listed large individual investor controlled firms in our sample in Slovakia and Slovenia. Strikingly, 137 firms (32.9%) are still under state control more than ten years after the fall of the iron curtain. In Russia, this percentage is more than 55%. Only 7% of companies are widely held, i.e. the largest ultimate shareholder holds less than 10% of the votes. Panel B presents the shares of the ultimate control categories across industries. We use the Fama and French 12 industry classification. The state as controlling shareholder is particularly predominant in telecommunications (75%), utilities (74.6%), gas and coal extraction (57.7%), and chemicals allied products (48.5%). Firms controlled by a large individual investor dominate in health care (43.9%), manufacturing (37.5%), and financial (31.3%) industries. The firms controlled by foreign companies are important in consumer non-durables (31.6%) and business equipment (38.4%) industries.

<sup>14</sup> We call this “formally passive”. We thank the referee for this comment.



**Table 4**  
Summary statistics.

	Non-large	Large	Non-Large	Large	Diff	t-Stat
	Ind. Inv.	Ind. Inv.	Ind. Inv.	Ind. Inv.		
	(median)	(median)	(mean)	(mean)		
size	11.32	11.22	11.49	11.19	0.296 (***)	3.11
tq	0.989	1.222	1.211	1.598	−0.387 (***)	−6.44
roa	0.043	0.045	0.053	0.057	−0.005	−1.05
intangibles	0.014	0.011	0.009	0.014	−0.005 (**)	−2.08
risk	0.039	0.403	0.046	0.046	0.001	0.36
leverage	0.398	0.436	0.455	0.496	0.006	0.26

\*  $p < 0.10$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$

**Table 5**

Means of the governance and market development indexes by country. VA is voice and accountability. RQ is regulatory quality, PS is political stability. GE measures government effectiveness. CC measures control of corruption. RL is the rule of law index, wb is the average of the six indexes. capGDP is the ratio of market capitalization to GDP.

Country	VA	RQ	PS	GE	CC	RL	wb	capGDP
Bulgaria	0.550	0.551	0.300	0.084	−0.014	−0.123	0.225	0.164
Croatia	0.528	0.398	0.367	0.421	0.125	0.034	0.312	0.489
Czech republic	0.967	1.029	0.819	0.968	0.380	0.755	0.820	0.248
Estonia	1.052	1.411	0.742	1.032	0.904	0.843	0.997	0.319
Latvia	0.819	1.014	0.720	0.577	0.312	0.514	0.659	0.107
Lithuania	0.915	1.058	0.789	0.698	0.301	0.457	0.703	0.210
Poland	0.943	0.700	0.469	0.504	0.277	0.432	0.554	0.264
Romania	0.425	0.139	0.195	−0.123	−0.251	−0.214	0.028	0.125
Russia	−0.725	−0.452	−0.783	−0.384	−0.833	−0.924	−0.683	0.652
Slovakia	0.967	0.980	0.714	0.662	0.344	0.378	0.674	0.080
Slovenia	1.092	0.821	1.030	0.957	0.939	0.893	0.955	0.254
Total	0.392	0.391	0.223	0.282	0.014	0.019	0.220	0.348

Table 3, panel A presents means and medians of the cash flow and voting (control) rights of large individual investor controlled firms across countries. The average cash flow rights reach 41.1%, while average control rights are 46.4%. Thus, the deviation between cash flow and voting rights (the “wedge”) is not particularly large in CEE countries. Panel B of the table presents information on whether the large individual investor is a member of the management board, only a member of the supervisory board, or is in none of the boards as well as information on control enhancing mechanisms. In 55% percent of the observations the large individual investor is a member of the management board. In 32% he/she sits only on the supervisory board, and in 13% the large individual investor is a formally passive shareholder not being present on any board. The firms controlled by a large individual investor use various control enhancing mechanisms. The most common control enhancing mechanisms are pyramids, while dual class shares are not often used.

Table 4 displays the means and medians of the firm level explanatory variables for non-individually controlled and individually controlled firms as well as t-tests of their differences.<sup>15</sup> Large individual investor firms, on average, are significantly smaller, and display a significantly larger Tobin's q (1.60 versus 1.21) as well as intangibles to total assets ratio than non-individually controlled firms.

Table 5 presents the means of the World Bank Governance Indicators voice and accountability (VA), regulatory quality (RQ), political stability (PS), government effectiveness (GE), control of corruption (CC), and rule of law (RL), their average (WB), as well as the average market capitalization to GDP ratios across countries. Average values of VA, RQ, PS, and GE are between 0.2 and 0.4, while for CC and RL they are just above zero (remember that the indexes range between −2.5 and +2.5). The average WB is 0.22. These numbers are well below the averages for Western Europe, which are around 1.5 (see e.g. Gugler et al., 2010). Russia in general and Bulgaria and Romania for GE, CC, and RL obtain particularly low values.

Table 6 displays a full set of correlation coefficients among the variables used.

