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Gebka B. [Ownership structure, monitoring, and market value of companies: evidence from an unusual privatization mode.](#)

International Review of Applied Economics 2014, 28(5), 586-610.

Copyright: This is an Accepted Manuscript of an article published by Taylor & Francis Group in *International Review of Applied Economics* on 25/06/2014, available online: www.tandfonline.com/

DOI link to article: <http://dx.doi.org/10.1080/02692171.2014.918938>

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Date deposited: 10th October 2014 (made available 25th December 2015)

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Ownership structure, monitoring, and market value of companies: Evidence from an unusual privatization mode

*Published in: International Review of Applied Economics, Vol. 28(5),
pp.586-610*

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This study analyzes the impact of ownership structure and market liquidity on company value. We investigate different aspects of ownership: the risk of political interference, private investors vs. the state acting as influential blockholders, and preferential political treatment of companies. Using a unique dataset of Polish partial privatizations initiated by shares transfers to entities under limited government influence, we find that government divestments can enhance company value, due to reduction in risk of political interference. A potential increase in the liquidity of trades in transferred companies' shares also boosts their market value. On the other hand, an increased likelihood of the emergence of private blockholders able to expropriate minority shareholders reduces the firm's market value. Our results support the political view of privatization: governments have objectives different to profit maximization, which leads to suboptimal investment from this point of view and lower market value of companies. We also develop a model to empirically distinguish between different aspects of ownership on company value.

Keywords: corporate governance, privatization, ownership structure, transition economy, event studies

JEL Classification: G14, G32, H82, O16, P31

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1. Introduction and literature review

This paper analyzes stock market reactions to announcements of (potential) partial privatizations using an unusual mode of state divestiture: transfers of shares under direct government control to other entities, being under limited influence from politicians, which subsequently sell the transferred stocks to private investors. Specifically, since 1999 the Polish government used stocks of partly privatized companies to increase the capitalization of troubled state-owned enterprises (SOEs), other partly privatized companies, or government agencies.¹ In addition, even if those transferred stocks were expected to be returned at a later stage, the direct influence of the government over the transferred company would diminish, at least temporarily. In reality, however, the transfers have not been returned. Rather, recipients used to sell the received stocks to improve their financial condition. Hence, as these transfers ended up in hands of private investors, this *de facto* constitute a mode of privatization.

On theoretical grounds, the impact of state divestitures on firm value is ambiguous.² Potential benefits for affected companies include: a reduction in political interference (Shleifer and Vishny, 1994), higher stock market liquidity and, hence, lower liquidity risk in the long run (Amihud, 2002), and a higher likelihood that a private controlling investor will emerge (Maug, 1998). However, anecdotal evidence suggests that the reactions of stock market participants to stock transfer announcements analysed here were overwhelmingly negative, since it was feared that large portions of shares would be sold and depress the market price. In addition, privatized firms are unlikely to benefit from preferential political treatment (Sun et al., 2002), and state divestiture can lead to dispersed ownership (Zingales, 1995).

Differences in performance between state-owned and private enterprises are analysed based on the notion of the company as a bundle of ownership and control rights (Berle and Means, 1932). The ownership-based argument, termed the *political view*, states that governments might pursue goals other than profit maximization, such as higher employment,

investment in certain regions or products, or high but unsustainable dividend payouts (Gupta, 2005; Sheshinski and López-Calva, 2003). Hence, transferring the ownership, i.e., the formal right to interfere with managerial decisions, to private investors can change the goals imposed on the management by the new owner, improving the privatized company's efficiency (both allocative and X-efficiency [Leibenstein, 1966]) and profits (Shleifer and Vishny, 1994).³

The second argument for private vs. state ownership, the *managerial view*, recognises that the government and the taxpayers are facing information asymmetries and high transaction costs of monitoring and incentivising the management of the SOEs (Vickers and Yarrow, 1988, 1991). As a result, the actual principals find it difficult to influence the actions of their agents, resulting in opportunistic behaviour by the latter. This can take the form of managerial perks, investment policy driven by private goals, etc., and is detrimental to the company's value. On the other hand, private investors have both incentives and means to control and discipline managers (Shleifer, 1998; Tirole, 1991). Further, the stock market might act as a monitoring and controlling device, by delivering information about the company which is unavailable from accounting data, allowing the owners to better shape incentives faced by management (Holmström and Tirole, 1993). Hence, privatization may improve corporate performance by introducing new mechanisms of monitoring and control: stock market valuation of managerial decisions, different legal framework, actions of analysts and shareholders, the market for corporate control, and the managerial labour market.⁴

Empirical studies show that privatization improves firms' performance and value, but the results vary and depend on the type of private owner, privatization mode, as well as the legal and macroeconomic framework (Megginson and Netter, 2001, Djankov and Murrell, 2002; Estrin et al., 2007; Konings et al., 2005, Driffield and Du, 2007). Despite potential benefits, governments around the world are reluctant to conduct full privatizations and retain shares in partially privatized companies (Bortolotti and Faccio, 2004).⁵ This type of firms is

analyzed in this study. However, theoretical arguments regarding the owner's incentives and ability to monitor managers speak against partial, as opposed to full, privatization (D'Souza et al., 2005, García and Ansón, 2007; Sheshinski and López-Calva, 2003). Empirical evidence is in line with this prediction: returns and subsequent performance following privatization IPOs are lower when governments remain majority shareholders (Boubakri et al., 2005a; Frydman et al., 1999, Jelic et al., 2003); politically connected managers diminish firm value (Fan et al., 2007), even if companies benefit from subsidies and lower taxation (Faccio, 2006); and the existence of non-managerial private blockholders benefits privatized companies (Lins, 2003).

This paper analyses the relative importance of managerial and political views of ownership. The majority of privatization studies deal with simultaneous changes in ownership and monitoring; therefore, they do not allow to distinguish between the political and the managerial view. However, knowing which of these aspects makes privatization work is of crucial importance for both policy makers and investors (Gupta, 2005): if the managerial view holds, partial privatisations could be sufficient to fully improve firms' performance; if the political view holds, however, full privatisations are required to entirely unleash firms' potential. Empirical studies (Section 2) point towards the managerial rather than political view; however, these two aspects are not necessarily mutually exclusive (Gupta, 2005).

The contributions of this paper are as follows. Firstly, we empirically analyze the impact of an unusual mode of state divestitures on firm value, providing new evidence on how changes in ownership affect the value of companies, especially on the role of the state and the blockholders. We test for the political view of ownership while controlling for the managerial view. Secondly, we show analytically how one can empirically distinguish between different factors determining the firm value, such as political interference, concentrated ownership by state or private investors, and preferential political treatment. Lastly, we use a unique, hand-

collected dataset, which helps to avoid the data mining bias that could potentially result from repeated utilization of popular databases in other studies.

Our findings yield support for the political view of privatization: State divestures tend to increase companies' market value due to reduction in political interference. Further, the stock market reacts positively to a potential increase in future liquidity of stocks of firms subject to transfers. These positive aspects contrast with potential negative consequences of privatization: emergence of blockholders expropriating small shareholders, more dispersed ownership, and loss of preferential political treatment. The total impact of privatisations on firm's market value depends on which of those effects dominates.

In the next section, we review the literature on selected aspects of privatization and formulate our hypotheses. Next, we describe the data, methodology, and testing strategy. Section 4 presents empirical results and their interpretation, and Section 5 concludes.

