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EVIDENCE FROM
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ABSTRACT

Which Investors Fear Expropriation? Evidence from Investors' Stock Picking*

Using a dataset that provides unprecedented details on individual investors' stockholdings, we analyse whether investors take into account corporate governance when they select stocks. After controlling for the supply effect via free float and other firm characteristics, we find that all categories of investors who generally enjoy only security benefits (domestic and foreign; institutional and small individual investors) are reluctant to invest in companies with bad corporate governance. In contrast, individuals who have strong connections with the local financial community because they are board members or hold large blocks of at least some listed companies behave differently. They do not care about the expected extraction of private benefits or even prefer to invest in firms where there is more room for it. Overall, the effect of corporate governance on portfolio decisions is more pronounced for small and medium size companies. These findings shed new light on the determinants of investor behaviour, and suggest that it is important to distinguish between investors who enjoy private benefits or access private information and investors who enjoy only security benefits in order to understand portfolio choices.

JEL Classification: F21, G11 and G32

Keywords: corporate governance, investor behaviour, portfolio selection, ratio of control to cash flow rights and security benefits

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1. Introduction

Extraction of private benefits perpetrated by companies' insiders is a well-known source of distortions in corporate finance, and has been analyzed by a large and growing theoretical and empirical literature (see La Porta et al., 1997 and 2002, Shleifer and Wolfenzon, 2002). So far, however, the effects of these distortions on investor behavior and portfolio selections remain unexplored: While it is well known that investors select stocks not only on the basis of their risk and return but also based on firm characteristics, which may or may not be related to returns, such as the growth prospects and the familiarity they have with the business of the firm (Huberman, 2001; Kang and Stulz, 1997; Falkenstein, 1996), nobody has analyzed whether corporate governance matters as well. However, corporate governance may be very important because it affects how a firm's value is divided between security benefits, which accrue to all shareholders pro-rata, and private benefits, which only a subset of shareholders with large participations or strong connections to the management can enjoy.¹

In this paper, we show that fears of expropriation in companies where the extraction of private benefits is expected to be greater discourage investors who enjoy only security benefits from buying shares. As a consequence, companies may have a smaller investor base when outside investors do not feel well protected. This has important implications. First, as Merton (1987) has pointed out, their stocks may be undervalued because of the lack of risk sharing (and not only because outside shareholders anticipate expropriation and discount it). Second, it can explain why firm liquidity is positively related to the protection offered to outside investors (Brockman and Chung, 2003). Finally, and most importantly, if we generalize the implications of our results taking into account that there are significant cross-country differences in the quality of corporate governance, our findings can help explain the large cross-country dispersion in the propensity of households to hold stocks (Guiso, Haliassos and Jappelli, 2003): Investors may be discouraged to buy stocks altogether in countries where corporate governance is worst, as Giannetti and Koskinen (2003) suggest.

We explore the effects of corporate governance on shareholding decisions and firm investor base using a comprehensive data set that provides information on almost all stockholders of companies listed on the Swedish stock markets. We investigate which

¹ Here security benefits refer to the total market value of the income streams that accrue to the corporation's stockholders, like in Grossman and Hart (1988). In contrast, private benefits represent perquisites of control and diversion of resources from the securityholders, which benefit only a company's insiders, like the principal shareholder and possibly other blockholders. They may include also the ability to trade at a price that is more

investors, if any, are less likely to invest in companies where the controlling shareholders are not expected to maximize shareholders' value. To identify the companies where the interests of insiders and outsiders are more misaligned we follow La Porta et al. (1999) and Bebchuk et al. (1999): We use the ratio of control to cash flow rights of the principal shareholder, which is expected to be positively correlated with the extraction of private benefits in a company and, more generally, with lack of monetary incentives, if the principal shareholder is directly involved in management or can influence managers' policies.²

After controlling for other possible determinants of portfolio choices and for the supply of freely tradable shares in a company, we find that the quality of corporate governance indeed affects the probability that investors hold the shares of a company in different ways. When the ratio of control to cash flow rights is larger, the probability is lower that investors who enjoy only the security benefits - such as small domestic individual investors, institutional investors, and foreign investors - would buy shares of the company. Interestingly, the minority participation of investors who have a significant share of the control rights of at least one listed company (without controlling it) or who are board members is driven by different motives. If anything, such investors prefer to invest in companies where the ratio of the principal shareholder's control to cash flow rights is larger. The reasons for their different behavior may be that, in contrast to small investors, they are able to defend their interests because they are better connected to the local financial community. This could be good news for small investors if they are able to monitor and to limit cash flow diversion, or bad news if they are able to collude and enjoy some of the private benefits together with the controlling shareholder. In either case, the quality of corporate governance affects differently insiders and outsiders.

We also find that in small and medium size companies, corporate governance hinders outside investors participation both in the intensive and the extensive margin: Not only investors who enjoy only security benefits are less likely to buy stocks of companies with bad corporate governance, but on average they also hold a smaller share of their capital. This implies that corporate governance may prevent firm growth due to lack of outside capital. Finally, we show that our results are not driven by reverse causation: Although we cannot exclude that some institutional investors lobby for improvements in corporate governance, we find that, when the ratio of control to cash flow rights decreases, a company's investor base

favorable than the price at which the most of shareholders can trade. In this respect, they can accrue also to investors with small participations.

² Faccio and Lang (2002) find that this is the case in at least 70% of Swedish companies.

always expands. Furthermore, the control structure can certainly be regarded as exogenous with respect to small individual investors: Because of free riding problems, small individual investors are unlikely to influence the firm's control structure. Therefore, as we show, they vote with their feet.

But why would any investors avoid companies with high ratio of control to cash flow rights? After all, if all market participants are aware of the extraction of private benefits, investors should pay for what they get and our measure of distortion should not affect the investor base, once we control for the supply of shares of a company. In fact, in a recent paper, Gompers, Ishii, and Metrick (2003) show that the undervaluation of the stocks of companies with bad corporate governance is not always sufficient to compensate for their bad performance: A strategy consisting of selling firms with bad corporate governance and buying firms with good corporate governance would have earned positive abnormal returns during their sample period. Companies with bad corporate governance may need more intensive monitoring, which only investors who are better connected or hold large shares of equity can exercise efficiently. Alternatively, they may provide higher expected returns to investors who have access to private information or can participate to the extraction of private benefits, who for this reason may hold more stocks of these firms.

There also may be alternative explanations. As Johnson et al. (2000) argue, the extraction of private benefits may be large during recessions because the expected rate of return on investment falls. In this case, the stocks of companies with bad corporate governance are expected to drop more if there is a contraction in the economy. Mitton (2002) and Lemmon and Lins (2003) show that indeed this has been the case during the East Asian crisis. Investors who are not well diversified may avoid stocks whose returns are lower during recessions because their other sources of income also are affected negatively by downturns (Cochrane, 1999). This may happen even if the distortions due to bad corporate governance are correctly priced.³

There also may be behavioral explanations. From the behavioral finance literature (see, for instance, Odean, 1998) we know that individual investors do not like to regret. Moreover, as some recent influential papers show, many economic decisions and aggregate outcomes are influenced by the fact that individuals care about fairness in the distribution of returns (see, for instance, Fehr and Gächter, 2000 and Fehr and Schmidt, 1999). As a consequence, investors might avoid the stocks of companies with bad corporate governance due to fear of events such as transfer of control out of the market or non-profit-maximizing

acquisitions.⁴ In what follows, we try to understand which explanation is more relevant looking at the portfolio holdings of different classes of investors.

This paper contributes to the literature showing that investors' preferences for stocks are not driven by conventional proxies for risk alone (see, for instance, Falkenstein, 1996, and Grinblatt and Keloharju, 2001). Our results confirm the findings of the previous literature: investors are more inclined to invest in stocks of large companies and in firms whose plants are located nearby. Additionally, we suggest that investors also care about the surplus that insiders can expropriate. Our findings also shed new light on the interpretation of Kang and Stulz (1997) and Dahlquist and Robertsson (2001), who show that foreign investors, like domestic institutional investors (Falkenstein, 1996), hold disproportionately more shares of firms with large market capitalization and argue that this is a proxy of firm recognition. Because foreign investors are generally institutional investors, Kang and Stulz identify an institutional investor bias in stockholdings. Although their explanation may be complementary to ours, we show that small domestic individual investors also seem to behave like institutional investors in that they prefer to invest in large and liquid companies. Therefore, the key difference in investment behavior seems to be between investors who enjoy only security benefits and those who can enjoy also private benefits, rather than between institutional and individual investors, as earlier studies suggest. In addition, investors without ties to the local financial community seem to share fears of expropriation besides a bias towards more visible firms.

The remainder of the paper is organized as follows. Section 2 describes the data and the stockholdings of different categories of investors. Section 3 describes the methodology. Sections 4 and 5 present the results and some further supportive empirical evidence. Section 6 concludes.

2. Descriptive analysis

2.1 The Swedish environment

The Swedish stock market represents a unique opportunity to analyze issues related to investor behavior and corporate governance, and allows drawing conclusions that go well

³ This is the case if marginal investors in these companies are wealthy and well diversified.

⁴ Here, we refer to events such as the takeover of Telecom Italia. In these cases, minority shareholders watch helplessly as powerful insiders earn fat premiums by exchanging blocks of shares at above-market prices. This is possible if there are complex cascades of holding companies because control can be secured at low levels of capital that do not make public offers compulsory.

beyond the Swedish context: Information on basically all shareholders of listed companies is available. While this kind of data is available for other Scandinavian countries and is, for instance, similar to the Finnish data that Grinblatt and Keloharju (2000 and 2001) use, in Sweden there is also high variation in ownership structure across firms. According to Faccio and Lang (2002), Sweden not only has the highest percentage of widely held firms in Continental Europe, but is also the country that makes highest use of dual class shares, together with a significant use of pyramiding and cross-holdings. As a consequence, in a large fraction of listed companies, there is a discrepancy between the principal shareholder's cash flow and control rights. The distortions due to the separation between control and cash flow rights that emerge appear to provoke significant agency problems, notwithstanding Sweden is believed to have high standards of protection of investor rights (La Porta et al., 1998): Cronqvist and Nilsson (2003) show that the agency costs of the separation between control and cash flow rights are sizable and may reach 25% of the company value. These findings are not surprising given the anecdotal evidence: Investor, the holding company of the Wallenberg family, has a market valuation that is more than 30% lower than the market valuation of the equity of the companies, mostly publicly traded, it holds.

At the same time, thanks to laws that guarantee high investor protection, and high levels of enforcement, and the wide variation in ownership structure, expropriation is *on average* quite limited (see Nenova, 2003 and Dyck and Zingales, 2003).⁵ Moreover, and we would argue as a consequence, stock market participation is very high: Guiso et al. (2003) show that household stock market participation in Sweden is the highest in Europe and also foreigners hold a large part of the stock market capitalization. In this context, where fears of expropriations are not so extreme to hinder stock market participation, we can analyze whether different categories of investors take into account corporate governance when they select stocks, exploiting a large cross-sectional variation in ownership structure. Our estimates, most likely, provide only a lower bound for the importance of corporate governance on shareholding decisions: Fears of expropriation may have much larger consequences in environment with lower investor protection and poorer enforcement of law.

⁵ The estimates of control benefits in these studies most likely provide only a lower bound. In particular, Nenova's sample includes only 43 Swedish companies, reported in Datastream, which is well known to be biased towards widely held companies. This can explain why she finds that the average control premium is only 1% in Sweden. The estimate of the control premium is 6% in Dyck and Zingales, who use a subsample of block transactions. Rydqvist's (1992) estimates a larger control premium for dual class shares in Sweden, using the whole population of listed companies: This is 15% on average and significantly larger during takeover contests when it can reach 98%. Dyck and Zingales' and Rydqvist's estimates seem more compatible with the level of investor protection that La Porta et al. (1998) attribute to Sweden: According to their categorization, the index of

Another desirable feature of the Swedish environment for studying investor behavior is the lack of regulation on shareholdings that could otherwise affect shareholding decisions. In fact, as of early nineties there are no restrictions to foreign ownership and the only restriction is that domestic financial institutions cannot exercise more than 5% of the voting rights (but there is no restriction on cash flow rights).

