

# Equity characteristics and investor preferences; empirical evidence from Finland and Sweden

Finance  
Master's thesis  
Ville Kantola  
2010



Aalto University  
School of Economics

# EQUITY CHARACTERISTICS AND INVESTOR PREFERENCES; EMPIRICAL EVIDENCE FROM FINLAND AND SWEDEN

Master's Thesis  
Ville Kantola  
Spring 2010  
Finance

Approved in the Department of Accounting and Finance \_\_\_ / \_\_\_20\_\_\_ and awarded the  
grade

---

## EQUITY CHARACTERISTICS AND INVESTOR PREFERENCES; EMPIRICAL EVIDENCE FROM FINLAND AND SWEDEN

### OBJECTIVES OF THE STUDY

The goal of the thesis is to test whether retail investors show preference towards certain type of companies. I compare the similarities between domestic and foreign equity holdings. I add to previous research by analysing also equity mutual funds and testing whether some preferences are seen also there.

### DATA AND METHODOLOGY

I use data from a Swedish brokerage company. The data contains the domestic and foreign shareholdings of Finnish retail investors and the foreign shareholdings of Swedish investors. In addition, I was able to get data of the equity mutual fund holdings of these two countries. I combine this unique data set with variables taken from Thomson Financial concerning the individual firms and data collected of the mutual fund equities. I follow the same methodology as earlier research in running regressions on the explanatory variables and classifying the stocks into portfolios. As explanatory variables I test such measures as firm size, leverage, volatility, price-to-book ratio etc.

### RESULTS

Retail investors show a preference towards smaller sized companies both in the domestic as well as in the foreign shareholdings. Similar type of preference can be noticed also among mutual fund holdings. There the relation is however not linear with respect to equities size and also other variables influence the results, especially the size of fund assets under management. The results are based on using the ownership share in a firm or a fund as the dependent variable, in line with previous research. An earlier study has offered as an explanation the fact that institutional investors show a preference towards large sized companies. My results of mutual fund holdings however do not confirm this as the only reason.

Retail investors show a preference towards value stocks in domestic shareholdings, whereas based on the foreign shareholdings the preference was more towards growth stocks. None of the other variables except size seemed to perform consistently well in explaining the observed shareholdings. The second best performing variable was the amount of liquid assets with respect to company market value. One possible reason for this might be that investors invest in companies which have or have had high profitability.

### KEYWORDS

Retail investor, preferences, firm characteristics, home bias, small sized stocks

## EQUITY CHARACTERISTICS AND INVESTOR PREFERENCES; EMPIRICAL EVIDENCE FROM FINLAND AND SWEDEN

### TUTKIMUKSEN TAVOITE

Tutkielman tavoitteena on testata osoittavatko piensijoittajat preferenssejä tietyn tyyppisiin yrityksiin. Vertaan näitä yritysten ominaisuuksia sekä kotimaisten että ulkomaisten osakeomistusten välillä. Lisäksi analysoin myös piensijoittajien osakerahasto-omistusten pohjalta, onko samat mieltymykset havaittavissa myös tässä ryhmässä.

### AINEISTO JA MENETELMÄT

Käytän tutkimukseni aineistona ruotsalaiselta pörssivälittäjältä saamaani materiaalia. Aineisto sisältää suomalaisten piensijoittajien osakeomistukset niin kotimaisissa kuin ulkomaisissa yhtiöissä sekä myös ruotsalaisten piensijoittajien ulkomaiset osake-omistukset. Lisäksi onnistuin saamaan myös vastaavat tiedot osakerahasto-osuuksista näille molemmille maille. Yhdistän tämän ainutlaatuisen aineiston Thomson Financialista ottamiini muuttujiin yksittäisistä yrityksistä sekä rahastoista keräämiini tietoihin. Noudatan samoja menetelmiä kuin aikaisemmat tutkimukset eli analysoin tietoja regressioiden ja luokitteluiden avulla. Selittävinä muuttujina käytän muun muassa yrityksen kokoa, velkaisuusastetta, volatilitteettia ja hinta-oma pääoma suhdelukua.

### TULOKSET

Piensijoittajat osoittavat preferoivansa enemmän pieniä yrityksiä niin kotimaisissa kuin ulkomaisissa osakkeissa. Samanlainen mieltymys oli havaittavissa myös osakerahastoissa. Niiden suhteen mieltymys ei ollut kuitenkaan täysin lineaarinen yritysten koon suhteen vaan myös muut tekijät vaikuttivat asiaan, vahvimpana rahaston hallinnoitavien varojen määrä. Tulokset perustuvat sijoittajien omistusosuuden käyttöön yhtiön tai rahaston riippuvana muuttujana, kuten myös muut tutkimukset ovat tehneet. Aiempi tutkimus on tarjonnut selityksenä institutionaalisten sijoittajien mieltymystä isoihin yhtiöihin. Tulokset piensijoittajien rahasto-omistuksista kuitenkin tukisivat myös muiden syiden olemassaoloa.

Tulosten perusteella yksityissijoittajat preferoivat kotimaisissa osakkeissa arvo-osakkeita kun taas ulkomaissa yrityksissä he osoittivat mieltymystä kasvu yhtiöihin. Mikään muista selittävästä muuttujista kuin yrityksen koko ei osoittanut pystyvän selostamaan johdonmukaisesti yksityissijoittajien omistuksia kotimaassa tai ulkomailla. Melko hyvin toimi muuttuja joka suhteutti yrityksen vapaat kassavarat sen markkina-arvoon ja se oli tilastollisesti merkitsevä. Yksi selitys tälle voisi olla, että piensijoittajat keskittyvät yrityksiin joilla on tai on ollut korkea kannattavuus.

### AVAINSANAT

Piensijoittaja, preferenssit, yritykset ominaisuudet, home bias, pienet yritykset

## Acknowledgements

I was able to get my data from a Swedish Brokerage company. I want to thank the firm for providing the data for my research and for the good co-operation with the personnel of the company.

In addition, I received good comments and advice from my Instructor, Professor in Behavioral Finance, Markku Kaustia. He contributed by mentioning good earlier articles and also in focusing my study on the more interesting up to date questions.

I also received help from my fellow student, Tero Viitanen, with whom I shared ideas about the content. He also provided critical but helpful comments on the formatting.

## Table of contents

1. Introduction.....	7
2. Earlier research .....	9
2.1 Traditional home bias theories.....	9
2.2 Shorting home equities.....	11
2.3 Behavioural and information based theories.....	11
2.3.1 Firm size and information asymmetries.....	11
2.3.2 Distance and culture.....	14
2.3.3 Familiarity.....	16
2.3.4 Optimism and confidence .....	17
3. International diversification of Finnish investors .....	20
3.1 Finnish investors .....	20
3.2 The additional risks of investing abroad .....	23
3.3 The benefit: correlation lower than one .....	24
4. Data and hypotheses.....	28
4.1 Provider of data.....	28
4.2 The data.....	29
4.3 The research goal and hypotheses.....	29
5. Determinants of individual stock holdings .....	30
5.1 The explanatory variables and summary statistics.....	30
5.3 Regression of foreign shares for Swedish and Finnish investors.....	35
5.3.1 Additional new variables .....	40
5.4 Institutional and retail investors.....	42
5.5 The effect of industry and region .....	45
5.6 Tobit regression.....	48
5.7 Comparison of investment size .....	49
6. Determinants of mutual fund holdings.....	51
6.1 Explanatory variables.....	51
6.2 Summary statistics .....	52
6.3 Regression of mutual fund variables.....	54
6.4 Regional differences in size preference .....	57
7. Conclusions and discussion .....	60
8. References.....	63
9. Appendices.....	66

## List of tables and figures

Table 1 Correlations based on monthly return data .....	25
Table 2 The sample countries and frequencies .....	33
Table 3 Regression of Swedish ownership in foreign shares.....	36
Table 4 Regression of Finnish ownership in foreign shares .....	37
Table 5 Classification of portfolios based on size and exports-to-sales ratio .....	39
Table 6 Classification of portfolios based on size and volatility for Finnish investors .....	41
Table 7 Regression of Finnish and foreign ownership on Finnish equities .....	43
Table 8 Regressions of foreign ownership on different industries .....	46
Table 9 Regression of ownership share in foreign companies based on region .....	47
Table 10 Regression of ownership share on selected mutual fund variables.....	55
Table 11 Classification of equity mutual funds into portfolios by Swedish investors .....	57
Table 12 Regression of Swedish investors' ownership share for West Europe and excluding it.....	58
Figure 1 The Helsinki Stock Exchange market capitalisation .....	20
Figure 2 The market value of Finnish retail investor and institutional holdings .....	21
Figure 3 Correlation analysed as running 12 monthly observations over time against Finland. ....	26
Figure 4 The sectoral distribution of foreign equities.....	32
Figure 5 The sectoral distribution of foreign equities.....	32
Figure 6 Distribution of market capitalisation and investor allocation.....	34
Figure 7 Distribution of market capitalisation and investor allocation.....	34
Figure 8 Geographic distribution of equities for Finland (n=70) and Sweden (n=455) .....	53
Figure 9 Geographic distribution of equities for Finland (n=70) and Sweden (n=455) .....	53

# 1. Introduction

Behavioural finance considers how various psychological traits affect the ways that individuals or groups act as investors. As noted by Olsen (1998), behavioural finance advocates recognize that the standard model of rational behaviour and profit maximization can be true within specific boundaries but assert that it is an incomplete model since it does not consider individual behaviour. The goal of this thesis is to analyse the company characteristics that influence investors' choices when they choose to invest in equities. I compare the investor behaviour and possible differences in preferences between domestic and foreign equities. In addition, I add to previous research by using data of equity mutual fund holdings in testing whether similar preferences can be found there.

It has been shown that investors hold mainly domestic equities (Black, 1974). This phenomenon has been named home bias and has encouraged a lot of research on the topic (Cooper and Kaplanis, 1994). Lately the research has been more focusing on whether the bias could be explained by the differences in company characteristics between domestic and foreign companies.

Institutional investors have been shown to prefer large, low leverage companies with a clear tradable product when investing in foreign firms (Kang and Stulz, 1997). On the other hand, retail investors seem to allocate more into smaller sized companies. Dahlquist and Robertsson (2001) argue that this preference is more an "institutional investor bias" where mutual funds and other large investors hold more large companies. This preference by mutual funds has been documented also by other researchers (Falkenstein, 1996). Among the domestic equities, higher allocation in the smaller companies by retail investors could be explained by better knowledge and familiarity. This type of explanation for investing in the familiar has been offered by Hubermann (2001) who argues that the local companies are better known to households.

I have a representative sample of the Finnish retail investors' domestic and foreign stock holdings and Swedish investors' foreign stock holdings which I received from a Swedish brokerage company. In addition, I compare this with data of equity mutual fund holdings by retail investors. I use same methods as earlier research by Dahlquist and Robertsson (2001) who focus on just individual shares.

Based on my results, retail investors show a preference towards smaller companies. This type of conclusion was evident based on both the domestic and foreign shareholdings. One possible

explanation could be, as argued by Dahlquist and Robertsson (2001), that the results are caused by institutional investors' preference for large companies. However, when looking at the mutual fund holdings, retail investors showed also preference towards mutual funds that invest more into smaller sized companies. Interestingly, the relation seemed not to be linear and other factors clearly had also an influence on the investor choice.

The most significant of these other factors seemed to be that retail investors had a higher allocation in mutual funds with fewer assets under management. It is likely that mutual funds with smaller amounts of assets under management operate more locally. This would support the conclusion by Hubermann (2001) of investor preference for familiarity. It would also imply that in the case of individual shares, investors might have some sort of preference towards smaller companies at least domestically since these are more likely to be better known to them. However, my results would seem to support similar kind of preference also among the foreign equities, even though not as strong. Familiarity is however not a likely explanation for the foreign companies. I also document preference towards volatility which could be one explanation for the preference for smaller firms. For retail investors liquidity is not such a problem and as a result it favours that type of companies.

The structure of the thesis is following. Section 2 presents briefly explanations for home bias and related earlier research covering investor preferences. Section 3 describes Finnish investors based on earlier findings and their asset allocation. In Section 4 I summarize my data and hypotheses. I present my analysis first on individual shares and then on mutual funds in Sections 5 and 6. After that in Section 7 I draw up the conclusions and discussion concerning the findings and how they line up with previous research.

## **2. Earlier research**

Home bias has been extensively studied both in finance and in economics. There have been many possible explanations for the phenomenon but empirical data has always failed to support the theories. Theoretically, one can come up with good reasons why investors actually should be short of their home market. Lately, there have been more and more behavioural and information asymmetry related theories explaining the empirical findings. First, I introduce the classical explanations. Second, I analyse possible reasons to short the home market. Third, I discuss the latest behavioural theories on investor preferences towards certain type of companies.

### ***2.1 Traditional home bias theories***

Barriers to international investing i.e. limitations on investments, transaction costs and exchange rate risks have been traditionally used as an explanation to focus on the home market (Black, 1974). However, these have been documented to be relatively small factors and the costs of investing in the foreign market are too small to explain the large focus on home country equities. Hubermann (2001) argues that in developed countries these costs can not explain the actual portfolio allocations. Also Tesar and Werner (1995) state “the high transactions rate on foreign investments suggests that investors frequently adjust the composition and size of their international portfolios, even though much of this activity has little impact on net investment positions...(this finding) suggests that high transaction costs associated with trading foreign securities can not be the reason for the observed reluctance of investors to diversify their positions internationally.” Still today we can observe that the home bias has not disappeared, even despite the liberalization of capital markets.

Another common explanation has been the desire to hedge country specific inflation risk (Adler and Dumas, 1983). Their argument goes that domestic assets are likely to follow domestic inflation and hence work as an inflation hedge. As a result, the purchasing power will remain fairly constant. However, this theory has been also abandoned by the findings of Cooper and Kaplanis (1994), which show that the observed portfolio holdings can't be explained with normal risk aversion levels. According to this theory, the level of domestic equity holdings should have decreased in developed countries because of the lower inflation expectations and its actual level. Nevertheless, this has not been the case. As a result, other more convincing explanations have been offered for the bias.

One additional explanation offered is the risk that is associated with non-traded goods, especially human capital (Stockman and Dellas, 1993). Also Tesar and Werner (1995) have used the same reasoning explaining that ownership of domestic equity would hedge cyclical fluctuations in labor's share of income and possible government income redistribution policies. However, Baxter et al. (1998) assume frictionless trade in financial assets and show that it can not explain the puzzle. The assumption of frictionless trade in financial assets is quite strong and especially for retail investors hedging might not be possible. Also the cost of hedging might not cover the benefit from international diversification.

An interesting approach to home bias has been the hypothesis that the difference in means and variances is not statistically significant. It is easy to notice that the estimates of historical means and variances fluctuate according to the chosen time period and its length. During the last two decades returns have been very volatile. Bekaert and Urias (1996) analyse the uncertainty in foreign returns and its effect on UK investors' holdings of closed-end mutual funds. Somewhat different approach has been used by Klein and Bawa (1977). In their model, investors have prior beliefs about means and variances and they update those as they observe new data. They use the so called Bayesian approach, which includes estimation risk.

Lewis (1999) shows that normal levels of investor risk aversion can not explain the actual portfolio holdings that we notice. She uses simplified mean variance analysis to derive a formula for investor diversification as a function of risk aversion, home and foreign country returns and covariance. Her model assumes that there are two assets, home and foreign, and the returns are uncertain. She uses a utility function where the relative risk aversion is constant. Her model analyses the benefit in two parts. The first one is the effect of return difference between domestic and foreign equities on the allocation. The second part of the model is the benefit from differing covariance on the allocation.

Lewis (1999) questions the explanation of risk aversion because the uncertainty should not cause investors to focus so much on the home market. She shows that for U.S. the optimal share of foreign equities would be 70.6 percent at the lowest risk aversion level of one. Even at a high risk aversion level of ten it would be 39.5 percent. In reality the allocation in foreign was 8 percent. She concludes that even with uncertain returns the foreign share should be higher than the one observed in reality.

## ***2.2 Shorting home equities***

Rationality and optimization of risk and return have been the fundamental assumptions in finance. In this setting investors try to find mean-variance optimal portfolios (Lewis, 1999). The correlation between different markets is not perfect. This fact offers investors possibilities to achieve lower variances and better Sharpe ratios for their portfolios. Theoretically, shorting the domestic equities could be supported under certain macroeconomic assumptions. This kind of model has been suggested by Baxter et al. (1998).

Their argument against the risk with non-traded goods has been the high correlation with labour incomes and the domestic stock market (Baxter et al., 1998). In this case, people should buy more of foreign securities. Hence, investors who are concerned of unemployment should be more inclined to invest internationally. Theoretically, it might even make sense to short the domestic equities in favour of foreign ones.

## ***2.3 Behavioural and information based theories***

### **2.3.1 Firm size and information asymmetries**

The features of foreign companies that are held by investors in their portfolios have been covered by Kang and Stulz (1997). They use data covering foreign investors' stock holdings in Japan between 1975 to 1991. As explanatory variables they have; leverage, current ratio, return on assets, beta, residual variance, excess return, market value and book-to-market ratio. Their main finding is that investors invest primarily in large foreign companies. This result was significant at 0.1 percent level over the entire period. On average, foreign investors had 6.97 percent of equity in the largest size quantile, whereas only 1.21 percent in the smallest size quantile. They classified the findings into five size quantiles.

Other main finding of Kang and Stulz (1997) was that foreign investors seemed to clearly prefer companies in manufacturing industries. Relative to the market value of different industries, manufacturing was overweighted on average by 13.7 percent, whereas transportation & communication and real estate were underweighted by 5.96 percent and 5.12 percent, respectively. Investors seemed to prefer also companies with good accounting performance, low leverage and high market-to-book ratios.

As a first explanation for the preference for large companies, Kang and Stulz (1997) mention that larger firms are better known abroad due to their larger share of exports. Moreover, they find that investors also prefer the most export-driven companies among the small-sized companies. As a second explanation they point out liquidity. Based on their regressions, the relationship between liquidity and foreign ownership was positive and significant. As a third explanation, they argue that large firms face fewer barriers to international investments. For example, they find that companies with cross-listings and ADRs have more foreign ownership.