2. Hypotheses and testing strategy

2.1. *Ownership-related effects*

Privatization might be expected to change a company's performance because it entails changes in ownership (political view), and/or because capital markets constitute a device which allows the shareholders to monitor and control the managers (managerial view). Since we are dealing with companies which were listed prior to the transfers, the latter aspect, i.e., the stock market as a controlling mechanism, was in place prior to the transfers. Hence, any changes in market value observed here will be interpreted as evidence related to the political view (a similar reasoning is employed by Bortolotti and Faccio, 2004, and Gupta, 2005).^{6 7}

The literature reports stronger support for the managerial, as opposed to the political, view. The former can be assessed by analyzing partial privatizations through public share offerings, whereby state ownership declines from 100% to a non-negative fraction. Studies show that efficiency improves following share issue privatization (Boubakri and Cosset, 1998;

Boubakri et al., 2005a; D'Souza and Megginson, 1999; Megginson et al., 1994). However, because both full and partial privatizations (and private sales) are dealt with in these studies, the results in support of the managerial view should be interpreted with caution, as they might be due to changes in ownership (political view) rather than in the extent of private control.

In addition, some studies argue that post-privatization improvements are more pronounced for firms with majority private ownership, pointing towards the political view (Boubakri et al., 2005a; D'Souza and Megginson, 1999). However, as they only focus on whether the state ownership drops below the 50% mark, detailed conclusions about the impact of often minor changes in ownership on corporate performance are not possible. Those studies which control for the exact level of post-privatization state ownership find it insignificant in both developed (D'Souza et al., 2005) and developing (Boubakri et al., 2004) countries, suggesting that once market-based control mechanisms have been introduced, further privatization does not improve performance (supporting the managerial view), or even harms it (Bortolotti and Faccio, 2004). Hence, we formulate two hypotheses:

Hypothesis H1. The level of private ownership affects a firm's value (political view);

Hypothesis H2. Introduction of private control affects a firm's value (managerial view).

If H1 holds, we should observe significant market reactions to the announcements of stock transfers (positive reactions if increased private ownership improves company performance and negative if it harms it). However, if H2 is the sole correct effect (or if privatisation leads to greater inefficiencies, see endnote 3), we should not observe any systematic market reactions to further (potential partial) privatizations, as companies in our sample are publically traded and already benefit from private control mechanisms.⁸

Furthermore, if H1 holds, the literature offers several explanations for the impact of ownership on firm's market value. Below we explain how they can be distinguished.

Hypothesis H1A. State ownership reduces firm value due to political interference with managerial decisions.

If the political interference hypothesis (H1A) holds, we further theorise that the government is more likely to interfere if it holds a sufficiently large fraction of shares, but should not be able to do so if its holdings are small. In addition, high levels of state ownership signal the government's interest in interfering. Hence, if the hypothesis H1A is correct, the market value of a company should be a negative function of state ownership, especially so for high levels of government's shareholding. We describe this relationship by the following stylized function of market value (MV) on state ownership (G) shown in Figure 1, Panel A:⁹

$$MV = \begin{cases} p_1 - G, & \text{for } G < K_1 \\ (p_1 - K_1) - (G - K_1)^2, & \text{for } G > K_1 \end{cases}, \quad (1A)$$

where p_1 is a constant to assure the continuity of the function MV at point $(K_1, MV(K_1))$, and K_1 is a threshold value of state ownership G separating 'low' from 'high' values of state ownership. K_1 could be equal to 50% plus one share, since owning marginally more than a half of the company would guarantee the government the majority of votes, or could be lower if the remaining shareholders were numerous and inactive.¹⁰

[FIGURE 1 ABOUT HERE]

An additional aspect is that of ownership concentration. Based on the agency theory, it can be argued that highly concentrated ownership might be better than diluted one: blockholders face lower per-stock-held costs of obtaining, processing, and acting upon information about the company, and receive higher total benefits than small shareholders. Hence, their incentives to actively monitor the management are stronger, helping to overcome the problem of information asymmetry between shareholders and managers and to improve the quality of managerial decisions. As a result, concentrated ownership might be better than diluted one, even if it is the state who acts as a blockholder (Tirole, 1991). These considerations lead to:

Hypothesis H1B. State ownership increases firm value due to the benefits of concentrated (state) ownership.

The detrimental effect of ownership dilution on a firm's value is well established in the empirical literature. For instance, Zingales (1995) reports a positive relationship between ownership concentration and corporate performance in the US, and numerous studies show this relationship to hold in the transition economies as well (e.g., Earle and Estrin [1996], Xu and Wang [1997], Claessens and Djankow [1999]). However, these papers do not distinguish between state and private ownership.

The notion that the government can act as a blockholder improving the firm's performance finds some support in empirical studies. In their meta-analysis of the privatization effects on enterprise restructuring in transition economies, Djankov and Murrell (2002) report that dispersed private ownership is not superior to full state ownership, as privatization to "diffused individuals" failed to significantly improve the company's performance. However, this finding could also be driven by preferential treatment of these companies by the governments (as hypothesized by Bortolotti and Faccio [2004]).

Hence, for high levels of state ownership, the decision to transfer shares from direct state control could cause a dilution of ownership and is hypothesized to lower the firm's value. The higher the state's initial stake, the smaller this potential damage and the weaker the (negative) market reaction would be. For low levels of state ownership, the transfer decision is irrelevant since the state cannot act as a blockholder anyway. Therefore the concentrated state ownership hypothesis (H1B) would predict a positive relationship between state ownership and the company's market value for firms with high levels of state ownership, and no relationship for low levels of government shareholding (Figure 1, Panel B). This can be described by the following stylized function of market value (MV) of state ownership (G):

$$MV = \begin{cases} p_2, & \text{for } G < K_2 \\ p_2 + (G - K_2)^2, & \text{for } G > K_2 \end{cases}, \quad (1B)$$

where p_2 is a constant and K_2 is a threshold value of state ownership G separating ‘low’ from ‘high’ values of state ownership, which does not have to be equal to K_1 .

On the other hand, when state ownership is already low, the government cannot act as a controlling owner. Hence, the decision to further privatize the company could increase the firm’s value because it increases the number of shares in the free float and the *probability* that a private block owner will emerge (Maug, 1998).¹¹ Furthermore, the lower the state ownership, the higher this probability is. This leads to:

Hypothesis H1C. Private ownership increases firm value due to the benefits of concentrated (private) ownership.

Hypothesis H1C further predicts a negative relationship between state ownership and a company’s value for firms with low levels of state ownership.¹² For high levels of government shareholding, the fraction of the company which might be held by a private shareholder would be insufficient for the latter to act as a blockholder, hence we would expect state ownership to be unrelated to the market value of a company (Figure 1, Panel C). This can be described by the following stylized function:

$$MV = \begin{cases} p_3 + (G - K_3)^2, & \text{for } G < K_3 \\ p_3, & \text{for } G > K_3 \end{cases}, \quad (1C)$$

where p_3 is a constant and K_3 is a threshold value of state ownership G separating ‘low’ from ‘high’ values of state ownership, which does not have to be equal to K_1 or K_2 .¹³

However, the impact of private block ownership on firm value can also be negative, due to “private benefits of control” allowing the blockholders to expropriate remaining shareholders, to exaggerated control reducing risk-taking by managers, or to increased risk borne by large shareholders (Grosfeld and Hashi, 2007, Trojanowski, 2008). Hence, the relationship (1C) could be inversed, i.e., low levels of government ownership giving rise to higher probability of emergence of private blockholders could reduce the value of companies.¹⁴

Lastly, state ownership can influence the market value of companies because of a higher likelihood of preferential treatment in the form of tax releases, cheap loans, subsidies, public contracts, etc., for companies with large state ownership, potentially resulting in the spurious superiority of state ownership (Bortolotti and Faccio, 2004; Sheshinski and López-Calva, 2003; Sun et al., 2002). For those firms in Central Europe facing hard budget constraints and unlikely to receive state support, Frydman et al. (1999) show that partially privatized corporations perform no better than SOEs and significantly worse than fully private firms. This finding suggests that the alleged beneficial effects of state ownership reported in other studies might result from preferential political treatment of the firms rather than from their superior performance due to, e.g., the government acting as a blockholder. Hence:

Hypothesis H1D. State ownership increases firm value due to preferential political treatment.

