Do Foreign Investors Feel Threatened by Reduced Profitability?

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Abstract

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JEL Classification: G14, G30
Keywords: Profit warnings, Home bias, Moral hazard

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Among the most prominent explanations for the home bias in international portfolio investments is more severe moral hazard problems faced by foreign investors than by corresponding domestic investors. Following recent literature we argue that a drop in the expected return of resources employed within the firm should increase the expected incidence of this type of moral hazard. Based on this argument foreign investors should react more strongly to profit warnings than domestic investors do, resulting in at least a momentary increase in the home bias phenomenon. Data on profit warnings combined with an extensive set of intra-day trading and shareholder depository data for the Helsinki Stock Exchange in Finland are used to test this hypothesis. The results indicate that foreign investors are indeed more likely to sell while domestic investors tend to buy when profit warnings are released.

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1. Introduction

A large number of empirical studies document that investors exhibit a strong bias in favour of domestic stocks[1]. An obvious potential explanation for this phenomenon provided by higher tangible transaction costs for buying foreign shares than domestic ones. However, as shown by Cooper and Caplanis (1994) tangible transaction cannot provide but a partial explanation for the home bias phenomenon. At odds with the transaction costs explanation are also the results reported in Baxter and Jermann (1997) who show that turn-over in foreign holdings tend to be relatively high compared to the turn-over in domestic holdings.

A frequently advanced, somewhat more subtle, explanation for the home bias phenomenon is information disadvantage faced by foreign investors. Due to less direct exposure to value relevant information concerning investable local firms, foreign investors are subject to more severe moral hazard problems than domestic investors. Stulz (2005) refers to the "twin agency problem", that arise as corporate insiders along with influential officials of sovereign states "pursue their own interest at the expense of outside shareholders".

Evidence from international financial crises suggest that these moral hazard problems, that is the ones to which foreign investors tend to be more exposed than domestic ones, are time-varying in nature. When a financial crisis erupts foreign investors expect a worsening information disadvantage as a result of the crisis. Consequently they are more likely than domestic investors to liquidate their holdings. Variations in the expected cost of being less well informed can thus explain why a foreign investor may find entering and exiting a foreign market preferable to a buy-and-hold strategy . Hence the findings reported in Baxter and Jermann (1997).

The time varying nature of the disadvantage faced by foreign shareholders compared to domestic shareholders in the context of the Asian financial crisis has been discussed in a

[1] For reviews of empirical results see Lewis (1999).

number of papers e.g. by Johnson, Boone, Breach and Friedman (2000) (henceforth JBBF), Mitton (2002), and Baek, Kang and Park (2004).

Of particular relevance for this paper is the model presented by JBBF. The model builds on the idea that the actual decision makers within the firm can choose, either to leave resources within the firm to accumulate future returns at the firm's expected rate of return on equity, or alternatively to extract some of the resources for their own personal benefit, that is "tunnel" resources out of the firm. When the prospects of the firm worsen the relative advantage of the "tunnelling" alternative will increase for these influential insiders. In support of their hypothesis JBBF in their Table 1 (p.144) list a number of examples from the Asian financial crisis at the end of the 1990's in which resources were channelled out of crisis firms to the benefit of controlling block holders and/or the management. As a more general support for their explanation JBBF show that minority shareholders, and thus share prices, suffered less during the Asian crisis in countries where corporate governance was better. Mitton (2002) finds the same relationship in firm level in data for Indonesia, Korea, Malaysia, the Philippines, and Thailand. Firms with better corporate governance and more transparent disclosure suffered less from the crisis[2].

A related issue that is discussed specifically by Mitton (2002) is the role of large block holders. LaPorta, Lopes-Silanes, Schleifer, and Vishny (1998) suggest that large block holders are required to champion share holders' rights in countries with weak investor protection. Consistent with the view that outside blockholders are important as champions of shareholder rights in countries with weak investor protection, Mitton (2002) found that firms with large outside blockholders suffered less from the financial crisis.

[2] Another possible explanation for these results, mentioned by Mitton (2002), is that firms that attract international investors are firms which have more of their operations located abroad. These firms are less exposed to local financial crises, and will thus suffer less in such events. Mitton's own results did not support this alternative explanation but his test suffered from lack of data.

Baek, Kang and Park (2004), in a study which focuses exclusively on South Korean firms, furthermore find that firms where the controlling shareholder's voting rights exceed his cashflow rights had lower returns, and that more diversified firms suffered more than less diversified ones during the crisis. These findings are consistent with minority shareholders being more inclined to sell out in firms where the likelihood of moral hazard was higher due to skewed incentives or lack of transparency.