The bias towards large companies causes the volatility of these investors' monthly return to be 5.38 percent, whereas for the market portfolio it is 4.81 percent. On the other hand, the return itself is quite close to the market portfolio. Kang and Stulz (1997) also regress monthly stock returns with foreign ownership, proceeding the same way as Fama and French (1992) in trying to find out whether foreign ownership affects the return expectations. However, the findings of this test remain statistically insignificant.

A similar approach in analysing the company features has been by Dahlquist and Robertsson (2001). They study the foreign investors' share holdings of Swedish companies by testing the same variables as Kang and Stulz (1997). In addition, they test new variables; ownership structure (concentration), foreign listing and the level of liquid assets. The concentration variable measures the proportion of votes held by the largest stockholder. Dahlquist and Robertsson (2001) get also data of their domestic institutional investors' and household shareholdings. This way they run the same regressions also using these as dependent variables.

The main findings of Dahlquist and Robertsson (2001) are very much in line with earlier work. Foreign investors focus on large companies with liquid stocks. Foreign investors also prefer companies with a low concentration of ownership. This would imply that investors attach great importance to their possibilities in exercising their shareholder rights. Foreign listing and dividend yield were both also statistically significant. Dahlquist and Robertsson (2001) draw the conclusion that information asymmetries might be the most important reason for the specific company features for foreign investors. The authors state that majority of the foreign investment comes from institutions. As a result, they argue that the firm characteristics are more related to institutional investors which prefer in general that type of companies. This applies especially to U.S. investors that comprise the majority of foreign investments to Swedish companies' shares. Dahlquist and

Robertsson (2001) conclude that this bias might be more related to institutional investors than to foreign investors in general.

Dahlquist and Robertsson (2001) show that based on the equity owned, retail investors underweight large companies and firms with high current ratios and low turnover. On the other hand, companies with high ownership concentration are overweighted. Dahlquist and Robertsson (2001) note that this is probably due to the existence of one large shareholder or their family. Domestic investors might also have better information available of the local companies which would support information based explanations. The authors run the regressions also on investors coming from different geographical areas. They separate four geographical areas; Nordic, Europe, North America and World. Based on those regressions, in particular European and North American investors prefer large companies with significant cash holdings.

Especially institutions have been shown to prefer certain type of companies. Mutual funds and other large investors prefer especially large liquid companies (Falkenstein, 1996). The research focused on mutual funds' ownership share in companies and the respective company features. According to the results, institutions are influenced by the company share price level, volatility and the amount of news stories. Small-cap funds on the other hand showed a relative preference towards smaller companies whereas all the other fund types showed a positive relation with firm size. What was also interesting was the finding that institutions showed aversion to low variance. Falkenstein (1996) proposes an explanation based on actively managed funds. He argues that in order to justify the higher fees of actively managed funds, the fund managers choose stocks that reach a certain threshold of volatility.

A similar study focusing on institutional investors has been done by Gompers and Metrick (2001). They show that during 1980 and 1996 institutional investors' share of the common stock market has nearly doubled. Large investors show a preference for certain type of companies. Gompers and Metrick (2001) test whether this preference has influenced the stock prices of large companies compared to the stock prices of small ones. They find some support for the hypothesis and argue that the good stock price performance of large companies during this period would be partly attributable to the behaviour of institutional investors.

Ahearne et al. (2002) use data of the U.S. foreign equity holdings by country in aggregate level. Their findings show that information asymmetry is one reason for home bias. They calculate the

market value based weights for each country in their sample and compare that to the actual portfolio weights of all the U.S. investors. The difference between these two is the bias that they use in their regression. For each country, the actual portfolio weight is clearly below the weight based on the market capitalization of that country's shares.

Ahearne et al. (2002) test five explanatory variables; the amount of a country's shares listed in US, the size of the market, the measure of possible foreign investment restrictions, the amount of trade between countries and the variable of reward-to-risk ratio which measures the country's past stock market performance. Based on their regressions, the U.S. listing, size and possible restrictions on investment were statistically significant. Surprisingly, the amount of trade did not matter. However, the U.S. listing was found to have the most explanatory power within both developed and developing countries. Ahearne et al. (2002) draw the conclusion from the strong results of the U.S. listing-variable that information asymmetries are one major reason for the low investment in some countries. Companies listed in the U.S. have to follow the country's disclosure requirements, accounting standards and regulatory environment, which forces them to produce higher quality financial information and hence reduce information costs. As a result, the companies become more attractive to investors.

### **2.3.2 Distance and culture**

Coval and Moskowitz (1999) study the home bias of mutual funds. They use data from the U.S. and calculate the geographical distance between the mutual fund managers and the corporate headquarters inside the U.S.. They compare this to the market value based portfolio. Their findings show that on average fund managers invest in companies located 160 to 184 kilometres closer to them than the benchmark portfolio. In percentage terms, managers invest in securities that are 9.32 percent to 11.20 percent closer. The range comes from different market portfolio weights of either value weighted or equally weighted.

Based on the results, Coval and Moskowitz (1999) argue that roughly one-third of the home bias in the U.S. portfolios could be explained by distance. They test their model by adjusting portfolio weights also in international level for the six main markets. They do this by extrapolating their U.S. results. Coval and Moskowitz (1999) predict that the distance bias might be even worse for

individual investors than it is for institutions with better information and resources available. This has been confirmed later by Grinblatt and Keloharju (2000) in their research using Finnish data.

Coval and Moskowitz (1999) also analyse the features of companies that mutual funds hold and the connection with distance. They use five same variables as Kang and Stulz (1997); firm size, leverage, current ratio, return-on-assets and market-to-book ratio. Besides those they add variables such as the number of employees and the tradability of a company's product as a dummy variable. Based on the regressions, they confirm the results of previous studies. According to their results, investors located far away prefer large, non-leveraged companies with a traded good. All these three variables were statistically significant. The good explanatory power of leverage-variable is explained with greater uncertainty about the company's future earnings. According to Coval and Moskowitz (1999), uninformed foreign investors face more severe risk of adverse selection and tend to hold smaller proportions of local securities. Local investors hold more of local companies because they have better possibilities of receiving information about them. The authors end up with the conclusion that information based explanations are major reasons for the local equity preference.

A similar interesting approach to investor choices is the research made by Grinblatt and Keloharju (2000), who use a unique data set of Finnish investors and their stock holdings and trades. Grinblatt and Keloharju (2000) test three variables in explaining investor preference for a company; distance, language of the annual report and the cultural background of the CEO. Based on their findings, investors prefer companies that are located close to them. For companies located in Helsinki, the bias is much smaller because the companies are better known nationally. This bias is seen also in institutional investors' shareholdings but is smaller than for households. Based on trades, institutional investors do not seem to exhibit bias in Helsinki located companies.

The second explaining factor, language, was also statistically significant. The results of Grinblatt and Keloharju (2000) show that Finnish speaking investors prefer companies that publish their annual reports in Finnish. The similar finding holds for the Swedish speaking nationals. The third variable, CEO's cultural background, was found to be important especially for households. Also institutions have a small bias in this respect even though it is not as strong as for households. In addition, Grinblatt and Keloharju (2000) analyze the connection between household sophistication and the home bias. As a proxy for sophistication, they use investor diversification. Their results

show that the biases based on distance, language and culture are smaller for more sophisticated investors who hold better diversified portfolios.

The results of Grinblatt and Keloharju (2000) support the findings of Hubermann (2001), which emphasize also geographic proximity and familiarity as main explaining factors for investment choices.

### **2.3.3 Familiarity**

One of the possible behavioural explanations for home bias has been familiarity (Hubermann, 2001). As a result, people prefer investing in companies that are familiar to them and that they feel like knowing about. Also Merton (1987) argued that investors invest in securities they know about. Hubermann (2001) shows that the preference for familiarity is demonstrated in people holding shares of the companies which are geographically close to them. The interesting finding of his work is that home bias is not just focused on the international country level but also strong within a country.

Hubermann (2001) used data of the shareholdings of the seven regional Bell companies. In every state except one, more people held shares in the local company than in any other regional Bell company. The result was clearly statistically significant. His findings also confirmed that people overweight local companies in their portfolios in monetary terms. The average account size for the local company was \$13,817 whereas for the out-of-state it was \$8,869. For families with annual income between \$50,000-\$100,000 (66.7 percent of households) the median value of direct and indirect stock ownership was \$21,300. For the income range of over \$100,000 (6.1 percent of households) the median direct and indirect stock ownership was \$90,800. As a result, Hubermann (2001) argues that the familiar investment of local telephone company represents a substantial share of the household equity portfolio.

Another argument by Hubermann (2001) is that many people are willing to hold their employer's stock in their portfolios. As an investment, this is contrary to the risk reducing behaviour, in which the employee actually should be short on the employer stock. Employees may heavily overweight their investments in their company's stock (Benartzi, 2000). Business week (1997) reports, "in some companies, even when employees have the choice of other investment options, they tend to go for what they know. Look at Abbott Labs. Until January 1996, employees had no choice: All of the

401(k) money went into the company stock. Then the company added four investment choices and the chance to reallocate. Today, 68 percent of the employees' regular investment still goes toward stock and the total plan remains 90 percent invested in Abbott shares." In case of a bankruptcy this investment strategy is the worst one.

Hubermann (2001) draws the conclusion that an investor may have the feeling of having information that the market has not. It represents "the investor's illusion that he has superior information". People's desire for clarity and avoidance of unknown has been also tested by Heath and Tversky (1991). They claim that "people prefer to bet in a context where they consider themselves knowledgeable or competent than in a context where they feel ignorant or uninformed. This feeling of knowledge can be created by experience or familiarity. Heath and Tversky's (1991) experiments show that people are even willing to pay a premium for the bet that they feel knowledgeable. Hubermann (2001) draws the conclusion that familiarity has not an informational advantage but it is the tendency of people to be optimistic. This has been documented also by several other researchers.

### **2.3.4 Optimism and confidence**

Babad (1995) has studied electoral estimates in Israel and her results show a wishful thinking effect in people's predictions. She asked voters to predict the election outcome and their preference for a political party. For each political group she found the estimates to be too optimistic. The analysis also included a case, where the respondents were given information about the previous election outcome, which was considered to be relevant for the prediction at hand. This didn't change the estimates compared to the base case. An interesting finding was that the wishful thinking effect was quite moderate. Babad (1995) states "...wishful predictions are not detached from reality, and they are quite realistic despite the distortion".

Kilka and Weber (2000) compared the stock market expectations of business students in Germany and in the U.S. on the domestic and foreign markets. Their results showed that people feel significantly more optimistic about domestic stocks than about foreign stocks. Kilka and Weber (2000) also asked the respondents to rate their level of knowledge about the stocks in question. Based on this, they found that people's estimates on high competence stocks were much less dispersed than for low competence stocks. Interestingly for high competence stocks the estimates also showed greater optimism. This is in line with the research about investor overconfidence. People prefer to bet on their own judgment against an equiprobable chance event when they

consider themselves competent (Heath and Tversky, 1991). In this situation, people may be even willing to pay a premium for the event they feel competent.

Kilka and Weber (2000) also tested whether their home country estimates would have been more accurate due to informational advantage. The results of the test did not support this hypothesis as neither German nor U.S. respondents showed any significant superior performance. It would have been interesting if Kilka and Weber (2000) would have used a comparison group which would have been provided historical information like in the study by Babad (1995). This way they could have analysed whether more accurate information would reduce the optimism bias.

The questionnaire by Kilka and Weber (2000) asked respondents to provide quarterly estimates about the stock index. Based on the results they argue that the estimates were annually around 2 percentage points more optimistic about domestic than for the foreign country. Kilka and Weber (2000) state that this is quite close to the findings by French and Poterba (1991), who calculated that based on the real portfolio holdings by U.S. investors, the expected annual return for home equities should be around 2 percentage points higher than for foreign equities. French and Poterba (1991) offer as another explanation besides investor optimism the fact that investors may consider estimated returns higher due to estimation errors. They state that the standard error of the estimated mean annual return has been around 200 basis points. Using the 95 percent confidence interval this can reach 800 basis points.

Suh (2004) has studied the recommendations of geographical portfolio allocation by major banks in the Economist Quarterly poll. He shows that home bias is present also in recommendations that institutions give despite the global operations. According to his findings, the recommendations of the institutions are tilted towards the home market of the institution in question. Suh (2004) also finds that the recommendations of changes for portfolio weight focus more on the home market. He argues that the weights of remote markets are not changed so often because of informational disadvantage. The results are interesting in a sense that some institutions seem to overweight their home country, whereas there are also institutions that underweight it in their recommendations. This fact makes one think that if the level of bias differs across countries or whether it could be explained by normal variance. However, the t-statistics are significant for the institutions that most heavily overweight their own market.

Quite similar research has been conducted by Strong and Xu (2003), who analyse the results of Merrill Lynch monthly Fund Manager Survey between years 1995 and 2000. In the survey respondents were asked to report their views on the future development of main markets and currencies. Strong and Xu (2003) report that fund managers are more optimistic about their own markets and this is statistically significant. Interestingly, the analysis covers individual persons, whereas the study by Suh (2004) covers institutions.

Also the work by Shiller et al. (1996) has documented the optimism of investors towards their own market. Their paper analyses the expectations of both Japanese and U.S. financial institutions using a survey during 1989-1994, in which both of them gave estimates of the two countries stock market development. Shiller et al. (1996) conclude that “Respondents in both countries became relatively optimistic or pessimistic at about the same time, but there was always the enormous spread between their expectations”. They state that this could be explained by the fact that investors are more optimistic about their own country market. They argue that the difference can’t be explained by informational difference.

### 3. International diversification of Finnish investors

#### 3.1 Finnish investors

In Finland, 14 percent of the population owned shares directly in 2000 (Karhunen and Keloharju, 2001). Private investors owned 7 percent, domestic institutions 21 percent and foreign investors 69 percent of the market value of Helsinki Stock Exchange. The stock ownership had concentrated to the capital, Helsinki, where people own 55 percent of the total retail investor share holdings. The median investment in stocks in 2000 was 5,244 euros (converted to euros from Finnish Markka) whereas the mean investment 37,613 euros (converted to euros from Finnish Markka). The large difference is caused by some investors who hold very large portfolios. The development of the Finnish share ownership in the Helsinki Stock Exchange can be seen below.

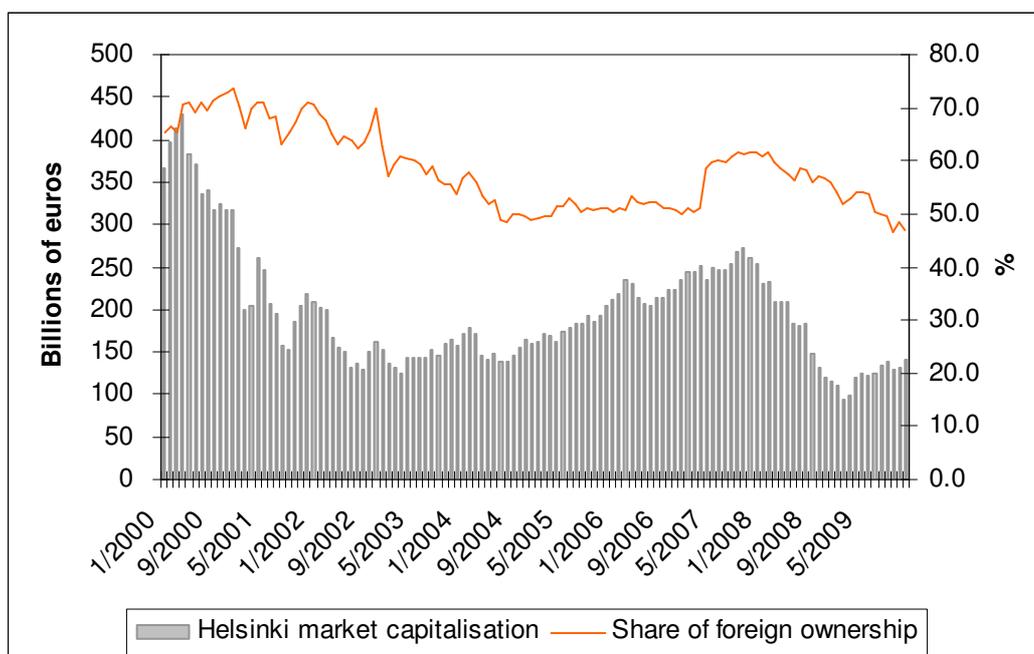
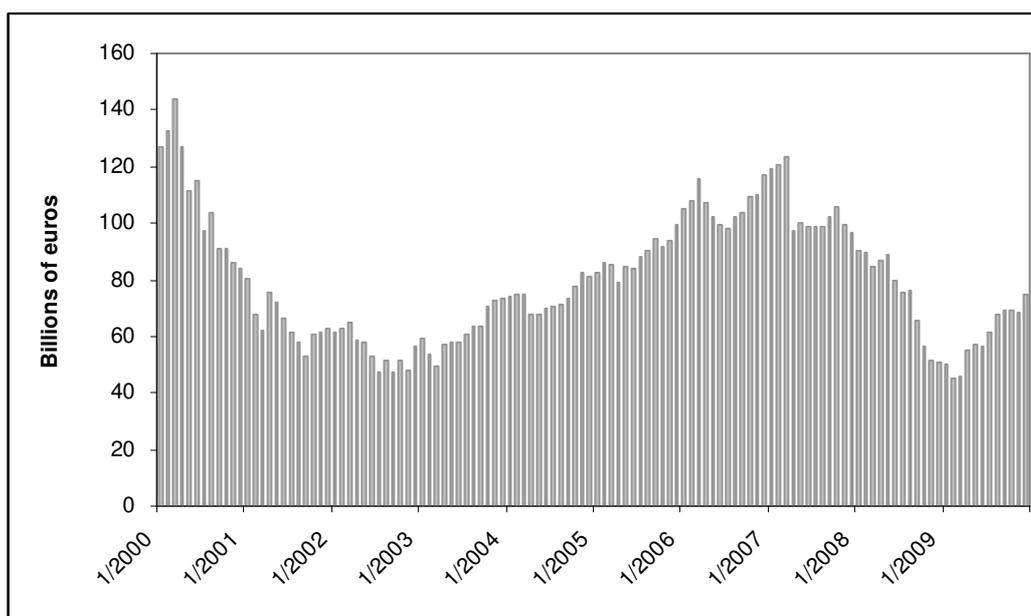


Figure 1 The Helsinki Stock Exchange market capitalisation and foreign ownership share (Source: The Bank of Finland)

Based on the Figure 1, one can notice that the share of foreign ownership has been decreasing since 2000 when it reached its high. This implies that Finnish investors and institutions have increased their holdings in terms of market value. The graph below shows the market value of domestic holdings in the Helsinki Stock Exchange.



