

# Which Investors Fear Expropriation?

## Evidence from Investors' Stock Picking

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**Abstract.** Using a data set that provides unprecedented details on the stockholders of Swedish listed companies, we analyze whether investors take into account corporate governance when they select stocks. We identify the companies where shareholders' value is less likely to be maximized by using the wedge between the control and cash flow rights of the principal shareholder. After controlling for the supply effect via free float and firm size, we find that all the categories of investors (domestic and foreign; institutional and small individual investors) who generally enjoy only security benefits are reluctant to invest in companies where the ratio of control to cash flow rights is larger. 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.

**Keywords:** private benefits; security benefits; investor base; corporate governance; portfolio selection

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## 1. Introduction

Extraction of private benefits perpetrated by companies' insiders, empire-building objectives that are not in line with the maximization of shareholders' value, and outright expropriation of minority shareholders are well-known sources of distortions in corporate finance. A growing body of theoretical and empirical research shows that, to the extent that firm managers and controlling shareholders are not expected to maximize shareholder value, corporate valuation decreases, firm cost of funds increases, and firm investment is inefficiently constrained (see La Porta et al., 1997 and 2002). Ultimately, though, investors are assumed to pay for what they get and outsiders provide funds as long as their participation constraint is satisfied (Shleifer and Wolfenzon, 2002).

It is well known, however, that investors select stocks not only on the basis of their risk and return but also based on firm characteristics, such as the growth prospects and the familiarity they have with the business of the firm (Huberman, 2001; Kang and Stulz, 1997; Falkenstein, 1996). Other firm characteristics, like corporate governance, may matter. In particular, 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 participation or strong connections to management can enjoy.<sup>1</sup>

In this paper, we show that fears of expropriation in companies where the extraction of private benefits is expected to be greater can 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. As Merton (1987) has pointed out, their stocks may be undervalued, not only because outside shareholders anticipate expropriation, as Shleifer and Wolfenzon (2002) show, but also because of limited risk sharing.<sup>2</sup>

We explore the effects of corporate governance on shareholding decisions and firm investor base using a comprehensive data set that provides information on almost

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<sup>1</sup> 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.

<sup>2</sup> See Giannetti (2002) for a model that formalizes the relation between level of investor protection, firm investor base and stock market capitalization.

all the stockholders of companies listed on the Swedish stock markets. We investigate which 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), who show how dual-class shares, pyramids and cross-shareholdings allow the principal shareholder to enhance its control. Thanks to these control-enhancing mechanisms, the share of the votes controlled by the principal shareholder may be a great deal larger than the share of cash flow rights the principal shareholder has. The wedge between control and cash flow rights 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 controlling shareholder is directly involved in management or can influence managers' policies.<sup>3</sup> In fact, if their cash flow rights are low, the controlling shareholders do not fully internalize the negative consequences in terms of lower cash flows when they extract private benefits either by choosing non-profit-maximizing investment or by outright stealing.<sup>4</sup>

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 the company in different ways. When the wedge between control and 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 wedge between the principal shareholder's control and 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

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<sup>3</sup> Faccio and Lang (2002) find that this is the case in at least 70% of Swedish companies.

controlling shareholder. In either case, the quality of corporate governance affects differently insiders and outsiders.

But why would any investors avoid companies with high control relative 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.

There also may exist 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) shows 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 may be affected negatively during downturns (Cochrane, 1999). This may happen even if the distortions due to bad corporate governance are correctly priced.<sup>5</sup>

Moreover, from the behavioral finance literature (see, for instance, Odean, 1998) we know that individual investors do not like to have regrets. Such investors might avoid the stocks of companies with bad corporate governance due to fear of the increased likelihood of events such as transfer of control out of the market or non-profit-maximizing acquisitions.<sup>6</sup>

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<sup>4</sup> This seems to be an important source of distortion in Sweden: Using Swedish data, Cronqvist and Nilsson (2002) indeed find that the stocks of Swedish companies with a larger wedge between control and cash flow rights are more undervalued.