2.2 Data

Under Swedish law, the *Värdepapperscentralen AB* (VPC), the Central Security Registry, publishes twice a year all stockholders of Swedish listed companies with more than 500 shares. In reality, the VPC also has records for smaller stockholdings.⁶ Using their records, we obtained information on most of the shareholders of the 354 Swedish listed companies as of July 29, 2001.⁷ Overall, the records provide information about the owners of 98% of the market capitalization of Swedish publicly traded companies. For the median company, we have information about 97.9% of the equity, and in all cases we have at least 81.6% of the market capitalization of a company. The data set contains both holdings held directly by the owner and indirectly via brokerage houses, custodian banks or the like. Moreover, we have information on foreign shareholders of Swedish companies, even if they hold ADRs traded on the New York Stock Exchange or Nasdaq.

Using VPC data we can reconstruct the shares controlled by a single investor that are held directly and indirectly through other listed companies. However, the VPC does not take into account the stockholdings of an investor via trusts, foreign holding companies and so on. As most of holding companies are not listed on the Swedish stock exchange, it is impossible to determine their ultimate ownership using only the information provided by the VPC. This may represent a serious problem for determining the control of a company because it is not uncommon for investors to hold their stocks through three or four holding companies, which are not listed or even registered abroad.

Fortunately, this problem can be overcome: *SIS Ägarservice AB*, a Swedish company, collects information on the ultimate owners of Swedish listed companies. *SIS Ägarservice* not only identifies indirect holdings through trusts, holding companies and custodian banks but

protection of shareholders' rights is equal to 3 for Sweden, while is equal to 5 for the U.S, the country that offers highest protection of minority shareholders.

⁶ For further information on VPC, see www.vpc.se.

⁷ We have VPC records since 1995. Although our main analysis focuses on the July 2001 sample, we use the time-series variation of the observations to check the robustness of our results in subsection 5.3.

also allows the shares held by family members and other closely related owners to be grouped in a single record.⁸ This allows the identification of controlling groups and the relation of family members to the family head.⁹ We cannot determine, however, whether shareholders are connected by voting pacts. Notwithstanding this, we have unprecedented detail in determining who controls listed companies. In fact, the previous studies of ownership structure (see Claessens et al., 2000a, 2000b and 2002 and Faccio and Lang, 2002) generally could not determine who were the ultimate owners of nominee accounts or unlisted holding companies.

The final dataset we use contains information on investor type (individual, bank, mutual fund, brokerage house, non-financial company), birth date of the individual investors, company name, share class, number of shares held by each investor, number of votes per share, three-digit zip code of the residence address for Swedish individuals and country of residence for foreigners. We have data on 670080 investors: There are 653584 Swedish investors, of which 606857 are individual investors, and 16496 foreign investors, of which 12496 are individual investors. Figure 1 shows the percentage of stock market capitalization held by different types of investors. We divided investors into groups according to whether they were Swedish individuals, Swedish financial institutions, which include foreign financial intermediaries with branches in Sweden,¹⁰ Swedish non-financial companies, Swedish individuals who reside abroad, Swedish government, foreign individuals, foreign companies, and foreign financial institutions. The category "other" mainly includes foreign governments. In the econometric analysis, we focus on domestic individual investors, domestic individual investors residing abroad, domestic financial institutions, domestic non-financial corporations, foreign individual investors, and foreign financial institutions.

Finally, we also take into account that there are firm and investor characteristics, other than ownership structure and investor category, which can influence the decision to invest in a company and its investor base. To do so, we complement the information on individual stockholdings with data on firm returns and risk characteristics from *SIX Trust*, which provides information on the closing prices and dividend yields of the firms listed in the

⁸ See Sundin and Sundqvist (1985-2001) for a detailed description of the methodology.

⁹ These corrections have important implications for determining control. For instance, the Persson family controls the well-known retail company, *Hennes & Mauritz*, by holding shares directly and through the private holding company Stefan Persson Placering AB. Moreover, several family members hold the direct stockholdings. If we did not attempt to identify families using the information provided by *Agarservice* we would conclude that the company free float (i.e. the shares held by individuals with less than 5% of the votes of the company) is 65% of the company's market capitalization; when indirect stockholdings and stocks belonging to members of the same family are taken into account, the free float represents only 55% of the stock market capitalization.

¹⁰ The foreign financial institutions with branches in Sweden are quite few (we counted fewer than 10) but are very large investors in the Swedish stock market.

Stockholm Stock Exchange, and with accounting variables from *Market Manager*.¹¹ This data set also provides information on the individuals who belong to boards of Swedish listed companies or the most important limited liabilities companies. We will use also this information to analyze the behavior of individual investors.

2.3 Investors' portfolios

Table 1 shows the mean and the standard deviation (in parentheses) of the number of positions in the portfolio of each investor type, the value of their holdings in firm f (position), the overall value of their stockholdings (portfolio), and the ratio of control to cash flow rights for different investor types. The median number of positions in the portfolio of domestic individual investors is only 1. This may be at first sight surprising: According to finance textbooks we would expect investors to hold portfolio of more than 20 stocks to eliminate idiosyncratic risk. In fact, it is well known that it is not so, and this is certainly not a peculiarity of Swedish investors: Blume and Friend (1975) had first identified this puzzle in the data looking at portfolios of U.S. investors. More recently, using the Survey of Consumer Finance, Kelly (1995) shows that the median U.S. stockholder holds a single publicly traded stock as well. Analogously, Goetzmann and Kumar (2001) find that 25% of investor portfolios contain only 1 stock and more than 50% of them consist of only up to 3 stocks, even if they use data from a brokerage house, which should be biased towards investors who have familiarity with stock markets. Of course, with our data we cannot make any conclusive claims on the extent of the diversification of the investors in our sample because we do not have information on their indirect shareholdings and other assets. However, this is beyond the scope of our paper: Our aim is to analyze whether any categories of investors avoid the stocks of companies where agency problems are more severe: If also financial institutions avoid these stocks we can conclude that indeed individual investors are less likely to hold stocks of companies with bad corporate governance. If this is not true, we could only infer that individual investors prefer to hold stocks of firms with bad corporate governance through intermediaries, which may be more sophisticated monitors.

A definitive advantage of our data set on the previous literature is that it allows us to study the behavior of very small domestic individual investors and to make comparisons with larger domestic individual investors. These investors may have very different expected returns

¹¹ This data company collects balance sheet information for Swedish companies. The last year available is 2000.

when the select investments, but have so far not been analyzed separately.¹² To be able to distinguish between those investors who may be able to extract private benefits and those who can enjoy only security benefits, we define a new category of large domestic individual investors or blockholders, which includes domestic individual investors that have more than 10% of the control rights of at least one listed company. We do so in order to have a category of investors who have strong connections to the local financial community and, for this reason, may have better access to information and ability to monitor or to extract private benefits together with the principal shareholder. This group of investors comprehends 165 individuals. As we would expect, in Table 2, the share of control to cash flow rights is largest for this category of investors. In the econometric analysis, we exclude the controlling shareholders and analyze the portfolio decisions of the remaining large domestic individual investors.

2.4 Control structure

To be able to evaluate whether stockholders who enjoy only security benefits fear expropriation, we need to measure insiders' incentives to extract private benefits and to pursue objectives that conflict with the company's maximization of future cash flows. Following the previous literature (Bebchuk et al., 1999, La Porta et al., 1999), we assume that these incentives correlate positively with the ratio of control to cash flow rights of the principal shareholder: the less the controlling shareholder is driven by monetary incentives, the more likely he will be to pursue interests other than maximizing shareholders' value. There is also plenty of empirical evidence supporting this assumption: La Porta et al. (1999), Claessens et al. (2002), Volpin (2002), Lemmon and Lins (2003) show that indeed firm valuation and firms returns are lower in companies where the controlling shareholders has more control than cash flow rights. The problem seems to be particularly accentuated when the controlling shareholders own only a small share of capital. Cronqvist and Nilsson (2003) show that these problems are significant in Sweden as well.

It is essential to our study to determine the actual control and cash flow rights held by the controlling shareholder. The information provided by *SIS Ägarservice* is an important first step because it allows us to identify control and cash flow rights obtained through

¹² Of course, many observations may regard employees' stockholdings that are unlikely to be driven by mere portfolio considerations; our econometric analysis takes this into account together with other possible determinants of company's investor base.

arrangements reached outside the stock market. Yet, pyramids, cross-shareholdings and dual-class shares are extremely common in Sweden (see Agnblad et al., 2001) and allow large shareholders to enhance their control rights. We can reconstruct information on control and cash flow rights obtained through stocks held via listed companies using the records of VPC.

The most common mechanism to enhance control rights in Sweden involves the use of dual-class shares, which deviate from the one-share-one-vote rule and give the owners superior voting rights. In this case, since VPC reports the votes per share, it is straightforward to determine the ratio of control to cash flow rights.

However, the principal shareholders are frequently corporate entities, non-profit foundations or financial institutions. In these cases, we identify their owners and the owners of their owners as explained in the following example, in which there are no deviations from one-share-one-vote rule or cross-holdings.¹³ Öresund is the principal shareholder of Custos and controls 23.1% of the votes. In turn, Öresund, which is itself a listed company, is controlled by Sven Hagströmer with 20.8% of the votes. In this example, Sven Hagströmer holds 20.8% of the control rights of Custos (the weakest link in the chain of voting rights), but only 4.8% of the cash flow rights (the product of two ownership stakes along the chain).

We also take into account cross-holdings. In this case, the ultimate controller has several control-rights chains through which to control the votes in a company. For example, the Stenbeck Group controls the companies Kinnevik and Invik through an elaborate holding structure: Jan Stenbeck has direct holdings in both companies, which give him 19.7% of the voting rights (7.7% of the cash flow rights) in Kinnevik and 43.5% of the voting rights (23.8% of the cash flow rights) in Invik. Moreover, Invik holds 32.2% of the votes (13.5% of the cash flow rights) of Kinnevik and Kinnevik holds 7.4% of the votes (4.1% of the cash flow rights) of Invik. In this case, we take into account the stakes along different control chains. Therefore, in the above example Stenbeck has 51.9% of the voting rights of Kinnevik and 50.9% of Invik, but only 10.9% and 24.1% of the cash flow rights of Kinnevik and Invik, respectively.

¹³ In previous studies using Swedish listed companies (Cronqvist and Nilsson, 2003 and Dahlquist et al., 2003), only the separation between ownership and control deriving from dual class shares had been taken into account.

We use the ratio of control to cash flow rights (for instance, in the above-mentioned case of Custos this is $20.8/4.8=4.33$) as a proxy for the distortion induced by a minority controlling shareholder. We set the level of this distortion to one if all the shareholders have less than 20% of the votes: This cut-off is in line with the earlier studies that assume that 20% of the votes suffices to ensure control, and consider the company to be "widely held" otherwise (see, for instance, Faccio and Lang, 2002) because nobody can seriously influence decisions and extract private benefits without facing the opposition of other stockholders and control is easily contestable. The value of the ratio of control to cash flow rights is, however, not sensitive to the choice of cut-off we use. Henceforth, we will sometimes refer to the ratio of control to cash flow rights as distortion. We also take into account the incentive effect of the controlling shareholder's cash flow rights by considering our proxy of distortion jointly with the share of the capital owned by the principal shareholder. Moreover, we consider that the existence of other large shareholders (besides the controlling shareholder) affects corporate governance and control for a company's fraction of stock market capitalization held by small investors.

In our sample, there are 71 controlling shareholders. The ratio of control to cash flow rights is larger than 1 for 40 percent of the companies. On average, it is equal to 1.88, but there is high variation and it can arrive to be larger than 60. To avoid overemphasizing firms with extreme separation between ownership and control, in the empirical analysis we check whether our results hold when we use a dummy equal to 1 when the ratio of control to cash flow rights is larger than 1 and equal to zero otherwise. We select also this specification because it is not clear that increases in the separation of control and cash flow rights have a linear effect on agency problems and consequently on shareholdings decisions.