Similar results have been found also for other markets. Elkinawy (2005) looks at mutual funds specializing on investing in Latin America. Her results reveal a preference for firms with lower leverage among those funds. In response to the Asian financial crises these funds shifted their holdings towards firms that were cross listed as ADRs in the US. Because of the relatively strict listing requirements information asymmetry is expected to be lower for firms that have successfully applied for an ADR listing in the US than for those that haven't.

These results can be compared with results obtained for Sweden, a country which closely resembles Finland with respect to its level of economic development and its financial market institutions. Dahlqvist and Robertson (2001) who look at foreign investments in Swedish firms find that foreigners, just as in other countries, seem to have a preference for large firms, firms that pay low dividends, and firms with large cash positions on their balance sheet[3]. However, in the Swedish case foreigners tend to underweight firms with a large owner. This is consistent with Roe's (2002) claim that lack of investor protection cannot be the explanation for the low level of diversification in the Swedish case. According to Roe (2002) the role of large shareholders in the Swedish case is to keep other stakeholders, notably employees, from extracting too large a part of economic rents produced by the firm. For foreign shareholders this is of less importance than for

[3] In a more recent paper Dahlqvist and Robertson (2002) show that foreign holdings in Swedish companies do not seem to reflect better stock picking ability by foreign investors. Consequently their results indicate that foreign investors are primarily trying to avoid firms in which they face more of an informational disadvantage.

domestic shareholders. For them dominant domestic shareholders may bemore of a threat due to a perceived higher risk of discrimination against foreigners.

This paper presents a different test of the hypothesis that time varying information asymmetry problems affect the allocation of international portfolio investments. If the hypothesis advanced by JBBF (2000) holds, then a downward revision in the expected profitability of the firm should hurt outside investors more than controlling shareholders. The analysis in this paper utilizes the fact that substantial revisions in the management's forecast of the future profitability of the firm have to be disclosed in the form of profit warnings. A profit warning should be released in situations where the top management has received new information indicating that the actual earnings outlook for the firm is significantly worse than the market expects. Following the logic of the JBBF(2000) model this should lead to a drop in insiders' willingness to keep resources within the firm, as alternatives available for them personally, through “tunnelling”, will become relatively more attractive.

The drop in expected profitability of the firm should thus hurt small investors more than insiders. Consequently small investors should exhibit a tendency to sell while insiders predominantly should be willing to buy those shares.

Following Stulz (2005) we argue that foreign investors are particularly vulnerable, and thus most likely to sell out. The “twin agency problem” that Stulz is discussing consists of expropriation on one hand by dominating shareholders, an issue that we discussed above, and on the other hand by the government in the country where the firm is incorporated. In Stultz (2005) the time varying nature of the moral hazard problems involved is not discussed. However, the same considerations as those discussed in the JBBF (2000) paper should also apply for the second leg in the twin agency problem in Stulz’s setting. Expropriation by the state in the case of a highly successful firm with prospering international markets makes less sense than expropriation in the case of a firm where resources are in less profitable use.

If “the state” in Stulz (2005) is interpreted broadly as the national interest, the “twin agency problem” may occur simply because insiders will find it less costly to allow some of the firms resources to be channelled to promote the national interest in situations where the expected return of resources within the firm drops. While domestic investors may perceive some external benefits from this, e.g. through a positive impact on the value of their human capital, foreign investors will bear the full cost.

The purpose of this paper is to find out whether foreign portfolio investors also in situations where no market wide financial crisis is being observed, will respond to this time varying moral hazard problem. Naturally, in the absence of a market wide crisis in the country foreign investors may react to an increase in potential moral hazard in one particular firm simply by switching their country risk exposure towards other firms in the same country.

Since profit warnings are issued when management learns that the firm's resources will yield a lower return than what the market has expected, foreign investors should regard the warning as worse news than domestic investors. Foreign investors should thus be more willing to part with their shares than domestic ones in the wake of the warning. Consequently, in response to profit warning announcements we would expect foreign investors to dominate on the selling side while domestic investors should dominate on the buying side.

The outline of the paper is the following: next section presents the general argument. The third section presents the data. The fourth section reports and discusses the test results. The paper ends with a summary.

2. Theoretical model

The hypothesis tested in this model is consistent with the predictions of the model in JBBF (2000). Following a large strand of literature starting from Jensen and Meckling (1976) they model the conflict of interest between insiders (managers) and outside

shareholders in the firm. Managers are assumed to own a share α of the firm. They decide what to do with retained earnings denoted *I*. They can choose to invest these earnings, and earn a rate denoted *R* on what they invest, or they can tunnel part of these earnings out of the firm. If they tunnel, or steal S they will thus invest *(I-S)*.

