STOCKHOLM SCHOOL OF ECONOMICS
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Herding behavior in the Swedish Mutual Fund Industry

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ABSTRACT

This thesis investigates the tendency to herd by 124 Swedish equity mutual funds over the period of 2000 to 2007. By employing the measure developed by Lakonishok *et al.* (1992) we find strong evidence of herding in the overall sample. The level of herding by the Swedish mutual funds seem to be higher than for mature markets, but less than for emerging markets. Furthermore, the Swedish mutual funds tend to herd more often when purchasing than when selling a stock, and when trading large stocks. Smaller funds show a higher tendency to herd than larger funds. Comparing our results with previous studies gives further input regarding the maturity of the Swedish capital market.

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1. Introduction

The amount of wealth managed by mutual funds world wide has grown considerably during the last decades. The key to success of investment companies has been the pooling of investors' assets, which made it possible for small investors to share the benefits of large-scale investing. The most widespread form today, is the open-end fund commonly known as a mutual fund. The mutual funds account for roughly 90 percent of the total value of the investment companies' assets. The characteristics for this fund-category are the absence of fixed maturity combined with the lack of restrictions regarding the amount of money under investment (The Investment Company Institute, 2007).

The development to more efficient and liquid global markets, as well as the substantial change in structuring pension plans, has further increased the interest in financial institutions, and particularly in mutual funds (The Investment Company Institute, 2007). The performance of mutual funds has extensively been investigated in mature markets, such as the US and UK. Further on, this issue has lately been transmitted and researched in the context of less developed markets. A commonly believed characteristic of managers in the financial markets is that they tend to trade assets in the same direction. This behavior is called herding and has been researched in the most mature financial markets and in some developing markets. Investigating the level of herding gives more insight into the behavior and characteristics of the financial markets. As far as we know, herding has not previously been analyzed for the Swedish mutual fund industry or for any other part of the Swedish financial market.

1.1 Purpose

The purpose of this study is twofold. First we want to investigate to what extent the Swedish mutual fund industry is affected by a herding behavior. Second, we want to analyze our data in relation to the results obtained from previous studies in mature as well as developing markets, and thus provide financial research with valuable insights into the level of maturity of the Swedish capital market

1.2 Contribution

Our study provides further evidence regarding the herding behavior of financial institutions. We analyse and expose the grade of herding behavior for, to the best of our knowledge, a never

previously investigated financial market. We analyse herding behavior for a very recent time period, giving fresh estimates of herding based on data on a changing financial market. Further input regarding the development of the Swedish capital market is provided by comparing the results from our study with previous research.