Table 2 summarizes a few firm characteristics and relates them to our proxy of corporate governance: If we exclude the top decile of companies for market capitalization, the companies with distortion (ratio of control to cash flow rights strictly larger than 1) have, on average, a smaller investor base. Moreover, the median number of investors of companies with distortion is always lower than for companies without distortions. The differences in the medians are also statistically significant at 5% level and suggest that fewer investors share the idiosyncratic risk in companies where agency problems are perceived to be more severe, especially if the very largest companies are not taken into account. Of course, a main objection to this argument is that the ratio of control to cash flow rights is correlated with other firms characteristics that affect investor shareholdings decisions and that we are not taking into account. Panel B of Table 2 summarizes some characteristics of companies with

with and without distortion. We sorted the companies in two groups with and without distortion, and we analyze whether the two groups present any significant differences for a numbers of characteristics that include proxies of firm age, such as the time from the incorporation and the initial public offering; growth opportunities, proxied by the market to book ratio; market capitalization, which proxies for firm visibility; free float, which proxies respectively for the supply of shares; leverage; dividend yield; liquidity, proxied by the bid-ask spread as a fraction of the share price; and whether firms belong to the high tech sector, which might have become particularly popular during the high-tech bubble. The only significant differences we detect regard dividend payouts: Firms with high control to cash flow rights ratio seem to pay higher dividends. If anything this bias the results against finding an effect of corporate governance on shareholdings decisions: For tax reasons, financial institutions and foreigners are expected to be more inclined to buy stocks of firms with distortion (see, for instance, Allen et al., 2000). In the econometric analysis, however, to avoid drawing misleading conclusions due to the fact that the wedge is correlated to firm characteristics, which also may affect shareholding decisions, we will control for these and other firm characteristics.

In the next section, we design a more rigorous methodology to control for these and other possible determinants of a company's investor base.

3. Methodology and specification

According to the capital asset pricing model, investors should hold the market portfolio. However, as we already noticed, it is well known that investors tend to underdiversify their portfolios and hold stocks of very few firms: In our sample, like in different samples of U.S. investors (see Blume and Friend, 1975; Kelly, 1995; Goetzmann and Kumar, 2001), the portfolio of most investors consists of shares of one company only and therefore most of the portfolio shares are equal to 1. This implies that using the portfolio share of individual i in firm f is not a good strategy to exploit individual variability in portfolio choices. It is more informative instead to understand how investors select the few companies in which to invest. Moreover, we think that it is important to investigate the determinants of a firm's investor base because it influences stocks' liquidity. Also the cost of a given amount of equity depends on the number of shareholders who share a firm's risk: the larger a firm's

investor base, the higher its stock valuation is (Merton, 1987).¹⁴ Given these considerations, we design a methodology to understand how shareholders select the firms in which to invest.

We observe whether any investor i buys the stock of firm f . Investor i 's choice can be modeled by using a binary variable, $Y_{i,f}$. Investor i can either buy shares of firm f ($Y_{i,f} = 1$) or not ($Y_{i,f} = 0$). We model this choice as the probability that investor i buys stocks of firm f and take into account that firm and individual characteristics affect this probability. We estimate the probability of having $Y_{i,f} = 0$ using a probit model. We assume that the probability that investor i does not invest in firm f depends on various firm and investor characteristics as follows:

$$\text{Prob}(Y_{i,f} = 0) = \Phi(\beta' X_{i,f}),$$

where Φ is the cumulative density function associated with the standard normal distribution.

The probability that $Y_{i,f} = 0$ may be affected by several investor and firm characteristics, $X_{i,f}$, which include our variable of interest, the ratio of control to cash flow rights, and several control variables that we describe later. The estimate of the unknown parameters, β' , by maximum likelihood allows us to evaluate the effect of a marginal change in $X_{i,f}$ on the probability that investor i buys stocks of firm f , as follows:

$$\frac{\partial \text{Prob}(Y_{i,f} = 0)}{\partial x_{i,f}} = \phi(\beta' X_{i,f}) x_{i,f},$$

where $x_{i,f}$ is an element of the matrix, $X_{i,f}$, and ϕ is the density function associated with Φ .

Modeling the choice whether to buy shares of firm f with a probit model also involves some assumptions on the error term structure. We have to take into account that an investor's choices to buy shares in firm f and f' are not independent, but are influenced by the return structure of the whole portfolio. To address this issue, besides controlling for variables that summarize the return structure of individual portfolios, we allow the error terms to be correlated for the observations referring to the same investor. The standard errors we present are White-corrected standard errors that allow inference in the presence of clustering and heteroskedasticity.

Within this framework we can investigate whether investors randomly choose a subset of firms in which to invest, given the supply of shares, or prefer to hold stocks of firms with certain characteristics. In particular, we want to test if investor i tries to avoid firms with

¹⁴ See Amihud et al. (1999) and Kadlec and McConnell (1994) for empirical evidence.

worse corporate governance: If investors participating in the stock market choose randomly among firms, the probability that investor i invests in firm f should not be affected by the ratio of control to cash flow rights, once we have included our control variables. There is support for the hypothesis that portfolio investors are discouraged from investing in firms with bad corporate governance if the ratio of control to cash flow rights increases the probability that investor i does not buy shares of firm f (i.e. $Y_{i,f} = 0$).

Although in section 5.3 we will use also time-series evidence to address problems related to the endogeneity of our variable of interest and the possibility of reverse causality, we believe that we can draw conclusions from the cross-sectional evidence because problems of reverse causality are less severe in our context than in studies using ownership structure to explain firm performance for several reasons. First, corporate governance can certainly be considered exogenous with respect to small individual investors, who are unlikely to be able to affect corporate governance due to free riding problems. Second, although it is possible that some institutional investors lobby to obtain improvement in corporate governance, not all institutional investors which hold stocks in a firm do. Since our methodology weights equally all observations referring to an investor-firm pair, our results are unlikely to be biased by the fact that a few institutional investors in a company try to influence its governance as long as most of them remain passive. Third, even if our results partially captured that some institutional investors affect corporate governance, we could still test if they prefer to hold stocks in companies with better corporate governance, whether or not they spurred the change. Finally, we control for several other firm characteristics that could be correlated with the ratio of control to cash flow rights and whose omission could lead omitted variable bias (Demsetz and Lehn, 1985).

The control variables we include in modeling the probability that investor i invests in firm f are the following:

1. The logarithm of the firm's stock market capitalization (MKT_CAP). Investors are more likely to buy shares of companies whose supply of shares is larger. Furthermore, this is a proxy of firm size and visibility.

2. The stock market capitalization of the firm to its free float (DIST_FLOAT). To obtain free float, we subtracted from a company's market capitalization the participation of all investors who control (via direct, group or indirect holdings) more than 5% of the votes in the spirit of Morgan Stanley free float indexes (Morgan Stanley, 2001). This variable helps take into account that shares may be unavailable to small portfolio investors because of the

presence of large shareholders. Dahlquist, Pinkowitz, Stulz and Williamson (2003) show that the free float may be very relevant for portfolio decisions because the holdings of foreign investors seem to be influenced more by the portfolio of available shares than by the market portfolio. If the free float were lower for firms with higher control to cash flow rights ratio, our results could be seriously biased.

3. The market-to-book ratio of firm f (MKT_BK). This variable takes into account that investors may not want to hold shares that are currently overvalued or, alternatively, may prefer to invest in shares of firms with high growth prospects.

4. The current dividend yield of firm f (DIVY). This takes into account that firms paying high dividends may be more attractive to investors as this is a way to limit cash flow diversion. Moreover, according to tax clienteles theories (Allen et al., 2000) institutional investors and foreigners should hold more stocks of high dividend yield companies.

5. A dummy variable equal to 1 for firms that are in the primary listings of the Stockholm Stock Exchange and are thus subject to wealth tax, and equal to zero otherwise (PRIM_LIST). This takes into account that firms on the o-list of the Stockholm Stock Exchange, which originally was meant to be reserved for relatively small firms, are exempt from wealth tax (with very few exceptions). Although today the different listings are almost identical,¹⁵ firms in the o-list may still be considered less visible or reputable by small investors. As a consequence, investors may avoid them notwithstanding the tax advantage.

6. A dummy for firms based in Stockholm (STOCKHOLMF). Ceteris paribus, firms based in the most important city can be more visible to investors than other firms based in more remote parts of the country. This dummy also has been interacted with a dummy equal to 1 for investors based in Stockholm (STOCKHOLM). This may account for the fact that more sophisticated investors or individuals who are from different parts of the country may reside in Stockholm.

7. The number of shares in the portfolio of each investor (NP). This variable controls for the level of sophistication of the investor, which may matter because more sophisticated investors hold more positions and are therefore more likely to buy shares of any firm f .

8. The logarithm of the distance between the residence of the investor and the closest establishment of the company (MINDIST). This can be calculated for Swedish individual investors only, by using the zip codes of the location of the company's establishments and the residence of the investor. This is an important control variable, because it has been extensively shown that investors prefer to buy stocks of firms with which they are familiar. In

particular, they are more likely to invest in firms that are located near where they live (Grinblatt and Keloharju, 2001; Huberman, 2001). Moreover, since we calculate the distance between the residence of the investor and the closest establishment of the company, we can capture employees' stockholdings using this variable.

9. The bid-ask spread of firm f (BASPREAD). This variable has been calculated as the volume-weighted average of the daily closing bid-ask spread for the period January-June 2001. It measures the liquidity of the stocks of firm f and is important because previous studies find that investors, especially institutional investors, are reluctant to hold shares of illiquid companies.

10. The leverage of firm f (LEVERAGE), calculated as the financial liabilities to financial liabilities plus the book value of shareholders' funds. This variable is a measure of firm long-term financial distress, which is expected to discourage investors.

11. The beta coefficient of the market model estimated using weekly returns and the *SIX Trust* return index as the return of the market portfolio (BETA). This variable measures systematic risk and also has been included in previous studies (see, for instance, Kang and Stulz, 1997), because investors that face high participation costs, like foreigners, are expected to hold higher beta stocks to be exposed to the market risk. In this context, this variable also help to control for the fact that undiversified investors may prefer to buy stocks of holding companies whose returns are more similar to the market portfolio.

12. The correlation between the monthly returns of firm f with the value-weighted monthly return of investor i 's remaining holdings of Swedish stocks (RHO_P_S). The correlation has been computed using the returns of the previous 36 months if available, and a shorter time period otherwise, with a minimum of six observations. This variable measures the fit of the stock of firm f to the portfolio of investor i . We set its value equal to zero if investor i holds stocks of one company only.

Table 3 provides summary statistics for all the control variables included in the econometric analysis. In addition, the ratio of control to cash flow rights has been interacted with the ratio of market capitalization to free-float or with the share of cash flow rights of the first shareholder. This interaction variable takes into account that the level of expropriation depends not only on the ratio of control to cash flow rights, but on the overall ownership structure: if the first shareholder has a large part of the cash flow rights or there are other large blockholders, the extraction of private benefits may be limited either because the incentive of

¹⁵ Hennes & Mauritz, which is the fifth Swedish company for market capitalization, is in the o-list.

the first shareholders are relatively more aligned with the outside shareholders¹⁶ or because other large shareholders can monitor the principal shareholder. Therefore, investors who enjoy only security benefits may be less reluctant to invest in firms with a lower free-float.

Furthermore, the variable of interest has been interacted with the firm market capitalization and a dummy equal to 1 for firms in the primary listings. Both variables control for the fact that the effect of distortion may be more pronounced for small firms, which are considered riskier and less visible.

In the next section, we perform the estimates of the determinants of the decision whether to invest in firm f , grouping investors by type because the process of portfolio selection may be different for institutional investors and individuals, and foreign and domestic investors. In particular, we distinguish domestic individual investors in small domestic individual investors and large domestic individual investors who have at least 10% of the control rights of a listed company (but are not the first shareholder), who are certainly connected to the local financial community and arguably can extract private benefits.

Since the data set contains more than two hundred millions observations of the dichotomic variable for small domestic individual investors we cannot estimate the parameters of the maximum likelihood function pooling all the observations together. To deal with this problem we estimate the equation of interest for random subsamples of small domestic individual investors. To construct random subsamples we use the day of the month in which investors were born. We present summary statistics of the estimated parameters for all the random subsamples.

4. Results

Results are shown in Tables 4 to 8. We estimate the equation of interest for the whole sample and a subsample that excludes the companies in the largest decile of market capitalization. We present the estimates of both equations when this helps to deepen the interpretation of the results; otherwise, we show only the whole sample estimates.