<sup>5</sup> This is the case if marginal investors in these companies are wealthy and well diversified.

<sup>6</sup> 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.

Alternatively, 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.

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. These findings 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 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.<sup>7</sup> Using their records, we obtained information on most of the shareholders of the 354 Swedish listed companies as of July 29, 2001.<sup>8</sup> 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.

The Swedish stock markets represent an unique environment to analyze corporate governance and investor stock picking not only because of the uniqueness of the information available on shareholdings, but also for the high cross-firm variation in ownership structure and the lack of regulation on shareholdings that may affect shareholding decisions. In fact, as of early nineties there are no restrictions to foreign ownership and the only restriction on local financial institutions is that they cannot exercise more than 5% of the voting rights (but no restriction exists on the cash flow rights).

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 and custodian banks but

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<sup>7</sup> For further information on VPC, see [www.vpc.se](http://www.vpc.se).

<sup>8</sup> We have VPC records since 1995. Although our main analysis focuses on the July 2001 sample, we use the time-series variability of the observations to check the robustness of our results in subsection 5.2.

also allows the shares held by family members and other closely related owners to be grouped in a single record.<sup>9</sup> This allows the identification of controlling groups and the relation of family members to the family head.<sup>10</sup> 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., 2000 and b 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,<sup>11</sup> 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.

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<sup>9</sup> See Sundin and Sundqvist (1985-2001) for a detailed description of the methodology.

<sup>10</sup> 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 *Ägarservice* 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.

## 2.2 Control structure and investors' holdings

To be able to evaluate whether the stockholders who enjoy only security benefits are influenced by the fear of expropriation, we need to measure the insiders' incentives to extract private benefits and to pursue objectives that conflict with the company's maximization of future cash flow. Following the previous literature (Bebchuk et al., 1999), we assume that these incentives correlate positively with the wedge between control and 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.

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 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 wedge between cash flow and control 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. 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).

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<sup>11</sup> The foreign financial institutions with branches in Sweden are quite few (we counted fewer than 10)



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.

We use the ratio of control to cash flow rights (for instance, in the case of Custos above 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 1 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. 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.

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but are very large investors in the Swedish stock market.

Figure 2 shows a few characteristics of companies in the Swedish stock market. Although most of the companies have a ratio of control to cash flow rights equal to 1, the companies for which the ratio of control to cash flow rights is larger than 1 represent more than half of the stock market capitalization. This is in accordance with Claessens et al. (2000a) and Gompers et al. (2003), who find that larger companies have generally worse corporate governance. We find 71 controlling shareholders with more control than cash flow rights: they control on average almost 35 percent of the votes, but own only 18 percent of the equity.

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. Swedish individuals and Swedish individuals living abroad are the investors who have a higher control to cash flow rights ratio. The median number of positions in the portfolio of domestic individual investors is only 1. In contrast to the previous literature, our data set also allows us to study the behavior of very small domestic individual investors and to make comparisons with larger domestic individual investors. 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.

Panel A of Table 2 exhibits preliminary empirical evidence on the effects of the expected extraction of private benefits on firms' investor base: the companies with high distortion (ratio of control to cash flow rights is between 1 and 4) have a smaller investor base, although they have on average a larger stock market capitalization than the companies with no distortion.

Panel B of Table 2 shows the portfolio shares held by different classes of investors in companies that differ in the level of distortion. It is difficult to see a clear pattern because different categories of firms differ significantly in the fraction of stock market capitalization they represent. 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, of whom 71 are the controlling shareholders with more control than cash flow rights, mentioned above. It is evident that these large investors invest more dramatically than any other type of investor in companies where the principal shareholder has a high control to cash flow rights. In the econometric analysis, we exclude the 71 controlling shareholders and analyze the portfolio decisions of the remaining large domestic individual investors, to see whether this finding is still present after taking into account the ownership structure of closely held firms.