Under H1D, we would expect the market reactions to privatization announcements to be negative, especially when preferential treatment was most likely to occur, i.e., for firms with high levels of state ownership. This would result in a positive relationship between state ownership and the market values of companies. This effect would be especially pronounced for high values of state ownership, as by remaining a major shareholder, the government implicitly signals its interest in a company, making preferential political treatment more likely to occur. The effect of this preferential political treatment hypothesis (H1D) is shown in Figure 1, Panel D, and can be described by the following stylized function:

$$MV = \begin{cases} p_4 + G, & \text{for } G < K_4 \\ (p_4 + K_4) + (G - K_4)^2, & \text{for } G > K_4 \end{cases}, \quad (1D)$$

where p_4 is a constant and K_4 is a threshold value of state ownership G separating ‘low’ from ‘high’ values of state ownership which does not have to be equal to K_1 - K_3 .

To summarise, the market value of a company might be linked to state ownership via four different channels (H1A-H1D). Therefore, we can express the market value MV as a weighted sum of the functions (1A)-(1D):

$$MV = \begin{cases} a(p_1 - G) + b(p_2) + c(p_3 + (G - K_3)^2) + d(p_4 + G), & \text{for } G < \underline{K} \\ a((p_1 - K_1) - (G - K_1)^2) + b(p_2 + (G - K_2)^2) + c(p_3) + \\ + d((p_4 + K_4) + (G - K_4)^2), & \text{for } G > \bar{K} \end{cases} \quad (1E)$$

where $\underline{K} = \min\{K_1, K_2, K_3, K_4\}$, $\bar{K} = \max\{K_1, K_2, K_3, K_4\}$, and a, b, c and d are weights measuring the relative impact on market value of hypotheses H1A-H1D, respectively, with $a+b+c+d=1$.

To assess the impact of privatization (announcements) on a firm's market value, we firstly need to establish the change in value, ΔMV , due to the (announced) change in state ownership, ΔG : $\Delta MV = MV(G_2) - MV(G_1)$, where $G_2 = G_1 + \Delta G$ and $\Delta G < 0$ due to state divestiture ($G_2 < G_1$). Using the functional form of MV in eq. (1E), we can analyze how changes in market value, ΔMV , depend on both the magnitude of announced privatization, ΔG , as well as on the initial level of state ownership, G_1 . For the former, we obtain:¹⁵

$$\frac{\partial(\Delta MV)}{\partial(\Delta G)} = \begin{cases} -a - 2cK_3 + d + 2c(G_1 + \Delta G), & \text{for } G < \underline{K} \\ 2(aK_1 - bK_2 - dK_4) - 2G_1(a - b - d) - 2\Delta G(a - b - d), & \text{for } G > \bar{K} \end{cases} \quad (1F)$$

It can be shown that the above expression, i.e., the slope of ΔMV with respect to ΔG , is negative for both low ($G < \underline{K}$) and high ($G > \bar{K}$) values of G iff $a > b + d$. That is to say, globally (for all values of G observed) a negative slope would indicate that the political interference effect (H1A with weight a) is relevant for the firm's market value, and that its impact on the firm's valuation is stronger than the joint effect of the effective state block ownership (b) and of the preferential political treatment (d) they might receive.

As for the dependence of changes in market value (ΔMV) on pre-announcement state ownership level G_1 , the following result can be obtained:

$$\frac{\partial(\Delta MV)}{\partial(G_1)} = \begin{cases} 2c\Delta G, & \text{for } G < \underline{K} \\ -2\Delta G(a - b - d), & \text{for } G > \bar{K} \end{cases} \quad (1G)$$

It can be shown that for low values of G , the relationship between ΔMV and G_1 will be positive (negative) if $c < 0$ ($c > 0$), implying a negative (positive) impact of the likelihood of emergence of a concentrated block ownership on firm value. For high values of G , this

relationship will turn positive for $a > b + d$. Overall, these conditions imply that the function $\Delta MV = f(G_I)$ will have a positive slope if the existence of private blockholders affects the value of a firm negatively ($c < 0$) and the impact of the political interference effect is positive ($a > 0$) and higher than that of the state blockholder effect (b) and of preferential political treatment (d) combined ($a > b + d$). The function will be V- or U-shaped iff the concentrated private ownership effect is positive ($c > 0$) and the political interference effect is stronger than that of the state blockholder effect (b) and of preferential political treatment (d) combined.¹⁶

Based on the above results, a finding of a negative relationship between ΔG and ΔMV will be interpreted as evidence in favor of a strong political interference hypothesis (H1A). In addition, a finding of a positive (U-shaped) relationship between G_I and ΔMV will be interpreted as evidence of the negative (positive) impact of private blockholding on firm value (H1C) as well as a strong political interference hypothesis (H1A).

2.2. *Liquidity- and control-related effects*

The second set of hypotheses is related to the liquidity aspect of share transfers and the ability of the stock market to effectively act as a controlling/monitoring device resulting there from. If beneficiaries of stock transfers decide to sell their holdings, this action can result in a large number of sell orders exerting a downward pressure on the stock price. Hence, the impact of the transfer announcement on a firm's value could be negative. If, however, market participants value the long-term liquidity improvements resulting from shares sales more than the potential short-term price pressure (García and Ansón, 2007), their reaction to the announced transfer should be positive, resulting in an increase in the firm's value¹⁷. Therefore, two further hypotheses can be formulated:

H3. The expected short-term price pressure of sell orders decreases a firm's value.

H4. The expected long-term liquidity improvements increase a firm's value.

As further partial privatizations also increase liquidity and the ability of the stock market to effectively act as a controlling/monitoring device (Holmström and Tirole, 1993), by

accounting for the effect of the increased liquidity on market value we also control for the potential improvement in the monitoring ability of the market (the managerial view). Hence, any significant impact of the remaining, ownership related variables can be attributed to the effects captured by hypotheses H1A-D (including the political view encapsulated by H1A).

3. Data and methodology

3.1. Data

In this paper, we analyze stock price reactions of companies listed on the Warsaw Stock Exchange (WSE). The WSE was established in 1817 and, after the collapse of communism, re-established in 1991 (it was closed during the WWI and WWII as well as during the communist era starting in 1945). Initially, only 5 companies (partly privatized former SOEs) were listed and trading took place in an auction system once a week. Subsequently, more companies entered the market, both former SOEs and newly established private enterprises, and a continuous trading system was introduced. In 1999, the year our sample starts, 221 companies were listed on the WSE, with the total capitalization of USD 30 billion, total annual turnover of USD 24 billion and a turnover ratio of 46%. The last transfer in our sample took place in 2011, but the last using publicly traded firms was in 2005, a year when 255 companies were listed, with the end-of-year capitalization of 131 billion USD, annual turnover of 60.8 billion USD, and the turnover ratio of 25.9%.

Data on stock prices, trading volumes and market index values were obtained from the Datastream and the WSE. Announcement dates and information about the shares to be transferred, transfer value, name of the beneficiary, and the government holdings in the to-be-transferred companies were hand-collected from the electronic archives of the Polish Press Agency (Polska Agencja Prasowa, or PAP), *Rzeczpospolita* and *Parkiet*, both Polish daily newspapers, as well as being obtained from the Ministry of the Treasury, the Chancellery of the Prime Minister and the Polish Financial Supervision Authority. This process resulted in the identification of 65 events, i.e., announcements of transfers. However, the first transfer

recorded concerned convertible bonds rather than stocks, and all usable transfers in the period 2006-2011 were of companies not listed on the stock exchange. For several further transfers the information was incomplete or the stocks subject to transfers were very thinly traded. These cases were excluded from further analysis, leaving us with a sample of 51 events¹⁸.