Our variable of interest and the other control variables are generally significant and have the expected sign. In Table 4, we present the results for small domestic individual investors: Panel A presents detailed results for small domestic individual investors born on the third day of the month. Summary statistics of the estimates obtained using the other random subsamples are presented in Panel B of Table 4. Since results are qualitatively

¹⁶ Claessens et al. (2002) provide evidence on the incentive and entrenchment effects of large shareholdings.

invariant across different random subsamples, we base our discussion on Panel A of Table 4. We indeed find that small domestic individual investors are less likely to invest in companies where the controlling shareholder has a high share of control relative to cash flow rights. A marginal increase in the value of the ratio, calculated setting all the explicative variables equal to their mean, increases the probability that investor i does not buy the stocks of firm f by more than 10%. Figure 2 shows the distribution of the marginal effect of the control to cash flow rights ratio for different random subsamples. However, this is only a partial effect as we have included the ratio of control to cash flow rights in several interaction terms, which we have to take into account before drawing conclusions.

Small domestic individual investors are more likely to invest in companies with high stock market capitalization, as is natural because the supply of shares is larger. More interestingly, in accordance with the descriptive analysis of Panel A of Table 2, the negative effect of the ratio of control to cash flow rights on the probability of buying the shares of a company is more pronounced for smaller companies, as suggested by the negative sign of the variable obtained by interacting the company market capitalization with the ratio of control rights to cash flow rights.

As we would expect, small domestic individual investors are more likely to invest in firms with larger free float relative to the stock market capitalization, as more shares of the firm are freely traded and available to small investors. Interestingly, though, small domestic individual investors are reluctant to buy stocks of companies that have large blockholders and controlling shareholders with little monetary incentive, as suggested by the positive sign of the variable obtained interacting the ratio of control to cash flow rights with the ratio of the company market capitalization to the free float. This is true even if the interaction of the ratio of control to cash flow rights with the share of cash flow rights of the first shareholder is used instead of the previous interaction variable. Contrary to the finding of Claessens et al. (2002), there seem to be no alignment effect from high ownership concentration. Instead, investors seem to perceive that large shareholdings are able to favor the extraction of private benefits perhaps because they can help to prevent takeovers, instead of aligning the incentives with small outside shareholders.

Small domestic individual investors are more inclined to invest in companies in the primary listing, although they are subject to a wealth tax. However, they are less likely to invest in companies that have more pronounced ratio of control to cash flow rights and are also subject to the wealth tax: The interaction variable suggests that visibility may also have a price if the company has a controlling minority shareholder, as investors are probably more

aware of the existence of a distortion and are more reluctant to invest. Interestingly, though, if the largest companies, which are also likely to be the most well known to investors, are excluded, small domestic individual investors turn out to be responsive to tax incentives and a bit less so for companies with high distortion.

When the whole sample is considered, the compounded marginal effect of distortion, which considers all the interaction variables, on the probability of investing in a firm is only 0.4% when all the independent variables are set equal to their mean value (the median level of compounded marginal effects for the different random subsamples, however, is larger and equal to 0.66%). Still, the effect estimated in Panel A of Table 4 is sizable if the overall investor base is considered: a marginal decrease in control rights would bring to the average company almost 2500 new small domestic individual investors, under the conservative assumption that no new individual investor decides to participate in the stock market. When we exclude the companies in the top decile of market capitalization, the effect of the distortion becomes much more pronounced: A marginal increase in the ratio of control to cash flow rights decreases the probability of investing in a firm by 2.85%. This further confirms that bad corporate governance affects the investor base especially in small and medium size companies, which may have stronger need of external funds.

The remaining control variables provide some more interesting information on the determinants of firms' investor bases. Small domestic individual investors, who hold shares in many firms, are obviously more likely to invest in any firm whatever its characteristics are.

Not surprisingly, investors are more likely to buy stocks of firms with low market beta: This may be an attempt to diversify because their other sources of income are already highly correlated with the market portfolio. However, investors seem less driven by diversification motives when they select stocks: We find that they hold stocks whose returns are highly correlated with their other stocks.¹⁷ This may suggest that individuals invest in stocks of a certain sector or region, with which they are more familiar, like Huberman (2001) find, and which happen to have high correlated returns.

As previous studies have found, companies' characteristics other than risk and return are important: Small domestic individual investors prefer companies that are located nearby

¹⁷ The high marginal effect of this variable on the probability that investor i invests in firm f is, most probably, due to the way in which we have defined the correlation between the return of firm f and the return of the other firms in investor i 's portfolio: We have set this correlation equal to zero if investor i invests in one firm only. This implies that RHO_P_S may have a high explanatory power just because many shareholders invest in only one firm. While this artifice together with the fact that RHO_P_S is comprehended between -1 and 1 by definition can affect the estimate of the coefficient of this variable, in no way it affects our other results: we estimated the probability excluding RHO_P_S and all our results were qualitatively invariant.

or are located in Stockholm because very likely they are more familiar with them. Interestingly though, investors who are residents of Stockholm invest relatively less in Stockholm firms. Companies that have a low bid-ask spread and therefore are more liquid have a larger investor base. More surprisingly, small domestic individual investors seem not to care about leverage or to even prefer companies with high leverage. This variable in fact is the only one which is not always significant and of the same sign for different random subsamples. Most likely, here leverage is not a good proxy for long-run financial distress but rather captures the debt capacity of the firm: reputable firms with stable cash flows are likely to have easier access to credit. This interpretation is confirmed by the fact that the coefficient of leverage has a different sign when the largest companies are excluded: High leverage marginally decreases the probability of investing in relatively smaller companies because it is probably related to financial distress only in this subsample. As expected, firms that paid higher dividends in the past attract more investors. Finally, small domestic individual investors seem to avoid firms whose price is relatively high as a high market-to-book ratio decreases the probability of investing in a company.

We estimate an analogous regression for foreign individuals (Table 5). The results are roughly unchanged and, most importantly, a high ratio of control to cash flow rights decreases the probability that foreign individual investors hold stocks of the firm by more than 1%. The control variables have generally the same impact on the probability of investing that they have for small domestic individual investors. The most surprising difference is that foreign individual investors do not seem to be attracted by firms that pay high dividends. The marginal effect on the probability, however, is close to zero. Moreover, they are always reluctant to invest in high leverage firms. Not surprisingly, they want to invest in more visible companies and disregard the tax incentive for o-listed companies, as foreign investors are not subject to wealth tax. Very interestingly, foreign individual investors prefer to select high beta stocks: this is in striking contrast to domestic small individual investors but in accordance with the findings of the previous literature that foreign investors want to be exposed to the local market index. This makes perfectly sense from the point of view of portfolio theory, since foreigners' incomes are less likely to be exposed to the Swedish business cycles than domestic investors' incomes.

Foreign financial institutions behave roughly as foreign individuals (Table 5). Overall, the effect of the distortion due to the ratio of control to cash flow rights is even more important for them: a marginal increase of the control to cash flow rights ratio reduces the probability of investing by 8.5%. The only relevant difference from individual investors is

that foreign financial institutions do not like firms with high level of distortion that are large and have a high level of free float. This is very likely due to the fact that these firm characteristics have a very high explanatory power for their investment decisions.

Domestic and foreign financial institutions also select their investments similarly: The impact of the distortion also is sizable for domestic financial institutions, as a marginal increase of control relative to cash flow rights decreases the probability of investing by 6.2%. Interestingly, though, domestic financial institutions are more inclined to invest in high leverage firms, possibly banks' best clients. As foreign individuals, both domestic and foreign financial institutions seem to prefer high beta stocks.

Large domestic individual investors, instead, behave differently. We define large domestic individual investors as the investors who have at least 10% of the control rights of a company listed on the Stockholm stock exchange, but we exclude the observations that regard the participation of the controlling shareholders in the firms they control. Large domestic individual investors are the only category of investors for which the ratio of cash flow to control rights has an impact close to zero on the probability of investing in a firm. Probably, they are able to protect their own interests and therefore do not fear expropriation.

Other interesting differences between small and large domestic individual investors emerge from the interpretation of the sign of the control variables. Large domestic individual investors do not invest in more visible companies: they seem to prefer companies with lower stock market capitalization and o-listed companies. They also invest in less liquid companies. However, like the small domestic individual investors, they try to avoid aggregate risk and are less inclined to invest in high beta companies.

These differences are even more pronounced for Swedish individual investors who reside abroad (estimates not reported). These are generally wealthy individuals who move their residences to escape Swedish high taxes: obviously, they are likely to be closely connected to the Swedish financial elite. They seem to like high distortion firms: a marginal increase of the control relative to the cash flow rights increases their probability of investing in a firm by 3.5%. Interestingly, they select high beta stocks, like foreigners, probably because their other sources of income are not seriously influenced by the Swedish business cycles.

These differences between large and small investors seem to apply to not only individuals but also domestic non-financial corporations, although in a quite different way. As before, we split the sample in small investors that control less than 10% of the votes of any company and large investors that control more than 10% of the votes of at least one company.

To be able to perform the estimation, we split the non-financial corporations without substantial control rights in two random subsamples using the sixth digit of their organization number. In the two random samples of non-financial corporations with less than 10% of the votes, a high ratio of control to cash flow rights increases the probability of investing in the company. This is not true for companies with large participations. The subsample of non-financial corporations with small shareholdings includes most of the companies that belong to a pyramid: most of their holdings are the cross-shareholdings that allow controlling shareholders to enhance their control rights. Therefore, it is not surprising that these arrangements especially affect companies where the extraction of private benefits is expected to be larger. In contrast, the objective of large corporate shareholdings could be to gain access and control of other firms' production technologies to exploit synergies and economies of scale. In this context, the presence of minority controlling shareholders and fears of expropriation weaken the incentive to invest.

To check the robustness of our results we estimate a number of different specifications that we do not report for sake of brevity. In order not to overemphasize extreme values of the ratio of control to cash flow rights, we use a dummy equal to 1 when the ratio is strictly larger than 1 and equal to zero otherwise. All results were qualitatively invariant. Results were invariant also to the inclusions of nine sectoral dummies that help to control for the fact that ownership structure and in particular the level of distortion may be industry dependent, or that there may have been fads regarding sectors, such as the high-tech sector, during the high-tech bubble. We run all regressions also without including the top decile of companies for market capitalization: Our results were always qualitatively invariant, and generally the effect of the ratio of control to cash flow rights on the probability of not investing was larger, suggesting that the problems deriving bad corporate governance are more accentuated for smaller firms. Finally, we included firm age among the control variables because investors may be more willing to hold shares of older firms with better reputations. This variable was generally significant, but its sign changed in different subsamples. More importantly, it did not affect the sign and the economic significance of the other variables.

5. Interpretation of the results and further empirical evidence

5.1 Investors without fears of expropriation

So far we have shown that shareholders who generally enjoy only security benefits, such as small domestic individual investors, institutional investors and foreign investors,

avoid the stocks of companies with bad corporate governance. Instead, large domestic individual investors (and Swedish individual investors resident abroad) do not. Why do they behave differently?

In this subsection, we argue that large domestic individual investors possibly have a comparative advantage in information acquisition, thanks to closer connections with the local financial community. This comparative advantage may help them to monitor firms with bad corporate governance. Alternatively, thanks to their connections, they may be able to protect their interests by selling stocks before value-destroying plans and other bad news are announced¹⁸ or to participate in the extraction of private benefits (for instance, by getting invited to expensive parties for “close” friends organized with the resources of the participated company).¹⁹ In both cases, the return from investing in firms with bad corporate governance would be higher for large domestic individual investors because they are part of the local financial elite.