Stealing is associated with an expected marginal cost, which is increasing in the level of S. This increase in the marginal cost could be due to an increasing probability of being caught and punished, when the magnitude of the theft increases. Following JBBF the cost function is specified as $C(S) = (S^2/2k)$, where the parameter *k* measures the laxity of the prevailing corporate governance system. That is, the higher the *k*, the less costly it is for the manager to steal.

The objective function for the manager will thus be:

$$\alpha R(I-S) + S - (S^2/2k)$$

The first order condition for a maximum yields the expression:

$$S^* = k(1- \alpha R)$$

for the optimal level of stealing.

The expression reveals that higher expected return *R* on the resources invested within the firm will reduce stealing by managers, while a lower *R*, which is the essence of a profit warning, will increase stealing by managers. The expression for the optimal level of stealing also reveals that a better corporate governance system, that is a lower *k*, will reduce tunnelling by managers.

In the setting provided by JBBF there is no difference between domestic and foreign outside shareholders. However, by introducing the "second leg" in the "twin agency problem" described by Stulz (2005) this distinction can be addressed. Foreign shareholders may be expropriated not only by manager-insiders but also by the state in the country of incorporation.

If, following Stulz (2005), we introduce an expected rate of expropriation, denoted *g*, of the proceeds from retained earnings which are being reinvested, while we assume that tunnelled resources cannot be expropriated, the optimal level of stealing will simply be

$S^{**} = k(1- \alpha R(1-g)),$

which, other things equal is higher than S*. That is, in anticipation of expropriation by the state, insiders will find tunnelling more attractive.

So far we have taken the rate of expropriation as given. This is clearly not realistic. Obviously the state will face the same type of considerations as the firm's managers when it decides whether, or how much, to expropriate. A higher lever of expropriation leads to loss of tax income. If we assume that the government receives a given rate t[4] on the net proceeds from the investment that accrues to domestic owners and if we denote the share of equity held by foreigners with *f* the tax proceeds for the government will be:

$t (1- f)(R-1)(I- k(1- \alpha R(1-g))$

A higher rate of confiscation, measured by *g,* will reduce this amount, as will a higher degree of foreign ownership. The government's immediate proceeds from confiscation will be:

$gR(I- k(1- \alpha R(1-g)).$

This function is quadratic in g. If *g* is zero there will be no proceeds to the government, and if g is high, proceeds will also be low, since most of the money will be tunnelled out of the firm by management. Consequently there is an optimal level which lies between zero and one.

Maximizing total government proceeds with respect to *g* gives the expression for this optimal rate of confiscation, which is:

$$g^{\circ} = \frac{I - k + t\,(1 - f)\,\alpha}{2\,\alpha k\,R^2} - \frac{(k - t\,[1 - f])\,\alpha}{2\,\alpha k\,R}$$

Thus the optimal level of confiscation will unambiguously be reduced when the expected return *R* increases, and consequently a profit warning should imply an increase in expected confiscation. By writing the optimal level of confiscation in the following form:

$$g^{\circ} = \frac{I - k + k\,\alpha R}{2\,\alpha k\,R^2} - \frac{(t\,[1 - f])\,(R - 1)}{2\,k\,R^2},$$

it is immediately obvious that higher foreign ownership f will increase expected confiscation g^{o}.

A more realistic setting would require that the long run consequences of confiscation for the value of other domestic firms should be taken into account as well, which would reduce the attractiveness confiscation.

For our empirical analysis the most important conclusion is that foreign investors are likely to suffer more from profit warnings than domestic investors, and that consequently we would expect to see net selling by foreign investors when a profit warning is issued.

3. Profit warnings

The Finnish Financial Supervisory Authority, on its web site, states the following concerning profit warnings:

"A profit warning must be issued if the company's result, balance sheet or financial position shows either a less favourable or a better (positive profit warning) performance than expected. The profit warning thus represents an adjustment of a previous profit forecast.

Profit warnings must be disclosed without undue delay, in other words as soon as a change has become apparent and the managing director or any member of the board of directors has received notice of it."

Since the number of positive profit warnings is small we decided to leave them out and focus on warnings that are negative news.

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[4] We assume that t is regarded as a justified compensation for public services and consequently doesn't have an impact on tunnelling.

Provided that the profit warning is released at a time of the day when the stock is actively trading at the exchange, we can roughly divide the trading day into three parts in analyzing investor reactions to the warning: the pre announcement period, the period immediately after the announcement, and the post announcement period.