**Figure 2 The market value of Finnish retail investor and institutional holdings in the Helsinki Stock Exchange (Source: The Bank of Finland)**

The Finnish investors have been allowed to invest in foreign shares since 1986. Afterwards, the limitations on foreign investment have been substantially reduced. For example, Finland eliminated all restrictions on foreign ownership in 1993. Also the taxation has become more unified and possible limitations on investment have been removed. Finland has tax treaties with over sixty countries. The tax rate on dividends from listed companies is the same between Finnish and foreign companies that are located in an EU-country or in a country with a tax treaty<sup>1</sup>. Hence, taxation should not be an obstacle for foreign investment. Also technology and the Internet have made it much easier and faster to search for information. Liljeblom and Löflund (1999) report that in 1999 Finnish households held 84 percent of their equity in domestic shares and 16 percent in foreign shares. They also show that Finnish investors would receive clear benefits from international diversification. They calculate following optimal weights for Finnish investors in 1999; Finland 15 percent, EU 34 percent, other European Monetary Union 11 percent and the rest of the world 40 percent. The problem with this analysis is that at that time it was not possible to invest in all of the listed market areas, or it was quite costly in terms of transaction costs.

The share of foreign holdings in the portfolios of Finnish retail investors has remained quite stable since the research by Liljeblom and Löflund (1999). Based on my data, the average portfolio share of foreign equities was only 15 percent at the beginning of 2010.

<sup>1</sup> See more: The tax law Dnro 1214/345/2005, 6.10.2005  
[http://www.vero.fi/default.asp?path=5,40,87&article=4186&domain=VERO\\_MAIN](http://www.vero.fi/default.asp?path=5,40,87&article=4186&domain=VERO_MAIN)

Finnish retail investors hold very undiversified portfolios. Based on (Karhunen and Keloharju, 2001), 56 percent of Finnish retail and institutional investors held shares in only one company and 18 percent held shares in two companies year 2000. Private investors had on average 2.4 and institutional investors 2.9 shares in their portfolios. However, larger portfolios are better diversified. Investors with a portfolio of 168 000 euros (approximately 1 million in Finnish Markka) had on average 9.3 shares (Karhunen and Keloharju, 2001). Their results are based on data from Central Securities Depository which covers 99.99 percent of Finnish institutional and retail investors.

Lehtinen and Männistö (2001) have covered Finnish investors in their investor survey. Their target group consisted of 640 members of the Finnish stock owners association and 251 investors using an online broker. Their results showed that main factors for choosing a stock were the superiority of a company's products, research and development investments and the industry of the company. Liquidity and the stock's previous performance had somewhat less significance for the respondents. Surprisingly, the respondents reported as less influential whether they work for the company or whether their friend had recommended the stock. Several studies have however especially shown that employer stock is considered to be more reliable and also heavily overweighted in portfolios. In marketing, recommendations by reference groups have been studied more extensively. These findings show that friends and opinion leaders may influence our buying behaviour<sup>2</sup>. This effect has been found to be stronger for luxury products which are more noticed by others. In the case of stocks, individuals do exchange information between each others. Hence, recommendations and holdings by our friends should influence our choices.

According to the survey by Lehtinen and Männistö (2001), retail investors seldom trade in foreign exchanges. The most frequent foreign trading place was the Stockholm stock exchange. Investors follow also actively the news flow from NYSE and Nasdaq. All these three exchanges were listed as the most interesting ones by investors. Lehtinen and Männistö (2001) conclude that investors have the most information available from these exchanges, and in languages that are easiest for Finnish investors.

In Finland, there are two major pension funds, Ilmarinen and Varma. Those have much better international diversification. The following data has been taken from their webpages. At the end of

---

<sup>2</sup> More e.g. Coganagher and Bruce (1971) Bearden and Etzel (1982)

year 2008 Ilmarinen had “around 7 billion invested in equities”. Out of that 35.3 percent was invested in domestic equities. Varma has 7.9 billion invested in equities (as of 30.9.2009). Out of this their “investment in Finnish equities was 2 billion” which constitutes 25.2 percent share in Finland. If we however include the commercial real estate investments, the share of domestic investments becomes much higher. Both pension funds hold mainly Finnish real estate but also somewhat real estate funds that focus abroad. The exact distribution was not given and can not be calculated. However, it was said that the majority of the real estate assets were focused in Finland.

The Finnish state is a shareholder in nine Finnish large stock listed companies. The investments are managed by a holding company Solidium which was created in 2008. Its investment decisions are “based on financial and national considerations and made within Solidium’s operational framework as defined by the Government”. The holding company may “acquire, on its own or in cooperation with other Finnish parties, new holdings with return from its investments or with debt financing and dispose of its holdings either in part or fully.” However, so far the portfolio has been entirely invested in Finnish securities. Just based on mean-variance thinking, better international diversification would be beneficial. Of course in the case of the Finnish state, the question is also somewhat political which influences the matter.

### ***3.2 The additional risks of investing abroad***

In international diversification there are risks that are not faced with domestic equities. The first one is exchange rate risk. The investment value of a foreign currency denominated stock fluctuates also due to exchange rate changes. The volatilities of exchange rates can be quite high. Exchange rate risk can be hedged with forward rates but for a retail investor this might not be possible or economically sensible. Also for large institutions hedging exchange risk is not totally costless. Due to development in the financial markets, the costs have been reduced and hedging possibilities have improved. The correlation coefficients between hedged and unhedged returns are very similar. This confirms that hedging currencies is not a major issue in diversifying internationally.

The second risk in international diversification is country-specific risk. This is kind of the opposite of the benefit that investors try to receive with foreign equities. Country-specific risk includes political risk which consists of variables such as government stability, corruption, possible military conflicts and ethnical tensions and taxation. Another component are financial and economic risk

variables such as indebtedness, exchange rate instability and inflation. Usually country-specific risks are higher in emerging markets. In developed countries especially political risk is quite low. Rating agencies provide analysis of country risk by classifying countries based on the above mentioned variables. In certain countries political risk can be major factor in investment decisions.

### **3.3 The benefit: correlation lower than one**

The main benefit from international diversification is that investors can reduce their portfolio variance. This can be done using different assets and also by investing in different countries. The general formulas for the expected return and variance of a portfolio are:

$$E(r_p) = \sum_{i=1}^n w_i E(r_i)$$

$$\sigma_p^2 = \sum_{j=1}^n \sum_{i=1}^n w_i w_j Cov(r_i, r_j)$$

The goal of portfolio optimization is to have optimal asset weights that maximise the portfolio return-variance relationship. All the optimal portfolio combinations form the efficient frontier. The benefits come from correlations that are lower than one. An ideal case would be to hold an asset with a negative correlation. However in real world, correlations are quite close to each other between the main markets.

In the following analysis of correlations I have focused on the seven individual markets that are directly available to retail investors through the Swedish brokerage company. I use price indexes that have been taken from Datastream and are in national currencies. The data was available for all the seven countries starting April 1999. The findings have been first transformed into monthly observations and after that into the log of the monthly values. As a result, I have monthly changes that are comparable to each other<sup>3</sup>.

Finland has somewhat lower correlations with its comparison group. The correlation is below 0.7 against all the other countries. On the other hand, the correlations between other countries except Finland remain above 0.7. The lowest correlation of the entire group is between Finland and

---

<sup>3</sup> The usage of monthly observations has been common in earlier research. For more detailed analysis, see e.g. Longin and Solnik (1995)

Norway 0.55. The highest correlation of the sample is between Sweden and Germany. These results indicate that Finnish investors would benefit from international diversification. On the other hand, also foreign investors would benefit from investing in Finnish stocks. For Finland's comparison group the correlation seems to be the highest between Sweden. The similar industrial structure and the trade between these countries probably explain this.

**Table 1 Correlations based on monthly return data**

	Finland	Canada	Germany	Denmark	Sweden	U.S.	Norway
Finland	<b>1.00</b>	0.64	0.60	0.59	0.69	0.66	0.54
Canada	0.64	<b>1.00</b>	0.72	0.76	0.76	0.77	0.77
Germany	0.60	0.72	<b>1.00</b>	0.70	0.85	0.76	0.71
Denmark	0.59	0.76	0.70	<b>1.00</b>	0.75	0.76	0.81
Sweden	0.69	0.76	0.85	0.75	<b>1.00</b>	0.73	0.72
U.S.	0.66	0.77	0.76	0.76	0.73	<b>1.00</b>	0.71
Norway	0.54	0.77	0.71	0.81	0.72	0.71	<b>1.00</b>

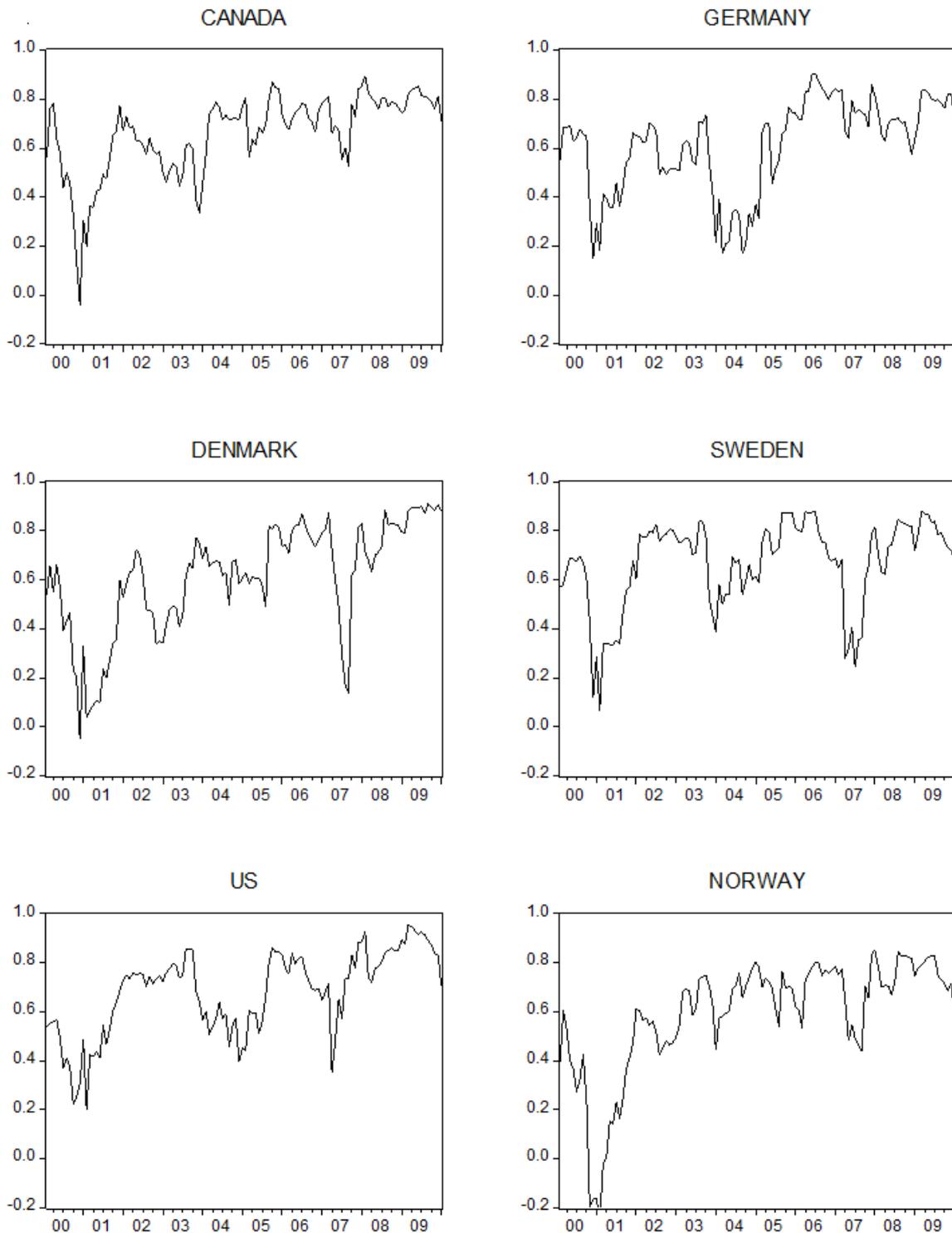
The adoption of the euro in Finland may have somewhat changed this situation. Interestingly, also between neighbouring countries Norway and Denmark the correlation is highest, 0.806. Between neighbouring countries U.S. and Canada the same result seems to apply. Cross listings might offer one explanation for the high correlation. For example, in the Helsinki and Stockholm exchanges there are several large cross listed stocks. The preference for the same language as suggested by Grinblatt and Keloharju (2000) would support also higher correlation in these three cases.

The above Table 1 gives rather stable picture of the correlation as something that is constant. In reality this is not true but instead the correlation may differ quite a lot depending on the chosen time period of data (Longin and Solnik, 1995)<sup>4</sup>. As a result, I run correlation against Finland for all the other countries on a running basis which consists of 12 monthly observations. Hence, the goal is to analyse the return similarity over one year period. The results are shown in Figure 3 below.

Based on the graphs, over the ten year period only Norway had for a short period negative correlation during the IT boom crash. Canada and Denmark were quite close to having also negative correlation. At the end of the period Norway had relatively stable and high correlation with Finland. An explanation for this can be found from the business sectoral recessions in 2000 and 2008. In Finland the share of information technology was very high whereas in Norway it was relatively much smaller against the large oil sector. During the financial crisis that started in 2008, the

<sup>4</sup> Better known as unconditional correlation Longin and Solnik (1995)

correlation between Norway and Finland has remained quite high. This can be explained by the relatively low risk taking by the banking sector and the resulting low write downs. Also the large share of manufacturing makes the economies similar. In conclusion, investors should analyse the correlation of different economic sectors and not just focus on the country level correlation.



**Figure 3 Correlation analysed as running 12 monthly observations over time against Finland.**

An interesting finding by Longin and Solnik (1995) has been the increase in international correlation between markets over time. As the correlation between countries increases, the benefits from international diversification become smaller. Longin and Solnik (1995) analysed the equity correlation using data of seven main markets between years 1960 to 1990. They calculate monthly excess returns and analyse that using a multivariate GARCH(1,1) model with constant conditional correlation. Longin and Solnik (1995) find a positive time-trend in conditional correlation for all countries. The trend is statistically significant at the five percent level for four out of six countries. The finding is similar if they estimate the GARCH model with a trend solely in correlation but not in variances. Based on their results, the average increase in correlation over 30 years has been 0.36.

Longin and Solnik (1995) offer as a possible explanation the economic integration between markets. This makes national firms more and more influenced by global factors. Large multinationals operate all over the world. As a result, Longin and Solnik (1995) suggest that their stock prices should behave more like an international diversified portfolio.

It has been reported in previous studies that institutional investors prefer large companies in their investment allocation. Longin and Solnik (1995) on the other hand discuss that perhaps globalisation has increased the correlation between stock exchanges. This raises the question whether there are differences in correlation between smaller and larger companies. The latter might operate more globally and hence have higher correlation with other multinationals. At the same time, smaller companies might be more subject to country specific factors and hence have lower correlation with the global market portfolio.

## **4. Data and hypotheses**

### ***4.1 Provider of data***

The data in my research comes from a Swedish based brokerage company. The firm operates in the Nordic countries and offers brokerage services through the Internet. This has kept the trading fees quite low. For an investor they offer possibilities to trade in Finnish, Swedish, Danish, Norwegian, German, U.S. and Canadian exchange listed shares. On the phone through a broker you can also trade British and other European stocks. It is also possible to make mutual fund investments using their brokerage services. The company doesn't charge any holding fee. For a regular customer the trading fees are between 0.1 and 0.27 percent of the total value of the trade. For Finland, Sweden and Norway the fee is 0.1 percent; for Denmark and Germany 0.12 percent and for the U.S. 0.15 and Canada 0.27 percent of the value of the trade. The Swedish brokerage firm applies a minimum fee which is 9 euros for trades in Finland. For shares in other countries the minimum fee is about the same level.

In case an investor trades a lot during a year, then the person will receive lower fees than presented above. The limits have been 30 trades and 100 trades annually. The company offers investors basic analysis tools for free. For Nordic shares, historical price graphs and also the most common financial ratios have been provided. However, for German, U.S. and Canadian shares the analysis tools are somewhat limited. The Swedish brokerage company has been ranked as the cheapest brokerage service by a Finnish financial magazine *Arvopaperi* in their (5/2009) edition for most of the investor types analysed. As a result, trading costs can not be used as an explanation for the low allocation in foreign shares because they are not significantly higher.

The Swedish brokerage firm has been growing fast. Already in 2008 they completed three percent of all the trades in Finland. The company operates in co-operation with the Finnish stock owners association. This has given a lot of credibility and especially private investors have been starting to use the company's brokerage services online. In Sweden they had somewhat higher market share of 6.4 percent. In Norway the share was even higher, 10 percent, and for Denmark 6.4 percent. For all other markets the share remained below one percent. As a result, the data I received offers an interesting dataset to study investor holdings and preferences. The sample can be considered representative because of the numerically high number of investors and the large market share.