Indeed, alternative explanations have a hard time simultaneously explaining the behavior of individual investors, foreign investors, and financial institutions. For instance, it is very hard to believe that large domestic individual investors are better at monitoring companies where the incentives of insiders and outsiders are more misaligned because they are more sophisticated than domestic and foreign financial institutions.²⁰

Analogously, although large individual investors, being wealthier and most likely better diversified, might be less averse to downside risk and more inclined to buy stocks of companies with bad corporate governance than small individual investors, it is very unlikely that they are less exposed to the risk of a Swedish recession than foreigners: Therefore they should not be more inclined to invest in companies with bad corporate governance, which supposedly have a larger downside risk²¹ (Mitton, 2002 and Lemmon and Lins, 2003), than foreign individuals, as instead we find. In particular, although the behavior of financial institutions may be due to limits imposed by their corporate charter, the behavior of foreign individuals cannot be easily explained by the lack of diversification. Finally, behavioral theories, like fears to regret and care about fairness, could explain the behavior of the small

¹⁸ This explanation would be in accordance to the findings of Choe, Kho and Stulz (2000), who show that Korean domestic investors make use of private information when they trade. Ke, Huddart and Proni (2003) also find that insiders trade upon knowledge of specific and economically-significant accounting disclosure as long as two years prior to the disclosure using U.S. data.

¹⁹ This would imply that blockholders, in contrast to small portfolio investors, are able to enjoy private benefits together with the principal shareholder, as Zwiebel (1995) argues.

²⁰ Grinblatt and Keloharju (2000) find that foreign investors are more sophisticated than domestic investors using Finnish data.

domestic individual investors, but certainly not the shareholding decisions of domestic and foreign financial institutions.

To bring further support to our explanation that connections with the local financial community matter in portfolio selection, we have identified the small domestic individual investors who belong to boards of Swedish listed companies or of the most important limited liabilities companies, using data from Market Manager: These are approximately 20% of the domestic individual investors with small shareholdings. In a small country like Sweden, board members are likely to have connections to the local financial community and are, in this respect, very similar to large domestic individual investors. For this reason, they may also have more timely access to private information about value-reducing business plans than other market participants, such as foreign investors. This could limit the extent to which they are subject to expropriation. To test whether they behave differently from the other small investors, we define a dummy variable equal to 1 for board members and equal to zero otherwise. We interact this dummy variable with the ratio of control to cash flow rights to see whether these individuals behave differently from other small individual investors. We reestimate the probability that individual i does not invest in firm f using the random sample of individuals born in the third day of the month.²² In accordance with our expectations, we find that board members behave like the other domestic individuals with strong connections. As Table 8 shows, not only they do not fear expropriation, they even prefer to invest in companies where the extraction of private benefits is larger. Furthermore, the compounded marginal effects of the control to cash flow rights ratio on the probability of not investing more than doubles for individuals who are not board members.

Although it is difficult to establish whether board members prefer companies with bad corporate governance because they are able to benefit from inside information without transaction data, there is some support for this explanation: The number of changes in positions in the last six months is significantly larger for board members than for the other small individual investors in our sample. Most importantly, the turnover is higher for the holdings of firm with distortion. This is true even after controlling for the number of positions in the portfolio and the amount of wealth invested in stocks.²³ Therefore, board members

²¹ Unfortunately, we cannot verify this easily with our data because the year 2001, to which our observations refer, was preceded by a prolonged expansion.

²² In this random subsample there are 4134 individuals who are board members.

²³ In particular, we regressed the number of changes in positions on the wealth of the investor (defined as logarithm of the value of his stock portfolio, LOG(PORTFOLIO)), age, percent of holdings held via broker (RATIO_BROKER), percent of portfolio held in companies with $C/CF > 1$ (FRACDIST), number of stocks in the portfolio (NP) and a board dummy that takes value 1 if the investor is currently board member, and 0 otherwise.

surely have a higher turnover and a shorter horizon when they buy stocks, especially in companies with bad corporate governance. Very likely, they trade more because they are able to exploit news that has not yet been incorporated in the market price.

5.2 Evidence from investors' shareholdings

So far our results consistently show that investors who enjoy only security benefits are, *ceteris paribus*, less likely to buy shares of companies where expropriation of private benefits is expected to be larger. Of course, some investors who presumably enjoy only security benefits end up buying stocks of companies with a ratio of control to cash flow rights larger than one. Our results show that they are fewer than in companies with similar characteristics but lower ratio of control to cash flow rights. While so far we analyzed *how many* investors buy stocks in companies with bad corporate governance, it is also interesting to know *how much* they invest in these companies. This is important for several reasons. First, if companies with bad corporate governance attracted fewer investors who, however, are willing to invest a larger portion of their wealth (or, at least, of their equity investment), our findings would not have strong implications for firms' ability to raise capital. Second, using Swedish data that provide foreign investors' equity positions aggregated by country of origin, company, and share-type, Dahlquist et al. (2003) find that foreign investors' equity-holdings depends on a company's free float, which proxy for the supply of shares to small investors, but there seems to be no extra effect deriving from a proxy of the separation of ownership and control. Their measure of the difference between control and cash flow rights does not take into account pyramids and cross-shareholdings, but only dual-class shares. This is not irrelevant because in Sweden the companies that achieve separation of ownership and control

In all tested specifications, the coefficient for the board dummy was positive and significant. Here we report the results for the specification that uses quadratic terms for age, number of positions and wealth, as well as the interaction terms of the board dummy with age, top decile of wealth dummy, fraction of portfolio held in companies with C/CF>1 and number of positions :

$$\begin{aligned}
 \text{NCHANGE} = & -1.932 + 0.081 * \text{BOARD_DUMMY} + 0.234 * \text{NP} - 0.001 * \text{NP}^2 \\
 & (-71.50) \quad (7.15) \qquad \qquad \qquad (101.19) \quad (-11.31) \\
 & -0.017 * \text{FRACDIST} + 0.013 * \text{FRACDIST} * \text{BOARD_DUMMY} \\
 & (-9.29) \qquad \qquad \qquad (2.62) \\
 & +0.174 * \text{RATIO_BROKER} + 0.907 * \text{LOG}(\text{PORTFOLIO}) - 0.113 * \text{LOG}(\text{PORTFOLIO})^2 \\
 & (85.44) \qquad \qquad \qquad (68.75) \qquad \qquad \qquad (-70.19) \\
 & +0.007 * \text{AGE} - 0.009 * \text{AGE}^2 + 0.144 * \text{BOARD_DUMMY} * \text{NP} \\
 & (32.23) \qquad \qquad (-41.61) \qquad \qquad \qquad (12.12) \\
 & +0.066 * \text{BOARD_DUMMY} * \text{TOPDECILE_DUMMY} - 0.002 * \text{BOARD_DUMMY} * \text{AGE} \\
 & (4.52) \qquad \qquad \qquad \qquad \qquad \qquad (-7.53) \qquad \qquad \qquad (\text{AdjR}^2=34.04\%)
 \end{aligned}$$

through dual class shares are especially the very large and visible ones, towards which the holdings of foreigners are notoriously biased (Kang and Stulz, 1997). Nevertheless, it is important to check whether foreign investors indeed invest less in companies where the controlling shareholders have weaker monetary incentives, as we argue. Finally, the analysis of this other dimension of investor portfolios may provide a further check on the validity of the interpretation of our results.

For all these reasons, in Table 9, we create portfolios of firms in different size quintiles for the different categories of investors we have analyzed so far. We measure size by market capitalization. Given the holdings of a category of investors in firms of a certain size group, we ask what share of their holdings goes to firms with distortion and compare this to the share of market capitalization (free float) the firms with distortion represent in that size group. Strikingly, board members always overweight firms with ratio of control to cash flow rights larger than one with respect to the other market participants. The large Swedish investors (i.e. according to our definition, investors who hold large blocks in at least one listed company) also do so, with the exception of the portfolio of companies in the largest quintile. Conversely, again with the exception of the portfolio of the largest companies, foreign individuals and foreign financial institutions always underweight companies with distortion in comparison to the percentage of their market capitalization (free float). This is not true only for the portfolio of the companies in the largest quintile, and only limitedly to the foreign individual investors who overweight the blue chips (i.e. the ten largest companies).

As from our previous analysis of stock selection, here it emerges quite clearly that all companies with the exception of the largest ones may have difficulty to raise equity: Not only they have fewer investors, but a large part of their equity is held by investors that are connected to the local financial community and may have access to private information. To put it differently, in small and medium size companies, corporate governance hinders outside investor participation both in the intensive and the extensive margin. Access to capital seems instead easier for the largest companies. Since the largest companies with distortion make large use of dual class shares (see, for instance, Ericsson and Volvo), this can explain why Dahlquist et al. (2003) find that their proxy of the difference between control and cash flow rights, which considers only dual class shares, does not affect the holdings of foreign investors. We believe, however, that this is better explained by the fact that foreign investors,

The estimation has been performed using the Newey-West estimator. The T-statistics are reported in parentheses.

especially individuals, are much more likely to invest in the largest and most visible companies (Kang and Stulz, 1997).

Domestic financial institutions generally, but not always, underweight companies with distortion in comparison to their weight in the country's market capitalization (free float) as well. Overall, the picture that emerges is that investors who supposedly are connected to the financial community and have access to inside information not only are relatively more often shareholders of companies with bad corporate governance, but they also invest a larger part of their wealth in these companies. Among the investors who enjoy only security benefits, the most sophisticated ones (i.e. foreigners and financial institutions) seem more successful in avoiding companies with bad corporate governance. In any case, the investors who are somehow connected to the controlling shareholders are less reluctant to invest in companies where the probability of expropriation is larger: This is again in accordance to our previous findings showing that the quality of corporate governance had a more pronounced effect on domestic financial and especially foreign institutions' probability to hold stocks of a company.

The implications for firm access to capital are important as well. As also our previous results on investors' stock selection suggest, the companies for which appear more difficult to attract foreign investors, and, in general, investors who enjoy only security benefits are the small and medium size ones with bad corporate governance. These firms may experience difficulties to raise equity and grow, especially in emerging markets where foreign capital is of fundamental importance for investment financing.

5.3 Time-series evidence

Since VPC data are available since 1995, in this section, we exploit the time series variability of the ratio of control to cash flow rights to check whether the time series implications of our hypothesis hold. Since investors who enjoy only security benefits should buy stocks of firms whose corporate governance improved, firms for which the ratio of control to cash flow rights decreases should have an increase in investor base larger than other firms with similar characteristics whose ownership structure did not change, if corporate governance indeed matters for stock selection. This test has another desirable feature: It allows us to check whether our results are driven by reverse causality: If, contrary to our interpretation of the empirical evidence, corporate governance did not drive portfolio selection, but instead firms with more outside investors were forced to improve their

corporate governance, we should not observe an abnormal expansion of the investor base after a decrease in the ratio of control to cash flow rights.

To test whether the data support this implication, we first identify the companies for which the ratio of control to cash flow rights changed during the sample period. As many have noted before us,²⁴ ownership and control are relatively stable over time. So we can identify only 11 companies for which the ratio of control to cash flow rights indeed changed. We find that it always decreased at least by a factor 10.

Unfortunately, the small number of observations prevents us from doing a full-fledged econometric analysis, but it is still possible to perform some statistical testing. We want to test whether the increase in the number of shareholders was larger for companies whose corporate governance improved than for other companies with analogous characteristics.

We look for matching companies of the companies whose index of corporate governance changed by using the sector and the market-to-book ratio. Then, we define a variable equal to the ratio of the number of investors two years after the change in corporate governance to the number of investors six months before and compare it for the company of interest and its matching company. Not only do we find that the number of shareholders always increases if the insiders' and outsiders' incentives become more aligned, but we can also reject with a confidence level larger than 5% the hypothesis that the average increase in the number of investors is lower than or equal to that of the companies whose corporate governance did not improve. These results are very interesting even surprising given the small number of observations: a controlling shareholder who, for instance, renounces to dual-class shares would have an incentive to increase her equity participation to try to maintain the previous level of control of the company. Therefore, notwithstanding that the supply effect could be negative we observe an increase in the number of shareholders.

Most importantly, even if *ex ante* some investors have lobbied for the improvements in corporate governance we observe, we do find that other investors' portfolio decisions are affected by this improvement in the way we would expect: *Ex post* the number of shareholders increases. This clearly lends support to our interpretation of the cross-sectional evidence, and mitigates concerns of reverse causality.

²⁴ See, for instance, Morck et al. (1988).