Assuming that no information of the imminent profit warning has leaked to traders in advance, the pre announcement period should essentially not differ from any other trading day. However, a more cautious attitude than normally from investors prior to the warning cannot be ruled out. Anticipations of an upcoming warning could result from some other, perhaps quite vague, indications of unexpectedly bleak prospects for the firm.

Immediately after the release of the negative information we would expect alert traders to attempt to take advantage of limit orders inserted into the system by less attentive traders, orders that have not yet been revised to reflect the piece of new information. Investors in charge of larger holdings in the firm should have stronger incentives to update their orders frequently. Typically we would thus expect institutions to be better informed than private investors.

Finally in the post announcement period practically all active traders are aware of the piece of significant news provided by the profit warning. Given our hypothesis that the increase in asymmetric information triggered by the profit warning will hurt foreign investors more than domestic ones we would expect net selling by foreign investors and net buying by domestic ones in this period.

Interestingly, optimal portfolio diversification behaviour by investors implies the opposite prediction. The drop in the market value of the equity in the firm will increase the firm's sensitivity to changes in local economic activity, increasing the firm's local beta, and thus the return required by domestic investors. It is likely that foreign investors who are less exposed to the local economy will experience a much smaller increase in required return as a consequence of the disclosed warning. Thus foreign investors should buy while domestic ones should sell in response to a profit warning from a portfolio diversification point of view.

4. Previous research on profit warnings

Systematic research on the impact of profit warnings is a relatively recent phenomenon. Jackson and Madura (2003) analyze US profit warnings during January 1998 to December 2000. They find a close to –15% drop in the price at the time of the warning and some evidence of an anticipating reaction before the warning and some further reaction in the days following the warning. Bulkley, Harris & Herreiras (2002) use data for almost the same period to focus on the long run consequences of profit warnings. They find a strong reversal one to two years after the warning, in particular for small firms that issue qualitative warnings. Helbok and Walker (2003) look at profit warnings issued by UK firms and specifically at the tightening of the regulation, against tipping off large investors in advance, that occurred 1994 in the UK. They use data for financial years 1992, and 1993 and data for 1995, through the first half of 1998. They find an average share price decline of -20 % around the warning, and an anticipatory price drop for the pre 1994 period but not for the post 1994 period.

Kvist and Åberg (2003) look at profit warnings issued by Swedish firms in January 2000 to May 2002. They find an average price decline of –14% at the time of the warning, and a further price drop in the days after the warning. In contrast to what Bulkley, Harris & Herreiras (2002) find on US data they find further underperformance amounting to –33% during the following 350 trading days.[5]

The only earlier study of profit warnings on Helsinki Stock Exchange data, which is also a data source for our study, that we have found is the one reported by Hanni (2003). The sample of profit warnings used by Hanni covers the period June 1996 to December 2001. He finds an average price reaction of –11.6 % at the day of the warning for the firms in his sample. His total sample reveals a further price decline some days after the announcement and a weak reversal tendency thereafter.

[5] The only additional study on profit warnings that we've found is one by Liu, Zheng and Zeng (2002) on 315 firms issuing profit warnings on the Chinese stock market in 1999 through 2001. They find a price reaction close to – 3% over the three days around the announcement. Surprisingly or the consequent period they find a strong reversal bringing up the price by some close to 10% in a 90 day period.

In summary we conclude that profit warnings are indeed highly significant phenomena that tend to wipe out some 10 – 20 % of the firm's value to shareholders in a day. What is specifically relevant for this paper is the presence of a similar reaction pattern in data from different countries. This indicates that any differences in the reaction of foreign versus domestic investors can hardly be ascribed to country specific differences in the issuance of profit warnings.

5. Data

In this paper we use an extensive data set available on trades made on the Helsinki stock exchange [OMX Helsinki] in Finland. Regularities in this data have been documented in a series of papers by Grinblatt and Keloharju (2000, 2001a, 2001b), covering the period from the middle of the nineties. Our data covers all changes in share ownership in the Nordic Central Share Depository [NCSD] for Finnish stocks, during January 1995 to December 2004. This information represents more than 99% of all share holdings in Finland. We also use dated and time stamped data on all share transactions on the Helsinki Stock Exchange during the same period. The depository data is provided by the Nordic Central Share Depository in Helsinki, the transaction data is provided by OMX Helsinki. Information on profit warning announcements is obtained from records of official press releases at OMX Helsinki.

The data provides two major advantages in comparison with other sources. Firstly the data represents the complete set of investors and thus is a full cross-section of the whole investment community in one market. Secondly the depository data includes details on trade date and trade price which makes it possible to match it with transaction data. This way we obtain unique information of who has traded, at what time and day the trade occurred and at what price the trade was done. We use this information to aggregate the total number of shares bought and sold by various investor groups.