## **4.2 The data**

First of all, I received data of the domestic and foreign shareholdings by Finnish investors. I also received a list of the foreign shareholdings by Swedish investors (short example list as Appendix 2). In analysing this data set I follow the work and methods by Kang and Stulz (1997) and Dahlquist and Robertsson (2001). These include regressions and classifying the stocks into portfolios. As the dependent variable I use ownership share, in line with previous work. Concerning explanatory variables I will focus on such features as market capitalisation, balance sheet structure, profitability and exports. The data for this comes from Thomson Financial. I retrieved the data in March 2010 so it contains all the latest financial information.

Second, my work will add to previous research by including equity mutual fund holdings into the analysis. In particular I test whether similar preferences can be observed in the mutual fund equities. I received data of the mutual fund holdings by Finnish and Swedish investors. Once again I analyse the ownership share in a mutual fund as the dependent variable. The Swedish brokerage company provides information about the mutual funds in their webpages using the Morningstar classification. I use explanatory variables such as the equities size, average price-to-earnings ratio, average price-to-book ratio and volatility. I have described the variables in more detail in the Section covering it.

## **4.3 The research goal and hypotheses**

My research goal is to test whether retail investors show preference towards certain type of companies and whether the preference is seen both in domestic as well as in foreign shareholdings. In addition I analyse whether similar behaviour can be seen also in mutual fund holdings.

The hypotheses of my research are following:

$H_0$  = Retail investors show preference towards smaller companies

$H_0$  = Retail investors show consistent preference towards either value or growth stocks

$H_0$  = Retail investors show preference towards companies with low leverage

$H_0$  = Retail investors show preference towards companies with high amounts of liquid assets as indicated by Dahlquist and Robertsson (2001).

## 5. Determinants of individual stock holdings

This section analyses whether retail investors show preference towards certain type of companies. I regress explanatory variables against the ownership share in a company. The dependent variable I have calculated using the following formula.

$$y = \frac{\text{invested amount in company Z}}{\text{company Z market capitalisation}} * 10000$$

The data has been analysed in euros in order to interpret the regression coefficients more easily. In case of stocks with two classes of shares, I have summed those up. For the gross monetary amount this does not cause problems. On the other hand, there might be individuals who hold both of the share classes. This is however quite unlikely and has been ignored.

In the following I will first analyse the foreign and domestic shareholdings of Finnish and Swedish investors. Second, I compare the regression results between retail investors and institutional investors. Third, I analyse whether there is difference in the results regionally or by industry. At the end of the Section I have also analysed the results using a Tobit model for comparison purposes.

### 5.1 The explanatory variables and summary statistics

The research goal was to explain retail investor choices by the company characteristics. The data for the following explanatory variables has been taken from Thomson Financial in March. For some variables, such as the market capitalisation, I collected some of the missing information from the company webpages. This was especially necessary for some of the smaller companies. I have used following explanatory variables in my analysis.

*Log (market cap):* the log of a company market value

*Cash/market cap:* the amount of cash divided by the market value

*Gearing:* (interest bearing debt-cash and cash equivalents)/equity; a measure of leverage

*Current ratio:* current assets divided by current liabilities

*ROA:* the return on assets

*Book-to-market*: the market value divided by book value of equity

*Exports*: the percentage share of exports out of revenues

*Log (trading volume)*: the log of trading volume

In addition, I use country dummies for the most frequent countries. These are the U.S., Canada, Germany, Sweden/Finland, Norway and Denmark. I also test three new variables which might work as proxies for some of the earlier variables or bring some new explanatory power.

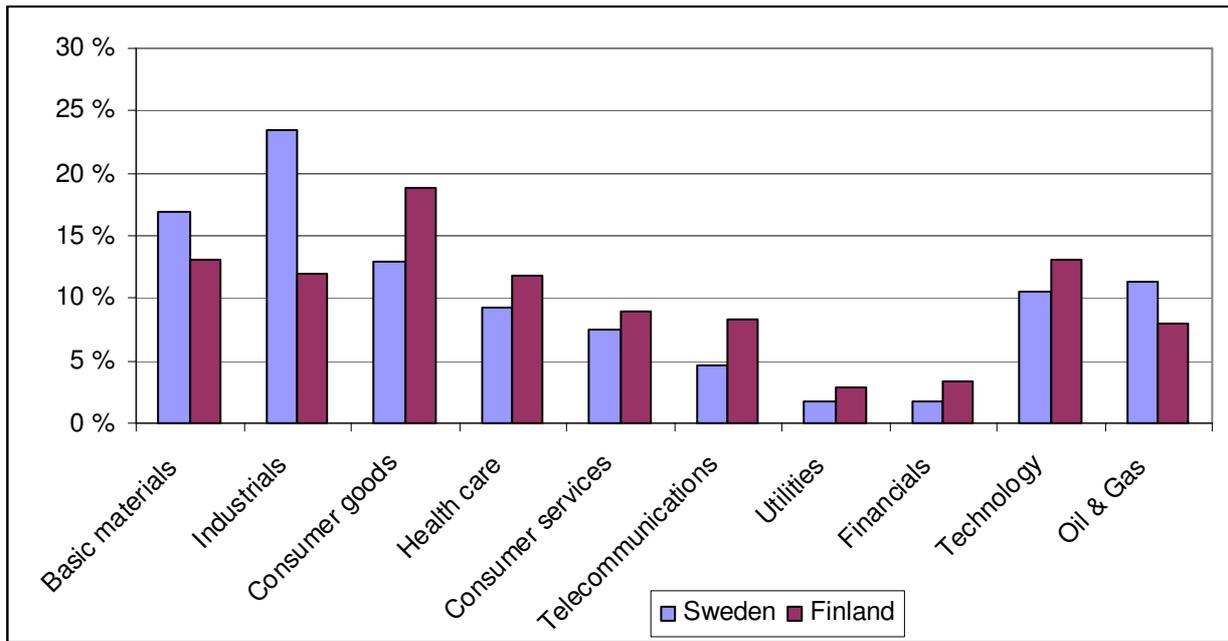
*Log (Sales)*: the log of company annual sales

*R&D*: the percentage of research and development expenses to sales

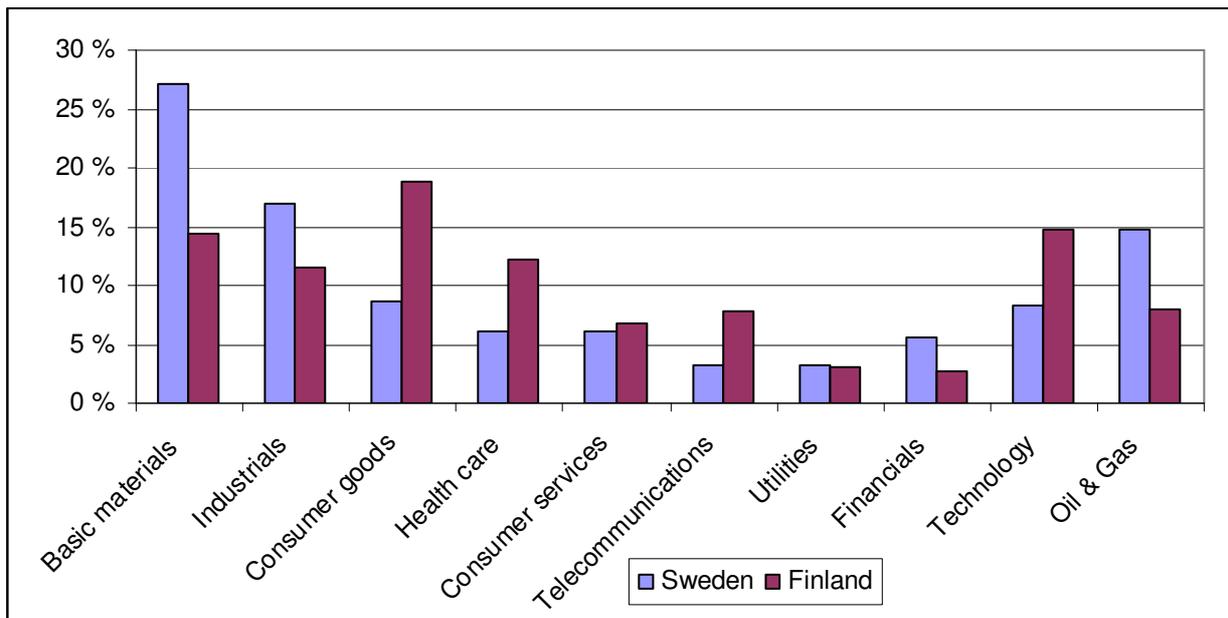
*Volatility*: the annual share price volatility

I used ICBindustry classification from Thomson Financial for the companies in my sample. This way I can analyse the portfolio composition and allocation by industry. The ICB codes and explanations have been added as Appendix 3. Earlier research by Kang and Stulz (1997) reports that investors prefer companies in the manufacturing industries. On the other hand, they show that transportation, communication and real estate sectors were underweighted. The ICB codes differ somewhat from the classification used by earlier research but still offer interesting comparison.

Below in Figures 4 and 5, I have provided two graphs about the frequency of different industry sectors. The first one is based on the number of companies in the industry sector out of all the companies in my sample. The second graph is based on the monetary amount invested in the sector. One can notice that Basic materials and Industrials are the most popular sectors for foreign shares. The Basic materials industry contains all different metals and mining companies. One especially popular subsector were uranium companies. For Finnish retail investors the largest industry was the Consumer goods. The share is quite the same by the number of companies as well as by the total value of equity. Utilities and telecommunications seem to be quite small by both number of companies and the equity invested. Those could be considered companies with the most stable cash flows. This is surprising because earlier research has used risk reducing behaviour and information asymmetries as an explanation for some of the company characteristics.



**Figure 4** The sectoral distribution of foreign equities by Sweden (n=753) and Finland (n=735). Based on the number of companies.



**Figure 5** The sectoral distribution of foreign equities by Sweden (n=753) and Finland (n=735). Based on the equity invested.

Table 2 shows the distribution of shareholdings by country. The list contains the country of incorporation for the sample companies. I have sorted the list based on the Swedish holdings. One can notice that U.S. companies are at the top of the list for both Sweden and Finland. Canadian companies are at the second place for Sweden, whereas for Finnish investors, the share is much smaller. For them Swedish companies are at the second place with a share of 19 percent. Otherwise

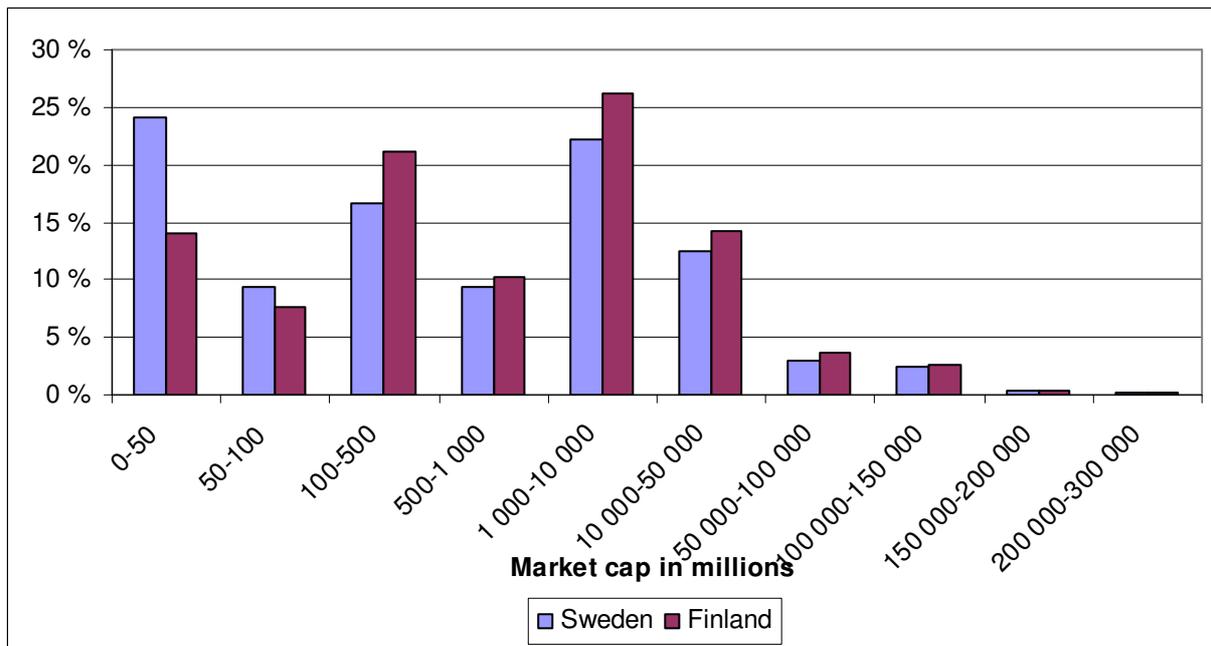
the list looks quite the similar and the same countries are at relatively same places. For Swedes, companies located in Norway seem to be relatively more popular than Finnish companies. One reason for that might be language as has been suggested by earlier research (Grinblatt and Keloharju, 2000).

**Table 2 The sample countries and frequencies**

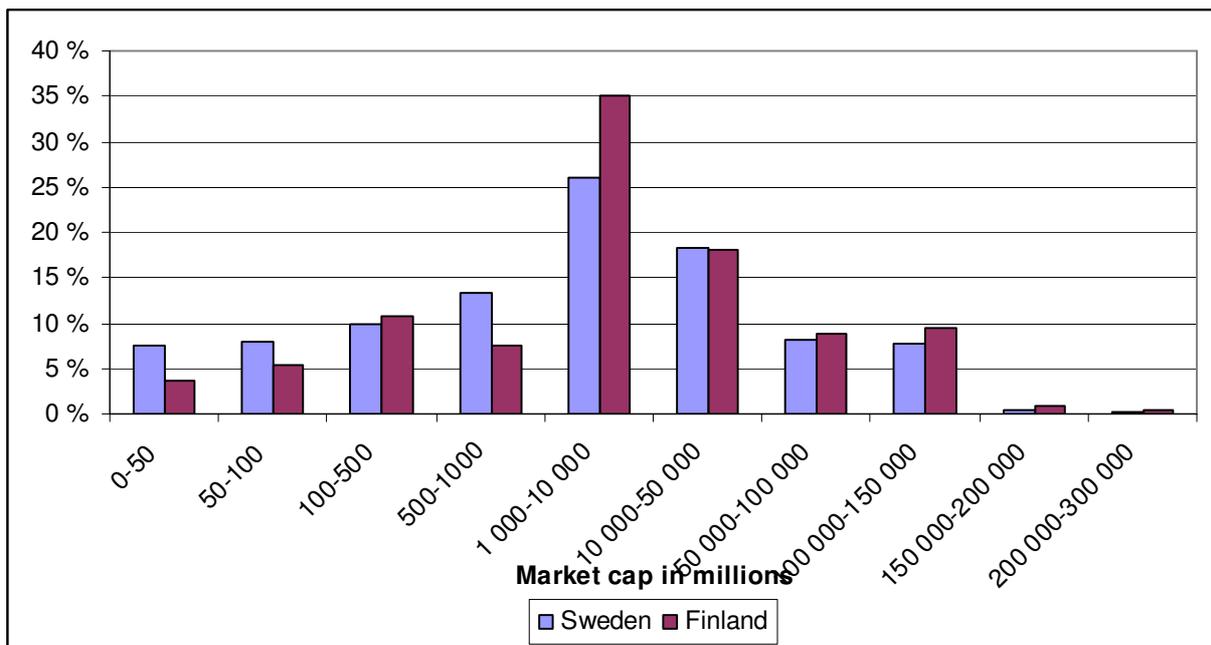
	Sweden	Finland	Sweden	Finland
U.S.	196	258	26 %	35 %
Canada	182	59	24 %	8 %
Norway	117	70	16 %	10 %
Finland	61	0	8 %	0 %
Denmark	48	29	6 %	4 %
Germany	39	48	5 %	7 %
China	21	25	3 %	3 %
UK	18	19	2 %	3 %
Bermuda	8	11	1 %	1 %
Russia	8	6	1 %	1 %
Hong Kong	7	5	1 %	1 %
Australia	5	1	1 %	0 %
Netherlands	5	2	1 %	0 %
Brazil	4	6	1 %	1 %
France	4	9	1 %	1 %
Switzerland	4	2	1 %	0 %
Cayman Islands	3	1	0 %	0 %
India	3	2	0 %	0 %
Japan	3	4	0 %	1 %
Colombia	2	0	0 %	0 %
Indonesia	2	0	0 %	0 %
Luxembourg	2	5	0 %	1 %
Singapore	2	2	0 %	0 %
Argentina	1	1	0 %	0 %
Austria	1	1	0 %	0 %
Chile	1	1	0 %	0 %
Greece	1	8	0 %	1 %
Iceland	1	0	0 %	0 %
Ireland	1	1	0 %	0 %
Israel	1	2	0 %	0 %
South-Korea	1	4	0 %	1 %
South Africa	1	0	0 %	0 %
Italy	0	3	0 %	0 %
Mexico	0	1	0 %	0 %
New Zealand	0	1	0 %	0 %
Spain	0	3	0 %	0 %
Sweden	0	142	0 %	19 %
Taiwan	0	1	0 %	0 %
Thailand	0	1	0 %	0 %
Vietnam	0	1	0 %	0 %
TOTAL	753	735	100 %	100 %

This table shows the frequency and share in percentages of firms classified by the country of origin in my sample data.

Retail investors seem to be willing to hold surprisingly small companies in their portfolios. For Swedish investors, companies with a market capitalisation of below 50 million euros were actually the largest group by number, Figures 6 and 7 below. When taking into account the total value of investment, the picture becomes somewhat different. For both countries the majority of investments go to companies sized between 1 billion and 10 billion when classified based on equity invested.