6. Conclusions

In this paper, we show that the choices of market participants are driven, among other reasons, by fear of expropriation. Foreign and domestic investors as well as institutional investors who most likely can enjoy only the security benefits of their equity participation are reluctant to buy shares of companies where extraction of private benefits is expected to be larger. Therefore, corporate governance can affect adversely the investor base of a company, and influence negatively stock valuation (Merton, 1987) , and liquidity. Interestingly, large domestic individual investors and individuals who are members of a board behave differently. Not only do they seem to prefer smaller and less liquid companies, but also they either do not care about the separation of control and cash flow rights or are even attracted by companies where the controlling shareholder has stronger incentives to extract private benefits. Our results point to a clear relation between quality of corporate governance and investor base: Investors who enjoy only security benefits are more likely to be shareholders of companies with good corporate governance. Since in Sweden, overall, investor protection is quite good and the level of enforcement of law very high, our estimates, most likely, provide only a lower bound for the importance of corporate governance on shareholding decisions: Fears of expropriation may have much larger consequences in environments with lower investor protection and poorer enforcement of law.

The time series evidence confirms that the direction of causality is, at least partially, from corporate governance to shareholding decisions and not vice versa: In fact, we observe that improvements in corporate governance are followed by an expansion of the investor base. Moreover, the quality of corporate governance can be considered certainly exogenous with respect to small individual investors, who because of free riding problems are unlikely to influence the governance of a company. Our results, therefore, indicate the way to pursue for a company that wishes to expand its investor base and raise new capital: Firms can use corporate governance to attract investors in the same way as they use dividends to attract certain categories of investors which are relatively less taxed, like in Allen et al. (2000).

The implications of our findings also are very important for our understanding of the way investors select their portfolios: while the previous literature, following Kang and Stulz (1997), has pointed out the difference in investment behavior between individual and institutional investors, our results suggest that the key difference may be between investors who can enjoy private benefits or have private information on companies' future plans and investors who do not. It is left to future research to understand whether the participation of

individuals who are connected to the local financial community is good for shareholder value because these individuals can monitor controlling shareholders more effectively, or is bad because they participate in the extraction of private benefits.

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Table 1
Descriptive statistics of investors' portfolios

This table presents mean, median (and in parenthesis standard deviation and interquartile range, respectively) of some characteristics of investors' portfolios.

Variable	Whole Sample		Foreign Individuals		Foreign Company	
No. of Investors	670080		12496		1989	
Number of Positions	1631089		27163		4626	
	Mean	Median	Mean	Median	Mean	Median
Value of position (000' SEK)	2415 (253334)	64 (153)	2087 (48429)	100 (233)	35698 (1028638)	176 (512)
Value of the portfolio (000' SEK)	5972 (1131168)	75 (223)	4752 (88379)	114 (338)	84153 (1601595)	259 (919)
Number of positions in portfolio	2.44 (4.38)	1 (1)	2.18 (4.25)	1 (1)	2.33 (2.99)	1 (1)
Ratio of share of the votes to share of the cash flow rights	0.845 (0.729)	0.769 (0.314)	0.761 (0.517)	0.768 (0.365)	0.738 (0.422)	0.731 (0.332)

Variable	Foreign Financial Company		Swedish Companies		Swedish Financial Company	
No. of Investors	1911		39057		572	
Number of Positions	20262		176412		20442	
	Mean	Median	Mean	Median	Mean	Median
Value of position (000' SEK)	29219 (400473)	736 (4957)	3812 (129540)	141 (329)	93734 (1931883)	2607 (13752)
Value of the portfolio (000' SEK)	320704 (3172053)	5524 (38261)	17704 (513272)	225 (832)	3328563 (37315571)	65707 (391773)
Number of positions in portfolio	10.79 (31)	2 (5)	4.53 (7)	2 (4)	35.16 (72)	20 (30)
Ratio of share of the votes to share of the cash flow rights	0.943 (0.274)	0.922 (0.204)	0.781 (0.459)	0.755 (0.189)	1.064 (0.295)	1.027 (0.499)

Variable	Small Domestic Individuals		Large Domestic Individuals		Swedish Individuals living abroad	
No. of Investors	606692		165		7180	
Number of Positions	1358222		3546		20096	
	Mean	Median	Mean	Median	Mean	Median
Value of position (000' SEK)	105 (795)	44 (83)	38240 (171807)	3681 (8606)	356 (5036)	100 (182)
Value of the portfolio (000' SEK)	402 (11750)	69 (199)	1046 (12436)	41045 (175971)	1046 (12436)	159 (437)
Number of positions in portfolio	2.23 (3.16)	1 (2)	21.49 (48.48)	9 (20)	2.81 (3.41)	2 (2)
Ratio of share of the votes to share of the cash flow rights	0.849 (0.766)	0.765 (0.331)	1.341 (0.873)	1.030 (0.811)	0.890 (0.752)	0.840 (0.318)

Table 2**Panel A: Characteristics of investor base for different categories of firms**

Companies have been classified according to the value of the ratio of control to cash flow rights. The no-distortion companies are the ones for which the principal shareholder's ratio of control rights to cash flow rights is equal to 1. The distortion companies are the ones for which the ratio is larger than 1. The investor base is the average (median) number of investors in each category of firms. We report the result of Wilcoxon test for the difference in medians between the two groups. The number of companies included is 354.

Variable	C/CF=1	C/CF>1	Wilcoxon' Z	p-value
Percentage of firms	60%	40%		
Percentage of total market capitalization	41%	59%		
Percentage of total market capitalization (outside top decile)	58%	42%		
Investor Base:				
Mean	4116	6260		
Median	1476	1102	1.66	0.048
Investor Base outside top decile				
Mean	2768	1887		
Median	1297	908	2.53	0.006

Panel B: Characteristics of different categories of firms

We report characteristics of the median company in distortion vs. non-distortion companies. The results of Wilcoxon test are reported. FREEFLOAT is the logarithm of the firm free float; MKT_CAP is the logarithm of the market capitalization; MKT_BK is the market to book ratio; BASPREAD is the bid-ask spread as a percentage of price; DIVY is company *f*'s dividend yield.

Variables	C/CF=1		C/CF>1		Wilcoxon'Z	p-value
	Median	I. Q. R.	Median	I. Q. R.		
FREEFLOAT	8.798	1.203	8.781	1.251	0.554	0.580
MKT_CAP	8.698	1.130	8.592	1.143	0.098	0.922
MKT_BK	1.507	2.072	1.519	1.260	0.835	0.404
DIVY	0.000	0.033	0.024	0.048	2.540	0.011
LEVERAGE	0.037	0.438	0.135	0.570	1.367	0.173
BASPREAD	0.030	0.059	0.041	0.063	0.094	0.925
% HITECH FIRMS	19.5%		10.1%			

Table 3
Descriptive Statistics

C/CF is the ratio of cash flow to control rights; MKT_CAP is logarithm firm of market capitalization; DIST_FLOAT is the ratio of firm market capitalization to free float; EQSH1 is the equity share of the first shareholder; RHO_P_S is the coefficient of correlation between the stock return of firm f and the weighted return of the other stocks of the portfolio of investor i ; NP is the number of stocks in the portfolio of investor i ; PRIM_LIST is a dummy equal to 1 for companies in primary listings; MINDIST is the distance between the residence of investor i and the closest establishment of company f ; MKT_BK is the market to book ratio; leverage is the ratio of financial liabilities to the sum of shareholders' funds plus financial liabilities; BASPREAD is the bid-ask spread; DIVY is company f 's dividend yield; BETA is the beta coefficient of company f ; STOCKHOLMF is a dummy equal to 1 for firm located in Stockholm; STOCKHOLM is a dummy equal to 1 for investors residing in Stockholm. All firm-year observations are included.

Panel A				
Variable	Mean	StdDev	Minimum	Maximum
C/CF	1.88	3.94	1.00	61.06
EQSH1	0.18	0.12	0.01	0.64
MKT_CAP	8.91	0.96	6.32	11.92
DIST_FLOAT	1.60	1.76	1.00	27.16
RHO_P_S	0.15	0.20	-1.00	1.00
NP	2.26	2.88	1.00	67.00
PRIM_LIST	0.18	0.38	0.00	1.00
MINDIST	5.03	0.86	1.00	6.17
MKT_BK	2.30	2.89	-7.90	23.60
LEVERAGE	0.42	0.93	0.00	10.95
BASPREAD	1.51	2.01	0.01	18.11
BETA	0.84	0.74	-1.25	3.07
DIVY	0.04	0.14	0.00	2.07
STOCKHOLMF	0.53	0.50	0.00	1.00
STOCKHOLM	0.28	0.45	0.00	1.00

PANEL B

The entries are the coefficients of correlation of the main variables.

	C/CF	EQSH1	MKT_CAP	DIST_FLO AT	RHO_P_S	NP	PRIM_LIST	MINDIST	MKT_BK	LEVERAGE	baspread	beta	DIVY	STOCKHO LMF
C/CF	1	-0.21	0.12	0.03	-0.05	0	0.15	0	-0.08	0.03	0.01	-0.07	0.23	0.04
EQSH1	-0.21	1	0.17	0.58	-0.02	0	0.04	-0.07	0.13	0.02	0.25	-0.23	-0.08	0.01
MKT_CAP	0.12	0.17	1	0.12	0.21	0	0.59	-0.17	0.24	0	0.17	-0.19	-0.06	0.13
DIST_FLOAT	0.03	0.58	0.12	1	-0.04	0	0.17	-0.04	0.01	-0.03	0.14	-0.12	-0.01	-0.09
RHO_P_S	-0.05	-0.02	0.21	-0.04	1	0.08	0.16	-0.05	0	-0.07	-0.13	0.23	-0.04	0.05
NP	0	0	0	0	0.08	1	0	-0.02	0	0	0	0	0	0
PRIM_LIST	0.15	0.04	0.59	0.17	0.16	0	1	-0.14	0	0.02	0.07	-0.27	0.02	0.09
MINDIST	0	-0.07	-0.17	-0.04	-0.05	-0.02	-0.14	1	-0.04	0.02	0	0.02	0.02	-0.19
MKT_BK	-0.08	0.13	0.24	0.01	0	0	0	-0.04	1	-0.11	0.03	-0.03	-0.09	0.02
LEVERAGE	0.03	0.02	0	-0.03	-0.07	0	0.02	0.02	-0.11	1	-0.04	-0.11	0.08	0.03
BASPREAD	0.01	0.25	0.17	0.14	-0.13	0	0.07	0	0.03	-0.04	1	-0.26	-0.06	0.02
BETA	-0.07	-0.23	-0.19	-0.12	0.23	0	-0.27	0.02	-0.03	-0.11	-0.26	1	0.01	0.11
DIVY	0.23	-0.08	-0.06	-0.01	-0.04	0	0.02	0.02	-0.09	0.08	-0.06	0.01	1	-0.04
STOCKHOLMF	0.04	0.01	0.13	-0.09	0.05	0	0.09	-0.19	0.02	0.03	0.02	0.11	-0.04	1
STOCKHOLM	0	0	0	0	0.01	0.03	0	-0.4	0	0	0	0	0	0

Table 4

Probit regression for small domestic individual investors

The dependent variable is $Y_{i,f} = 0$ if investor i does not invest in firm f and $Y_{i,f} = 1$ otherwise. The probability of $Y_{i,f} = 0$ is modeled. C/CF is the ratio of control rights to cash flow rights; MKT_CAP is firm market capitalization; DIST_FLOAT is the ratio of firm market capitalization to free float; RHO_P_S is the coefficient of correlation between the stock return of firm f and the weighted return of the other stocks of the portfolio of investor i ; NP is the number of stocks in the portfolio of investor i ; PRIM_LIST is a dummy equal to 1 for companies in the primary listings; MINDIST is the distance between the residence of investor i and the closest establishment of company f ; MKT_BK is the market to book ratio; LEVERAGE is the ratio of financial liabilities to the sum of shareholders' funds plus financial liabilities; BASPREAD is the bid-ask spread; DIVY is company f 's dividend yield; STOCKHOLM F is a dummy equal to 1 for firm located in Stockholm; STOCKHOLM is a dummy equal to 1 for investors who reside in Stockholm. Panel A reports the detailed estimations for the investors who were born on the 3rd day of each month. The number of investors included is 19980. Panel B reports the statistics for parameter estimates and marginal effects for subsamples of investors born in all the days of the month using the full sample of Swedish listed companies. For all variables (except LEVERAGE) all 31 subsamples produces estimates that have the same sign and are significant on 5% level. For LEVERAGE only 11 estimates are significant on 5% level.