Crucial to our empirical analysis is the ability to classify all transactions in a stock by investor type. Each transaction in the NCSD data is assigned a code which is unique to the investor making the transaction, trade related information such as security, price and

volume, and a code classifying the investor into one of 29 classes according to the business sector the investor belongs too. See the Table 1 for a complete list of available business sectors.[6]. Each transaction is also designated a code that classifies trades according to if the trade was done by an individual account or a nominee account. With the help of the business sector and the individual/nominee account codes we classify each trade into three main groups: foreign investors (foreign institutions typically nominee accounts, foreign companies and foreign retail with own accounts in NCSD), domestic institutions (financial institutions with domicile in Finland), retail (private individuals living in Finland and small corporations), and a residual group including e.g. municipalities and state churches. In the following we use aggregate transactions for these three groups to uncover any general differences in behavior between foreign investors and domestic investors. We retain the distinction between domestic institutions and domestic retail investors to be able to consider the interaction between institutions and retail in our analysis.

<Insert Table 1 about here>

As information events that disclose significant changes in the expected profitability of individual firms we focus on profit warnings. We consider all profit warnings announced by companies listed on the OMX Helsinki between during 1996 to 2003. [Joakim will revise] There are 195 profit warnings issued on the Finnish market in all during this period. Based on our main hypothesis we would expect foreign investors to react more rapidly and aggressively to these warnings.

Table 2 lists the five investor categories we analyze, aggregating foreign investors to one group, and their share average share of total daily trading in the analyzed 195 profit warning companies during the period 1996 to 2003.

<Insert Table 2 about here>

In our empirical study we are interested in the impact a profit warning on the flow of foreign investments. Since investment flows occur in the form of series a transactions which must involve at least one buyer per seller there is probably a limit for how many

[6] See the Appendix for a complete list of available business sectors and market share.

shares foreign investors are able to part with at a price that they still can regard as reasonable. We assume that the capacity of buyers to absorb a spike on the selling side will be largely determined by the normal trading activity in the shares of the firm. Thus we measure the incidence of foreign selling pressure as the difference between purchases and sales of overseas investors in relation to the normal volume of shares traded.

$$\frac{\text{BuyVolume}_{f,i,t} - \text{SellVolume}_{f,i,t}}{MeanVolume_{t-60,t-1}} =$$

This dependent variable measures the net flow of foreign investments into or out of domestic shares and is comparable across companies, as the yard stick is the normal level of trading activity in this specific stock. No selling pressure by foreigners, will result in a value of zero, while a number of -1 indicates that the equivalent of a normal daily trading volume of shares has switched from foreign to domestic hands.

6. Results

The statistics in Table 3 cover all stocks with at least one profit warning during the sample period. Flows between investor groups in a window of fifteen trading days around the date for the warning are analyzed. The control period for a particular stock is the whole period 1996 to 2003 excluding our 15-day window.

The table reveals that for foreign banks and nominees our selling pressure variable is significantly negative as predicted, reaching an average value of -26.5% for the day of the profit warning. For foreign banks and nominees it is also significant in total during the 10 days after the announcement, while when foreign companies and retail investors are included the ratio is significantly negative only during the first day, at -26.9%. The results strongly support our hypothesis that foreign investors tend to exit companies when a profit warning is issued. The main reason for the observed difference between the results

excluding and including foreign firms and retail investors is related to the behavior of foreign firms since foreign retail investors played a marginal role in terms of volume during our sample period. Foreign firms´ transaction motives tend to differ from those of other investors. The activities of foreign firms are likely to be related to building toeholds for possible future takeovers. A profit warning, in that context, may simply allow the potential buyer to buy its target at a less expensive price. Naturally, we do not expect the logic of our basic model to apply to those cases.

<Insert Table 3 about here>

Table 4 focuses on foreign nominee accounts and foreign banks only and breaks up the sample into two time periods, 1996 – 1999 inclusive and 2000 to 2004 inclusive. The statistics in Table 4 are computed for all stocks with profit warnings during the sample period. The results show that about 20% of the profit warnings were issued during the earlier period when the market experienced a cycle of rising prices while a majority were issued in the later period when the market experienced a correction in valuations. Investment flows within the 15 day profit warning windows are compared across companies. The whole period 1996 to 2004 excluding the 15 day window around the profit warnings for the company is used for the control period statistics. Our selling pressure variable for foreign investors is significantly negative for both periods. The main difference between the periods is that foreigners appear to sell out their positions over ten days or more in the earlier period, while they adjust portfolios during the first day after the profit warning in the later period. The reaction in the earlier period is also stronger with a total ten day selling pressure of -220% compared to 58.4% during the later period.