Of course, there are other firm and investor characteristics that can influence the decision to invest in a company and its investor base. To take this into account, 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 Stockholm Stock Exchange, and with accounting variables from *Market Manager*.<sup>12</sup> This data set provides information on the individuals who belong to boards of Swedish listed and major unlisted companies. We also will use this information to analyze the behavior of individual investors.

In the next section, we design a methodology to control for other possible determinants of a company's investor base before drawing conclusions on investors' fears of expropriation.

### **3. Methodology and specification**

According to the capital asset pricing model, investors should hold the market portfolio. However, it is well known that this does not happen in reality. Investors tend to underdiversify their portfolios and hold stocks of very few firms.<sup>13</sup> In our sample, for instance, 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

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<sup>12</sup> This data company collects balance sheet information for Swedish companies. The last year available is 2000.

<sup>13</sup> See Guiso et al. (2001) for references on this point.

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 the cost of a given amount of equity also 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).<sup>14</sup>

Given these considerations, we design a methodology to understand how shareholders select the firm in which to invest. This in turn determines the number of shareholders of a firm. 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 ( $Y_{i,f} = 0$ ). Firm and individual characteristics may affect this choice that can be modeled as the probability that investor  $i$  buys stocks of firm  $f$ . 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 where the wedge between cash flow rights and control rights is larger: If investors participating in the stock market choose randomly among firms that differ in their corporate governance, the probability that investor  $i$  invests in firm  $f$  should not be affected by the ratio of control to cash flow rights.

We model 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  $\Phi$  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,  $X_{i,f}$ , for which we need to control before drawing any conclusions about the fact that portfolio investors avoid buying stocks of firms where the controlling shareholder has fewer monetary incentives.

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

The estimate of the unknown parameters,  $\beta'$ , 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  $\phi$  is the density function associated with  $\Phi$ .

Modeling the choice whether to buy shares of firm  $f$  with a probit model also involves some assumptions on the error term structure. In particular, we take into account that investors' choices to buy shares in firm  $f$  and  $f'$  are not independent by admitting that the error terms can be correlated for the observations referring to the same investor. The standard errors we present are White-corrected standard errors that allow inference also in the presence of heteroskedasticity.

We also control for other variables that summarize the return structure of investors' portfolios. In this way, we attempt to control for choices influenced by the other stocks an investor holds and the fit of a company's shares to the overall portfolio of the investor.

There is support for the hypothesis that portfolio investors are discouraged from investing in firms where they expect a higher extraction of private benefits only if the wedge between control and cash flow rights increases the probability that investor  $i$  does not buy shares of firm  $f$  (i.e.  $Y_{i,f} = 0$ ), after controlling for other possible determinants of this probability.

The control variables we use 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. As shown by Pinkowitz, Stulz and Williamson (2001), this may be very relevant 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.

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 indistinguishable,<sup>15</sup> 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 control 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  $f$ .

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

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 or small investors, are expected to hold higher beta stocks to be exposed to the market risk. In this context, this variable also help 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.<sup>16</sup> 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 the first shareholders are relatively more aligned with the outside shareholders<sup>17</sup> 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 show 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. Like the previous literature we analyze the following subsamples: domestic individual investor, financial institutions, non-financial corporations, foreign financial institutions, and foreign individual investors. In addition, 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).

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<sup>16</sup> We also tried other specifications: In some of the regressions, we included a dummy for firms in high-tech sectors, which might have become especially popular among investors during the high-tech bubble. However, it did not affect the results and was mostly not significant. We also 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.

<sup>17</sup> Claessens et al. (2002) provide evidence on the incentive and entrenchment effects of large shareholdings.



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 and present summary statistics of the estimated parameters for all the random subsamples.

#### **4. Results**

The results are shown in Tables 4 to 8. We estimate the equation of interest for the whole sample of companies and for a subsample that excludes the companies in the largest decile of market capitalization. We present both estimates 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 other random subsamples are presented in Panel B of Table 4. Since results are qualitatively 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 rights relative to the 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 3 shows the distribution of the marginal effect of the control to cash flow rights ratio for different random subsamples.