**Figure 6 Distribution of market capitalisation and investor allocation based on the number of companies. Sweden (n=753) Finland (n=735)**



**Figure 7 Distribution of market capitalisation and investor allocation based on the value of equity invested. Sweden (n=753) Finland (n=735)**

### **5.3 Regression of foreign shares for Swedish and Finnish investors**

I have analysed the earlier mentioned explanatory variables with the help of a multiple factor ordinary least squares model of the form:

$$Y_i = b_1 + b_2 X_{2i} + \dots b_k X_{ki} + u_i$$

For some of the variables data was not available and hence the number of observations is usually less than the total sample size. I have always indicated the number of observations and adjusted R-squared in the tables. Despite this the number of observations remains quite high and hence quite reliable. The results have been analyzed with Eviews and the software produces automatically Newey-West heteroskedasticity consistent coefficients.

The following Tables 3 and 4 show the regression results of foreign shares for Swedish and Finnish brokerage clients. For both countries, retail investors seem to invest relatively more in smaller sized companies. The coefficient is negative with respect to market capitalisation and the t-statistic is strongly significant. This is actually the only variable that seems to perform well in all the regressions. Trading volume variable was also significant and had a positive coefficient. This variable could be considered as a certain type of proxy for the company size. Larger companies normally have higher trading volume. However, the positive sign of the trading volume differs from the negative coefficient of market capitalisation variable. The ownership share is higher in companies with higher trading volume whereas by looking at the market capitalisation variable it is higher in smaller companies. These two facts would imply that investors show preference for smaller but liquid companies.

The ownership share seems to be higher in companies with lower dividend yield which would mean larger allocation in growth stocks. The coefficient is however statistically not significant. Smaller companies experience usually faster growth and hence pay less dividends. On the other hand, many large companies operate in industries where growth has slowed down and distribute larger share of profits back to shareholders. Part of this profit distribution takes effect through share repurchases. The rather low explanatory power of dividend yield might be caused by this fact. The variable might have better explanatory power in case it would include both dividends and share repurchases.

**Table 3 Regression of Swedish ownership in foreign shares**

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
<b>Log (Market capitalisation)</b>	-48.87 (1.83)	-5.03 (3.57)	-5.07 (3.55)	-4.29 (5.06)	-4.08 (4.63)	-3.47 (4.57)	-3.45 (4.57)	-3.40 (4.32)	-3.06 (4.02)
<b>Dividend yield</b>		-0.23 (1.72)	-0.24 (1.76)	-0.20 (1.46)	-0.33 (1.85)	-0.28 (2.01)	-0.28 (2.02)	-0.28 (2.00)	-0.49 (2.57)
<b>Book-to-market ratio</b>			-0.03 (1.21)	-0.03 (1.15)	0.07 (0.82)	0.00 (0.17)	-0.12 (0.76)	-0.11 (0.69)	-0.15 (0.95)
<b>Cash/market capitalisation</b>				0.02 (1.14)	0.02 (1.21)	0.00 (3.23)	0.00 (3.18)	0.00 (3.10)	0.00 (2.91)
<b>Exports</b>					-0.02 (0.23)	0.03 (0.48)	0.03 (0.48)	0.03 (0.45)	0.05 (0.75)
<b>Log (Trading volume)</b>						0.06 (1.62)	0.07 (1.79)	0.07 (1.70)	0.06 (1.67)
<b>Gearing</b>							0.00 (0.83)	0.00 (0.75)	0.00 (1.04)
<b>ROA</b>								0.00 (0.36)	0.00 (0.82)
<b>Current ratio</b>									0.09 (0.22)
<b>Adjusted R<sup>2</sup></b>	0.09	0.10	0.10	0.10	0.09	0.07	0.07	0.07	0.06
<b>N</b>	422	422	422	422	422	422	422	422	422
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
<b>Log (Market capitalisation)</b>	-48.87 (1.83)	-5.03 (3.57)	-5.07 (3.55)	-5.12 (3.08)	-5.10 (2.98)	-5.28 (2.98)	-5.27 (2.97)	-5.50 (2.91)	-5.47 (2.84)
<b>Dividend yield</b>		-0.23 (1.72)	-0.24 (1.76)	-0.24 (1.79)	-0.23 (1.81)	-0.23 (1.76)	-0.18 (1.47)	-0.15 (1.33)	-0.14 (1.35)
<b>Book-to-market ratio</b>			-0.03 (1.21)	-0.03 (1.03)	-0.03 (1.03)	-0.03 (0.94)	-0.01 (0.47)	-0.01 (0.56)	-0.01 (0.56)
<b>U.S.</b>				1.15 (0.18)	1.37 (0.22)	2.95 (0.45)	0.92 (0.14)	-2.18 (0.35)	-1.50 (0.32)
<b>Canada</b>					1.03 (0.19)	2.13 (0.41)	0.15 (0.03)	-3.51 (0.50)	-2.76 (0.41)
<b>Germany</b>						12.94 (1.04)	10.90 (0.87)	7.90 (0.63)	8.56 (0.72)
<b>Finland</b>							-10.63 (3.50)	-14.09 (2.79)	-13.38 (3.04)
<b>Norway</b>								-7.81 (1.23)	-7.05 (1.13)
<b>Denmark</b>									2.31 (0.21)
<b>Adjusted R<sup>2</sup></b>	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.11	0.10
<b>N</b>	642	642	642	642	642	642	642	642	642

The table reports the results of multiple regressions of Swedish investors' ownership share in foreign companies. Exports, dividend yield and ROA are denoted in percentage points. Constants for the regressions are not shown. The heteroscedasticity consistent t-statistics are provided in parentheses. The lower part contains country dummies of the most frequent countries. The number of findings N and adjusted R squared are reported for each regression.

**Table 4 Regression of Finnish ownership in foreign shares**

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
<b>Log (Market capitalisation)</b>	-2.06 (2.57)	-2.12 (2.35)	-2.14 (2.34)	-1.42 (2.37)	-0.51 (2.40)	-0.52 (4.75)	-0.54 (4.77)	-0.54 (4.66)	-0.52 (4.41)
<b>Dividend yield</b>		-0.07 (1.44)	-0.07 (1.42)	-0.06 (0.80)	-0.04 (0.49)	-0.01 (0.93)	-0.01 (1.00)	-0.01 (0.99)	-0.02 (0.98)
<b>Book-to-market ratio</b>			0.00 (0.14)	0.00 (0.30)	0.00 (0.49)	0.00 (0.34)	0.00 (1.19)	0.00 (1.24)	0.00 (1.23)
<b>Cash/market capitalisation</b>				0.02 (2.74)	0.02 (2.91)	0.00 (0.50)	0.00 (0.44)	0.00 (0.44)	0.00 (0.00)
<b>Exports</b>					0.01 (0.72)	0.00 (0.60)	0.00 (0.64)	0.00 (0.62)	0.00 (0.02)
<b>Log (Trading volume)</b>						0.01 (2.56)	0.02 (3.34)	0.02 (3.10)	0.02 (2.84)
<b>Gearing</b>							0.00 (1.25)	0.00 (1.30)	0.00 (1.30)
<b>ROA</b>								0.00 (0.01)	0.00 (0.32)
<b>Current ratio</b>									-0.02 (1.26)
<b>Adjusted R<sup>2</sup></b>	0.09	0.09	0.09	0.10	0.09	0.13	0.13	0.13	0.12
<b>N</b>	477	477	477	477	477	477	477	477	477

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
<b>Log (Market capitalisation)</b>	-2.06 (2.57)	-2.12 (2.35)	-2.14 (2.34)	-2.18 (2.22)	-2.21 (2.23)	-2.22 (2.19)	-2.19 (2.15)	-2.22 (2.12)	-2.24 (2.11)
<b>Dividend yield</b>		-0.07 (1.44)	-0.07 (1.42)	-0.07 (1.45)	-0.07 (1.35)	-0.07 (1.34)	-0.07 (1.35)	-0.07 (1.34)	-0.07 (1.35)
<b>Book-to-market ratio</b>			0.00 (0.14)	0.00 (0.24)	0.00 (0.23)	0.00 (0.23)	0.00 (0.20)	0.00 (0.19)	0.00 (0.20)
<b>U.S.</b>				1.35 (0.59)	0.89 (0.40)	1.01 (0.41)	1.64 (0.79)	1.01 (0.61)	0.68 (0.47)
<b>Canada</b>					-3.99 (2.37)	-3.90 (2.36)	-3.21 (2.40)	-3.90 (2.14)	-4.24 (2.05)
<b>Germany</b>						0.89 (0.47)	1.49 (0.88)	0.88 (0.69)	0.57 (0.50)
<b>Sweden</b>							1.77 (0.64)	1.07 (0.38)	0.72 (0.25)
<b>Norway</b>								-2.14 (1.02)	-2.49 (1.06)
<b>Denmark</b>									-1.76 (0.84)
<b>Adjusted R<sup>2</sup></b>	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
<b>N</b>	695	695	695	695	695	695	695	695	695

The table reports the results of multiple regressions of Finnish investors' ownership share in foreign companies. Exports, dividend yield and ROA are denoted in percentage points. Constants for the regressions are not shown. The heteroscedasticity consistent t-statistics are provided in parentheses. The lower part contains country dummies of the most frequent countries. The number of findings N and adjusted R squared are reported for each regression.

For the Swedish and Finnish investors; gearing, ROA or current ratio were not significant. Earlier research reported good explanatory power for the leverage variable in explaining institutional investor holdings. This was argued to be due to informational disadvantage. As a result, investors want to avoid very heavily indebted companies. My data does not show similar preference and also the other variable, ROA, which could be considered to measure also company performance, performed quite badly.

The cash to market capitalisation variable performed surprisingly well as was reported by earlier research (Dahlquist and Robertsson, 2001). The coefficient had a positive sign which would imply increased investment when the company had larger amount of cash to market value. Two possible explanations could be offered for this. First of all, this variable could be perhaps used as a proxy of the business risk related to the company. In particular, firms in the technology sector and with large R&D spending have high levels of liquid assets. Usually these companies would suffer high costs of financial distress. On the other hand, companies with stable and reliable cash flows don't need such a large amount of liquid assets. These results have been confirmed by Opler et al. (1999) who showed that companies with strong growth opportunities and riskier cash flows hold relatively high amounts of cash to total non-cash assets. A second possible explanation could be that the high amount of liquid assets was a sign of the firm profitability. Opler et al. (1999) also showed that well performing companies accumulated more cash than predicted by the static tradeoff model where managers maximize shareholder wealth. The good performance of the variable in my results would perhaps indicate more of a preference for highly profitable companies than desire for volatility.

The exports variable did not show any good performance in explaining foreign shareholdings. The t-statistics remained very low for both Finnish and Swedish investors. Earlier research by Kang and Stulz (1997) reported that this variable increased ownership especially for smaller companies. The difference in results can be explained with the difference in the sample data as has been also argued by Dahlquist and Robertsson (2001). Kang and Stulz (1997) used all foreign investors in aggregate in the Japanese market. The majority of these are likely institutional investors whereas my data focuses on retail investors. Dahlquist and Robertsson (2001) analyse in detail this fact and argue that many of the so called biases are more related to institutional investors. In addition they show that especially U.S. institutional investors show preference for large low leverage companies with large exports. Also my data later on compares institutional and retail investors.

The amount of exports might be related to company size. In order to separate the effect of export ratio and company size, Kang and Stulz (1997) formed portfolios of different sized companies with different levels of exports to sales. I use a similar table to demonstrate that in the smallest size quintile retail investors invest relatively more in the companies with the smallest exports to sales ratio. In Table 5 below I present foreign ownership share for size quintiles and exports quintiles. In constructing the table I have ignored companies with no data. The table reports average ownership shares and in parentheses the median ownership share.

Households exhibit preference towards companies which seem to operate mainly in the domestic market. In the results by Kang and Stulz (1997), the first column has the opposite results where investors have a higher share in companies with larger exports. In their results this is statistically significant for the two first columns. This shows the difference between institutions and other small investors. For my data the results remain statistically insignificant but still show the difference in preferences for the smallest sized companies.

**Table 5 Classification of portfolios based on size and exports-to-sales ratio for Finnish investors**

Exports/Sales ratio	Size quintiles					All
	Smallest	2	3	4	Largest	
Smallest (1)	4.63 (1.80)	0.48 (0.40)	0.17 (0.06)	0.05 (0.01)	0.02 (0.00)	1.07 (0.10)
2	2.28 (1.10)	0.34 (0.31)	0.05 (0.03)	0.09 (0.02)	0.02 (0.01)	0.55 (0.07)
3	3.18 (0.76)	1.06 (0.28)	0.29 (0.10)	0.06 (0.03)	0.01 (0.01)	0.95 (0.09)
4	1.89 (1.25)	0.42 (0.23)	0.37 (0.16)	0.07 (0.03)	0.01 (0.01)	0.54 (0.11)
Largest (5)	1.60 (0.80)	0.48 (0.15)	0.18 (0.09)	0.10 (0.06)	0.03 (0.01)	0.83 (0.10)
(5)-(1)	-3.03	0.00	0.01	0.06	0.01	-0.24
[t-statistic]	[1.46]	[0.08]	[0.06]	[1.16]	[1.05]	[0.59]
All	3.07 (1.00)	0.55 (0.26)	0.21 (0.07)	0.07 (0.03)	0.02 (0.01)	

Mean and median ownership (%) in foreign companies by portfolios formed on the market value of equity and then the exports-to-sales ratio. The firms for which data are available on exports-to-sales ratio are divided into size quintiles. Each quintile is then divided into five quintiles based on the exports-to-sales ratio. The cells in the table provide the mean (median) of the portfolio. The average difference between the smallest and largest portfolio has been also indicated and the respective t-statistic.

In the smallest exports-to-sales quintile the average ownership is 4.63 whereas in the largest quintile it is only 1.6. For larger companies the preference seems to be the opposite but statistically not significant. That is, in the largest size quintile larger exports increase ownership slightly. In the

results of Kang and Stulz (1997), for larger companies there was no difference in ownership share based on the exports to sales ratio. In the largest size quintile with smallest exports-to-sales ratio, the average exports share was 16 percent. The level was about the same also in the respective smallest sized companies' quintile.

The country dummies in Tables 3 and 4 did not improve the explanatory power of the regression. For Swedish investors this gave somewhat better results whereas for Finnish investors it lowered the R-squared. Swedish investors seemed to underweight Finnish companies and overweight German. Finnish investors on the other hand seemed to prefer Swedish and German companies and underweight Norwegian and Canadian firms. For Swedish investors only underweighting Finnish shares was statistically significant. For Finnish investors underweighting Canadian companies was statistically significant. The number of Canadian companies was quite low for Finnish investors compared to Swedish. This can be seen in the Table 2 earlier which listed all the countries in the sample.

### **5.3.1 Additional new variables**

I tested also three new variables which might have been able to improve the regression or to proxy for another variable. The log of sales variable I used in replacing the company market cap. This however did not improve the regression and the t-statistics remained insignificant. It seems that market value is more relevant factor for investment choices than just the company sales. The company sales could be usually considered to be related to company size. However, profitability usually determines market value more than just sales. In growth companies sales might influence market value much more. As a result, the variable did not improve the regression.

Research and development expenses as a percentage of sales had a significant t-statistic of 2.07 in the Finnish data but the coefficient remained close to zero. I replaced the gearing variable in the initial regression with R&D. The explanatory power of the entire regression did not improve from this change. Usually companies with high research and development expenses also have high amounts of liquid assets. Hence this variable might work as a proxy for the cash to market capitalisation variable.

The volatility had similar level of performance as the R&D but its larger coefficient made it a much better variable in explaining investor choices. I substituted also this variable in the place of the

gearing variable. In general the R-squared increased slightly to 0.13 for Finnish investors which was still quite a small change. More interesting was to use once again similar classification of portfolios by size and volatility as already earlier.

Table 6 below shows that in the smallest companies' quintile the ownership share is highest for companies with lowest volatility. The ownership share seems to drop for more volatile shares but starts to increase once again. By looking at the median investment, investors seem to hold more volatile stocks. Also in the largest size quintile ownership is higher in companies with higher volatility and this is statistically significant. This would imply that investors prefer companies with higher volatility. However, when looking at the column "All" in the table below, it clearly shows the negative relation between volatility and investor holdings. This can be seen also in the second size quintile. There might be different kinds of investor clienteles who hold small sized companies. In the smallest size quintile the volatility was at the lowest volatility portfolio on average 31 percent whereas in the largest it was 56 percent. In the largest size quintile the corresponding figures were 17 percent and 36 percent.

**Table 6 Classification of portfolios based on size and volatility for Finnish investors**

Volatility	Size quintiles					All
	Smallest	2	3	4	Largest	
Smallest (1)	7.35 (1.19)	1.29 (0.41)	0.17 (0.11)	0.03 (0.01)	0.01 (0.00)	2.51 (0.10)
2	5.13 (2.11)	0.98 (0.41)	0.26 (0.11)	0.11 (0.07)	0.02 (0.01)	1.92 (0.16)
3	3.03 (1.29)	0.46 (0.22)	0.13 (0.05)	0.09 (0.04)	0.03 (0.01)	0.69 (0.11)
4	6.96 (2.32)	1.03 (0.36)	0.43 (0.10)	0.07 (0.03)	0.02 (0.01)	1.46 (0.11)
Largest (5)	6.66 (2.04)	0.79 (0.43)	0.16 (0.09)	0.13 (0.07)	0.02 (0.01)	0.53 (0.11)
(5)-(1)	-0.70	-0.50	0.00	0.10	0.02	-1.98
[t-statistic]	[0.14]	[0.75]	[0.59]	[3.09]	[2.67]	[2.51]
All	5.83 (1.96)	0.91 (0.36)	0.23 (0.09)	0.09 (0.03)	0.02 (0.01)	

Mean and median foreign ownership (%) by portfolios formed on the market value of equity and then the volatility. The firms for which data are available on volatility are divided into size quintiles. Each quintile is then divided into five quintiles based on the volatility. The cells in the table provide the mean (median) of the portfolio. The average difference between the smallest and largest portfolio has been also indicated and the respective t-statistic.

Similar type of behaviour has been documented by Falkenstein (1996) of mutual funds. He showed that there is a non linear preference with respect to volatility and that mutual funds are averse to very low idiosyncratic volatility. As a result, the coefficient of volatility was positive. This was explained by the fact that mutual fund managers want to take a certain level of risk in order to justify their higher management fees. Probably similar type of explanation would be in place for the previous findings and retail investors. Households try to search for undervalued stocks and hence invest in growth stocks with a larger potential gain.