Panel A: Estimates for a random subsample investors

Variable	Full Sample				Without top decile of market capitalization companies			
	ESTIMATE	StdError	p-value	Marginal effect	ESTIMATE	StdError	p-value	Marginal effect
Intercept	2.1613	0.0160	<.0001		1.645	0.0268	<.0001	
C/CF	0.4439	0.0063	<.0001	10,60%	0.33	0.0192	<.0001	5.14%
MKT_CAP	-0.1892	0.0037	<.0001	-4,52%	-0.1334	0.005	<.0001	-2.08%
C/CF*MKT_CAP	-0.0587	0.0006	<.0001	-1,40%	-0.0193	0.0012	<.0001	-0.30%
DIST_FLOAT	0.6038	0.0327	<.0001	14,42%	1.5259	0.0467	<.0001	23.78%
C/CF*DIST_FLOAT	0.4958	0.0111	<.0001	11,84%	0.1684	0.0247	<.0001	2.62%
RHO_P_S	-2.2317	0.0089	<.0001	-53,31%	-2.1647	0.0129	<.0001	-33.73%
NP	-0.0417	0.0003	<.0001	-1,00%	-0.0431	0.0004	<.0001	-0.67%
PRIM_LIST	-0.1310	0.0082	<.0001	-3,13%	0.1948	0.0107	<.0001	3.04%
C/CF*PRIM_LIST	0.1266	0.0022	<.0001	3,02%	-0.0162	0.0036	<.0001	-0.25%
MINDIST	0.1001	0.0021	<.0001	2,39%	0.0769	0.0036	<.0001	1.20%
MKT_BK	0.0134	0.0008	<.0001	0,32%	0.0086	0.001	<.0001	0.13%
LEVERAGE	-0.0054	0.0023	0,0162	-0,13%	0.0269	0.0029	<.0001	0.42%
BASPREAD	0.1287	0.0021	<.0001	3,07%	0.0918	0.0022	<.0001	1.43%
BETA	0.0408	0.0031	<.0001	0,97%	0.0851	0.0037	<.0001	1.33%
DIVY	-0.1266	0.0192	<.0001	-3,02%	-0.1753	0.0167	<.0001	-2.73%
STOCKHOLMF	-0.2408	0.0052	<.0001	-5,75%	-0.2206	0.0057	<.0001	-3.44%
STOCKHOLMF*STOCKHOLM	0.0975	0.0059	<.0001	2,33%	0.0834	0.0085	<.0001	1.30%
			Total effect of C/CF=0.4%				Total effect of C/CF=2.85%	
			Log likelihood=-182473.3				Log likelihood=-126945.6	

Panel B: Summary statistics of the estimates for different random subsamples

Variable	Estimate					Marginal effect				
	MEAN	MEDIAN	STD.DEV.	MIN	MAX	MEAN	MEDIAN	STD.DEV.	MIN	MAX
Intercept	2.181	2.182	0.061	2.052	2.317					
C/CF	0.463	0.463	0.020	0.428	0.506	11.18%	11.19%	0.51%	10.28%	12.29%
MKT_CAP	-0.194	-0.194	0.007	-0.210	-0.179	-4.68%	-4.67%	0.18%	-5.07%	-4.33%
C/CF*MKT_CAP	-0.061	-0.061	0.002	-0.066	-0.058	-1.48%	-1.47%	0.06%	-1.61%	-1.39%
DIST_FLOAT	0.512	0.524	0.089	0.275	0.655	12.36%	12.67%	2.13%	6.65%	16.10%
C/CF*DIST_FLOAT	0.603	0.592	0.063	0.496	0.787	14.57%	14.36%	1.54%	11.84%	19.07%
RHO_P_S	-2.149	-2.126	0.054	-2.249	-2.075	-51.90%	-51.59%	1.01%	-53.59%	-50.17%
NP	-0.042	-0.042	0.002	-0.047	-0.037	-1.02%	-1.01%	0.06%	-1.13%	-0.92%
PRIM_LIST	-0.117	-0.118	0.010	-0.136	-0.089	-2.82%	-2.84%	0.24%	-3.29%	-2.11%
C/CF*PRIM_LIST	0.119	0.119	0.005	0.112	0.129	2.87%	2.89%	0.10%	2.67%	3.11%
MINDIST	0.101	0.101	0.002	0.097	0.105	2.45%	2.45%	0.04%	2.37%	2.56%
MKT_BK	0.014	0.015	0.001	0.012	0.017	0.35%	0.36%	0.03%	0.28%	0.42%
LEVERAGE	-0.004	-0.004	0.002	-0.007	0.000	-0.09%	-0.09%	0.04%	-0.16%	-0.01%
BASPREAD	0.123	0.125	0.006	0.113	0.136	2.98%	3.00%	0.14%	2.76%	3.30%
BETA	0.037	0.036	0.007	0.017	0.048	0.89%	0.89%	0.16%	0.41%	1.14%
DIVY	-0.138	-0.143	0.026	-0.185	-0.082	-3.34%	-3.48%	0.64%	-4.48%	-1.95%
STOCKHOLMF	-0.239	-0.239	0.008	-0.254	-0.215	-5.77%	-5.77%	0.16%	-6.05%	-5.28%
STOCKHOLMF*STOCKHOLM	0.102	0.101	0.006	0.093	0.117	2.47%	2.45%	0.12%	2.29%	2.74%
Total effect of C/CF						0.69%	0.66%	0.16%	0.40%	1.05%

Table 5
Probit regression for foreign investors

The dependent variable is $Y_{i,f} = 0$ if investor i does not invest in firm f and $Y_{i,f} = 1$ otherwise. The probability of $Y_{i,f} = 0$ is modeled. C/CF is the ratio of control to cash flow rights; MKT_CAP is firm market capitalization; DIST_FLOAT is the ratio of firm market capitalization to free float; NP is the number of stocks in the portfolio of investor i ; PRIM_LIST is a dummy equal to 1 for companies in primary listings; MKT_BK is the market to book ratio; LEVERAGE is the ratio of financial liabilities to the sum of shareholders' funds plus financial liabilities; BASPREAD is the bid-ask spread; DIVY is company f 's dividend yield; STOCKHOLM F is a dummy equal to 1 for firm located in Stockholm. Data for 12496 foreign individuals and 1911 foreign financial companies were used.

Variable	All foreign Individuals				Foreign financial Institutions			
	ESTIMATE	StdError	p-value	Marginal effect	ESTIMATE	StdError	p-value	Marginal effect
Intercept	4.703	0.0433	<.0001		8.5046	0.0753	<.0001	
C/CF	0.5139	0.0093	<.0001	6.96%	-0.0481	0.0168	0.0043	-0.98%
MKT_CAP	-0.4151	0.0048	<.0001	-26.56%	-0.7435	0.008	<.0001	-71.58%
C/CF*MKT_CAP	-0.00546	0.00011	<.0001	-0.67%	0.0057	0.0018	0.0015	1.06%
DIST_FLOAT	0.1765	0.0503	0.0004	0.19%	0.7851	0.0606	<.0001	1.26%
C/CF*DIST_FLOAT	0.3345	0.0339	<.0001	0.64%	-0.0508	0.0282	0.0717	-0.15%
NP	-0.0268	0.0002	<.0001	-0.43%	-0.0169	0.0001	<.0001	-2.03%
PRIM_LIST	-0.2083	0.0109	<.0001	-0.27%	-0.2087	0.0162	<.0001	-0.40%
C/CF*PRIM_LIST	0.0482	0.0038	<.0001	0.19%	0.0188	0.0056	0.0008	0.11%
MKT_BK	0.0138	0.0009	<.0001	0.23%	0.0068	0.0015	<.0001	0.17%
LEVERAGE	0.0708	0.0047	<.0001	0.22%	0.0391	0.0064	<.0001	0.18%
BASPREAD	0.1226	0.003	<.0001	1.33%	0.0782	0.0028	<.0001	1.28%
BETA	-0.3194	0.0041	<.0001	-1.93%	-0.3172	0.0068	<.0001	-2.89%
DIVY	0.3786	0.0333	<.0001	0.11%	0.1367	0.0473	0.0039	0.06%
STOCKHOLMF	-0.1233	0.0062	<.0001	-0.47%	-0.0797	0.0096	<.0001	-0.46%
Total Effect of C/CF=		1.09%				8.50%		
Log Likelihood=		-115615				-48308.4		

Table 6

Probit regression for domestic financial institutions and large domestic individual investors

Swedish large investors are investors who hold more than 10% of the control rights in at least one company listed in the Stockholm Stock Exchange. The dependent variable is $Y_{i,f} = 0$ if investor i does not invest in firm f and $Y_{i,f} = 1$ otherwise. The probability of $Y_{i,f} = 0$ is modeled. C/CF is the ratio of control to cash flow rights; MKT_CAP is firm market capitalization; DIST_FLOAT is the ratio of firm market capitalization to free float; NP is the number of stocks in the portfolio of investor i ; PRIM_LIST is a dummy equal to 1 for companies in primary listings; MKT_BK is the market to book ratio; LEVERAGE is the ratio of financial liabilities to the sum of shareholders' funds plus financial liabilities; BASPREAD is the bid-ask spread; DIVY is company f 's dividend yield; STOCKHOLM F is a dummy equal to 1 for firm located in Stockholm. The observations refer to 572 Swedish financial institutions and 165 large Swedish investors, respectively.

Variable	Swedish Financial Institutions				Swedish Large Investors			
	ESTIMATE	StdError	p-value	Marginal effect	ESTIMATE	StdError	p-value	Marginal effect
Intercept	11.483	0.0999	<.0001		-0.1086	0.4164	0.7942	
C/CF	-0.1851	0.0198	<.0001	-0.91%	0.1135	0.1073	0.2902	0.14%
MKT_CAP	-0.9972	0.0107	<.0001	-23.12%	0.1762	0.0494	0.0004	0.22%
C/CF*MKT_CAP	0.0179	0.0022	<.0001	0.80%	-0.0194	0.0141	0.1697	-0.02%
DIST_FLOAT	0.8877	0.0799	<.0001	0.34%	-0.0518	0.3544	0.8837	-0.06%
C/CF*DIST_FLOAT	0.1271	0.0433	0.0033	0.09%	0.182	0.2346	0.4378	0.23%
RHO_P_S					-1.3124	0.3601	0.0003	-1.64%
NP	-0.0122	0.0001	<.0001	-0.35%	-0.0043	0.0017	0.0136	-0.01%
PRIM_LIST	-0.1281	0.0205	<.0001	-0.06%	0.224	0.1467	0.1268	0.28%
C/CF*PRIM_LIST	0.0069	0.0072	0.3353	0.01%	0.0328	0.0432	0.4476	0.04%
MINDIST					0.2059	0.0133	<.0001	0.26%
MKT_BK	0.0054	0.002	0.0076	0.03%	-0.0059	0.0102	0.5641	-0.01%
LEVERAGE	-0.0146	0.0072	0.0433	-0.02%	0.013	0.0334	0.6969	0.02%
BASPREAD	0.0294	0.0026	<.0001	0.12%	-0.02	0.0139	0.1506	-0.03%
BETA	-0.2646	0.0087	<.0001	-0.58%	0.1053	0.0404	0.0091	0.13%
DIVY	0.0352	0.0579	0.5429	0.00%	0.0144	0.2334	0.9509	0.02%
STOCKHOLMF	-0.0985	0.0125	<.0001	-0.14%	0.3537	0.0892	<.0001	0.44%
STOCKHOLMF*STOCKHOLM					-0.0949	0.0915	0.3351	-0.12%
Total Effect of C/CF				6.20%				-0.06%
Log Likelihood				-28870.4				-1043.7

Table 7**Probit regression for domestic non-financial companies**

The domestic non-financial companies with control are the ones which hold more than 10% of the control rights in at least one company listed in the Stockholm Stock Exchange. The remaining companies are classified as companies without control. The dependent variable is $Y_{i,f} = 0$, if investor i , does not invest in firm f and $Y_{i,f} = 1$ otherwise. The probability of $Y_{i,f} = 0$ is modeled. C/CF is the ratio of control to cash flow rights; MKT_CAP is firm market capitalization; DIST_FLOAT is the ratio of firm market capitalization to free float; NP is the number of stocks in the portfolio of investor i ; PRIM_LIST is a dummy equal to 1 for companies in primary listings; MKT_BK is the market to book ratio; LEVERAGE is the ratio of financial liabilities to the sum of shareholders' funds plus financial liabilities; BASPREAD is the bid-ask spread; DIVY is company f 's dividend yield; STOCKHOLM F is a dummy equal to 1 for firm located in Stockholm. The two random subsamples in Panel A refer to 19458 and 19501 companies. There are 100 companies with control in Panel B.