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 for these companies. Moreover, the negative effect of the wedge between control and cash flow rights on the probability of buying the shares of a company is more pronounced for

small 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.

Obviously, 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, instead of being held by large blockholders. 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. 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 wedge between cash flow and control 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%.

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.

The diversification motive does not seem to be important for the selection of the stocks to hold in the portfolio. Instead, small domestic individual investors seem to select stocks whose returns are highly correlated with their other stocks.<sup>18</sup> This is not completely surprising because individual investors rarely hold diversified portfolios as confirmed by the fact that they hold stocks of very few firms. However, they do not seem to buy stocks just to be exposed to market risk, as they are less likely to buy stocks of firms with a high beta. This is not surprising because their other sources of income may be highly correlated with the return of the market portfolio.

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

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<sup>18</sup> 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 firm  $f$  only. This implies that RHO\_P\_S may have a high explanatory power just because many shareholders invest in a firm only. 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.

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 estimated 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 invest in 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 the 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 finds 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 wedge between control and 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 Swedish 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 the best clients of Swedish banks. 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 includes all 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.

## **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 announced<sup>19</sup> 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).<sup>20</sup> 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.<sup>21</sup>

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 risk<sup>22</sup> (Mitton, 2002), 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.

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 or major unlisted 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

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<sup>19</sup> This explanation would be in accordance to the findings of Choe, Kho and Stulz (2000), who show that Korean domestic investors are favored by private information when they trade.

<sup>20</sup> 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.

<sup>21</sup> Grinblatt and Keloharju (2000) find that foreign investors are more sophisticated than domestic investors using Finnish data.

<sup>22</sup> Unfortunately, we cannot verify this easily with our data because the year 2001, to which our observations refer, was preceded by a prolonged expansion.

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.<sup>23</sup> 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. This is true even after controlling for the number of positions in the portfolio and the amount of wealth invested in stocks.<sup>24</sup> Therefore, board members surely have a higher turnover and a shorter horizon

<sup>23</sup> In this random subsample there are 4134 individuals who are board members.

<sup>24</sup> 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), age, percent of holdings held via broker, number of stocks in the portfolio and a board dummy that takes value 1 if the investor is currently board member, and 0 otherwise. 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 and well-diversified dummy (takes value 1 if the number of positions is greater than 3, and 0 otherwise):

$$\begin{aligned} \text{NCHANGE} = & -1.925 + 0.088 * \text{BOARD\_DUMMY} + 0.234 * \text{NP} - 0.001 * \text{NP}^2 + \\ & (-71.30) \quad (7.86) \quad (101.80) \quad (-11.40) \\ & + 0.175 * \text{RATIO\_BROKER} + 0.902 * \text{LOG}(\text{PORTFOLIO}) - 0.113 * \text{LOG}(\text{PORTFOLIO})^2 \\ & (85.91) \quad (68.38) \quad (-69.95) \\ & + 0.007 * \text{AGE} - 0.911\text{E-}4 * \text{AGE}^2 + 0.144 * \text{BOARD\_DUMMY} * \text{DIVERSIF\_DUMMY} \\ & (32.28) \quad (-41.62) \quad (12.07) \\ & + 0.067 * \text{BOARD\_DUMMY} * \text{TOPDECILE\_DUMMY} - 0.002 * \text{BOARD\_DUMMY} * \text{AGE} \\ & (4.60) \quad (7.49) \quad (\text{AdjR}^2=34.04\%) \end{aligned}$$

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



when they buy stocks. Very likely, they trade more because they are able to exploit news that has not yet been incorporated in the market price.

## 5.2 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. According to our interpretation of the empirical evidence, if corporate governance indeed matters for stock selection, 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. In fact, investors who enjoy only security benefits should become more inclined to buy stocks of firms whose corporate governance improved.

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,<sup>25</sup> 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 with that of 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

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<sup>25</sup> See, for instance, Morck et al. (1988).

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: 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.

## **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, the corporate governance can adversely affect the investor base of a company, and negatively influence stock valuation and the cost of funds, as Merton (1987) has shown.