<Insert Table 4 about here>

The total impact of the warning on foreign ownership is depicted in Figure1. The figure exhibits a fairly systematic trend in the withdrawal of foreign investors, a trend that levels off towards the end of the ten day period after the warning. Another interesting fact which is clearly seen in Figure 1 is the substantial difference between the median and the mean reaction, the median shift in ownership reaching a level of 20% of the normal daily trading volume while the mean shift goes all the way up to 140 %. The fact that the mean

is much higher in absolute value than the median shows that there is a high degree of skewness in the distribution of the reactions to the warnings in our sample. While some cases have exhibited really strong reactions, the reactions have been relatively modest in most cases.

<Insert Figure 1 about here>

The dispersion in the results for different warnings begs the question whether there are systematic factors that can explain in which cases the warning produces a strong reaction and in which cases not. Our model implies that features that tend to increase investors' confidence in the firm, like strict adherence to accepted corporate governance standards, should reduce the tendency for foreign investors to back out when the operations of the firm turn less profitable. The issue of which variables capture this difference most efficiently will be addressed in future research.

6. Summary

In this paper we compare foreign and domestic investors' reactions to a significant change in the expected profitability of the firm. Theories that emphasize an information disadvantage faced by foreign investors when compared to domestic ones predict a more dramatic reduction the attractiveness of the firm's shares in the eyes of foreign than in the eyes of domestic investors when expected profitability falls. As relatively clean cases in which expected profitability falls we take profit warnings issued by individual firms on the Helsinki Stock Exchange.

Using a simple model that builds on the one presented by Johnson, Boone, Breach and Friedman (2000) we show that a drop in the expected profitability of the firm is expected increase the incidence of moral hazard, in particular at the expense of foreign shareholders. This increase in the likelihood of moral hazard should reduce the willingness of foreign investors to hold on to the shares in comparison with domestic investors.

Our findings indicate that foreign investors are indeed more likely to sell in response to

profit warning announcements than domestic investors, and domestic retail investors in particular tend to pick up the shares sold by foreigners.

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Table 1

Descriptions of investor classes

Table 1 presents details of the twenty-nine different investor classes included in the Nordic Central Securities Depository (NCSD) database of shareholdings in securities listed on OMX Helsinki. Some of these classes include both individual depository accounts and nominee accounts. For the purpose of our investigation we identify five main categories of investors: foreign institutions, foreign companies, foreign retail, domestic institutions and domestic retail. To trade on OMX Helsinki, Finnish institutions, companies and individuals must register with NCSD and are given a unique account. Foreign investors are partially exempt from registration as they may choose to trade through a nominee account, which may have multiple foreign investors and are registered through financial institutions.

		Classification	
Investor Class	Description	Individual Accounts	Nominee Accounts
100	Companies		
110	Public Sector Companies		
111	Government Owned Companies		
120	Domestic Companies	Domestic Retail	
121	Foreign Companies	Foreign Companies	
122	Foreign Majority Owned Companies		
200	Financial and Insurance Institutions	Domestic Institutions	
221	Domestic Deposit Taking Banks	Domestic Institutions	Foreign Institutions
222	Foreign Owned Deposit Taking Banks	Foreign Institutions	Foreign Institutions
230	Other Credit Institutions	Domestic Institutions	Foreign Institutions
240	Insurance Institutions	Domestic Institutions	
250	Finance and Brokerage Service Institutions	Domestic Institutions	Foreign Institutions
260	Other Financial Institutions	Domestic Institutions	Foreign Institutions
300	Public Sector Authorities		
310	The State of Finland		
320	Municipalities		
340	A Provincial Government		
352	Pension and Social Security Funds		
410	Strata Companies		
420	State Churches		
430	Other Non-profit Institutions		
511	Farming Households	Domestic Retail	
512	Entrepreneur Households	Domestic Retail	
520	Salary Earning Households	Domestic Retail	
530	Other Households	Domestic Retail	
600	Foreign Residence	Foreign Retail	
610	Resident in European Union	Foreign Retail	
611	Resident in European Union Member State	Foreign Retail	
621	Resident in Other Countries	Foreign Retail	

Table 2

Analysed Investor Categories and Trading Activity

Table 2 lists the five investor categories we analyse, included depository accounts, and their share of total value traded in the analysed 281 profit warnings for 176 stocks during the period 1996 to 2004.