Panel A

	Domestic non-financial companies without control (Random sample 1)				Domestic non-financial companies without control (Random sample 2)			
	ESTIMATE	StdError	p-value	Marginal effect	ESTIMATE	StdError	p-value	Marginal effect
Intercept	15.6201	0.0337	<.0001		5.5638	0.0338	<.0001	
C/CF	0.3269	0.0084	<.0001	4.30%	0.3038	0.0084	<.0001	4.18%
MKT_CAP	-0.4557	0.0033	<.0001	-28.32%	-0.4546	0.0034	<.0001	-29.57%
C/CF*MKT_CAP	-0.0375	0.0008	<.0001	-4.49%	-0.0343	0.0008	<.0001	-4.30%
DIST_FLOAT	0.5693	0.0345	<.0001	0.59%	0.6602	0.0342	<.0001	0.71%
C/CF*DIST_FLOAT	0.2975	0.0221	<.0001	0.55%	0.2282	0.0215	<.0001	0.44%
NP	-0.0478	0.0002	<.0001	-0.75%	-0.0439	0.0002	<.0001	-0.72%
PRIM_LIST	-0.1988	0.007	<.0001	-0.25%	-0.1992	0.0071	<.0001	-0.26%
C/CF*PRIM_LIST	0.0375	0.0025	<.0001	0.14%	0.0351	0.0025	<.0001	0.14%
MINDIST	0.0614	0.0017	<.0001	2.15%	0.0648	0.0017	<.0001	2.38%
MKT_BK	0.0105	0.0006	<.0001	0.17%	0.011	0.0006	<.0001	0.18%
LEVERAGE	0.0265	0.0025	<.0001	0.08%	0.0268	0.0025	<.0001	0.08%
BASPREAD	0.1113	0.0017	<.0001	1.18%	0.1073	0.0017	<.0001	1.19%
BETA	-0.2275	0.0028	<.0001	-1.34%	-0.2271	0.0028	<.0001	-1.40%
DIVY	-0.0804	0.0171	<.0001	-0.02%	-0.1118	0.0169	<.0001	-0.03%
STOCKHOLMF	-0.0483	0.0043	<.0001	-0.18%	-0.0583	0.0043	<.0001	-0.23%
STOCKHOLMF*STOCKHOLM	0.0346	0.0051	<.0001	0.04%	0.0477	0.0052	<.0001	0.05%
LogLikelihood	-265323.0574				-258541.6445			
TOTAL EFFECT OF C/CF	-35.64279%				-34.07122%			

Panel B

Domestic non-financial companies with control				
	ESTIMATE	StdError	p-value	Marginal effect
Intercept	6.1038	0.3013	<.0001	
C/CF	-0.076	0.0639	0.2345	-0.19%
MKT_CAP	-0.4382	0.0316	<.0001	-5.24%
C/CF*MKT_CAP	0.0068	0.0071	0.3344	0.16%
DIST_FLOAT	0.2965	0.2398	0.2163	0.06%
C/CF*DIST_FLOAT	0.1532	0.1314	0.2437	0.05%
NP	-0.0238	0.0007	<.0001	-0.07%
PRIM_LIST	0.0354	0.0721	0.6228	0.01%
C/CF*PRIM_LIST	-0.0215	0.0253	0.3964	-0.02%
MINDIST	0.0917	0.0155	<.0001	0.62%
MKT_BK	-0.0013	0.0063	0.8326	0.00%
LEVERAGE	0.025	0.0253	0.3227	0.01%
BASPREAD	0.0164	0.0096	0.0893	0.03%
BETA	-0.1133	0.0282	<.0001	-0.13%
DIVY	0.2265	0.2108	0.2825	0.01%
STOCKHOLMF	-0.0394	0.0496	0.4271	-0.03%
STOCKHOLMF*STOCKHOLM	0.1441	0.0547	0.0085	0.03%
LogLikelihood	-2386.807			
TOTAL EFFECT OF C/CF	1.21%			

Table 8
The shareholdings of Swedish Board Members

The dependent variable is $Y_{i,f} = 0$ if investor i does not invest in firm f and $Y_{i,f} = 1$ otherwise. The probability of $Y_{i,f} = 0$ is modeled. D_Board is a dummy variable equal to 1 if individual i is a board member and equal to zero otherwise. The column D_Board shows the value of the dummy that corresponds to the estimated coefficient to the right. C/CF is the ratio of control to cash flow rights; MKT_CAP is firm market capitalization; DIST_FLOAT is the ratio of firm market capitalization to free float; NP is the number of stocks in the portfolio of investor i ; PRIM_LIST is a dummy equal to 1 for companies in primary listings; MKT_BK is the market to book ratio; LEVERAGE is the ratio of financial liabilities to the sum of shareholders' funds plus financial liabilities; BASPREAD is the bid-ask spread; DIVY is company f 's dividend yield; STOCKHOLM F is a dummy equal to 1 for firm located in Stockholm. The observations refer to 19980 investors in total, out of whom 4134 are board members.

Variable	D_Board	ESTIMATE	StdError	p-value	Marginal Effect
Intercept		2.0361	0.0354	<.0001	
C/CF*D_Board	0	0.5883	0.007	<.0001	16.71%
	1	0.3495	0.0125	<.0001	9.93%
MKT_CAP		-0.216	0.0035	<.0001	-6.13%
C/CF*MKT_CAP*D_Board	0	-0.0539	0.0007	<.0001	-1.53%
	1	-0.0506	0.0013	<.0001	-1.44%
DIST_FLOAT		0.2998	0.0075	<.0001	8.52%
C/CF*DIST_FLOAT*D_Board	0	-0.062	0.0024	<.0001	-1.76%
	1	-0.0657	0.0022	<.0001	-1.87%
RHO_P_S		-2.1198	0.0091	<.0001	-60.21%
NP		-0.0416	0.0003	<.0001	-1.18%
PRIM_LIST		-0.1117	0.0076	<.0001	-3.17%
C/CF*PRIM_LIST*D_Board	0	0.156	0.0021	<.0001	4.43%
	1	0.1603	0.0034	<.0001	4.55%
MINDIST		0.0974	0.0021	<.0001	2.77%
MKT_BK		0.0189	0.0008	<.0001	0.54%
LEVERAGE		-0.0048	0.0022	0.0298	-0.14%
BASPREAD		0.145	0.0021	<.0001	4.12%
BETA		0.0204	0.0031	<.0001	0.58%
DIVY		-0.0858	0.0183	<.0001	-2.44%
STOCKHOLMF		-0.2341	0.0051	<.0001	-6.65%
STOCKHOLMF*STOCKHOLM		0.0943	0.0059	<.0001	2.68%
LogLikelihood		-180441			
Total Marginal effect of C/CF	D_Board	0		1.03%	
	D_Board	1		-5.06%	

Table 9

Portfolio shares of different classes of investors.

This table reports portfolio shares of different classes of investors in different size portfolios distinguishing between companies with and without distortion. We also report shares of corresponding market and free float portfolios.

		Small Domestic Individual investors			Large Domestic Individuals	Swedish Financial Companies	Swedish Companies	Foreign Individual Investors	Foreign Financial Companies	Market Portfolio	Free float Portfolio
		All	Board members	Non –Board members							
Smallest Q1											
C/CF=1		57.68%	55.62%	57.86%	43.41%	57.65%	57.94%	70.76%	66.59%	58.30%	59.04%
C/CF>1		42.32%	44.38%	42.14%	56.59%	42.35%	42.06%	29.24%	33.41%	41.70%	40.96%
Q2											
C/CF=1		70.19%	64.99%	70.50%	45.97%	69.17%	72.58%	69.00%	69.48%	67.23%	67.38%
C/CF>1		29.81%	35.01%	29.50%	54.03%	30.83%	27.42%	31.00%	30.52%	32.77%	32.62%
Q3											
C/CF=1		57.56%	55.82%	62.81%	30.25%	64.11%	58.64%	75.22%	77.05%	66.78%	71.31%
C/CF>1		42.44%	44.18%	37.19%	69.75%	35.89%	41.36%	24.78%	22.95%	33.22%	28.69%
Q4											
C/CF=1		70.75%	69.16%	71.63%	70.52%	71.21%	63.56%	72.03%	73.37%	64.85%	68.47%
C/CF>1		29.25%	30.84%	28.37%	29.48%	28.79%	36.44%	27.97%	26.63%	35.15%	31.53%
Largest Q5											
C/CF=1		22.69%	18.09%	28.89%	54.33%	38.37%	37.37%	27.06%	34.75%	31.97%	32.85%
C/CF>1		77.31%	81.91%	71.11%	45.67%	61.63%	62.63%	72.94%	65.25%	68.03%	67.15%
Top quintile no blue chips											
C/CF=1		35.52%	30.57%	42.47%	68.91%	44.45%	42.35%	43.97%	42.54%	40.50%	44.97%
C/CF>1		64.48%	69.43%	57.53%	31.09%	55.55%	57.65%	56.03%	57.46%	59.50%	55.03%
Blue chips											
C/CF=1		23.96%	12.56%	23.24%	44.88%	35.28%	39.25%	23.65%	36.59%	27.35%	25.85%
C/CF>1		76.04%	87.44%	76.76%	55.12%	64.72%	60.75%	76.35%	63.41%	72.65%	74.15%

Figure 1. Investors in the Swedish Stock Market

This figure shows the percentages of the Swedish stock market capitalization held by different categories of investors. The Swedish financial institutions include the Swedish branches of foreign financial institutions.

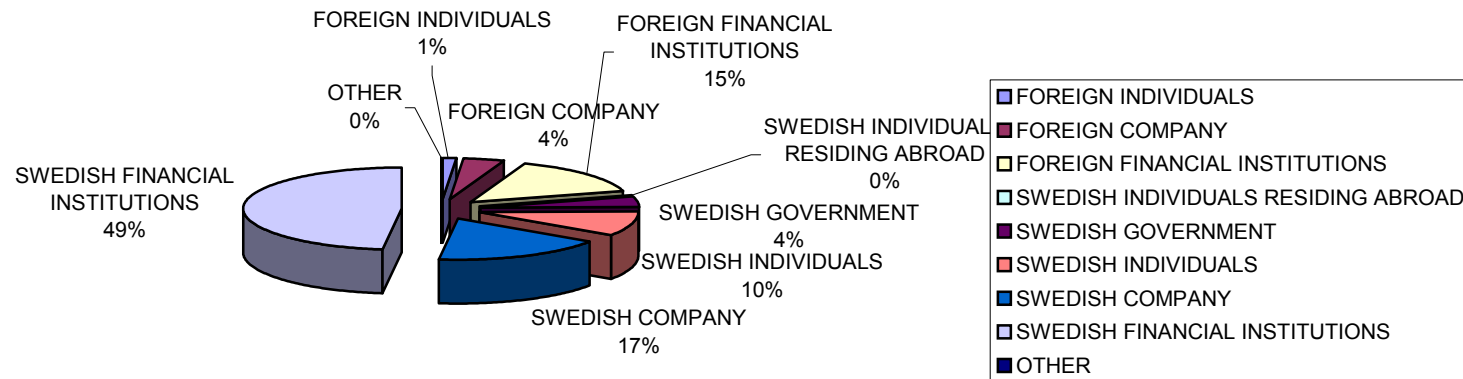


Figure 2. Distribution of the marginal effect of the control to cash flow rights ratio on the probability of investing

The random subsamples of small domestic individual investors are constructed using the day of the month in which investors were born. The estimates of the marginal effect were obtained using a probit model analogous to the one used in Table 4