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 wedge between cash flow and control 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. This indicates the way to pursue for a company that wishes to expand its investor base: Firms can use corporate governance to attract investors in the same way as use dividends to attract certain classes of investors which are relatively less taxed, like in Allen et al. (2000). It remains to be explored, however, whether the causality can run also in the other direction: we could observe that financial institutions and foreign investors invest in companies with better corporate governance, because to some extent they lobby and obtain better corporate governance.

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 wedge 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 are 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		Foreign Financial Company		Foreign Government	
No. of Investors	670080		12496		1989		1911		6	
Number of Positions	1631089		27163		4626		20262		103	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Value of position (000' SEK)	2415 (253334)	64 (153)	2087 (48429)	100 (233)	35698 (1028638)	176 (512)	29219 (400473)	736 (4957)	49437 (111357)	5838 (52345)
Value of the portfolio (000' SEK)	5972 (1131168)	75 (223)	4752 (88379)	114 (338)	84153 (1601595)	259 (919)	320704 (3172053)	5524 (38261)	848663 (1307520)	375757 (875924)
Number of positions in portfolio	2.44 (4.38)	1 (1)	2.18 (4.25)	1 (1)	2.33 (2.99)	1 (1)	10.79 (30.55)	2 (5)	17.17 (13.17)	17 (25)
Ratio of voting rights to cash flow rights	4.74 (15.84)	1 (0)	3.50 (14.12)	1 (0)	3.37 (14.12)	1 (0)	3.37 (12.58)	1 (0)	6.31 (19.38)	1 (5)

Variable	Domestic Individuals		Swedish Individuals living abroad		Swedish Companies		Swedish Financial Company		Swedish Government	
Investors	606857		7180		39057		572		12	
N Positions	1361768		20096		176412		20442		217	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Value of position (000' SEK)	265 (39675)	57 (126)	356 (5036)	100 (182)	3812 (129540)	141 (329)	93734 (1931883)	2607 (13752)	749410 (8267446)	1589 (4365)
Value of the portfolio (000' SEK)	645 (85702)	69 (199)	1046 (12436)	159 (437)	17704 (513272)	225 (832)	3328563 (37315571)	65707 (391773)	13551835 (36165053)	88676 (1758940)
Number of positions in portfolio	2.25 (2.83)	1 (1)	2.81 (3.41)	2 (2)	4.53 (7.16)	2 (4)	35.16 (71.52)	20 (30)	18.17 (17.08)	14.5 (32)
Ratio of voting rights to cash flow rights	4.92 (16.11)	1 (0)	5.98 (18.29)	1 (0)	3.80 (14.46)	1 (0)	2.74 (9.81)	1 (0)	4.31 (15.44)	1 (0)

**Table 2**  
**Panel A**

**Characteristics of different categories of firms**

Companies have been classified according to the level of the ratio of control to cash flow rights (distortion). 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 high distortion companies are the ones for which this ratio is larger than 1 and less than or equal to 4, which is approximately equal to the 90<sup>th</sup> percentile of the distribution in the sample. The very high distortion companies are the ones for which the ratio is larger than 4. The investor base is the average (median in parentheses) number of investors in each category of firms.

	Distortion		
	No	High	Very High
Percentage of firms	60%	34%	6%
Percentage of market capitalization	41%	34%	26%
Investor base	4116	4048	19216
	(1476)	(9895)	(60250)

**Panel B**

**Portfolio shares of different categories of investors**

The entries of this table are the aggregate portfolio shares of different classes of investors (percentage of a given category of investors investing in firms of a given type, in parentheses). Aggregate portfolio shares have been calculated by summing the investment in each category of firms for all the investors of a given type and dividing it by the sum of their holdings of listed companies. The category "Others" primarily includes Swedish and foreign governments.