#### 4.2. The determinants of large individual investor control

Table 7 presents the results on probit estimations in which the dependent variable is “individual investor”, a binary variable taking on the value one if an individual ultimately owns more than 10% of the votes. All the regressions control for heterogeneity

<sup>15</sup> Age would be another firm characteristic. Usually it is measured using the date of incorporation. However, for a major part of the companies included in our sample the date of incorporation does not provide accurate information about the true age of the firm. A large fraction of these companies have been founded during or even before communism and the changes in the regimes in Central and Eastern European countries led to changes in their characteristics and the legal forms. The date of incorporation of these firms actually reflects the date of the change in the legal form but not their real age. Due to this measurement problem we do not include age as an explanatory variable.

**Table 6**  
Correlation coefficients.

	individual	ind_not	ind_man	ind_sup	roa	tq	size	leverage	intangibles	risk	wb	capGDP	mebo	voucher	ind_con	wedge	gini index	second_large
individual	1																	
ind_not		1																
ind_man			1															
ind_sup				1														
roa	0.02	−0.05	−0.07	0.1	1													
	(−0.29)	(−0.26)	(−0.15)	(−0.02)														
tq	0.18	0	−0.03	0.07	0.28	1												
	(0.00)	(−0.99)	(−0.6)	(−0.15)	(0.00)													
size	−0.07	−0.02	−0.11	0.16	0.14	0.18	1											
	(0.00)	(−0.58)	(−0.01)	(0.00)	(0.00)	(0.00)												
leverage	0.04	0.04	−0.05	0.04	−0.27	0.08	−0.12	1										
	(−0.09)	(−0.4)	(−0.23)	(−0.41)	(0.00)	(0.00)	(0.00)											
intangibles	0.06	−0.05	−0.05	0.08	−0.01	0.05	0.02	−0.02	1									
	(−0.01)	(−0.25)	(−0.28)	(−0.07)	(−0.55)	(−0.04)	(−0.44)	(−0.48)										
risk	−0.01	0.05	−0.12	0.06	0.07	0.05	−0.11	0.15	0	1								
	(−0.74)	(−0.25)	(−0.01)	(−0.2)	(0.00)	(−0.06)	(0.00)	(0.00)	(−0.95)									
wb	−0.16	−0.03	0.04	−0.06	−0.18	−0.1	−0.17	−0.13	0.13	−0.16	1							
	(0.00)	(−0.54)	(−0.33)	(−0.15)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)								
capGDP	0.13	0.12	−0.24	0.2	0.13	0.35	0.27	0.13	−0.08	0.02	−0.6	1						
	(0.00)	(−0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(−0.45)	(0.00)							
mebo	−0.04	0.02	0.02	−0.06	−0.13	−0.13	−0.12	−0.11	−0.05	−0.14	0.37	−0.21	1					
	(−0.03)	(−0.71)	(−0.68)	(−0.21)	(0.00)	(0.00)	(0.00)	(0.00)	(−0.02)	(0.00)	(0.00)	(0.00)						
voucher	0.22	0.11	−0.01	−0.04	0.12	0.06	0.24	0.05	−0.12	0.07	−0.63	0.51	−0.27	1				
	(0.00)	(−0.01)	(−0.76)	(−0.42)	(0.00)	(−0.01)	(0.00)	(−0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)					
ind_con		−0.1	−0.03	0.12	−0.16	0.09	0.07	0.06	−0.08	0.01	−0.15	0.09	0.2	0	1			
		(−0.03)	(−0.58)	(−0.01)	(0.00)	(−0.08)	(−0.11)	(−0.18)	(−0.10)	(−0.88)	(0.00)	(−0.06)	(0.00)	(−0.92)				
wedge		0.1	0.09	−0.21	−0.1	−0.16	−0.07	0.07	−0.04	−0.09	0.06	−0.11	0	−0.07	−0.02	1		
		(−0.03)	(−0.05)	(0.00)	(−0.04)	(0.00)	(−0.14)	(−0.14)	(−0.35)	(−0.07)	(−0.17)	(−0.02)	(−0.98)	(−0.11)	(−0.68)			
gini index	0.15	0.01	−0.14	0.18	0.16	0.23	0.23	0.15	−0.06	0.13	−0.71	0.71	−0.47	0.64	−0.02	−0.14	1	
	(0.00)	(−0.82)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(−0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(−0.61)	(0.00)			
large_second		−0.04	−0.04	0.05	0.02	−0.06	−0.2	0.09	0.04	0.04	0.13	−0.04	−0.18	−0.08	−0.29	0.18	0.03	1
		(−0.37)	(−0.35)	(−0.25)	(−0.67)	(−0.21)	(0.00)	(−0.04)	(−0.42)	(−0.38)	(0.00)	(−0.42)	(0.00)	(−0.06)	(0.00)	(0.00)	(−0.43)	

The significance of each correlation is printed in parentheses.

**Table 7**

Determinants of large individual investor control: main results. This table presents the results of probit regression models in which the dependent variable is individual investor, a binary variable which is one if a firm is ultimately controlled by a large individual investor. size is measured by the natural logarithm of total assets. wb is the average of the six country level governance indicators provided by the World Bank, roa is the return on assets, risk is the standard deviation of roa. leverage and intangibles are respectively the ratios of total debt to total assets and intangible assets to total assets. capGDP is the ratio of market capitalization to GDP. voucher and mebo are indicator variables which equal 1 if the primary method of privatization, as reported by EBRD, is respectively voucher or MEBO. All the models control for year and industry effects.