The average value of transferred stocks amounts to PLN 63,734,048 (USD 16,365,562 using the average exchange rate in 1999-2005) with the lowest value of PLN 4,097 (USD 1,052), the highest value of PLN 606,606,000 (USD 155,763,660), and the total value of around PLN 3,250 mln (USD 834 mln). Stocks of industrial companies were most frequently used for transfers, with 25 transfers accounting for 21% of the total transfer value. However, seven transfers of stocks of the TP S.A., a telecommunication company, accounted for an even bigger fraction of the total transfer value (59%). Another noticeable 14% of the total transfer value stems from KGHM PM S.A., a company operating mostly in the copper mining and telecommunication sectors, and 12% from PEKAO, a bank. The banking sector accounted for 21% of the total value of transfers.

3.2. *Methodology*

To measure stock market reactions to transfer announcements (an empirical equivalent of ΔMV), we calculate the cumulated abnormal returns for stocks of firms subject to transfers in the following way. Firstly, for each event (announcement), the estimation period starting 250 trading days (approximately one calendar year) before the announcement and ending 11 trading days before the announcement is defined: $[T-250, T-11]$, where $T=0$ indicates the relative announcement day. Secondly, for each event 'i' the following market model for the daily stock return is estimated for this estimation period:

$$R_{i,t} = \alpha_i + \sum_{k=0}^5 \beta_{i,k} R_{M,t-k} + \varepsilon_{i,t}, \quad (2)$$

where $R_{i,t}$ denotes the daily stock return for event 'i', $i=1$ to 51, at time 't', $R_{M,t-k}$ denotes the daily market return at time 't-k', with the market being proxied by the all-shares value-

weighted stock index WIG, $\varepsilon_{i,t}$ represents the error term for event ‘i’ at time ‘t’, and α and β are parameters.¹⁹ Thirdly, for each event ‘i’, the expected stock returns are estimated for the event period defined as [T-10; T+50] using the estimated market model (2), as follows:

$$\hat{R}_{i,t} = \hat{\alpha}_i + \sum_{k=0}^5 \hat{\beta}_{i,k} R_{M,t-k}, \quad (3)$$

where $\hat{R}_{i,t}$ denotes the estimated “expected” daily stock return for event ‘i’ at time ‘t’ and $\hat{\alpha}$ and $\hat{\beta}$ are estimated from the market model (2). Next, we calculate unexpected, or abnormal, returns for each event ‘i’ and day ‘t’ within the event window [T-10; T+50], $AR_{i,t}$, as:

$$AR_{i,t} = R_{i,t} - \hat{R}_{i,t} \quad (4)$$

Lastly, to assess the cumulative, impact of the event on the stock price, we calculate the cumulated abnormal returns for each event ‘i’ within the event window [T-10; T+50] as:

$$CAR_i = \sum_{t=T-10}^{T+50} AR_{i,t} \quad (5)$$

We consider an event window starting 10 working days prior to the announcement day rather than at T=0 to account for several effects: 1) possible information leakages prior to the announcement day; 2) the fact that government holdings in the listed companies are known to the public (making it easier to forecast which company’s shares will be transferred); 3) the approximated value of the transfer is also known since it is determined by the need of the beneficial, often expressed publicly. To account for a slow price adjustment of the stock prices, we consider a period of 50 working days after the announcement, i.e., a window [-10, 50]. Alternative windows are also considered: [0, 5], [-10, 15], and [-10, 20].

It should be noted that, as we investigate cross-sectional differences among firms undergoing ownership change (rather than those between privatized and state-owned companies), the potential endogeneity of privatization decisions does not bias our results: even if companies with certain common characteristics were more likely to be transferred than

others, this common factor should not generate differences in cross-sectional price reactions to transfer announcements (Driffield and Du, 2007).

3.3. *Testing strategy*

Our first step in testing the above hypotheses empirically is to measure the stock market's reaction to the announcement of share transfer, by calculating the cumulated abnormal returns (CARs) around the announcement days. However, based on the CARs it is not possible to draw conclusions about the hypotheses outlined above or about the effectiveness of privatization. This is due to the fact that theoretically CARs can be positive, negative, or zero, which results from the interplay of ownership and liquidity effects, and it is not possible to conclusively attribute the observed sign of CARs to one particular effect.

To overcome this problem, we use regression analysis to distinguish between the aforementioned ownership and liquidity effects. As the dependent variable, we use CARs, a measure of the change in a firm's value due to the announced stock transfer and an empirical proxy for the theoretical variable ΔMV . CARs are regressed on the following variables:

- *IMPACT_t*, which measures the potential impact of the transfer on price, i.e., the liquidity aspect of transfer announcements. This is equal to the product of the Amihud ratio (Amihud, 2002) and the monetary value of the transfer on announcement day. The Amihud ratio is defined as the average ratio of the absolute daily return to trading volume (in PLN) and expresses the average stock price reaction to a change in trading by one monetary unit. When multiplied by the value of the respective transfer, the Amihud ratio is a measure of illiquidity expressed in monetary terms and a proxy of a potential price reaction, should an order in size equal to the transfer's value be executed. As a sale of transferred shares would increase the free float of the company, this variable is also related to the increased ability of the market to act as a monitoring mechanism.

- $TRANSARE_i$, expresses the fraction of a firm's equity being transferred. This is used as a proxy for the theoretical variable ΔG and the shape of the relationship between this variable and CARs will be used to draw conclusions about the relevance of ownership-related effects, as discussed in Section 2.1.
- $GOVSHARE_i$, equal to the total fraction of equity held by the government prior to the transfer announcement, a proxy of the variable G_I .

Hence, the following regression will be estimated:

$$CAR_i = \beta_0 + \beta_1 IMPACT_i + \beta_2 GOVSHARE_i + \beta_3 TRANSARE_i + \varepsilon_i \quad (6)$$

As the market reaction to transfer announcements hypothesized in (1E) could be a quadratic function of state ownership (if private blockholders improve firm value), we allow for this relationship by estimating the following regression:

$$CAR_i = \beta_0 + \beta_1 IMPACT_i + \beta_2 GOVSHARE_i + \beta'_2 GOVSHARE_i^2 + \beta_3 TRANSARE_i + \varepsilon_i \quad (7)$$

Depending on the values of the parameters, inference will be made about the validity of the aforementioned hypotheses H1-H4. Firstly, a positive β_1 is expected if the benefits of higher liquidity in the long run (H4) outweigh the negative short-term price impact (H3), and negative otherwise. This variable also controls for the increasing ability of the more liquid market to monitor managers (the managerial view). Secondly, a U-shaped relationship between government shareholding prior to privatization and the market response to it will be observed if β_2 is negative and β'_2 is positive, which in turn can be interpreted as evidence of the market reacting positively to the reduction in political interference with the company (H1A) and of an increased likelihood of the emergence of a private blockholder increasing a firm's value (H1C). Evidence in favour of H1A would also support the political view of privatization. The finding of both positive β_2 and insignificant β'_2 , on the other hand, would still support the beneficial reduction of political interference but would also indicate that private block ownership is seen as detrimental to minority shareholders and a firm's market

value. Lastly, negative β_3 is predicted by our model if the market values the reduction of harmful political interference more than the potential loss of preferential political treatment and risk of diluted ownership by the firm undergoing ownership transformation.