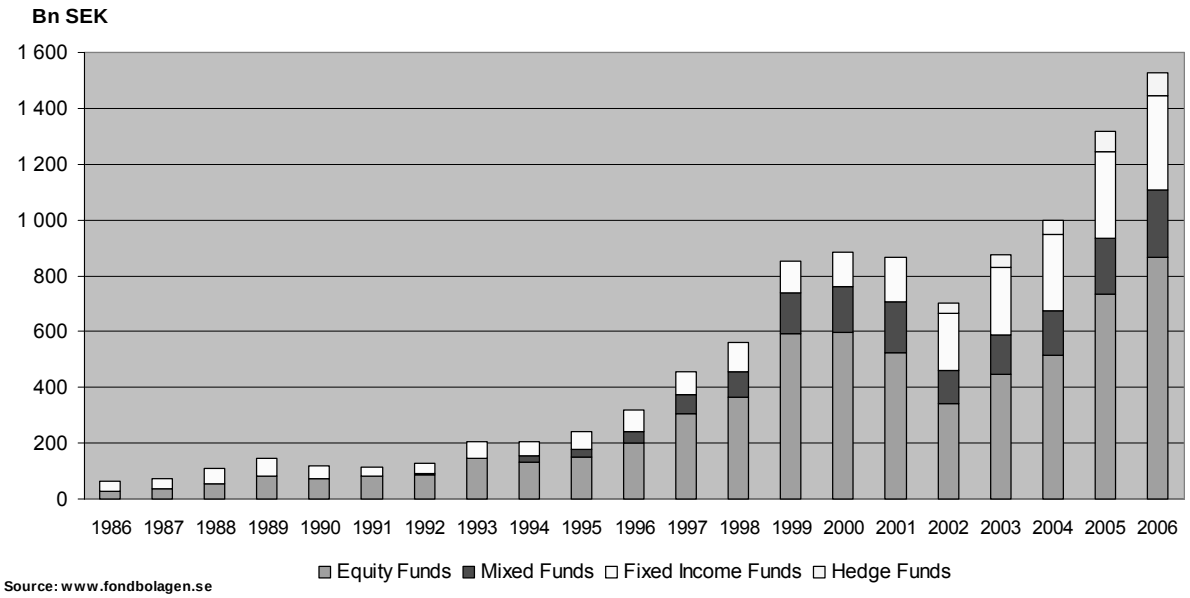
1.3 Disposition

The rest of this thesis is structured as follows: first background of the Swedish mutual fund industry is displayed. Then the thesis continues with a section that presents and introduces the reader to the most relevant theories and studies about herding behavior. In the following section hypotheses based on the theories are presented. Section five is dedicated to our dataset and thereafter we present our methodology used in the thesis. The penultimate section is reserved for the empirical results and analysis. In the final part of the thesis we present our conclusions and topics for further research.

2. The Swedish mutual fund industry

The Swedish mutual fund market has grown enormously during the last decades and the supply of different kinds of funds has augmented. Consequently, the importance today of the mutual funds for the individual investors as well as for the overall Swedish economy is eminent. As a proportion of the total household savings, the mutual funds now constitute approximately 30 percent. The increase is remarkable, in 1980 the proportion of households assets invested in mutual funds was 0.4 percent. Today, 70 percent of the Swedish population invest in funds. Adding the savings in the Swedish Premie Pension Authority's (PPM) saving system, the proportion becomes nine out of ten, where 80 percent of the funds invested in are equity funds. In Figure 1 the development of total net asset value of the Swedish mutual fund industry is presented. The increase in total asset value is clearly visible, as well as the large percent of the wealth belonging to equity funds. One reason for the growth in funds is due to changes in the Swedish legislation. The currency deregulation in 1989 made it possible for Swedish investors to place savings in non-Swedish securities. Funds with investment objectives in foreign markets emerged as an accessible alternative to direct investment. In 1994 the individual retirement accounts, IPS, were created, giving the individuals some control over their retirement savings. During the fall of 2000, new regulations made it possible for individuals to invest a proportion of their retirement capital in funds, in the PPM savings system (Fondbolagens Förening, 2006).

Figure 1 Total net assets of the Swedish mutual fund industry



Source: www.fondbolagen.se

3. Theory and previous research

The statement that "investors flock together and trade in a herd-like behavior" is generally accepted both by academic researchers and others. Many theories try to explain why investors might trade together. The tendency to trade in the same direction can be categorized into intentional and unintentional herding. Intentional herding is when investors try to imitate the actions of their peers. If investors while sharing the same information act in the same manner in similar trading situations, it is considered to be unintentional herding.

Scharfstein and Stein (1990) try to explain intentional herding by stating that fund managers may disregard their private information and trade with the crowd due to the reputational risk of acting differently from their peers. An alternative theory points out that fund managers might gather private information from the prior trades of better-informed managers and trade in the same direction (Bikhchandani *et al.*, 1992).

The approach to unintentional herding by Froot *et al.* (1992) is that managers may trade together solely because they receive correlated private information, e.g. by analyzing the same indicators. Managers could dump past losers and dress up their portfolio out of reputational and evolutional motive, so called window dressing, according to Lakonishok *et al.* (1991). In order to explain unintentional herding Falkenstein (1996) declares that institutional investors may share an aversion to stocks with certain characteristics, such as stocks with lower liquidity or stocks that are less risky.

It is difficult to prove if the possible herding is intentional or unintentional, since empirical studies cannot directly test any of the suggested theories. We will divide the dataset into subgroups in order to more easily bring together empirical findings with present theory.