	Distortion		
	No	High	Very High
Foreign Individuals	31.66%	38.74%	29.60%
	(54%)	(23%)	(23%)
Foreign Company	49.63%	5.25%	45.12%
	(53%)	(22%)	(24%)
Foreign Financial Institutions	39.80%	34.16%	26.04%
	(57%)	(31%)	(12%)
Swedish Individuals living abroad	29.86%	43.56%	26.58%
	(47%)	(31%)	(22%)
Domestic Individuals	30.77%	49.96%	19.28%
	(49%)	(27%)	(23%)
of which			
small investors	36.00%	36.47%	27.53%
	(48%)	(40%)	(13%)
large investors	20.30%	76.91%	2.78%
	(50%)	(27%)	(23%)
Domestic Company	39.11%	34.56%	26.34%
	(52%)	(30%)	(18%)
Domestic Financial Institutions	40.25%	31.68%	28.07%
	(57%)	(33%)	(9%)
Others	76.59%	21.96%	1.45%
	(49%)	(37%)	(13%)



**Table 3**  
**Descriptive Statistics**

C/CF is the ratio of cash flow to control rights; MKT\_CAP is firm 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 of the portfolio of investor  $i$ ; tax is a dummy equal to 1 for companies subject to wealth tax; 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.

**Panel A**

Variable	Mean	StdDev	Minimum	Maximum
C/CF	1.46	4.05	0.00	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. 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 of the portfolio of investor  $i$ ; tax is a dummy equal to 1 for companies subject to wealth tax; 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 3<sup>rd</sup> day of each month. 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. 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 of the portfolio of investor  $i$ ; tax is a dummy equal to 1 for companies subject to wealth tax; 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.

Variable	All Companies, All foreign Individuals				All companies, 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. 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; 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 of the portfolio of investor  $i$ ; tax is a dummy equal to 1 for companies subject to wealth tax; 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; STOCKHOLMF is a dummy equal to 1 for firm located in Stockholm; STOCKHOLM is a dummy equal to 1 for investors who reside in Stockholm.

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**

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. 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; 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 of the portfolio of investor  $i$ ; tax is a dummy equal to 1 for companies subject to wealth tax; 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 companies located in Stockholm.

**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**

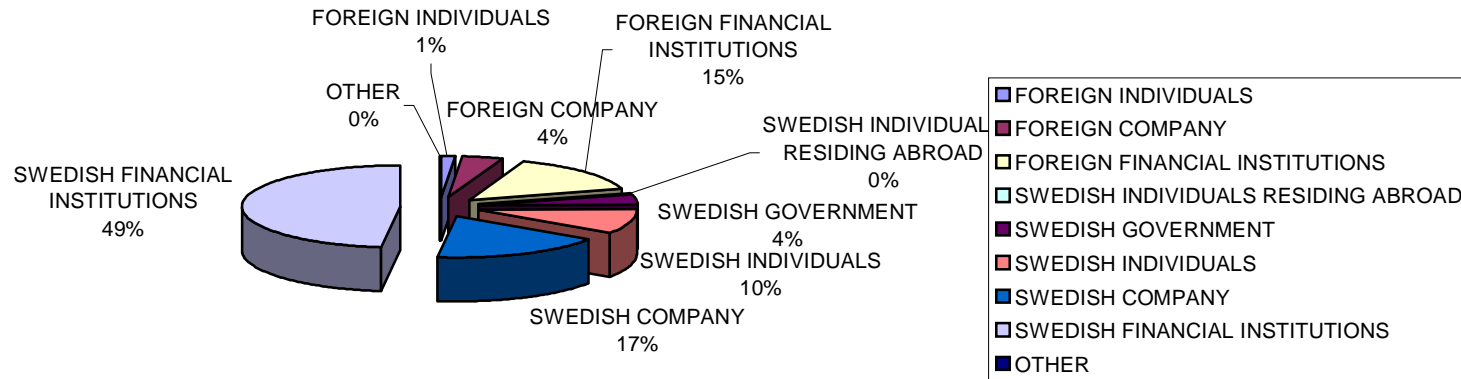
The dependent variable is  $Y_{i,f} = 0$  if investor  $i$  does not invest in firm  $f$  and  $Y_{i,f} = 1$  otherwise. D\_Board is a dummy variable equal to 1 if individual  $i$  is a board member and equal to zero otherwise. The column D\_Board shows the value of the dummy that corresponds to the 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; 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 of the portfolio of investor  $i$ ; tax is a dummy equal to 1 for companies subject to wealth tax; 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; STOCKHOLMF is a dummy equal to 1 for firm located in Stockholm; STOCKHOLM is a dummy equal to 1 for investors who reside in Stockholm.