	(1)	(2)	(3)
	Probit	Probit	Probit
roa	0.457 (0.97)	0.540 (1.13)	0.086 (0.17)
size	−0.095*** (−4.57)	−0.084*** (−4.04)	−0.073*** (−3.45)
leverage	−0.139 (−0.82)	−0.0967 (−0.57)	−0.244 (−1.39)
risk	−5.282*** (−4.75)	−5.728*** (−5.05)	−6.591*** (−5.49)
intangibles	4.096*** (3.31)	3.977*** (3.27)	2.980*** (2.67)
wb	−0.530*** (−8.52)	−0.749*** (−8.79)	−0.629*** (−6.38)
capGDP		−0.840*** (−3.54)	−0.553** (−2.08)
voucher			−0.193 (−1.60)
mebo			−0.749*** (−7.05)
intercept	1.176*** (3.25)	1.637*** (4.25)	1.620*** (4.08)
N	1662	1662	1662
pseudo R <sup>2</sup>	0.133	0.139	0.167

t-Statistics are in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ .

using the Huber–White–Sandwich estimator and include industry and year fixed effects.<sup>16</sup> The condition number test rejects the presence of multicollinearity in our regressions.

The results provide strong support for the hypotheses discussed in Section 3. All explanatory variables obtain the expected signs and most of them are significant at the 5% level or better. Size and risk are significantly negatively related to, while intangibles are significantly positively related to the likelihood of being a large individual investor firm. Smaller and less risky firms are more likely to be controlled by a large individual investor. More intangibles imply that the firm is harder to monitor, so a large individual investor might solve this governance problem better than other owners. Leverage is not significant as is performance measured by ROA (return on assets). The latter result is reassuring, since it implies that self-selection of large individual investors to well performing firms is not of a particular concern in the sample at hand. We return to this problem later in the section on two-stage regression models.

The negative and highly significant coefficient on the average World Bank indicator (WB) for country institutional quality supports the substitution hypothesis: the better developed the institutions in a country are, the less need there is for large individual investors to substitute for missing governance and contractual enforcement mechanisms. This hypothesis receives further support by the coefficients on the stock market development variable, which is an outcome variable. The more developed the stock exchange, the lower the probability for a firm to be ultimately under the control of a large individual investor.

The insignificant coefficient of voucher privatization indicates that this privatization method is not less likely to result in large individual ownership than other privatization methods. This finding is in accordance with Atanasov (2005) who demonstrates that, at least in the case of Bulgaria, voucher privatization resulted in ownership concentration (in the hands of privatization/voucher funds) and substantial minority expropriation.<sup>17</sup> Finally, a firm is less likely to be under large individual investor control if the primary method of privatization was a management or employee buy-out (MEBO) more than 10 years ago. This last result confirms that ownership and control structures are very sticky. If CEE countries started out with sub-optimal ownership structures, our results imply that firms and countries may be trapped in sub-optimal ownership structures for a long time.

Table 8 presents the last regression of Table 7 and explores institutional quality in greater detail. In particular, columns (1) to (6) use the six sub-indexes VA, RQ, PS, GE, CC and RL as regressors to determine which dimensions of country institutional quality play the most important roles in determining large individual investor control. Maybe not surprisingly, control of corruption (CC) followed by government effectiveness (GE) are the most important (inverse) determinants of large individual investor control.

<sup>16</sup> We also perform the analysis by adjusting standard errors for firm clustering. The results remain robust to this change.

<sup>17</sup> We are very grateful to the referee for this comment.

**Table 8**

Determinants of large individual investor control: governance indexes. This table presents the World Bank indexes as determinants of firms controlled by large individual investors. VA is voice and accountability, RQ is regulatory quality, PS is political stability, GE is government effectiveness, CC is control of corruption and RL is rule of law. capGDP is the ratio of market capitalization to GDP. roa is return on assets, size is the logarithm of total assets and leverage and intangibles are respectively the ratios of total debt to total assets and intangible assets to total assets. mebo and voucher are indicator variables which equal 1 if the primary method of privatization, as reported by EBRD, is respectively voucher or MEBO. All the models control for year and industry effects.