3.4. *Estimation techniques*

The basic method used in this study is the OLS regression, with standard errors robust to heteroscedasticity (White, 1980). To check for the robustness of the OLS results, we also employ alternative estimation techniques. Firstly, to assess the functional form of the estimated equations, the Box-Cox transformation is undertaken. The method deals with problems of non-normality and heteroskedasticity of data (Sakia, 1992). In general, if Y_i is the dependent variable and $X_{i,1}$ - $X_{i,k}$ are the regressors, it involves the estimation of the following equation: $Y^{(\theta)}_i = \beta_0 + \beta_1 X_{i,1}^{(\lambda)} + \dots + \beta_k X_{i,k}^{(\lambda)} + \varepsilon_i$, where: $Y^{(\theta)}_i = (Y_i^\theta - 1) / \theta$ and $X_{i,k}^{(\lambda)} = (X_{i,k}^\lambda - 1) / \lambda$. The optimal powers θ and λ can be estimated along the remaining parameters and tested, e.g., against the Null of equality to one, i.e., linear vs. nonlinear form.

Secondly, the least absolute deviations (LAD) method is also used to estimate regression (6). It is a special case of the quantile regression estimator (Kroenker and Bassett, 1978; Dielman 2005) and minimizes the sum of absolute values of the residuals with respect to the coefficient vector b : $\min_b \sum_{i=1}^n |Y_i - bX_i|$. By doing so, it estimates the effect of explanatory variables on the median rather than the mean of the dependent variable. The LAD estimator has been shown to be more desirable than the OLS when there is multicollinearity among variables, the errors follow a heavy-tailed distribution, and the data suffers from the existence of outliers (Narula et al., 1999). However, the closed-end formula for optimal parameter values does not exist. The optimization problem is solved by the use of the Barrodale-Roberts (1973) modified Simplex algorithm for linear programming.

Lastly, we also employ a two-stage estimation method by Hinich and Talwar (1975) which poses no requirements on the distribution of the error term and is robust to outliers (with the number of degrees of freedom chosen conservatively to be 10% of the sample size)

4. Empirical results and discussion

4.1. Features of independent variables

Table 1 gives an overview of the main features of independent variables which describe selected features of transfer events. The average potential price impact of a hypothetical transaction in size of the whole transfer ($IMPACT_i$) amounts to around 400% (change in stock price), and it varies enormously in the cross-section, mirroring homogeneity in liquidity across stocks. The average transfer ($TRANSHARE_i$) represented 5.26% of the transferred company's equity, but this number varied between 0.0003% and 26.50%. The data on the fraction of transferred equity is skewed to the right as most transfers involved a small proportion of equity: the median is 2.41% and the 75-th percentile is only 7.67%. Prior to the announcement, the government typically held directly 15.1% of the company subject to transfer ($GOVSHARE_i$), but transfers were announced for firms with state ownership of between 0.0003% and 75.59%. This variable is also skewed to the right, as the median state ownership is 10.18% and the 75-th percentile is 18%. Lastly, the average market capitalization of the company subject to transfer ($SIZE_i$) was 4,323.88 PLN million, with strong differences among investigated companies.

[TABLE 1 ABOUT HERE]

4.2. Average stock price reaction to transfer announcements

We consider the average value of CARs as a measure of a typical market reaction to the transfer announcement, with results reported in Table 2. For the shortest event window [0; 5], the mean CAR value is -1.13% and insignificant (Panel A). This indicates that the average market reaction to transfer announcements was not significantly different from zero. To

control for the possible impact of outliers, we calculate robust means: trimmed and windsorized, both by 3 observations at each end of the respective distribution. Based on the corresponding p-values (0.1049 and 0.114) we again fail to reject the hypothesis of CARs being equal to zero. Since some tests show evidence of non-normality (Panel B: Shapiro-Wilk and Kolmogorov-Smirnov indicate normality whereas Cramer-von Mises and Anderson-Darling reject the normality of CARs in the [0; 5] window), we test for the significance of the median rather than the mean *CAR* using the sign test and the Wilcoxon signed-rank test. Both procedures indicate (p-values of 0.4011 and 0.1162) that the median *CAR* is not significantly different from zero, either. Hence, based on the cross-section of CARs, we find no evidence that there was a systematic market reaction to transfer announcements. This result is consistent across CARs computed over alternative event windows of different widths. The evidence of non-zero skewness and excess kurtosis (Panel C) further highlights the non-normality of CARs, necessitating the use of alternative estimation methods (Section 3.4).

[TABLE 2 ABOUT HERE]

Even though on average the CARs are not different from zero, the price reactions to transfer announcements are far from uniform across events, with a considerable cross-sectional variation in individual CARs (Table 2, Panel C). For instance, the cumulative reaction measured over six trading days on and following the event ($CAR[0;5]$) can be as low as -13.6685% and as high as 18.2439%, with a considerable part of the distribution in the tails, as shown by the percentiles reported in Panel C. This cross-sectional variability in reactions to announcements is even more pronounced for CARs covering longer time horizons. Hence, it would seem premature to conclude that transfer announcements have had no impact on firm value (even though the average impact is insignificant). Rather, heterogeneity in price reactions suggests that various opposing factors contribute to the total effect, as hypothesized in section 2 and encapsulated by our simple model (6). We proceed to empirically analyze the

cross-sectional determinants of CARs to better understand the impact of ownership- and liquidity- related effects on firm value.

4.3. *Determinants of stock price reactions to transfer announcements*

To further analyze the effectiveness of ownership privatization, we estimate regression (6).

Any measurement errors in CARs are captured by the constant and the error term. The results are presented in Table 3.

[TABLE 3 ABOUT HERE]

Panel A shows values of the OLS parameters. Firstly, the estimated value of β_1 is positive for all measures of CARs and significant for all but one. This result seems to be in line with hypothesis H4: the market expects the transferred shares to be sold on the stock exchange and to increase the liquidity of trading in the shares of the transferred companies. Less strictly, the finding of a positive coefficient can indicate that the expected positive impact of increasing liquidity in the long run (H4) exceeds the expected negative short-term price impact of the transfers (H3). Investors seem to value the potential gains from higher liquidity and the resulting improvement in the market's ability to monitor managers (the managerial view).

Secondly, higher pre-transfer levels of state ownership ($GOVSHARE_i$) go hand in hand with stronger price reactions to transfer announcements, as indicated by positive and significant values of β_2 . This is in line with the negative impact of concentrated private blockholding on firm value (H1C) as well as with the political interference hypothesis (H1A), as discussed in section 2. Lastly, the parameter β_3 is negative and significant for all CARs, indicating larger price drops if large fractions of firms are being transferred. As shown in section 2, this finding indicates that the effect of the political interference hypothesis H1A is stronger than the potential benefits from the state acting as a blockholder (H1B) and treating partially state-owned companies in a preferential way (H1D). This yields further support to the political view of privatization.

Overall, the results indicate that the privatization mode we are dealing with in this study tends to increase firm value due to the reduction of political interference with managerial decisions (the political view). At the same time, however, the emergence of private blockholders able to expropriate the minority shareholders rather than to monitor the managers is seen as value-reducing. Markets also positively value the potential increase in free float and stocks' liquidity. The interplay between these often conflicting forces differs in each event, giving rise to the observed heterogeneity of individual stock price reactions (CARs) and to the insignificant market reaction on average.

4.4. Robust estimations

As the excess kurtosis in CARs is positive (Table 2, Panel C), the error distribution could suffer from heavy tails. In addition, there is a potential colinearity problem as correlations between some dependent variables are not negligible (Table 1, Panel D). Further, the range of the regressors' values is considerable (Table 1), and some of the observations could be treated as statistical outliers. Therefore, we estimate the parameters of equation (6) using the least absolute deviations (LAD) method and present our results in Table 3, Panel D. The results are qualitatively identical regardless of the estimation method: parameters β_1 and β_2 are positive and β_3 is negative and the most significant, as was the case with the OLS results.