The problem with this type of analysis is that it lacks the comparison of domestic equivalent data. The number of shares in the Helsinki stock exchange is insufficient to make similar classification into portfolios. On the other hand, due to substantially larger ownership shares in the domestic shares, it was not possible to combine these two data sets and analyse the difference in results.

#### ***5.4 Institutional and retail investors***

My data from the Swedish brokerage company contains mostly small retail investors. On the other hand, majority of foreign investors in the Finnish market are institutions. Information about the foreign ownership share for each company listed on the OMX Helsinki was available on the Euroclear Finland webpages on a monthly basis. I collected that data and analyse the differences in company characteristics using similar type of regressions as earlier. The results have been provided in Table 7 below.

The results are quite the same as in Dahlquist and Robertsson (2001). Retail investors hold relatively more smaller companies. Foreign investors on the other hand hold more of larger companies in their portfolios. Majority of these foreign investors are institutions as has been shown by Dahlquist and Robertsson (2001). For institutions the exports variable was significant and seems to be an important decision variable. Institutional investors probably consider exports as reducing the country risk and also as a sign of lower problems of information asymmetry. Companies operating globally have to provide suppliers and clients high quality financial information using the generally accepted reporting principles. The explanation of familiarity would fit better for retail investors and for companies with consumer brands. For these the exports ratio was however not significant when looking at foreign share holdings.

Table 7 Regression of Finnish and foreign ownership on Finnish equities

FINNISH INVESTORS IN FINNISH EQUITIES									
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
<b>Log (Market capitalisation)</b>	-17.81 (5.07)	-19.01 (5.45)	-18.98 (5.39)	-19.82 (4.16)	-18.65 (4.24)	-20.29 (3.82)	-19.91 (4.03)	-20.89 (4.07)	-22.55 (4.61)
<b>Dividend yield</b>		1.81 (0.70)	2.04 (0.79)	3.33 (1.50)	3.71 (1.76)	3.86 (1.82)	3.74 (1.81)	3.19 (1.38)	2.74 (1.05)
<b>Book-to-market ratio</b>			0.20 (5.08)	0.19 (5.98)	0.06 (0.01)	-0.31 (0.07)	2.35 (0.52)	1.26 (0.25)	-0.33 (0.07)
<b>Cash/market capitalisation</b>				0.61 (3.88)	0.60 (4.76)	0.59 (4.74)	0.63 (3.81)	0.65 (3.82)	0.60 (3.69)
<b>Exports</b>					0.36 (1.61)	0.33 (1.41)	0.32 (1.39)	0.35 (1.59)	0.24 (0.97)
<b>Log (Trading volume)</b>						2.52 (1.23)	2.54 (1.27)	2.74 (1.30)	3.29 (1.44)
<b>Gearing</b>							0.09 (0.80)	0.09 (0.81)	0.06 (0.39)
<b>ROA</b>								0.69 (1.67)	0.73 (1.30)
<b>Current ratio</b>									-5.57 (0.69)
<b>Adjusted R<sup>2</sup></b>	0.25	0.26	0.26	0.28	0.34	0.34	0.35	0.36	0.37
<b>N</b>	113	113	113	113	113	113	113	113	113

FOREIGN INVESTORS IN FINNISH EQUITIES									
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
<b>Log (Market capitalisation)</b>	7.02 (10.82)	7.72 (10.70)	7.73 (10.75)	7.82 (10.90)	6.38 (4.99)	5.15 (3.90)	5.08 (3.78)	5.77 (4.25)	5.26 (4.13)
<b>Dividend yield</b>		-1.52 (2.77)	-1.42 (2.66)	-1.38 (2.46)	-1.26 (1.72)	-1.14 (1.58)	-1.12 (1.52)	-0.73 (0.98)	-0.72 (0.96)
<b>Book-to-market ratio</b>			0.09 (5.12)	0.09 (4.77)	-0.44 (0.28)	-0.72 (0.48)	-1.19 (0.91)	-0.41 (0.32)	0.51 (0.37)
<b>Cash/market capitalisation</b>				0.02 (0.40)	-0.04 (0.59)	-0.05 (0.82)	-0.06 (1.08)	-0.07 (1.32)	-0.07 (1.33)
<b>Exports</b>					0.27 (2.53)	0.24 (2.24)	0.25 (2.24)	0.22 (2.16)	0.29 (2.81)
<b>Log (Trading volume)</b>						1.90 (2.99)	1.90 (2.98)	1.76 (2.88)	1.80 (2.61)
<b>Gearing</b>							-0.02 (0.77)	-0.02 (0.75)	-0.01 (0.55)
<b>ROA</b>								-0.49 (2.06)	-0.35 (1.52)
<b>Current ratio</b>									1.87 (0.80)
<b>Adjusted R<sup>2</sup></b>	0.32	0.34	0.35	0.33	0.31	0.32	0.32	0.35	0.38
<b>N</b>	113	113	113	113	113	113	113	113	113

The table reports the results of multiple regressions of Finnish and foreign investors' ownership share in Finnish companies. Exports, dividend yield and ROA are denoted in percentage points. Constants for the regressions are not shown. The heteroscedasticity consistent t-statistics are provided in parentheses. The number of findings N and adjusted R squared are reported for each regression.

Another statistically significant variable for institutions is the trading volume. The t-statistic was 2.61 and about the same level as for exports variable. For foreign investors also return on assets was clearly significant but negative. This is strange as one could expect investors to focus on companies with higher profitability. High current ratios were also positively related to foreign ownership share whereas for retail investors the relation was negative.

For domestic investors the cash to market capitalisation variable was always positive and statistically significant. It had the second highest t-statistic after company size. Because the variable performed clearly worse in the case of foreign companies, it would support the conclusion that Finnish investors have certain type of informational advantage in the domestic market. It is possible that domestic investors are able to focus more on profitable companies that have high operating cash flows. As a result, either the preferences are different or investors change these preferences due to better information.

The preference for cash dividends has been covered in previous research (Shefrin and Statman, 1984). This has been explained with the fact that investors consider consumption financed with dividends more acceptable than consumption financed with capital. Evidence by Kahneman and Tversky (1982) indicates that for most people the sale of stock causes more regret than getting the same amount in the form of dividends. As a result, dividends and capital can not be treated as perfect substitutes. In my results dividend yield has a positive coefficient compared to the negative one in the regression looking at foreign shareholdings. This would mean that investors prefer value stocks when investing in the home market whereas growth stocks when investing abroad. There seems to be a change in behaviour between these two markets. Another explanation might be that different clienteles of investors focus on either the domestic market or the foreign markets.

## ***5.5 The effect of industry and region***

Using the ICBindustry codes as dummy variables, I can also test for the effect of different industries on foreign share holdings. The results have been reported in Table 8 below. In general the industry dummies do not improve the explanatory power of the regression. Both countries seem to underweight Industrials and this is statistically significant. Finnish investors also seem not to prefer Basic materials which has a t-statistic of 1.93. The domestic stock market offers possibilities for investing in mining related companies and this might be one reason for the low level.

Finnish investors seem to favour consumer goods whereas Swedish brokerage clients have a negative coefficient of -4.21 for this sector. However, the t-statistic for Finnish retail clients remains only 0.70. Probably for this industry sector, familiarity of the companies could be assumed to be the highest because of mostly branded products. As a result, possible preference might be here an indication of investing in the familiar. On the other hand, many consumer products companies have different company names from their brand names.

Both Healthcare and Telecommunications could be considered as quite stable cash generating industries. Despite the similarities, Finnish investors seem to underweight the first one while overweighting the second one. There are similar cases for Swedes; Telecommunications are overweighted with a coefficient of 3.71 and at the same time Utilities are underweighted with a coefficient of -2.86.

In general, industry as an explanatory variable does not seem to offer any consistent information in explaining the equity allocation. Majority of the industries had different type of coefficients between these two markets. The industrial structure of both Finland and Sweden is quite similar and hence investors should be familiar with companies in same type of industries. It seems that this type of argument of investing in the familiar does not apply when looking at different industries.

**Table 8 Regressions of foreign ownership on different industries**

	FINNISH	SWEDISH		FINNISH	SWEDISH
<b>Log (Market capitalisation)</b>	-2.23 (2.32)	-5.07 (3.49)	<b>Log (Market capitalisation)</b>	-2.17 (2.29)	-5.11 (3.53)
<b>Dividend yield</b>	-0.08 (1.50)	-0.16 (1.58)	<b>Dividend yield</b>	-0.09 (1.43)	-0.21 (1.43)
<b>Book-to-market ratio</b>	0.00 (1.39)	-0.05 (1.25)	<b>Book-to-market ratio</b>	0.00 (0.37)	-0.03 (1.24)
<b>Oil &amp; Gas</b>	1.34 (0.34)	4.05 (0.66)	<b>Consumer services</b>	1.20 (0.72)	3.71 (0.64)
<b>Basic materials</b>	-3.22 (1.93)	0.97 (0.17)	<b>Telecommunications</b>	2.29 (1.32)	3.07 (0.65)
<b>Industrials</b>	-3.14 (1.97)	-7.67 (2.07)	<b>Utilities</b>	1.33 (1.49)	-2.86 (0.91)
<b>Consumer goods</b>	1.38 (0.70)	-4.21 (1.33)	<b>Financials</b>	2.70 (1.02)	-1.83 (0.52)
<b>Health care</b>	-3.66 (1.88)	2.04 (0.22)	<b>Technology</b>	0.59 (0.41)	2.79 (0.45)
<b>Adjusted R<sup>2</sup></b>	0.09	0.10	<b>Adjusted R<sup>2</sup></b>	0.08	0.10
<b>N</b>	695	642	<b>N</b>	695	642

The table reports the results of multiple regressions of Swedish and Finnish investors' ownership share in foreign companies. Both of the regressions contain five industrial dummies. Constants for the regressions are not shown. The heteroscedasticity consistent t-statistics are provided in parentheses. The number of findings N and adjusted R squared are reported for each regression.

I also analyse the regression results by segregating different countries into regional portfolios. Similar approach was used by Dahlquist and Robertsson (2001). Table 9 below reports the results of this analysis. Region Nordic contains the five Nordic countries, North America contains the U.S. and Canada, Europe includes all other European countries except the Nordic ones and the region World contains all the other countries not included in the earlier groups.

**Table 9 Regression of ownership share in foreign companies based on region**

	FINNISH INVESTORS				SWEDISH INVESTORS			
	Nordic	North America	Europe	World	Nordic	North America	Europe	World
<b>Log (Market capitalisation)</b>	-0.547 (2.46)	-0.383 (2.67)	-0.135 (4.18)	-1.909 (1.43)	-4.863 (2.55)	-2.488 (3.39)	-1.373 (2.34)	-4.158 (0.99)
<b>Dividend yield</b>	-0.042 (0.34)	-0.031 (1.15)	0.004 (0.55)	0.263 (0.93)	-0.759 (2.40)	-0.352 (1.52)	0.488 (1.24)	0.830 (0.34)
<b>Book-to-market ratio</b>	-0.046 (0.40)	-0.002 (1.16)	-0.013 (0.55)	-0.403 (0.68)	-0.429 (0.36)	-0.048 (0.29)	0.045 (0.15)	-6.489 (1.22)
<b>Cash/market capitalisation</b>	0.015 (1.96)	0.001 (0.62)	0.000 (3.83)	-0.030 (1.09)	-0.034 (0.58)	-0.001 (3.00)	-0.004 (1.57)	-0.015 (0.34)
<b>Exports</b>	-0.013 (0.78)	0.005 (0.78)	0.001 (0.89)	0.004 (0.22)	0.163 (1.19)	-0.049 (0.89)	-0.017 (0.68)	0.299 (1.25)
<b>Log (Trading volume)</b>	0.049 (1.62)	0.010 (2.15)	0.006 (1.89)	0.154 (0.82)	0.611 (0.78)	0.036 (0.96)	0.005 (0.38)	-0.131 (-0.96)
<b>Gearing</b>	-0.001 (0.53)	0.000 (1.30)	0.000 (0.82)	0.009 (0.60)	-0.065 (1.35)	0.001 (0.49)	-0.003 (0.49)	0.050 (0.63)
<b>ROA</b>	-0.012 (0.65)	-0.001 (0.24)	-0.006 (0.85)	-0.085 (0.60)	-0.860 (0.88)	-0.002 (0.51)	-0.038 (0.73)	0.367 (0.64)
<b>Current ratio</b>	0.408 (0.63)	-0.019 (1.82)	0.005 (0.11)	-0.265 (1.16)	-2.509 (0.75)	0.095 (0.16)	0.294 (0.43)	-0.562 (0.21)
<b>Adjusted R<sup>2</sup></b>	0.15	0.14	0.47	0.14	0.09	0.12	0.33	0.10
<b>N</b>	141	216	74	38	137	193	54	33

The table reports the results of multiple regressions of Finnish and Swedish investors' ownership share in foreign companies by region. Exports, dividend yield and ROA are denoted in percentage points. Constants for the regressions are not shown. The heteroscedasticity consistent t-statistics are provided in parentheses. The number of findings N and adjusted R squared are reported for each regression.

For European companies the R squared seems very high for both Finnish and Swedish investors. Part of the high value might be explained by the smaller amount of observations but on the other hand the World region has even less observations but worse explanatory power. The t-statistics for the European shares seem quite high but not compared to other regions. Hence there is no clear explanation for this and the result might be just spurious.

Investors overweight smaller companies especially in the Nordic countries but similar behaviour seems to be common also for other regions. In European countries the focus on smaller firms is less strong. Also the dividend yield reports similar conclusions. For both countries' investors Nordic and North American shares seem to be more growth stocks whereas the European and World regions' companies are more value stocks.

For other variables the explanatory power was at the same level as for the aggregate regressions. Cash to market capitalisation had a high t-statistic of 3.83 for Europe and 1.96 for Nordic. For Swedes the similar variable performed the best for North America. As a result, there is no major consistency in the rest of the variables.

## **5.6 Tobit regression**

I compare the foreign shares that are held by Finnish investors against randomly chosen shares with similar geographical allocation using a censored regression model, known as the Tobit model. The sample sizes were close to each other and the distribution of error terms was assumed normally distributed. The regression model is following:

$$y_i^* = x_i' \beta + \sigma \varepsilon_i$$

The observed y are given by:

$$y_i = \begin{cases} 0 & \text{if } y_i^* \leq 0 \\ y_i^* & \text{if } y_i^* > 0 \end{cases}$$

In other words, non held shares are coded as 0. The model is called left censored at 0 and tests all the same previously used variables. Based on the results only the company size and trading volume were significant with z-statistics of 7.32 and 1.79 respectively. The next highest z-statistic was only 0.71 for the current ratio. All the other variables had even lower explanatory power and also the

current ratio has to be included among these since the probability was only 47.5 percent. The market capitalisation and trading volume are usually related and hence the results confirm the earlier results.

## ***5.7 Comparison of investment size***

Possible difference in the average investment size (invested amount/number of investors) between domestic and foreign companies could be interpreted as a sign of certain type of home bias. Hubermann (2001) showed that investors held a relatively large amount of their financial wealth in their local telephone operator. He argued that this might be one result of the preference for locally situated familiar firms. In that case the home bias could be partly explained with holding larger amounts in the local shares compared with more distant companies. The data of Hubermann (2001) is comparable to mine because it contained information of individual accounts, that is, it omitted institutional investors.

I test this by comparing the average investment size between the Finnish domestic companies and foreign companies. I included only companies that had over 10 investors in order to avoid possible outliers. For domestic shares the investment was on average 3 532 euros per company whereas for foreign companies it was 3 901 euros. This was quite surprising because investors could be assumed to show home bias also in this respect and hence to hold larger amounts in domestic companies. This finding would also imply that the home bias is due to investors holding in number less foreign companies compared to the domestic ones, and not due to smaller investment size.

In order to make some statistical conclusions about the difference in average investment I have compared the two sample means. The test results showed that the means are statistically different but with a t-statistic of only 1.05. The investment in foreign shares seems to be on average slightly higher than for domestic shares.

One possible explanation for the higher mean could be the fact that Norway still uses share lots where you need to purchase a certain minimum amount of shares. This might raise the average investment for foreign shares. I separated the Norwegian shares from the sample and ran the test again. After this adjustment the average in foreign dropped to 3 679 euros but was still somewhat higher than the domestic average.

Other possible behavioural explanations could be that investors incur more search costs in finding companies that they consider good and, as a result, feel themselves more competent. This type of explanation would be based on the findings by Heath and Tversky (1991) who showed that people are even willing to pay a premium for the bet that they feel knowledgeable. Also the theory of familiarity by Huberman (2001) would support the higher investment for foreign shares after the efforts of searching for information. Since investors have become familiar with the company, they feel more optimistic about it and might invest a larger amount. This would represent a certain type of a wishful thinking effect. Another related possibility might be that investors feel simply overconfident in their skills of finding good stocks. Most likely investors need to sacrifice more of their time and effort in searching for a foreign company than a domestic company.

Alternatively there might be some kind of mental accounting where you invest more since you have incurred more search costs. Also the slightly higher brokerage fees for foreign shares might cause some investors to optimize by purchasing a larger amount “at the same price”. This might be caused by the pricing structure where there is a minimum fee for each trade.

The result of preference towards smaller companies by retail investors might be partly explained by the fact that the investment size is similar for both large and small firms. Then as a proportion of market value this would lead to a higher ownership share for smaller companies. This explanation does not however totally explain the earlier results. As a result, I will continue analysing whether similar preferences by retail investors can be seen in their equity mutual fund holdings.