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%

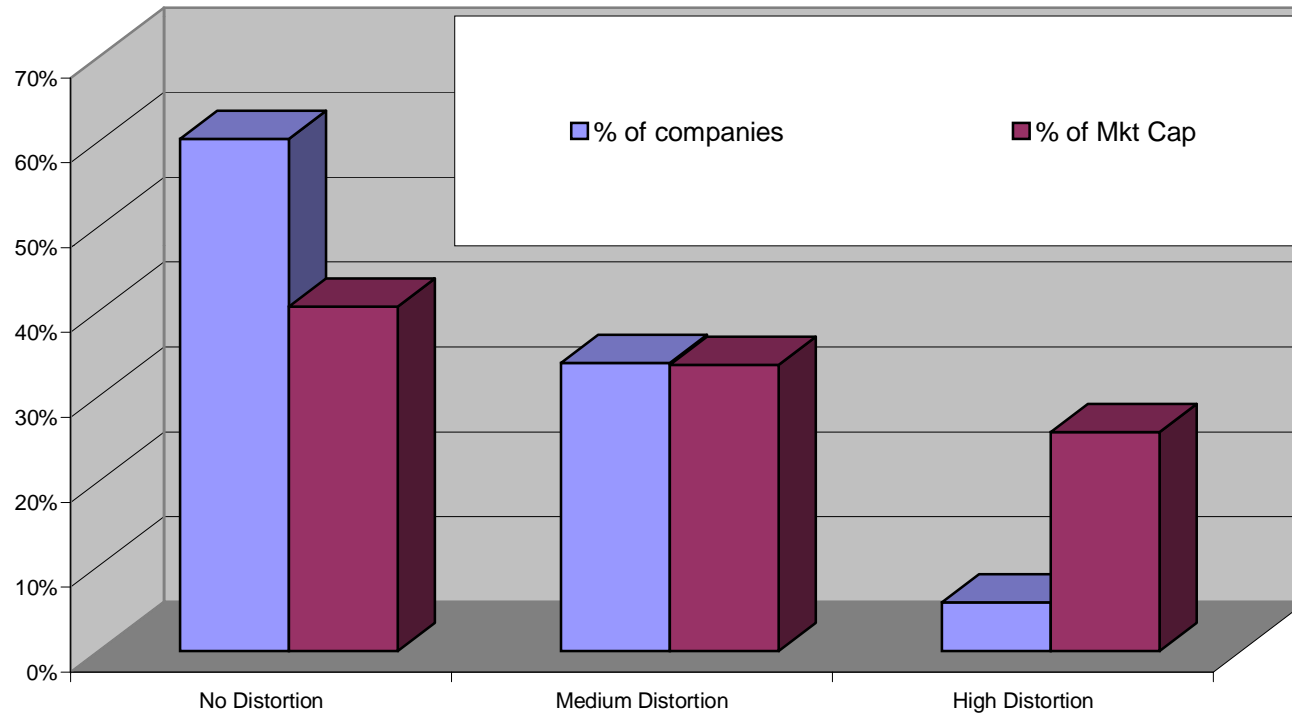
**Figure 1. Investors in the Swedish Stock Market**

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. Characteristics of Swedish Companies**

The no-distortion companies are the ones for which the measure of the distortion in the incentives of the principal shareholder is equal to 1. The high distortion companies are the ones for which this measure is larger than 1 and less than or equal to 4, which is approximately equal to the 90<sup>th</sup> percentile of the distribution of the distortion in the sample. The very high distortion companies are the ones for which the measure is larger than 4.



**Figure 3. 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