In addition, to deal with the potential estimation problems due to non-normality and heteroskedasticity of data, as well as to allow for non-linearities in equation (6), we employ the Box-Cox transformation as described in section 2.4. Results reported in Table 3, Panel E, show that the estimated power for the LHS variable, θ , is not individually significantly different from one at the 5% significance level, as the 95% confidence intervals for θ always include that value of one. This suggests a correct specification of the LHS of equation (6). The powers for the RHS variables, λ , are significantly different from zero in two out of four cases. Overall these results suggest that the linear model (6) does not feature severe non-linearities.

However, the tests of joint equality of θ and λ to one suggest that the Null of $\theta=\lambda=1$ should be rejected in three out of four cases. Therefore, we apply the transformations of all variables with power parameters as reported in Panel E and estimate the model (6) using transformed variables. Again, the result (Panel F) is of β_1 and β_2 being positive and β_3 being negative, and significant, as for the OLS estimates.

Furthermore, the explanatory variables are moderately but significantly correlated (Table 1, panel D). Therefore, there exists a potential problem with multicollinearity. Admittedly, the variance inflation factors (VIF) for parameters $\beta_1 - \beta_3$ are close to one (equal 1.27, 1.12, and 1.4, respectively); however, we still want to account for the potential issues due to multicollinearity. Hence, we re-estimate equation (6) by OLS using different orders of orthogonalization of the independent variables, and the results are qualitatively robust (not reported to conserve space). Firstly, β_1 and β_2 are positive and β_3 is negative in virtually all model specifications, regardless of the order of orthogonalization and the time window the CARs variable covers. Secondly, most of β_2 and β_3 estimates are significant, whereas β_1 is significant in slightly fewer than half of all cases considered, especially for CARs computed over the $[0; 5]$ and $[-10; 50]$ windows. Overall, the results obtained with orthogonalized variables strongly support our previous conclusions.

We also re-estimate equation (6) using an OLS-based procedure of Hinich and Talwar (1975) which is robust to large values of the error term (results not reported to conserve space). However, this approach does not identify any outliers for three of the CAR variables used and only one outlier for CARs measured over the interval $[-10; 20]$. In the latter case, the results are still virtually identical to the OLS ones, and highly significant.

Overall, robust approaches confirm the results from OLS regressions.

4.5. Robustness checks for functional misspecifications and omitted variables

We test further for the correctness of the specification of equation (6) using the Lagrange

multiplier test (Engle, 1982). The results (Table 3, Panel B) indicate that the Null of no squared value cannot be rejected for any of the independent variables used, supporting the choice of a linear model ((6) is superior to (7)).

It could be argued that our regression suffers from endogeneity biasing the values of the estimated coefficients. The endogeneity bias occurs if the dependent variable is correlated with the error term, which might result from two sources. Firstly, the bias can exist if one of the independent variables, e.g., $GOVSHARE_{it}$, is driven by an external factor (e.g. pre-announcement corporate performance) and this factor is in turn influenced by the dependent variable, i.e., CARs. However, given that our dependent variable CARs by construction measures the previously unexpected changes in prices, it cannot be argued to have influenced any factor observed in the past (including $GOVSHARE_{it}$), as the unexpected future cannot influence the past. Therefore, this source of exogeneity bias can be ruled out. Secondly, the coefficients might suffer from the omitted variable bias. This can be analyzed by statistical tests and adding further potential determinants of CARs into the regression equation.

The omitted variable bias is tested for by the Ramsey's RESET test, which is an F-test on $H_0: \theta = 0$ in the regression: $y = X\beta + Z\theta + \varepsilon$, where y is the dependent and X is a matrix of independent variables. Z was defined by Ramsey (1969) as $[\hat{y}_t^2, \hat{y}_t^3, \dots, \hat{y}_t^{p+1}]$, i.e. a vector of predicted values of y_t , and the F-statistic has p and $T-k-p$ degrees of freedom, where T denotes the sample size and k the number of parameters in the above regression. Values of $p=1, 2, 3$ are common choices. Thursby and Schmidt (1977) show that defining Z as a vector of the squares, cubes, and fourth powers of the elements of X rather than y_t constitutes a more powerful test against a non-specified model alternative. We apply both versions of the test (denoted RESET1 and RESET2, respectively), with up to four powers of fitted y values and of dependent variables, and the results show no misspecification: only one statistic is significant at the 10% level (Table 3, Panel C).

We also test against specific forms of the omitted variable bias by adding additional variables into regression (6). Factors such as company size and industry affiliation influence privatization outcomes (D'Souza and Megginson, 1999; D'Souza et al., 2005; Konings, 2005). As they might also be correlated with the pre-privatization state ownership, *GOVSHARE*, failure to include them could generate a bias (Boubakri et al., 2005b). In addition, the timing of transfers could be an important factor, as the market participants could have been learning that share transfers lead to privatization, and the macroeconomic and legal environment was changing over time (Boubakri et al., 2005a; Estrin, 2002). Therefore, we include additional variables to assess whether our main conclusions will be affected: *SIZE_i*, measuring the average daily market capitalization of a company in the year prior to the announcement, *TIME_i*, a time trend, and four dummy variables to capture possible differences in CARs due to industry effects: for telecommunication, banking, industrial, and trade and services sectors (a dummy of energy companies is omitted). We add these variables as regressors, each of them separately and all jointly, and test for their significance by means of the t-test and the F-test (results not reported to preserve space). For all CARs, the additional variables are jointly insignificant. When added separately, most of them remain insignificant, too. The only exception is that the transfers of banks' shares positively affect CARs over the [0; 5] horizon, and the trend is negative for CARs measures over the [-10; 20] horizon. Market capitalization of the transferred firm does have any significant impact on price reactions to transfer announcements. The overwhelming insignificance of these results indicates that the original model (6) captures the relevant determinants of CARs without a bias and does so rather well.

5. Discussion and conclusions

Our finding of the beneficial further privatization due to reduction in political interference (political view) is in line with some previous studies (Boubakri et al., 2005a; D'Souza and Megginson, 1999) and contradicts the results reported by other authors that a reduction in state ownership does not improve corporate performance, once the stock market based monitoring

has been introduced (Boubakri et al., 2004; D'Souza et al., 2005), or can be even detrimental to the firm's value (Bortolotti and Facio, 2004). A possible explanation, apart from the methodological differences, is the higher quality of shareholder policy by the developed countries' governments as compared with a transition country, so that the political interference does not negatively influence firms' value. Moreover, companies analyzed in other studies can benefit from preferential political treatment (Bortolotti and Facio, 2004; Sun et al., 2002). The finding of negative impact of the potential emergence of a dominant shareholder supports the argument of private benefits of control obtainable on small shareholders' expenses (Thomsen et al., 2006, Trojanowski, 2008).

Based on these results, the policy makers should be aware that further privatizations can result in at least short-term increases in market value of companies, especially those with very large state ownership, as they are most likely to be exposed to political interference. However, based on our results we cannot infer about the long term impact on both market value and corporate performance: the observed short-term market reaction could be excessive and at least partially reversed in the longer run. Furthermore, some changes to social welfare might not be captured by changes in shareholder value. Moreover, the likelihood of expropriation of minority shareholders by blockholders should be reduced by effectively enforcing an appropriate corporate governance code protecting the former from the latter. Stock market liquidity should be enhanced, as illiquid stocks are considered to be more risky and carry an illiquidity premium, making it more expensive for companies to raise capital through equity issuance. However, due to the features of our approach (focus on short-term price movements, on capital market's reactions rather than changes in accounting measures, on one country only), these recommendations may not have a general character and should be considered with caution.

Acknowledgements

I would like to thank the editor of this journal, Prof. Malcolm Sawyer, and two anonymous referees for their constructive comments and suggestions. Further, I thank David Barlow, Lynne Evans, Mike Jones-Lee, Roxana Radulescu, Dobromil Serwa, and Robert Sollis for their feedback. A preliminary version of this paper was presented at the 2009 CICM Conference, London Metropolitan University, London, UK; the 2008 CEF-QASS Conference on Empirical Finance, Brunel University, London, UK; and the 2008 Scottish Economic Society Meeting, Perth, UK. The usual disclaimers apply.