	(1)	(2)	(3)	(4)	(5)	(6)
	Probit	Probit	Probit	Probit	Probit	Probit
roa	0.126 (0.25)	0.132 (0.26)	−0.0232 (−0.05)	0.158 (0.32)	0.0849 (0.17)	0.114 (0.23)
size	−0.070*** (−3.31)	−0.075*** (−3.52)	−0.0789*** (−3.70)	−0.069*** (−3.26)	−0.074*** (−3.48)	−0.070*** (−3.28)
leverage	−0.206 (−1.18)	−0.266 (−1.52)	−0.272 (−1.55)	−0.233 (−1.33)	−0.260 (−1.48)	−0.225 (−1.28)
risk	−6.229*** (−5.17)	−6.451*** (−5.37)	−6.645*** (−5.53)	−6.716*** (−5.61)	−6.806*** (−5.68)	−6.434*** (−5.33)
intangibles	2.899*** (2.62)	2.837*** (2.59)	3.003*** (2.74)	3.002*** (2.66)	2.933*** (2.62)	2.949*** (2.62)
capGDP	−0.574* (−1.92)	−0.580** (−2.04)	−0.576** (−2.15)	−0.391 (−1.55)	−0.406* (−1.65)	−0.346 (−1.38)
voucher	−0.206* (−1.69)	−0.137 (−1.17)	−0.187 (−1.55)	−0.0763 (−0.66)	−0.293** (−2.38)	−0.166 (−1.41)
mebo	−0.778*** (−7.28)	−0.895*** (−8.50)	−0.684*** (−6.27)	−0.717*** (−6.71)	−0.678*** (−6.28)	−0.751*** (−6.98)
VA	−0.479*** (−4.82)					
RQ		−0.571*** (−5.60)				
PS			−0.600*** (−6.39)			
GE				−0.665*** (−6.69)		
CC					−0.744*** (−7.75)	
RL						−0.507*** (−5.94)
intercept	1.563*** (3.84)	1.778*** (4.29)	1.736*** (4.32)	1.478*** (3.79)	1.416*** (3.64)	1.302*** (3.39)
N	1662	1662	1662	1662	1662	1662
pseudo R <sup>2</sup>	0.158	0.162	0.168	0.169	0.175	0.164

t-Statistics are in parentheses. \* $p < 0.10$ , \*\* $p < 0.05$ , and \*\*\* $p < 0.01$ .

#### 4.3. The determinants of the role of the large individual investor

Table 9 presents the results on the determinants of the large individual investors decisions to be actively involved in firm's management (as a member of the management board) or in the monitoring of the firm's activities (as a member of the supervisory board) or as a formally passive shareholder. The table shows multinomial logistic regressions of dependant variable "role" having values from zero to two, with larger numbers indicating more active control. Thus, role equals zero when the large individual investor is formally passive, role equals one when he is represented on the supervisory board, and role is equal to two when he actively manages his company. The determinants proxy for the seriousness and constraints in the principal–agent set up. Our results show that, in larger companies the large individual investors are more likely to become involved in supervision rather than to stay formally passive. The better the corporate governance system in the country, the less need there seems to be for the controlling individual shareholder to be on the management or on the supervisory board. Thus, in well governed countries, the large individual shareholder can confine himself to exercise control in a formally passive way. Similar results also obtain when using our second proxy for institutional quality, capital market development.

We further document that in riskier firms the large individual investor is more likely to be passive. Maybe for risky firms, corporate governance requires specialized skills, making an active involvement of the large individual investor less desirable. We also explore the effect of the presence of multiple large shareholders. The presence of a second large shareholder may lead to overall higher levels of monitoring and thus may reduce the marginal benefits of monitoring of the first investor. Alternatively, it may be particularly important to monitor and control possible extraction of private benefits through the second large investor, thus providing increased marginal benefits of monitoring to the initial investor. The same effect would be obtained if control rights are easier to exploit if the large shareholders collude, thereby increasing the profitability of active involvement. Therefore the presence of another large shareholder can affect the degree of involvement of the large shareholder in the firm. The table shows that the large individual shareholder is more likely to be actively involved in the management or in the supervision of the company when there is another large shareholder. Finally, we document a non-linear relation between the activeness of the large individual investor and his control rights.

**Table 9**

Role of the large individual investors. The table presents the results of a multinomial logistic regression in which the dependent variable is the role of a large individual investor. Role is equal to zero (the base category) if the large individual investor is formally passive, role is equal to one if the large individual investor is on the supervisory board, and role is equal to two if the large individual investor is on the management board or he and his family members are on both boards. size is measured by the natural logarithm of total assets. wb is the average of the six country level governance indicators provided by the World Bank, risk is the standard deviation of roa. capGDP is the ratio of market capitalization to GDP. voucher and mebo are indicator variables which equal 1 if the primary method of privatization, as reported by EBRD, is respectively voucher or mebo. ind\_con measures the control rights of a large individual shareholder. large\_second is an indicator variable equal to one if there is a second large shareholder holding more than 10% of the control rights. The model controls for year and industry effects.

	Role	
	1	2
size	0.506*** (3.37)	0.146 (0.99)
wedge	-0.021 (-0.74)	0.051* (1.82)
wb	-1.414** (-2.96)	-1.695** (-3.05)
risk	-9.766 (-1.33)	-22.233** (-3.16)
capGDP	-0.359 (-0.26)	-6.252*** (-3.70)
mebo	-3.533*** (-5.69)	-2.823*** (-4.51)
voucher	-3.548*** (-5.73)	-1.042 (-1.58)
ind_con	-0.209** (-2.72)	-0.324*** (-4.20)
ind_con <sup>2</sup>	0.003*** (3.33)	0.004*** (4.48)
large_second	1.971*** (4.43)	1.492*** (3.35)
intercept	-1.261 (-0.43)	8.135** (2.87)
N	412	
pseudo R <sup>2</sup>	0.2938	

t-Statistics are in parentheses. \* $p < 0.10$ , \*\* $p < 0.05$ , and \*\*\* $p < 0.01$ .