Investor class	Depository accounts included	Share of total trading activity %
Foreign Institutions	All nominee accounts and foreign owned banks	81.21
Foreign Companies	All foreign company accounts	6.29
Foreign Retail	Foreign Residence Resident in European Union Resident in European Union Member State Resident in Other Countries	1.59
Domestic Institutions	Financial and Insurance Institutions Domestic Deposit Taking Banks Other Credit Institutions Insurance Institutions Finance and Brokerage Service Institutions Other Financial Institutions	4.98
Domestic Retail	Salary Earning Households Farming Households Entrepreneur Households Other Households Companies Domestic companies	5.93

Table 3 Buy – sell vs. average volume ratio for profit warning companies 1996 to 2004.

The statistics are calculated for all stocks with profit warnings during the period. For each warning a 15 day window, five days up to, and ten days including the warning, beyond the date of the warning. The 'TOTAL' column reports the accumulated buy sell ratio over 10 days post the profit warning. The control statistics are computed on data for the same firm for the whole period 1996 to 2004 excluding the window. Significant differences in means on a 1% level between the profit warning window and the control period are marked bold. The t statistic for this are reported in the table.

EVENT WINDOW	LAG 5	LAG 4	LAG 3	LAG 2	LAG 1	1. DAY	2. DAY	3. DAY	4. DAY	5. DAY	6. DAY	7. DAY	8. DAY	9. DAY	10. DAY	TOTAL
						(Profit Warning Announced)										
Foreign Owned Banks and Nominees																
MEAN	-0.0278	-0.0584	0.0246	-0.0367	-0.0477	**-0.2652**	-0.0194	-0.0042	-0.0466	-0.0190	-0.0584	-0.1349	-0.1425	-0.2198	0.0127	**-0.8780**
MEDIAN	-0.0044	-0.0131	-0.0064	-0.0020	-0.0189	-0.0733	-0.0212	-0.0080	-0.0406	-0.0121	-0.0170	-0.0101	-0.0095	-0.0044	-0.0061	-0.0274
MIN	-13.5400	-3.9806	-0.9593	-2.4950	-5.0479	-8.8650	-6.4119	-2.5970	-1.1646	-0.7648	-5.9355	-11.4504	-15.4753	-49.3099	-1.4325	-49.3099
MAX	5.9964	1.6318	5.2094	0.8422	1.9894	1.6684	8.4506	2.5269	0.6373	1.4901	0.6982	1.3870	0.8001	2.2579	3.8435	8.4506
STDEV	0.9886	0.3769	0.4040	0.2351	0.3682	0.9773	0.8347	0.3474	0.1817	0.1592	0.4273	0.9326	1.2221	3.1267	0.3991	3.8338
N	266	264	264	263	263	251	250	250	251	250	250	252	252	252	252	243
t-value to control	-0.54	-1.68	0.49	-1.40	-1.41	-4.33	-0.43	-0.25	-1.92	-0.96	-1.54	-2.30	-2.12	-2.02	0.19	-7.03
All foreign investors																
MEAN	-1.0058	0.0875	0.1568	0.0985	-0.1094	**-0.2691**	0.0323	0.0214	0.0179	-0.0341	0.3062	-0.0654	-0.1320	0.1326	0.0236	-0.1942
MEDIAN	-0.0028	-0.0116	-0.0005	-0.0048	-0.0091	-0.0460	-0.0134	-0.0069	-0.0252	-0.0097	-0.0120	-0.0088	-0.0108	-0.0092	-0.0081	-0.1083
MIN	-306.1322	-8.4282	-1.5161	-4.7267	-14.4593	-9.1304	-6.1408	-3.9237	-1.9555	-4.5994	-5.9355	-8.7703	-11.2500	-45.5458	-3.6670	-44.4193
MAX	29.8063	39.2395	15.3912	38.0427	1.9894	4.0044	14.6995	9.1371	10.6487	2.4431	55.5079	4.6718	2.1005	76.6388	4.5812	76.3657
STDEV	18.8728	2.5067	1.3200	2.3901	1.0126	1.3069	1.2026	0.8495	0.7980	0.4306	4.1120	0.9503	0.9050	5.6225	0.6103	6.8195
N	266	264	264	263	263	253	250	251	252	251	251	253	254	253	254	243
t-value to control	-3.79	0.86	2.17	1.00	-1.82	-3.79	0.42	0.31	0.26	-0.90	2.37	-1.12	-2.27	0.87	0.41	-1.18

CONTROL PERIOD	Foreign Owned Banks and Nominees	All foreign investors
MEAN	0.0053	0.0034
MEDIAN	-0.0001	0.0005
MIN	-4.9981	-4.9917
MAX	4.9896	4.9896
STDEV	0.6746	0.6597
N	154460	154460

Table 4 Buy – sell vs. average volume ratio for profit warning companies divided into 1996 – 1999 and 2000 – 2004.