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Figure 1. Predicted stylized relationships between the level of state ownership in companies subject to the transfer (G) and their market value (MV).

Panel A: Political interference hypothesis (H1A)

Panel B: Concentrated state ownership hypothesis (H1B)

Panel C: Concentrated private ownership hypothesis (H1C)

Panel D: Preferential treatment hypothesis (H1D)

Table 1. Descriptive statistics for explanatory variables

	IMPACT _i	GOVSHARE _i	TRANSHARE _i	SIZE _i
Panel A: Tests of location				
Mean	399.8841	0.151	0.0526	4323.8781
p-value	<.0001	<.0001	<.0001	<.0001
Trimmed mean	296.7233	0.1317	0.044	3455.0054
p-value	<.0001	<.0001	<.0001	0.0016
Windsorized Mean	337.2607	0.1423	0.0489	4176.5892
p-value	<.0001	<.0001	<.0001	0.0002
Median	106.6819	0.1018	0.0241	450.7022
Sign test (p-value)	<.0001	<.0001	<.0001	<.0001
Wilcoxon signed-rank test (p-value)	<.0001	<.0001	<.0001	<.0001
Panel B: Test of normality (p-values)				
Shapiro-Wilk	0	0	0	0
Kolmogorov-Smirnov	<.0100	<.0100	<.0100	<.0100
Cramer-von Mises	<.0050	<.0050	<.0050	<.0050
Anderson-Darling	<.0050	<.0050	<.0050	<.0050
Panel C: Selected characteristics of the distribution				
Standard deviation	618.1462	0.1557017	0.0674528	6841.603
Skewness	2.30645	1.784565	1.576812	1.637582
Kurtosis	8.802283	6.507098	4.796873	4.238941
Minimum	0.012228	3.00*10 ⁻⁰⁶	3.00*10 ⁻⁰⁶	7.08388
10 th Percentile	0.761632	0.011	0.0001	26.52372
25 th Percentile	8.511721	0.04679	0.004578	85.76016
75 th Percentile	649.8399	0.18	0.0767	5079.857
90 th Percentile	1065.775	0.3518	0.1614	18705.4
Maximum	3015.387	0.7559	0.265	22420.99
Panel D: Correlations (p-values in parentheses)				
IMPACT _i	1 (<.0001)			
GOVSHARE _i	0.1108 (0.4387)	1 (<.0001)		
TRANSHARE _i	0.4613 (0.0007)	0.3232 (0.0207)	1 (<.0001)	
SIZE _i	-0.2458 (0.0821)	0.0797 (0.5782)	-0.3494 (0.0120)	1 (<.0001)

Note: Trimmed (windsorized) mean computed after removing (replacing) 3 observations on each end of the respective distribution. *IMPACT_i* measures the potential price impact of a transaction order equal in size to the transfer (in %), *GOVSHARE_i* is the fraction of equity owned by the government prior to the transfer, and *TRANSHARE_i* is the fraction of the firm's total equity being transferred; *SIZE_i* measures the average daily market capitalization of a company in the year prior to the announcement (in PLN million).

Table 2. Characteristics of CARs

	CARs			
	[0; 5]	[-10; 15]	[-10; 20]	[-10; 50]
Panel A: Tests of location				
Mean	-0.0113	-0.0082	-0.0294	-0.0092
p-value	0.2032	0.6132	0.1978	0.7591
Trimmed mean	-0.0142	-0.0099	-0.0209	0.0016
p-value	0.1049	0.5508	0.2533	0.9532
Windsorized Mean	-0.0139	-0.0046	-0.0178	0.0267
p-value	0.114	0.7806	0.3312	0.8678
Median	-0.0119	-0.0334	-0.0425	0.0181
Sign test (p-value)	0.4011	0.0489	0.0919	1
Wilcoxon signed-rank test (p-value)	0.1162	0.3116	0.2021	0.8898
Panel B: Test of normality (p-values)				
Shapiro-Wilk	0.0918	0.011	0.0006	0.0117
Kolmogorov-Smirnov	0.0477	<.0100	0.0339	0.0207
Cramer-von Mises	0.236	<.0050	0.0102	0.0096
Anderson-Darling	0.1679	<.0050	<.0050	0.007
Panel C: Selected characteristics of the distribution				
Standard deviation	0.0626569	0.1150695	0.1609552	0.2135532
Skewness	0.6056907	0.2633135	-0.9986854	-0.6945545
Kurtosis	4.124555	3.477643	6.443509	4.551301
Minimum	-0.136685	-0.342239	-0.644159	-0.625357
10 th Percentile	-0.080419	-0.123349	-0.160901	-0.244011
25 th Percentile	-0.051886	-0.071842	-0.097036	-0.098232
75 th Percentile	0.018511	0.054595	0.075285	0.125959
90 th Percentile	0.058692	0.176117	0.174379	0.25081
Maximum	0.182439	0.251302	0.308129	0.498642
Panel D: Correlations (p-values in parentheses)				
CAR [0; 5]	1 (<.0001)			
CAR [-10; 15]	0.5872 (<.0001)	1 (<.0001)		
CAR [-10; 20]	0.5302 (<.0001)	0.8162 (<.0001)	1 (<.0001)	
CAR [-10; 50]	0.4347 (0.0014)	0.5343 (<.0001)	0.649 (<.0001)	1 (<.0001)

Note: Trimmed (windsorized) mean computed after removing (replacing) 3 observations on each end of the respective distribution.

Table 3. Regression results for equation (6). Dependent variable: CAR_i , computed over four alternative event windows. Sample size $n=51$.

CARs:	[0;5]		[-10;15]		[-10;20]		[-10;50]	
Panel A: OLS regression results								
	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	t-value
β_0	-0.02164	-1.62905	-0.032062	-1.44602	-0.057191**	-2.19928	-0.0020574	-0.07016
$\beta_1 \times 10^{-05}$	2.036	1.61503	7.12449***	2.91505	8.64975***	3.40342	6.9187*	1.74152
β_2	0.159577*	1.705	0.297035***	2.72768	0.446614***	3.51533	0.453565***	2.73205
β_3	-0.416091***	-3.06296	-0.939617***	-4.91991	-1.41009***	-3.46833	-1.96223***	-3.35091
F	4.36924***		6.96989***		7.78236***		6.75527***	
R ²	0.21807		0.307904		0.331884		0.30128	
Panel B: Lagrange multiplier test (Engle, 1982). H ₀ : no squared value of the respective RHS variable in eq. (6)								
	Test statistic:	p-value:	Test statistic:	p-value:	Test statistic:	p-value:	Test statistic:	p-value:
IMPACT _i ²	1.204742	0.27238	0.8697325	0.35103	0.4808027	0.48806	0.7814856	0.37669
GOVSHARE _i ²	0.885594	0.34667	5.35E-02	0.81716	7.94E-02	0.77806	3.37E-03	0.95372
TRANSHARE _i ²	0.454679	0.50012	1.274938	0.25884	2.604529	0.10656	1.010559	0.31477
Panel C: Ramsey's RESET tests for omitted variables								
	Test statistic:	p-value:	Test statistic:	p-value:	Test statistic:	p-value:	Test statistic:	p-value:
RESET1	0.77	0.5187	0.6	0.6155	1.45	0.2425	2	0.1272
RESET2	0.97	0.4782	1.38	0.2325	0.92	0.5151	1.88	0.0853
Panel D: LAD regression results								
	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	t-value
β_0	-0.011319	-1.2738	-0.021359	-1.37845	-0.038833*	-1.99913	-0.0012523	-0.04538
$\beta_1 \times 10^{-05}$	1.7515	1.63507	7.64857***	4.09465	9.93893***	4.2443	2.6423	0.794236
β_2	0.089354**	2.24097	0.118983*	1.7113	0.25061***	2.87522	0.45609***	3.68317
β_3	-0.389807***	-3.78097	-0.780848***	-4.34349	-1.10001***	-4.8809	-1.13782***	-3.55364
R ²	0.193861		0.257981		0.297729		0.264115	
Panel E: Box-Cox transformation tests								
Θ	0.7497338		0.8812563		1.370241		1.079335	
up95CI	1.028501		1.159965		1.772556		1.416583	
down95CI	0.470967		0.6025471		0.9679261		0.7420861	
Λ	0.951949		0.3504615		0.4632226		1.006359	
up95CI	2.321259		0.6814817		0.7940253		1.676557	
down95CI	-0.4173613		0.0194412		0.1324199		0.3361621	
H ₀ : θ = λ=1 (p-value)	0.099		0.038		0.005		0.637	
Panel F: Box-Cox transformed regression results								
	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	t-value
β_0	0.256982***	10.7697	0.361365***	9.53906	0.331138***	12.3989	0.557606***	20.0058
$\beta_1 \times 10^{-05}$	5.08102*	1.71863	486.076***	2.67376	238.585***	3.13382	6.26073*	1.75306
β_2	0.240235*	1.78474	0.126643***	3.2991	0.171531***	3.81843	0.439761***	2.69428
β_3	-0.636868***	-3.01687	-0.220789***	-5.04939	-0.329259***	-5.41034	-1.86246***	-3.45399
F	3.93287**		8.53971***		11.4429***		6.72162***	
R ²	0.200662		0.352788		0.422098		0.300229	