#### 4.4. The effects of large individual investor control

##### 4.4.1. Effects relative to other control types

This Section presents the regression results of the effects of large individual investor control on performance. We proceed in two steps. First, we estimate simple OLS regressions and compare them to treatment effects and random effects regressions. The treatment effects regression explicitly controls for possible endogeneity biases by simultaneously estimating a probit equation as in Table 7 of the determinants of large individual investor control (not shown, since these are very similar to the results in Table 7), and the Tobin's q equation. The random effects regression explicitly utilizes our firm level panel structure, and includes firm random effects. Second, we go into greater detail analyzing the effects of specific control mechanisms on Tobin's q in large individual investor controlled firms, such as whether or not a large individual investor is a member of the management board or whether he is only on the supervisory board or not present at all.

Table 10 presents the results on the effects of large individual investor control on Tobin's q. Column (1) provides OLS results, treating large individual investor control as exogenous, column (2) displays the results on the treatment effects model, and column (3) presents the firm random effects results. Controlling for size, leverage and intangibles, large individual investor control increases the Tobin's q of companies as compared to other forms of control by around 0.255 on average, which is sizable given that the average Tobin's q of non-individually controlled firms is 1.21. Column (2) controls for possible selectivity bias. The Wald test confirms the hypothesis that the correlation between the error terms of the selection and the effects equations is zero. Thus, OLS and firm random effects should provide unbiased estimates, and indeed the results of columns (1)–(3) are very close. Column (3) shows that all our main results carry over, once we control for firm random effects by using the GLS estimator. It should be noted that this is quite a stringent test of the effects of large individual investor control on performance. GLS uses a matrix weighted average of the between and within estimators, and since the within variation in large individual investor control is low (30 firms changed from non-individual to large individual investor control during our sample period) and one nevertheless gets a statistically significant increase in Tobin's q of 0.199, we are reassured that the results are robust and sizable. Models 1 to 3 control for year and industry effects and model 4 controls for country and year effects.

**Table 10**

Large individual investor firms and performance. The dependent variable is Tobin's q (tq) proxied by the ratio of market value of equity plus the book value of debt to book value of total assets. individual is an indicator variable which is equal to one if the firm is controlled by a large individual investor. State is an indicator variable equal to one. size is the natural logarithm of total assets, and risk is the standard deviation of return on assets. Leverage and intangibles are respectively the ratios of total debt to total assets and intangible assets to total assets. The first model is evaluated using OLS. The second model is estimated using treatment effects (treatreg). The third model is estimated using firm random effects. Models 1–3 control for year and industry effects. Model 4 controls for industry and country effects.

	(1)	(2)	(3)	(4)
	OLS	Treatment	RE	Treatment
individual	0.255*** (4.03)	0.366*** (2.81)	0.199** (1.96)	0.271*** (3.17)
state	-0.159*** (-3.46)	-0.154*** (-3.34)	-0.0817 (-0.94)	-0.199*** (-4.18)
size	0.0938*** (7.15)	0.0831*** (6.27)	0.0896*** (3.56)	0.081*** (6.04)
leverage	0.248*** (2.91)	0.288*** (3.54)	0.384*** (2.64)	0.286*** (3.50)
intangibles	0.850 (0.99)	0.736 (0.85)	0.175 (0.20)	0.188 (0.82)
intercept	0.805** (2.03)	1.460*** (5.41)	0.114 (0.17)	0.164 (0.34)
athrho		-1.102 (-1.24)		-0.090 (-1.85)
lnsigma		-0.181*** (-4.25)		-0.199 (-5.06)
rho		-0.102		-0.090
sigma		0.834		0.820
lambda		-0.085		-0.074
sigma_u			0.785	
sigma_e			0.559	
rho			0.664	
N	1654	1654	1654	1654
R <sup>2</sup>	0.202		0.245	
Treatment (model 2): Wald test of indep. eqns. (rho = 0): $\chi^2(1) = 1.26$ Prob > $\chi^2 = 0.261$				
Treatment (model 4): Wald test of indep. eqns. (rho = 0): $\chi^2(1) = 1.48$ Prob > $\chi^2 = 0.02235$				

t-Statistics are in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ .

So far we have compared firms controlled by a large individual investor or by the state to all other firms, be they controlled by a foreign firm, are widely held, etc. This may be too crude, since e.g. the state as an owner may pursue different goals from economic efficiency, such as maximization of employment or social responsibility. It may thus be that large individual investor firms only outperform state controlled firms but not e.g. foreign controlled firms. Table 11 thus estimates the impact of the different types of ultimate controlling shareholders on performance. We now disentangle ultimate owners into large individual investor firms, state controlled firms, foreign controlled firms, firms with anonymous owners and a rest category. For data availability reasons, the rest category lumps together financially controlled firms, firms that could not be traced further than the first layer, and widely held firms. In the regressions we exclude the rest dummy, thus the rest is the base category and we measure effects as differences from the rest firms. The companies controlled by large individual investors outperform all other control categories. The companies in which the owner is anonymous display the worst performance on average, even worse than state controlled firms. Foreign controlled firms and the rest category of companies lie in between. Thus, three conclusions can be drawn from Table 11. First, when ownership is transparent, control exerted by the private sector displays better results than control exerted by the state. Second, firms owned by anonymous owners obviously pursue goals different than profit maximization (e.g. capital flight, tax avoidance, money laundering) and perform even worse than the state owned firms. Third, large individual investors are best in solving the unique corporate governance problems in CEEC, at least during the transition to a market economy.