The statistics are calculated for all stocks with profit warnings during the period. For each warning a 15 day window, five days up to, and ten days including the warning, beyond the date of the warning. The 'TOTAL' column reports the accumulated buy sell ratio over 10 days post the profit warning. The control statistics are computed on data for the same firm for the whole period 1996 to 2004 excluding the window. Significant differences in means on a 1% level between the profit warning window and the control period are marked with bold.

EVENT WINDOW	LAG 5	LAG 4	LAG 3	LAG 2	LAG 1	1. DAY	2. DAY	3. DAY	4. DAY	5. DAY	6. DAY	7. DAY	8. DAY	9. DAY	10. DAY	TOTAL
						(Profit Warning Announced)										
Foreign Owned Banks and Nominees 1996 - 1999																
MEAN	-0.0114	-0.0838	-0.0480	-0.0583	-0.0489	**-0.3506**	-0.2861	0.0035	-0.0830	-0.0874	-0.1114	-0.0870	-0.0488	-1.1071	-0.0477	**-2.2061**
MEDIAN	-0.0044	-0.0131	-0.0064	-0.0026	-0.0189	-0.1504	-0.0689	-0.0316	-0.0461	-0.0734	-0.0497	-0.0353	-0.0222	-0.0218	-0.0277	-0.7043
MIN	-0.3959	-1.6215	-0.5579	-0.9633	-0.5090	-5.1807	-6.4119	-0.8656	-1.1646	-0.6724	-1.9913	-2.2496	-1.5801	-49.3099	-0.5296	-49.3099
MAX	0.7886	0.3789	0.3723	0.8408	0.1203	0.3750	0.6556	2.5269	0.1687	0.0923	0.3987	0.0926	0.5557	2.2579	0.3803	2.2651
STDEV	0.1883	0.2965	0.1549	0.2468	0.1241	0.8845	1.0323	0.4376	0.2173	0.1448	0.3500	0.3403	0.2857	7.2774	0.1456	7.5320
N	45	45	45	45	45	44	44	44	44	44	44	45	45	45	45	44
t-value to control	-0.26	-1.10	-0.91	-0.86	-1.03	-2.51	-1.90	-0.02	-1.25	-1.62	-1.31	-1.06	-0.68	-2.77	-0.93	-5.34
Foreign Owned Banks and Nominees 2000 - 2004																
MEAN	-0.0337	-0.0551	0.0379	-0.0328	-0.0468	**-0.2470**	0.0376	-0.0058	-0.0389	-0.0044	-0.0471	-0.1453	-0.1629	-0.0269	0.0259	**-0.5843**
MEDIAN	-0.0044	-0.0130	-0.0050	-0.0029	-0.0189	-0.0509	-0.0149	-0.0058	-0.0377	-0.0015	-0.0110	-0.0087	-0.0072	-0.0035	-0.0019	-0.1668
MIN	-13.5400	-3.9806	-0.9593	-2.4950	-5.0479	-8.8650	-1.6266	-2.5970	-1.0886	-0.7648	-5.9355	-11.4504	-15.4753	-5.4678	-1.4325	-15.4753
MAX	5.9964	1.6318	5.2094	0.8422	1.9894	1.6684	8.4506	2.5091	0.6373	1.4901	0.6982	1.3870	0.8001	1.4270	3.8435	8.4506
STDEV	1.0812	0.3913	0.4368	0.2324	0.4005	0.9950	0.7743	0.3249	0.1722	0.1583	0.4413	1.0164	1.3409	0.4243	0.4340	2.2198
N	221	219	219	218	218	207	206	206	207	206	206	207	207	207	207	199
t-value to control	-0.56	-1.43	0.73	-1.16	-1.21	-3.64	0.53	-0.28	-1.53	-0.35	-1.13	-2.15	-2.09	-0.71	0.45	-5.58

CONTROL PERIOD	**Foreign Owned Banks and Nominees**
MEAN	0.0053
MEDIAN	-0.0001
MIN	-4.9981
MAX	4.9896
STDEV	0.6746
N	154460

Figure 1: Cumulative Buy – sell vs. average volume ratio for profit warning companies 5 days prior and 10 days post the profit warning

The figure describes the development of the mean and median for our main variable of interest, the buy – sell ratio vs. normal volume for foreign investors 5 days before and 10 days after for a total of 281 profit warnings. The ratio is accumulated over time in the graph.