Note: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$. Parameters are from the regression (6):

$$CAR_i = \beta_0 + \beta_1 IMPACT_i + \beta_2 GOVSHARE_i + \beta_3 TRANSHARE_i + \varepsilon_i,$$

where $IMPACT_i$ measures the potential price impact of a transaction order equal in size to the transfer, $GOVSHARE_i$: fraction of equity owned by the government prior to the transfer, and $TRANSHARE_i$: fraction of the firm's total equity being transferred. RESET1 refers to the Ramsey RESET test using up to four powers of the fitted values of the dependent variable whereas RESET2 to the test using the powers of the independent variables. 'up95CI' ('down95CI') refers to the upper (lower) bound of the 95% confidence interval.

Notes

- ¹ The legal basis for this policy was the Act of August 30, 1996 on Commercialisation and Privatisation (Journal of Laws No. 171 / 2002, item 1397 with subsequent amendments), especially Article 33(3). Each transfer had to be approved by the Council of Ministers and executed by the Minister of the Treasury.
- ² Throughout this paper, by ‘firm value’ we mean the stock market value, or market capitalization, of a firm. Short-term changes in market value are used to measure the benefits of announced policy measures. This implicitly assumes that the stock market reacts rationally, i.e., instantaneously and correctly, to future implications of those measures for firm’s cash-flows etc. This assumption is not undisputed, especially for an emerging economy, as investors might over- or underreact to news, especially in the short term. In addition, the impact of privatizations on public welfare might not be accurately captured by changes in private benefits captured by shareholders. We thank the Editor and a referee for pointing this out.
- ³ In the context of our study, by the new owner we mean the final buyer of the stocks on the market, not the intermediate beneficiary of the transfer, e.g., an underperforming and undercapitalised SOE.
- ⁴ This is not to say that private owners’ ability to control and incentivise managers is perfect: as the recent experiences of misreporting and financial crisis indicate, managers can try to enrich themselves through manipulation of publicly available information about their companies or pursuit of short-term, high-risk goals rather than focus on long-term profitability and economic sustainability of their companies. Therefore, the validity of this argument for privatisation will be tested empirically.
- ⁵ Partial privatization can be motivated by intertemporal maximization of revenues, enhancement of the restructuring by wealth-constrained investors, screening of potential buyers, signalling commitment to non-expropriation, and different market structures (Bennett and Maw, 2003; Matsumura, 1998, Maw, 2002).
- ⁶ Of course, any transfer of shares constituting further partial privatization also implies increased liquidity and improved monitoring by the stock market (Holmström and Tirole, 1993). However, the biggest change to monitoring takes place following the initial flotation, not the subsequent changes analyzed here. Therefore, we expect the changes in ownership to have a far greater impact on firms than the liquidity aspect, and discuss the latter separately in the next subsection. In addition, we account for each of these simultaneous changes in liquidity and ownership in our empirical model.
- ⁷ At the time of transfer announcement, it is not certain that it will lead to privatization, as transferred stocks can also be returned under direct government control. At the very least, a transfer implies

a temporary weakening of direct government control over the transferred company; at best it results in privatization. Due to this uncertainty of the final outcome, if transfer announcements resulted in significant effects, this would strengthen any arguments the findings support, as with certain privatizations the effects would be even stronger.

⁸ Empirically, we also control for the notion that transfers followed by stock sales can improve private monitoring through improvements to free-float and liquidity (the managerial view).

⁹ Needless to say, this, and the following, functions are not supposed to be an exact description of the relationships hypothesized. Rather, they depict selected general features of these relationships, such as the sign and changes in magnitude for different levels of state ownership, which can be conjectured from the theoretical and empirical literature. The crucial issue is that the relationships hypothesized under 1A to 1D, when combined, allow for distinguishing between existence vs. nonexistence and linearity vs. non-linearity of the link between state ownership and price reaction. The exact form of these individual or combined functions is irrelevant for our purpose.

¹⁰ The term *control privatization* is used in the literature to describe state divestitures of more than 50% of equity (Boubakri et al., 2004, 2008). However, this use is inconsistent with the agency theory which states that the owners, especially the state is unable to fully control managers even when it holds 100% of equity. Hence, it cannot be argued that by selling less than 50% the government retains control over a company whereas by selling more it relinquishes it. The very problem with state ownership is that the government has only limited control due to agency problems, regardless of the level of state ownership.

¹¹ Indeed, Grosfeld and Hashi (2007) show that following Polish mass privatization, ownership concentration increased as new owners attempted to gain influence on managerial decisions and improve companies' profitability.

¹² Pistor et al. (2000) reports a good protection of minority shareholders against blockholders in Poland, compared to other transition economies, and a report of the World Bank (2005) on Polish governance framework assesses its compliance with the OECD Principles of Corporate Governance on equitable treatment of shareholders as "largely observed".

¹³ K_3 has to be below 50% (state as a minority shareholder) to allow for the emergence of private blockholders, especially given the prevailing one-share-one-vote policy (World Bank, 2005).

¹⁴ Demsetz (1983) argues that ownership structure has no impact on firms' value in equilibrium. Empirical studies show that ownership concentration has little to no impact on firm value in the US and the UK but impact negatively firms in continental Europe (Holderness, 2003, Thomsen et al., 2006).

¹⁵ Derivation details available on request.

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- ¹⁶ As we expect the slope for the intermediate levels of G ($\underline{K} < G < \overline{K}$) to change smoothly from negative to positive, a U shape seems more realistic to expect.
- ¹⁷ Amihud and Mendelson (1986), Datar et al. (1998), Amihud (2002), among others, report a significant negative relationship between liquidity and expected returns.
- ¹⁸ The sample size is comparable to those used in other studies, e.g., Gupta (2005): 42 firms, or García and Ansón (2007): 16 firms. A small sample size can be seen as a trade-off of using a new, unique dataset and avoiding data mining, and is dealt with by appropriate statistical methods.
- ¹⁹ The number of lags equal five for the analysis of daily returns was chosen to account for the well-known day-of-the-week effects in returns, a common practice in the literature (see, e.g., Brennan et al. (1993), Chordia and Swaminathan (2000))