## 6. Determinants of mutual fund holdings

The goal of the following analysis is to compare whether similar behaviour can be seen also in the equity mutual funds as for single shares. The Swedish brokerage company offers retail investors also mutual funds of other banks and investment companies. For Finnish investors they have around 300 mutual funds available and for Swedish households around 900 different kinds of mutual funds. I was able to get similar kind of data as for stock holdings, of the mutual fund holdings for the two countries. I focus on equity mutual funds with over 50 percent of the assets allocated in equities. The following values are denoted in euros. As the dependent variable I use once again the ownership share in a fund.

$$y = \frac{\text{money invested in fund } Z}{\text{assets under management in fund } Z} * 10000$$

The Swedish brokerage company has information available about the funds in question in their webpages. I have collected data of different variables that I regress against the ownership share. This offers interesting comparison of similarities with single shares in mutual fund holdings by retail investors. My sample size for Finland is 85 mutual funds whereas for Sweden it is 550 mutual funds. For Finland it covers all the mutual fund holdings by Finnish investors. For Sweden the sample that I received contained altogether 814 mutual funds. Out of that, I collected data for 550 funds which I found statistically adequate. After removing observations with missing data and non equity funds, I ended up with 70 and 455 equity mutual funds respectively.

### 6.1 Explanatory variables

I use following variables related to the mutual funds and equities in my regressions. The data is available on the brokerage company webpages and is most likely used by investors in their decision making. The amount of assets under management was however not provided and I collected that from Morningstar.

*Log (Fund assets)*: The log of fund assets under management

*Index equities size*: an index of the fund equities size. Information of the percentage allocation between large, mid and small cap shares was provided using Morningstar classification. I formed the index using the following formula:

$$y = (3 * \text{percentage large} + 2 * \text{percentage mid} + 1 * \text{percentage small}) / 100$$

*P/E*: the price to earnings ratio of the fund equities

*P/B*: the price to book ratio of fund equities

*Volatility*: the fund volatility calculated over the last 36 monthly returns

*Currency dummy*: a dummy variable that gets a value of 1 in case fund sold in the national currency and otherwise 0

*Distance*: the weighted average distance of the fund equities to Finland or Sweden in kilometres

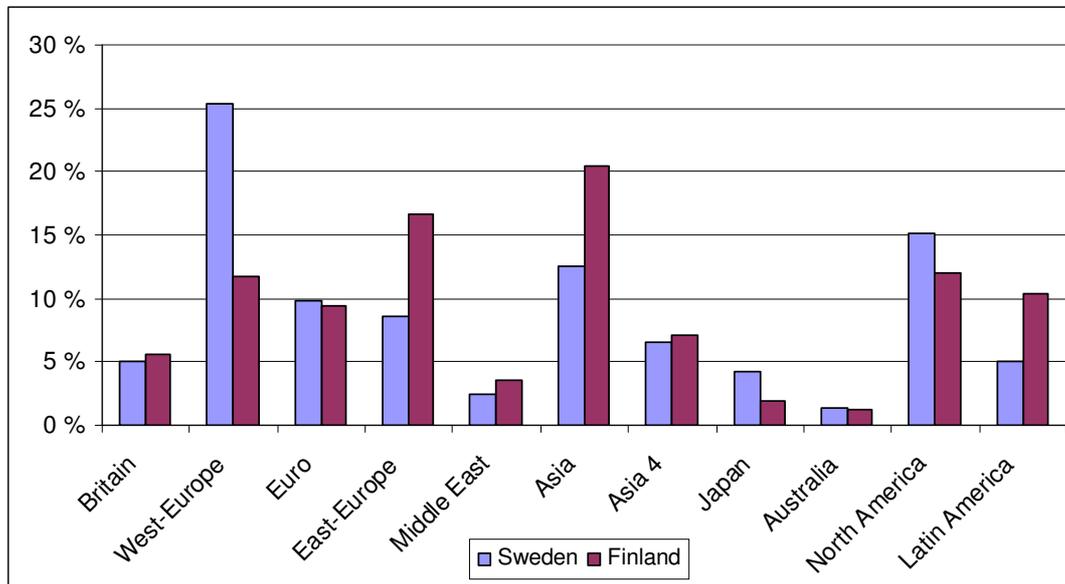
The geographical distribution of the equities was provided in percentages using a Morningstar classification. Also the underlying countries for each region were mentioned. Based on this information I calculated an equally weighted average distance for each of the regions. I used flight distances between capitals. More detailed information has been provided in Appendix 1.

## **6.2 Summary statistics**

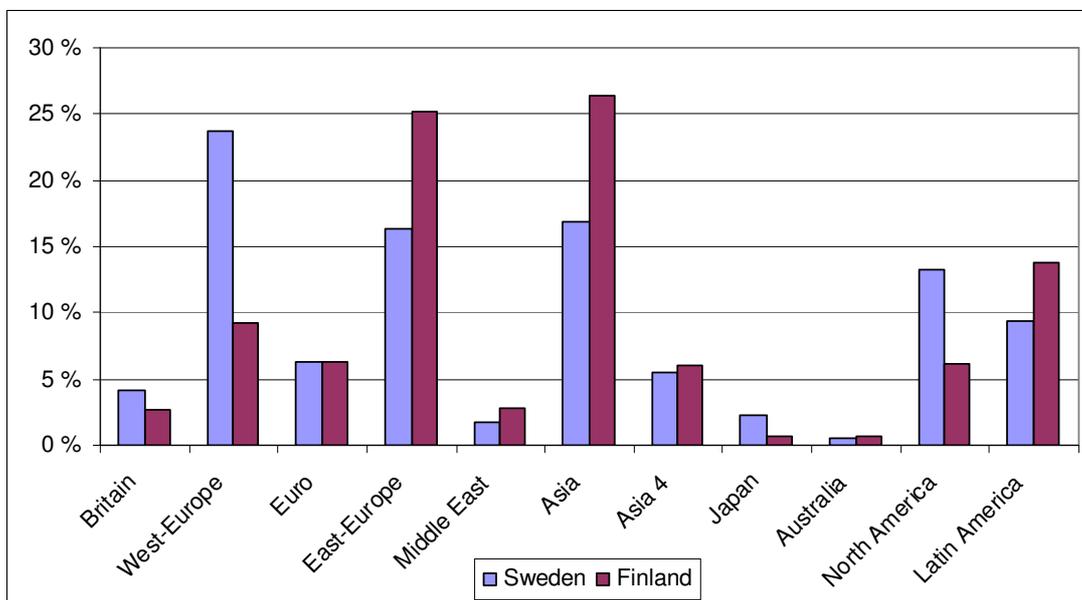
Finnish investors had much less mutual fund investments. For them the average fund assets under management size was 1 045 million, median 354, minimum 10 and maximum 9 585 million euros. Swedish investors held much more mutual funds and for them the average fund assets under management size was 465, median 154, minimum 2 and maximum 9 585 million euros.

Finnish investors held funds which had on average a price to earnings ratio of 14.0 whereas for Swedish investors the corresponding figure was 14.4. The average price to book ratio was 1.66 for Finnish investors and 1.65 for Swedes. The average volatility was somewhat higher for Finnish investors of 28.9 and 24.1 respectively for the other group. As a result, on average the two sample groups were quite similar.

Below Figures 8 and 9 show the geographical distribution of fund allocation. The first one is based on the number of funds holding equities in the region whereas the second is based on the equity invested in the region.



**Figure 8 Geographic distribution of equities for Finland (n=70) and Sweden (n=455) based on number of funds holding equities in the region**



**Figure 9 Geographic distribution of equities for Finland (n=70) and Sweden (n=455) based on the amount of equity invested in the region**

The graphs show some clear differences in geographical investment preference even though the main picture is quite the same. Emerging markets are most popular among Finnish investors. In monetary terms the difference is even more obvious. Swedish investors seem to have quite high

share in West-Europe which would indicate some sort of home bias. Despite the large market, Japan has not attracted much investment. The stock market performance of the Japanese equities has been quite bad which probably reflects the low allocation.

### ***6.3 Regression of mutual fund variables***

I analyse the performance of earlier variables using ownership share in the mutual funds as the dependent variable. The variables are tested using multiple variable regressions where adjusted R-squared reports the explanatory power. The approach is similar for both Finland and Sweden but since Swedish investors had more investments in mutual funds, the coefficients may differ somewhat in size. Table 10 below shows the results.

The ownership share has a negative relationship with the assets under management. This would imply that investors allocate relatively more in smaller mutual funds. Usually smaller mutual funds are local asset management companies with which retail investors are better familiar. This would support the conclusion of Hubermann (2001) that familiarity breeds investment, whether it is a company or a mutual fund. A related variable is the currency dummy which was given the value of one in case the fund was sold in the local currency. The t-statistics for this variable remains insignificant even though being at the highest 1.51. Local asset management companies offer their funds usually in the local currency. This might be simply related to the fund assets under management variable or it could also have a behavioural effect on the investors. Denotation in the local currency might create a feeling of lower risk than a foreign currency.

The volatility of a fund influences people's choices and it was statistically significant. The coefficient was also quite stable. The distance variable seemed to be slightly positive but the explanatory power was quite low. The sign of the coefficient would imply investor desire to allocate in more distant equities. From the earlier graphs one can notice that the developing markets had a high share of the equity. Based on this the regression results make sense. As I tested for regional preference using dummy variables, the results remained very low of statistical significance. Because of this the findings were not reported.

**Table 10 Regression of ownership share on selected mutual fund variables for Finnish and Swedish investors**

<b>FINNISH</b>							
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
<b>Log (Fund assets)</b>	-4.12 (2.54)	-4.14 (2.77)	-4.00 (2.96)	-4.02 (2.99)	-3.48 (4.28)	-3.31 (4.75)	-3.24 (4.89)
<b>Index equities size</b>		0.15 (0.09)	0.76 (0.59)	0.96 (0.67)	1.46 (1.24)	1.65 (1.41)	0.25 (0.18)
<b>P/E</b>			-0.44 (1.54)	-0.42 (1.35)	-0.49 (1.40)	-0.50 (1.40)	-0.60 (1.52)
<b>P/B</b>				-0.36 (0.59)	-0.37 (0.49)	-0.08 (0.10)	0.25 (0.26)
<b>Volatility</b>					-0.15 (0.80)	-0.16 (0.81)	-0.14 (0.74)
<b>Currency dummy</b>						1.49 (1.13)	1.74 (1.20)
<b>Distance</b>							0.00 (1.85)
<b>Adjusted R<sup>2</sup></b>	0.20	0.19	0.25	0.23	0.27	0.27	0.27
<b>N</b>	70	70	70	70	70	70	70
<b>SWEDISH</b>							
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
<b>Log (Fund assets)</b>	-572.00 (2.83)	-582.30 (2.68)	-582.43 (2.68)	-584.70 (2.67)	-457.39 (2.80)	-440.66 (2.71)	-436.97 (2.69)
<b>Index equities size</b>		95.56 (0.47)	91.93 (0.46)	101.05 (0.49)	79.99 (0.42)	83.09 (0.43)	53.25 (0.28)
<b>P/E</b>			4.16 (0.48)	7.55 (0.71)	-8.22 (0.96)	-8.82 (1.03)	-11.10 (1.35)
<b>P/B</b>				-50.01 (0.85)	-17.52 (0.34)	-11.01 (0.21)	-22.31 (0.40)
<b>Volatility</b>					-23.78 (2.36)	-23.53 (2.34)	-23.17 (2.33)
<b>Currency dummy</b>						79.95 (1.38)	119.44 (1.51)
<b>Distance</b>							0.02 (1.05)
<b>Adjusted R<sup>2</sup></b>	0.13	0.13	0.13	0.12	0.16	0.16	0.16
<b>N</b>	455	455	455	455	455	455	455

The table reports the results of multiple regressions of Finnish and Swedish investors' ownership share in equity mutual funds. Volatility is denoted in percentage points. Constants for the regressions are not shown. The heteroscedasticity consistent t-statistics are provided in parentheses. The number of findings N and adjusted R squared are reported for each regression.

The book-to-market ratio had just as bad performance as for the single stocks. The coefficient was negative for both countries investors and supports preference for value stocks. On the other hand, the coefficient was quite low and even a one unit change in the book-to-market ratio would not change the ownership share much. The price-to-earnings ratio would also support the conclusion of overweighting value stocks but the Swedish results were somewhat mixed. The coefficient was partly negative and partly positive which makes the results somewhat spurious.

Compared to the earlier analysis of single stocks, investors seem not to exhibit any preference for smaller companies. For both Swedish and Finnish investors the relation between the size of underlying equities is positive even though not statistically significant. Retail investors had available funds that focus on smaller cap companies. In case they would show preference of holding smaller companies, then the coefficient should have been negative. This result would support the conclusion of Dahlquist and Robertsson (2001) who argue that the size bias is more an institutional investor bias where mutual funds and other large investors prefer to hold large companies. Another type of conclusion can be reached when using once again the classification of the mutual funds into portfolios.

Table 11 below classifies the Swedish mutual funds based on the assets under management and the size index of the equities. In this case the columns indicate the assets under management quintiles. A clear preference towards smaller capitalisation companies can be noticed at least in portfolios with more assets under management. By using the median ownership share, a similar conclusion can be drawn also for the smallest assets under management quintile. The column "All" explains partly why the multiple regression failed to report this preference. It seems that the preference is not totally linear with respect to equities size. The pattern also differs between the assets under management quintiles. Actually only the smallest quintile has different type of results as all the other quintiles. This might be explained by the earlier observed increased allocation in smaller mutual funds that probably operate more locally. In case this familiarity effect disappears like in the larger assets under management quintiles, the preference for smaller sized equities reappears.

**Table 11 Classification of equity mutual funds into portfolios by Swedish investors**

Equities size index	Assets under management					
	Smallest	2	3	4	Largest	All
Smallest (1)	1114 (422)	131 (48)	147 (116)	41 (23)	36 (13)	294 (41)
2	827 (288)	75 (37)	39 (13)	32 (16)	24 (15)	199 (24)
3	505 (121)	83 (14)	65 (18)	46 (21)	27 (11)	145 (20)
4	1476 (160)	62 (18)	73 (24)	12 (6)	12 (4)	327 (15)
Largest (5)	1897 (123)	61 (25)	61 (14)	33 (8)	7 (5)	412 (19)
(5)-(1)	783	-70	-86	-8	-28	118
[t-statistic]	[0.84]	[1.36]	[2.16]	[0.39]	[2.28]	[0.59]
All	1172 (209)	82 (25)	77 (24)	33 (13)	21 (9)	

Scaled mean and median ownership share in equity mutual funds by portfolios formed on the assets under management and the fund equities size. The funds for which data are available on assets under management are divided into size quintiles. Each quintile is then divided into five quintiles based on the equities size. The cells in the table provide the mean (median) of the portfolio. The average difference between the smallest and largest portfolio has been also indicated and the respective t-statistic. The number of funds is 455.

## **6.4 Regional differences in size preference**

Next, I will focus only on the Swedish investors due to larger amount of data. In order to analyze whether there is any regional difference in the preference for the size of companies that funds hold, I separate findings with the largest share allocated to West Europe. The region West Europe includes Norway, Sweden, Switzerland and Denmark. As a result, it does not limit the analysis only to Sweden but offers some point of comparison.

The results are shown in Table 11 below. The results are otherwise quite similar but the coefficients of the two regressions differ on the equities size variable. The t-statistics remain insignificant but however quite high. As a result, the conclusion is that those have different coefficients. This would imply that funds investing in Sweden and holding smaller companies are preferred by retail investors. This type of conclusion could be drawn also based on the earlier classification of funds into portfolios.

**Table 12 Regression of Swedish investors' ownership share for West Europe and excluding it**

<b>WEST EUROPE</b>							
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
<b>Log (Fund assets)</b>	-557.47 (2.87)	-501.37 (2.82)	-504.90 (2.76)	-515.84 (2.58)	-411.31 (3.18)	-410.26 (3.15)	-416.76 (3.47)
<b>Index equities size</b>		-432.62 (1.51)	-409.77 (1.56)	-418.83 (1.46)	-476.93 (1.70)	-479.33 (1.69)	-492.02 (1.59)
<b>P/E</b>			-15.22 (0.35)	-13.91 (0.34)	-20.47 (0.54)	-20.91 (0.55)	-19.88 (0.49)
<b>P/B</b>				-72.15 (0.27)	-54.49 (0.25)	-53.24 (0.24)	-61.31 (0.27)
<b>Volatility</b>					-26.90 (1.66)	-26.66 (1.62)	-26.15 (1.45)
<b>Currency dummy</b>						71.78 (0.63)	80.44 (0.58)
<b>Distance</b>							0.02 (0.18)
<b>Adjusted R<sup>2</sup></b>	0.17	0.21	0.20	0.19	0.25	0.24	0.24
<b>N</b>	129	129	129	129	129	129	129
<b>EXCLUDING WEST EUROPE</b>							
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
<b>Log (Fund assets)</b>	-579.12 (2.24)	-606.90 (2.23)	-608.04 (2.23)	-608.64 (2.24)	-470.41 (2.26)	-428.82 (2.08)	-428.89 (2.07)
<b>Index equities size</b>		317.41 (1.48)	309.90 (1.48)	334.42 (1.49)	314.17 (1.51)	302.60 (1.46)	303.39 (1.39)
<b>P/E</b>			8.56 (0.89)	17.60 (1.18)	1.45 (0.15)	2.26 (0.23)	2.39 (0.23)
<b>P/B</b>				-114.74 (1.30)	-87.58 (1.11)	-93.84 (1.18)	-93.82 (1.18)
<b>Volatility</b>					-23.26 (2.17)	-23.11 (2.17)	-23.12 (2.15)
<b>Currency dummy</b>						142.08 (1.49)	141.41 (1.42)
<b>Distance</b>							0.00 (0.04)
<b>Adjusted R<sup>2</sup></b>	0.11	0.12	0.12	0.12	0.16	0.16	0.15
<b>N</b>	326	326	326	326	326	326	326

The table reports the results of multiple regressions of Swedish investors' ownership share in equity mutual funds by separating West Europe and other regions. Volatility is denoted in percentage points. Constants for the regressions are not shown. The heteroscedasticity consistent t-statistics are provided in parentheses. The number of findings N and adjusted R squared are reported for each regression.