Our analysis reveals that firms controlled by large individual investors perform better than the other companies. We offer as reasons the unique monitoring incentives and capabilities by individuals, incentives and capabilities other entities which are agents themselves may lack. A competing hypothesis in a CEE context may be that the controlling individual investors in our sample simply ensure that their firms are better politically connected than other firms. These political connections may ensure easier access to capital, cheaper capital (e.g. subsidized credit) or preferred tax or procurement treatment. While we cannot rule out this possibility, we wish to make two remarks. First, we control for a number of factors in our regressions such as industry, firm size and firm random effects, which should leave the remaining covariation between owner type and performance to proxy for governance effects. Second, one may argue that state controlled firms should be best politically connected. Thus, if this is the driving force behind our results we would expect firms controlled by the state to outperform the rest of the companies, which is resoundingly rejected by our estimations. We leave, however, a final judgment to future research.



**Table 11**

Large individual investor firms and Performance: blockholders. The dependent variable is Tobin's q (tq) proxied by the ratio of market value of equity plus the book value of debt to book value of total assets. Individual is an indicator variable which is equal to one if the firm is controlled by a large individual investor. State is an indicator variable equal to one. foreign is an indicator variable equal to one if the company is controlled by foreign investors. Anonymous is an indicator variable equal to one if the company is controlled by anonymous owners. size is the natural logarithm of total assets, risk is the standard deviation of return on assets. leverage and intangibles are respectively the ratios of total debt to total assets and intangible assets to total assets. The first model is evaluated using OLS. The second model is estimated using treatment effects (treatreg). The third model is estimated using firm random effects. All the models control for year and industry effects.

	(1)	(2)	(3)	(4)
	OLS	Treatment	RE	Treatment
individual	0.275*** (4.16)	0.395*** (3.00)	0.207* (1.93)	0.207*** (2.61)
foreign	0.129 (1.51)	0.115 (1.33)	0.075 (0.47)	0.149* (1.87)
state	-0.138*** (-2.73)	-0.137*** (-2.74)	-0.069 (-0.70)	-0.176*** (-3.51)
anonymous	-0.429*** (-4.36)	-0.441*** (-4.66)	-0.492*** (-3.02)	-0.350*** (-3.40)
size	0.092*** (6.94)	0.082*** (6.13)	0.089*** (3.45)	0.073*** (5.52)
leverage	0.246*** (2.87)	0.287*** (3.51)	0.387*** (2.65)	0.232*** (2.68)
intangibles	0.806 (0.94)	0.681 (0.79)	0.164 (0.19)	0.293 (0.34)
intercept	0.732* (1.89)	2.166*** (7.50)	0.925 (1.40)	0.499*** (3.00)
athrho		-0.250 (-2.52)		-0.047 (-1.17)
lnsigma		-0.151 (-3.51)	-0.204	-0.047 (-5.27)
rho		-0.245		0.816
sigma		0.860		0.038
lambda		-0.210		
sigma_u			0.787	
sigma_e			0.559	
rho_re			0.665	
N	1654	1654	1654	
R <sup>2</sup>	0.278		0.245	
Treatment (model 2): Wald test of indep. eqns. (rho = 0): $\chi^2(1) = 0.00$ Prob > $\chi^2 = 0.9696$				
Treatment (model 4): Wald test of indep. eqns. (rho = 0): $\chi^2(1) = 1.37$ Prob $\chi^2 = 0.241$				

t-Statistics are in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ .

#### 4.4.2. Active versus passive management

So far we have analyzed rather crudely (with the use of dummies) the average effects of large individual investor firms relative to other control categories. In what follows we analyze in greater details the way large individual investors control their firms and its effects on performance. Table 12 presents 2SLS regression results on the impact of the excess of control over cash flow rights (wedge), non-linearities of control rights, the presence of the large individual investor on the management or on the supervisory board, and passive individual control. The set of instrumental variables consists of risk, WGLs, years after IPO, the Gini index of income inequality, methods of privatization, and the type of the second largest shareholder. For every endogenous variable we employ a different subset of instruments, reported in Table 12. A series of tests are performed to test the validity of the 2SLS procedure. The Wu–Hausman test is done to verify the endogeneity of the instrumented variables. Only for the control rights of the large individual investor (ind\_con) we fail to reject the null hypothesis that the variable is endogenous. Therefore we re-estimate the results of the impact of the control rights on performance by OLS (column 3). We check the joint explanatory power of the instruments by calculating Cragg–Donald's F statistic, and the test reveals that the instruments are moderately correlated with the endogenous variables. The over-identification test suggests that our instruments are uncorrelated with the error term, and thus are valid instruments.<sup>18</sup> Column (1) presents the effect of the wedge between control and ownership rights on Tobin's q. Wedge is measured as the difference between large individual investor control and cash flow rights. We find that the wedge has a significantly negative sign. Columns (2) and (3) find significant non-linear effects of voting rights concentration on performance. We estimate a u-shaped relation between control stake and Tobin's q, with the turning point at 49.25% of the votes, implying that the incentive effect begins to outweigh any entrenchment/expropriation effects at majority control. Taken together, our results imply that while expropriation of minority shareholders by the large individual investor cannot be excluded for some firms, these effects do not appear to be predominant, leaving the positive direct shareholder monitoring benefits of large individual investors to dominate.

<sup>18</sup> We use the difference-in-Sargan statistic to test the exogeneity of the instruments privatization methods. The test reveals that for our sample the methods of privatization are exogenous instruments.

**Table 12**

The impact of large individual investor supervision and control on performance. This table presents 2SLS results of the effect of the wedge, the large individual investor control rights and the presence of the large individual investor on the management or on the supervisory board on Tobin's q. The dependent variable is Tobin's q (tq) proxied by the ratio of market value of equity plus the book value of debt to book value of total assets. size is the natural logarithm of total assets. Leverage and intangibles are respectively the ratios of total debt to total assets and intangible assets to total assets. wedge is measured as the difference between voting and cash flow rights. ind\_sup is an indicator variable which is equal to one if the large individual investor is only a member of the supervisory board. ind\_not is an indicator variable which is equal to one if the large individual investor is neither a member of the management nor of the supervisory board and is the base. ind\_man is equal to one if the large individual investor together with his family members are sitting only on the management board or on the both boards, management and supervisory. wedge is instrumented by risk, years after the IPO and methods of privatization. ind\_con is instrumented by VA, RL, CC, gini index, risk and privatization methods. ind\_sup and ind\_man are instrumented by VA, GE, RQ, risk, gini index, and privatization methods. The models control for year and industry effects.

	(1)	(2)	(3)	(4)
	2SLS	2SLS	OLS	2SLS
wedge	-0.051** (-2.53)			
ind_con		-0.059 (-1.62)	-0.020* (-1.72)	
ind_con <sup>2</sup>		0.0006* (1.79)	0.0002** (2.06)	
ind_sup				0.096 (0.22)
ind_man				-0.609* (-1.83)
size	0.090** (1.98)	0.018 (0.42)	0.058 (1.29)	-0.046 (-0.80)
leverage	0.312 (0.96)	0.211 (1.05)	0.189 (0.86)	0.109 (0.54)
intangibles	1.084 (0.81)	0.151 (0.14)	0.644 (0.54)	-0.070 (-0.06)
intercept	1.455* (1.78)	3.115*** (2.95)	0.203 (0.28)	1.878*** (3.02)
<i>Test of overidentifying restrictions</i>				
Hansen J	1.809	7.515		8.461
J p-value	0.613	0.276		0.294
<i>Endogeneity test</i>				
Wu-Hausman F test	8.190	0.530		4.995
Wu-Hausman p-value	0.005	0.589		0.007
<i>Explanatory power of excluded instruments</i>				
Cragg-Donald F test	13.238	3.164		15.098
Adjusted R <sup>2</sup>		0.161		
N	267	357	382	343

t-Statistics are in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ .

The last model in Table 12 presents the differential effects of the individual investor being a member of the management board, being only a member of the supervisory board, and passive shareholdings on performance. ind\_man is a binary variable which is equal to one if the large individual investor is a member of the management board or if he and his family members are present on both management and supervisory boards. ind\_sup is a binary variable which equals one if the large individual investor is represented only on the supervisory board. ind\_not is a binary variable which takes the value of one if the large individual investor is represented neither on the management board nor on the supervisory board, zero else. Note that we define the three variables as mutually exclusive. In the regression we exclude ind\_not, this implies that the constant term of the equation measures the effects of the left out category, and the coefficients on ind\_sup and ind\_man measure the difference of these categories from formally passive large individual investor firms.

The coefficient on ind\_sup is positive but not significant, indicating that the firms actively supervised by a large individual investor perform just as well as firms in which the large individual investor is formally passive. The negative and significant sign on ind\_man suggests that actively managed large individual investor firms underperform both companies in which the large controlling shareholder is formally passive as well as companies actively supervised by their controlling shareholders.<sup>19</sup> Thus, professional managers may introduce separation of ownership and control problems, but they may be better qualified and more competent than the large individual investors.

<sup>19</sup> Note that this does not imply that large individual investors who are members of the board of directors do not add value compared to non-individually controlled firms, since we sample select here only large individual investor firms into the regression. Actually, we have shown above that they do. It says that they do not add additional benefits compared to large individual owners, who are not formally active.

#### 4.5. Robustness checks

To check the robustness of our results we re-estimate the treatment effects and random effects regressions using different operating performance measures, like return on assets (Table 13) and return on equity (Table 14) instead of Tobin's q. Both tables confirm that our finding, that on average large individual investors improve performance, is robust to different performance measures. Using return on assets, the Wald test rejects the independence equations assumption, underlining the importance of instrumenting in this case.