Earlier research has shown that mutual funds show aversion to small firms (Falkenstein, 1996). In addition, mutual funds show aversion to low-priced stocks, while demand is consistently increasing in liquidity. Falkenstein (1996) also documented that funds tend to avoid firms with little information, as measured by the number of major newspaper articles. This behaviour would support the familiarity hypothesis by Hubermann (2001). For large mutual funds the preference for large capitalisation stocks is understandable because of the need for liquidity. Also the research coverage of several smaller companies might increase the administrative costs of a fund. As a result, it is quite logical that globally operating funds focus on large companies. On the other hand, funds operating in the local market might be more familiar with the smaller companies beforehand. They might also get research coverage of those stocks relatively cheaply.

## 7. Conclusions and discussion

In general, my results were quite in line with the earlier findings by Dahlquist and Robertsson (2001). My data is however somewhat different because it looks at the foreign and domestic shareholdings of retail investors. For example Kang and Stulz (1997) use data of all foreign stock holdings in Japan, where probably institutional investors form a majority. Institutions may have certain rules concerning their investment policy and acceptable risk level. My data has probably mostly small retail investors even though there might be also individuals with above average investment wealth.

My results would support the conclusion that individual investors seem to overweight smaller companies, both when investing in domestic as well as in foreign companies. This type of preference was seen also in the mutual fund holdings even though the relation seemed not to be linear. This preference was influenced by the fact that investors also overweighted mutual funds with fewer assets under management. These funds are most likely locally operating and hence better known to national brokerage clients.

Dahlquist and Robertsson (2001) argue that the result of retail investor preference for smaller companies is due to some sort of institutional investor bias. They show that mutual funds and other institutional investors overweight large companies in their portfolios. My results would seem to support the argument of some sort of retail investor preference towards smaller companies. First of all, based on the number of companies, retail investors seemed to focus on firms with a market capitalisation of even below 50 million euros. Second, the fact that the ownership share was higher in mutual funds having larger amounts of small and medium sized companies supports the argument. In conclusion, it seems that retail investors show some kind of preference to smaller companies even though part of it can be explained by large institutional investors' preferences towards large companies. Especially for the domestic companies the results were quite strong. One explanation in this case for the preference might be familiarity as suggested by Hubermann (2001). The information asymmetries are most likely less of a problem concerning domestic equities and hence retail investors might be willing to hold smaller companies which could be considered riskier than larger companies in general.

Based on the allocation in domestic equities, retail investors seemed to hold more value stocks whereas based on the foreign shareholdings they seemed to hold growth stocks. Out of the other tested variables only trading volume and cash to market capitalisation were constantly significant. The cash to market capitalisation performed even better for the domestic equities. Possible explanations for the good performance of this variable might be that the companies had performed well during the last few years and, as a result, had high amounts of liquid assets. Another possibility could be that the companies in question had higher business risk. This explanation seems however unlikely because based on the dividend yield, retail investors seem to prefer value stocks in the domestic market.

The coefficient of trading volume was interestingly positive in the regressions even though it could be considered to be related to company size. This fact would imply that investors focus more on smaller but liquid companies. Liquidity has been considered more of a problem for institutional investors but obviously also households consider liquidity as important.

Country or industrial dummy variables were not able to explain investor choices. The allocations seemed to also differ totally between Finnish and Swedish investors. Also the mutual fund allocations differed between the two sample countries. For mutual funds the distance variable that I used did not show any home bias behaviour, actually the distance was positively related to ownership share. This makes actually sense because the majority of the equity seemed to go to the developing markets.

Investors seem to be willing to hold surprisingly small firms in their portfolios. Many of these were on the Canadian TSX Venture list or in the Nordic Growth Market. For many of the smallest companies Thomson Financial did not provide any information. I collected the missing market capitalisations manually from the company websites and the Internet. Collecting the rest of the missing variables was quite impossible since many of the company webpages provided very limited information. This was quite surprising and would imply that investors are willing to bet smaller amounts in quite risky ventures that provide very little financial statement information. Most of these smaller companies were either in the mining (gold, uranium, precious metals) or energy sector (oil exploration). Perhaps because of this fact the leverage variable did not have any connection with investor preference. The riskiness of a company is obviously evaluated based on other factors than the balance sheet.

An interesting supplement to this type of study would be to compare the results over time. This would offer comparison of possible changes in the performance of the variables. The percentage of foreign equities out of total equities seems to stay relatively stable. In my sample it was 15 percent, whereas about ten years earlier a study reported it to be 16 percent. Also analysing the changes in this amount based on the market situation would offer new aspects of the topic. A more detailed analysis about the difference in correlations between different sized companies might better quantify the effect of holding certain type of companies.

## 8. References

- Adler, M., Dumas, B., 1983, "International Portfolio Choice and Corporate Finance: A Synthesis" *The Journal of Finance*, 38, 925-984.
- Ahearne, A.G., Grier, W.L., Warnock, F.E., 2002, "Information Costs and Home Bias: An Analysis of US Holdings of Foreign Equities", *The Journal of International Economics*, 62, 313-336.
- Babad, E., 1995, "Can Accurate Knowledge Reduce Wishful Thinking in Voters' Predictions of Election Outcomes?", *The Journal of Psychology*, 129(3), 285-300.
- Baxter, M., Jermann, U.J., 1993 "The International Diversification Puzzle is Worse Than You think", *American Economic Review*, 87, 170-180.
- Bearden, W.O., Etzel, M.J., 1982, "Reference Group Influence on Product and Brand Purchase Decision", *The Journal of Consumer Research*, 9, 183-194.
- Bekaert, G., Urias, M.S., 1996, "Diversification, Integration and Emerging Market Closed-End Funds", *The Journal of Finance*, 51, 835-69.
- Benartzi, S., 2000, "Excessive Extrapolation and the Allocation of 401(k) Accounts to Company Stock", *The Journal of Finance*, Vol. 56, Issue 5, 1747-1764.
- Black, F., 1974, "International Capital Market Equilibrium with Investment Barriers", *The Journal of Financial Economics*, 44, 211-229.
- Business Week, 1997, "The Cream of the Crop in Pensions, Too" May 19.
- Cocanougher, A.B., Bruce, G.D., 1971, "Socially Distant Reference Groups and Consumer Aspirations", *The Journal of Marketing Research*, 8, 79-81.
- Cooper, I., Kaplanis, E., 1994, "Home Bias in Equity Portfolios, Inflation Hedging, and International Capital Market Equilibrium", *Review of Financial Studies*, 7, 45-60.
- Coval, J.D., Moskowitz, T.J., 1999, "Home Bias at Home: Local Equity Preference in Domestic Portfolios", *The Journal of Finance*, 54, 2045-2107.
- Dahlquist, M., Robertsson, G., 2001, "Direct Foreign Ownership, Institutional Investors and Firm Characteristics", *The Journal of Financial Economics*, 59, 413-440.
- Falkenstein, E. G., 1996, "Preferences for Stock Characteristics as Revealed by Mutual Fund Portfolio Holdings", *The Journal of Finance*, 51, 111-135.
- Fama, E., French, K.R., 1992, "The Cross-Section of Expected Stock Returns", *The Journal of Finance*, 47, 427-466.
- French, K.R., Poterba, J.M., 1991, "Investor Diversification and International Equity Markets", *American Economic Review, Papers and Proceedings*, 81, 222-226.

- Gompers, P.A., Metrick, A., 2001, "Institutional Investors and Equity Prices", *The Quarterly Journal of Economics*, 1, 229-259.
- Grinblatt, M., Keloharju, M., 2000, "Distance, Language and Culture Bias: The Role of Investor Sophistication", *The Journal of Finance*, 46, 1053-1073
- Heath, C., Tversky, A., 1991, "Preference and Belief: Ambiguity and Competence in Choice under Uncertainty", *The Journal of Risk and Uncertainty*, 4:5-28.
- Hubermann, G., 2001, "Familiarity Breeds Investment", *The Review of Financial Studies*, Vol 14, 659-680.
- Kahneman, D., Tversky, A., 1982, "The Psychology of Preferences", *Scientific American*, 246, 167-173.
- Karhunen, J., Keloharju, M., 2001, "Shareownership in Finland 2000", *Liiketaloudellinen aikakauskirja*, 50:2, 188-226.
- Kilka, M., Weber, M., 2000, "Home Bias in International Stock Return Expectations", *The Journal of Psychology and Financial Markets*, Vol 1, 176-192.
- Klein, R.W., Bawa, V.S., 1976, "The Effect of Estimation Risk on Optimal Portfolio Choice", *The Journal of Financial Economics*, 3, 215-231.
- Lehtinen, R., Männistö, T., 2001, "Tamkin sijoittajatutkimus 2001 ja kotitalouksien säästämistutkimus 2001. *Tampereen Ammattikorkeakoulun liiketalouden yksikkö & Suomen pörssisäätiö.*
- Lewis, K.K., 1999, "Trying to Explain Home Bias in International Stock Return Expectations", *The Journal of Economic Literature*, 37, 571-608.
- Liljeblom, E., Löflund, A., 1999, "The Euro and Portfolio Choices- a Nordic Perspective", *Swedish Economic Policy Review*, 6, 41-82.
- Merton, R.C., 1987, "A Simple Model of Capital Market Equilibrium with Incomplete Information", *The Journal of Finance*, 42, 483-510.
- Olsen, R., 1998, "Behavioral Finance and Its Implications for Stock Price Volatility", *Financial Analysts Journal*, 54, 10-18.
- Opler, T., Pinkowitz, L., Stulz, R., Williamson, R., 1999, "The Determinants and Implications of Corporate Cash Holdings", *The Journal of Financial Economics*, 52, 3-46.
- Shefrin, H.M., Statman, M., 1984, "Explaining Investor Preference for Cash Dividends", *The Journal of Financial Economics*, 13, 253-282.
- Shiller, R.J., Fumiko, K., Yoshiro, T., 1996, "Why Did the Nikkei Crash? Expanding the Scope of Expectations Data Collection", *Review of Economics and Statistics*, Vol 78, 156-164.

- Stockman, A.C., Dellas, H., 1993, "International Portfolio Diversification and Exchange Rate Variability", *The Journal of International Economics*, 26, 271-290.
- Suh, J., 2004, "Home Bias Among Institutional Investors: A Study of the Economist Quarterly Poll", *The Journal of Japanese International Economics*, 19, 72-95.
- Tesar, L.L., Werner, I.M., 1995, "Home Bias and High Turnover", *The Journal of International Money and Finance*, Vol 14, 467-492.

## 9. Appendices

Area	Countries	Distance to Finland	Distance to Sweden
Great-Britain	England	1 826	1 436
West-Europe excluding Euro-area	Norway	829	530
	Sweden	573	0
	Switzerland	1 835	1 524
	Denmark	993	606
Euro-Area	Belgium	1 670	1 299
	Spain	3 006	2 648
	Holland	1 506	1 128
	Italy	2 097	1 870
	Austria	1 616	1 371
	Greece	2 364	2 279
	Portugal	3 239	2 867
	France	2 180	1 828
	Germany	1 426	1 090
	Finland	0	573
	Developing East-Europe	Russia	896
Baltic countries		557	583
Poland		960	826
Czech		1 303	1 055
Hungary		1 501	1 379
Etc.			
Middle-East and Africa	Egypt	3 706	3 709
	Saudi-Arabia	4 202	4 352
	Morocco	3 826	3 489
	South Africa	9 883	9 804
	Etc.		
Developing Asia-excluding 4 tigers	China	6 174	6 572
	Vietnam	7 983	8 375
	India	6 036	6 366
	Etc.		
Asian 4 tigers	South-Korea	7 154	7 530
	Hong-Kong	7 844	8 242
	Singapore	9 259	9 635
	Taiwan	8 094	8 489
Japan	Japan	7 733	8 090
Australia	Australia	13 564	13 956
	New Zealand	17 004	17 373
North-America	U.S.	6 636	6 336
	Canada	6 619	6 347
Central and South-America	Mexico	9 617	9 379
	Brazil	10 412	10 015
	Argentina	13 251	12 858
	Chile	13 169	12 771
	Etc.		

Appendix 1 The distances in kilometres

**Swedish investors**

1	NOKIA OYJ	1 815
2	GAZPROM	1 273
3	VESTAS WIND SYSTEMS	1 220
4	FORTUM OYJ	1 205
5	RENEWABLE ENERGY CORPORATION AS	1 055
6	STATOIL ASA	1 046
7	DNO INTERNATIONAL ASA	604
8	AFRICAN MARINE MINERALS CORP	503
9	APPLE COMPUTER	483
10	TOPOTARGET A/S	426
11	BIOPHAUSIA TO 1	382
12	FRED. OLSEN ENERGY	372
13	QUESTERRE ENERGY CORPORATION	374
14	MONSANTO	348
15	ENERGY FUELS INC	329
16	CITIGROUP	303
17	AFRICA OIL CORP	287
18	TAMERLANE VENTURES INC	276
19	INT. GOLD EXPLORATION IGE	272
20	DNB NOR ASA	258
21	SEMAFO J	246
22	POWERTECH URANIUM CORP	264
23	OCEANAGOLD CORP	232
24	NORSK HYDRO	231
25	PAN ORIENT ENERGY CORP	229
26	YARA INTERNATIONAL	205
27	NORTHLAND RESOURCES	207
28	GOLDEN OCEAN GROUP LIMITED	190
29	AVION GOLD CORP	185
30	GOOGLE INC	181
31	CARLSBERG B	194
32	NOVO NORDISK B	172
33	SEADRILL LIMITED	169
34	ORKLA	161
35	LIBERTY MINES INC	161

**Finnish investors**

SWECO B	258
CITIGROUP	192
RENEWABLE ENERGY CORPORATION AS	189
HENNES & MAURITZ B	174
VESTAS WIND SYSTEMS	136
GENERAL ELECTRIC CO	131
ASTRAZENECA	134
STATOIL ASA	122
ABB LTD	97
FRED. OLSEN ENERGY	90
PFIZER	79
APPLE COMPUTER	77
GOOGLE INC	72
BANK OF AMERICA	64
YARA INTERNATIONAL	61
TRIGON AGRI A/S	60
BOLIDEN	58
BERKSHIRE HATHAWAY INC B	57
TELIASONERA AB	53
NORSK HYDRO	52
SANDVIK	49
SECURITAS	48
MCDONALD'S CORP	47
MICROSOFT CORP	47
KRAFT FOODS A	46
ERICSSON B	55
INTEL CORP	42
PROCTER & GAMBLE CO	41
MEDA A	40
Q-CELLS AG	40
SWEDBANK AB	45
CARLSBERG B	40
ORKLA	40
HARLEY-DAVIDSON	39
SEADRILL LIMITED	39

**Appendix 2 Example of the most popular stocks and number of investors for Sweden and Finland**

0001 Oil&Gas	0533 Exploration & Production 0537 Integrated Oil & Gas 0573 Oil Equipment & Services 0577 Pipelines 0583 Renewable Energy Equipment 0587 Alternative Fuels	4000 Health Care	4533 Health Care Providers 4535 Medical Equipment 4537 Medical Supplies 4573 Biotechnology 4577 Pharmaceuticals
1000 Basic materials	1353 Commodity Chemicals 1357 Specialty Chemicals 1733 Forestry 1737 Paper 1753 Aluminum 1755 Nonferrous Metals 1757 Iron & Steel 1771 Coal 1773 Diamonds & Gemstones 1775 General Mining 1777 Gold Mining 1779 Platinum & Precious Metals	5000 Consumer Services	5333 Drug Retailers 5337 Food Retailers & Wholesalers 5371 Apparel Retailers 5373 Broadline Retailers 5375 Home Improvement Retailers 5377 Specialized Consumer Services 5379 Specialty Retailers 5553 Broadcasting & Entertainment 5555 Media Agencies 5557 Publishing 5751 Airlines 5752 Gambling 5753 Hotels 5755 Recreational Services 5757 Restaurants & Bars 5759 Travel & Tourism
2000 Industrials	2353 Building Materials & Fixtures 2357 Heavy Construction 2713 Aerospace 2717 Defense 2723 Containers & Packaging 2727 Diversified Industrials 2733 Electrical Components & Equipment 2737 Electronic Equipment 2753 Commercial Vehicles & Trucks 2757 Industrial Machinery 2771 Delivery Services 2773 Marine Transportation 2775 Railroads 2777 Transportation Services 2779 Trucking 2791 Business Support Services 2793 Business Training & Employment Age 2795 Financial Administration 2797 Industrial Suppliers 2799 Waste & Disposal Services	6000 Telecommunications	6535 Fixed Line Telecommunications 6575 Mobile Telecommunications
		7000 Utilities	7535 Conventional Electricity 7537 Alternative Electricity 7573 Gas Distribution 7575 Multiutilities 7577 Water
3000 Consumer Goods	3353 Automobiles 3355 Auto Parts 3357 Tires 3533 Brewers 3535 Distillers & Vintners 3537 Soft Drinks 3573 Farming & Fishing 3577 Food Products 3722 Durable Household Products 3724 Nondurable Household Products 3726 Furnishings 3728 Home Construction 3743 Consumer Electronics 3745 Recreational Products 3747 Toys 3763 Clothing & Accessories 3765 Footwear 3767 Personal Products 3785 Tobacco	8000 Financials	8355 Banks 8532 Full Line Insurance 8534 Insurance Brokers 8536 Property & Casualty Insurance 8538 Reinsurance 8575 Life Insurance 8633 Real Estate Holding & Development 8637 Real Estate Services 8671 Industrial & Office REITs 8672 Retail REITs 8673 Residential REITs 8674 Diversified REITs 8675 Specialty REITs 8676 Mortgage REITs 8677 Hotel & Lodging REITs 8771 Asset Managers 8773 Consumer Finance 8775 Specialty Finance 8777 Investment Services 8779 Mortgage Finance 8985 Equity Investment Instruments 8995 Nonequity Investment Instruments
		9000 Technology	9533 Computer Services 9535 Internet 9537 Software 9572 Computer Hardware 9574 Electronic Office Equipment 9576 Semiconductors 9578 Telecommunications Equipment

**Appendix 3 The ICB industry and subsector codes**