### 5. Conclusions

The fall of communism offers a unique research laboratory to explore the impact of a changing institutional environment on the ownership and control structure of firms and its effects on performance. Our special interest is in the existence and prevalence of firms controlled by large individual investors. We do not refer to these firms as “family firms”, since most of them were under state control for several decades and privatized in the early 1990s, but as “large individual investor firms”. The paper uses a comprehensive data set to explore the determinants and effects of large individual investor control in CEEC. We find that large individual investors are the predominant shareholders in the CEE countries, and, consistent with the substitution hypothesis, that the quality of country level governance and stock market development has a negative impact on the existence of individually-controlled firms. Thus, large individual investors appear to mitigate the governance problem, when the institutional environment does not. This form of control is an optimal response to the institutional environment. Consistently, we find that large individual investor control has a positive effect on performance as measured by Tobin's q compared to all other control types. Thus, private sector control outperforms state control, and the specific abilities and incentives of individuals bearing the residual gains and losses of their monitoring decisions are important value drivers.

An important set of findings concern the determinants and the effects of the presence of the large individual investor on the management or on the supervisory board. The presence of large individual investors on the management board has two countervailing effects on firm performance. On the one hand, it reduces the agency problem between managers and shareholders, and on the other hand it increases the probability of excess private benefits of control and expropriation of minority shareholders. Our results suggest that the second effect dominates, since firms where the large individual investor is on the management board underperform other types of large individual investor firms, i.e. firms where the large individual investor is only on the supervisory board and firms where the large individual investor exerts formally passive control.

Finally, we find long lasting effects of the primary methods of privatization chosen by the CEE countries. If the country chose as primary methods voucher privatization or management or employee buy-outs, we find that more than 10 years later there is still a

**Table 13**

Large individual investor firms and performance: ROA. The dependent variable is roa, return on assets. individual is an indicator variable which is equal to one if the firm is controlled by a large individual investor. size is the natural logarithm of total assets. leverage and intangibles are respectively the ratios of total debt to total assets and intangible assets to total assets. The first model is evaluated using treatment effects (treatreg). The second model is estimated using firm random effects. The models control for year and industry effects.

	(1)	(2)
	roa	roa
individual	0.097*** (12.55)	0.170*** (5.51)
size	0.008*** (5.36)	0.005** (2.05)
leverage	-0.110*** (-10.10)	-0.115*** (-8.61)
intangibles	-0.176*** (-3.21)	-0.125** (-1.99)
intercept	-0.058** (-2.32)	0.191** (2.47)
athrho	-0.871*** (-10.91)	
lnsigma	-2.463 (-82.62)	
rho	-0.701	
sigma	-0.055	
lambda	-0.060	
sigma_u		0.059
sigma_e		0.060
rho_re		0.494
N	1558	1558
Wald test of indep. eqns. (rho = 0): $\chi^2(1) = 118.96$ Prob > $\chi^2 = 0.000$		

t-Statistics are in parentheses. \* $p < 0.10$ , \*\* $p < 0.05$ , and \*\*\* $p < 0.01$ .

**Table 14**

Large individual investor firms and performance: ROE. The dependent variable is roe, return on equity. individual is an indicator variable which is equal to one if the firm is controlled by a large individual investor. size is the natural logarithm of total assets. leverage and intangibles are respectively the ratios of total debt to total assets and intangible assets to total assets. The first model is evaluated using treatment effects (treatreg). The second model is estimated using firm random effects. The models control for year and industry effects.

	(1)	(2)
	roe	roe
individual	0.178*	0.542***
	(1.75)	(4.51)
size	0.019***	0.015
	(3.37)	(1.62)
leverage	−0.095	−0.149**
	(−1.03)	(−2.15)
intangibles	−0.294*	−0.564
	(−1.92)	(−1.57)
intercept	−0.322**	0.187
	(−2.26)	(0.63)
athrho	−0.274	
	(−1.42)	
lnsigma	−0.852	
	(−4.68)	
rho	−0.267	
sigma	0.426	
lambda	−0.114	
sigma_u		0.197
sigma_e		0.404
rho_re		0.193
N	1560	1560
R <sup>2</sup>		
Wald test of indep. eqns. (rho = 0): $\chi^2(1) = 2.02$ Prob > $\chi^2 = 0.155$		

t-Statistics are in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ .

lower prevalence of large individual investor controlled firms. This implies that ownership and control structures are very sticky. If CEE countries started out with sub-optimal ownership structures after the privatizations (e.g. since mass/voucher privatizations led to too much dispersed ownership), then firms and countries may be trapped in sub-optimal ownership structures for a long time. Once ownership is dispersed, coordination and free rider problems may hinder the concentration of ownership, although it would be optimal, given the institutional environment.

Overall, there are several corporate finance lessons that emerge from our analysis. First, it appears that agency theory explains ownership structure well. We report numerous results supporting the basic underlying theory. Both the determinants regressions as well as the effects regressions imply that monitoring, incentives, and institutions are important. Second, and more specifically to CEE countries, it appears that ownership and control decisions, once taken, are sticky and have long lasting effects. Secondary markets for ownership and control may not achieve the same long-run equilibria when initial conditions differ. Finally, we have a message for transition processes in general. It may be optimal, for transitory periods when market institutions are not yet well developed, to let families and individuals concentrate shareholdings and control so that they can achieve a second best solution to the basic contracting problem. In such an environment it may be best if firms are run by professional managers but actively monitored by a large individual investor.

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