The herding behavior has been investigated mostly in the US and UK, which are considered to be more mature markets than the Swedish one. Generally, the overall results revealed low levels of herding in the US and UK markets. Also emerging markets have been examined, were the studies have shown a clear tendency of a more elevated herding behavior in the less developed markets. The outcomes from the research on the less developed markets should be viewed with some caution due to the limited sample of funds used in those studies. The most common empirical model to test for herding behavior is the measure named after the inventors

Lakonishok, Shleifer and Vishny (1992), the so called LSV measure. They could be considered to be breaking new ground within the academic research on mutual funds, particularly regarding measuring the herding behavior. They measure herding behavior for a sample of 769 pension funds in the US during the period of 1985 to 1989. They find that the overall level of herding is not significant.

The table below presents the results from studies conducted using the LSV measure of herding. Grinblatt, Titman and Wermers(1995) investigate the behavior of 274 mutual funds and they find only weak evidence of herding. When imposing a higher number of minimum funds active in a stock, their computed figures of herding behavior increase and are highest among growth and income funds. The study by Wermers (1999) is the most extensive, with a remarkable 2 424 different funds in the sample. He obtains a low level of herding among mutual funds for the overall sample in the period 1975 to 1994. When dividing into subgroups formed by investment objective he finds higher herding tendency among growth-oriented funds. Also, the effect of herding in small and past-winner stocks seemed to be more prominent. The 268 UK mutual funds investigated by Wylie (2005) showed a similar tendency to herd as for the US investors. As noted above, the results from less developed markets, as the Portugal and Polish financial markets could be considered to be, present a much higher level of herding behavior. The latest study conducted on herding behavior is by Walter and Weber (2006) on a sample of 60 German mutual funds. Their figures of herding are close to those from the mature markets.

Table 1 Summary of results of the LSV measure of herding in previous studies

				Number of funds trading			
Study	*Market*	*Period*	*Fund counts*	≥ 1	≥ 2	≥ 5	≥ 10
Lakonishok *et al* (1992)	USA	85-89	769	2.70	-	-	2.00
Grinblatt *et al.* (1995)	USA	74-84	274	2.50	-	4.32	5.50
Wermers (1999)	USA	75-94	2424	-	-	3.40	3.61
Loboa and Serra (98-00)	Portugal	98-00	32	11.38	12.44	13.54	13.96
Wylie (2005)	UK	86-93	268	-	2.60	2.50	3.30
Voronkova and Bohl (2005)	Poland	99-02	17	14.60	-	10.90	11.50
Walter and Weber (2006)	Germany	98-02	60	2.67	5.11	5.59	5.59

NOTES:
The column *Fund counts* displays the number of distinctive funds used in the different studies. The number of funds trading indicates the minimum number of active funds within a stock-quarter to be included in the computed average herding value.

4. Hypotheses

The overall objective of this thesis is to investigate if the Swedish mutual funds investing in Swedish equity show a tendency to herd and to what extent. Furthermore, we investigate the herding behavior within subgroups. Comparing the results from the sample of Swedish equity mutual funds with previous studies may give indications of the level of development of the Swedish capital market.

The hypotheses below are based on the theories presented in section 3.
Hypothesis 1: The Swedish mutual funds exhibit herding behavior.

The explanations of intentional herding behavior by both Scharfstein and Stein (1990) and Bikhchandani et al. (1992) implies that the probability of herding increases with a higher number of funds trading the stock.
Hypothesis 2: The tendency to herd increases with the number of funds trading a specific stock within the period.

The expected level of herding in the Swedish fund market is higher than for more mature markets. Less developed markets have lower information efficiency, therefore the investors may base more of their decisions on information from the trades of their peers, Bikhchandani et al. (1992).
Hypothesis 3: The level of herding in the Swedish fund market is more elevated than for more mature markets.

Small stocks tend to give out less precise information, consequently an investor may follow the herd instead of using the individual private information, Bikhchandani et al. (1992). The reputational risk of being the "only one" holding a bad performing stock could also be an explanation of why herding should be more elevated in small stocks, Scharfstein and Stein (1990).
Hypothesis 4: Higher level of herding is found in the trading of small capitalization stocks.

Managers of larger funds have more resources and should therefore be able to extract more accurate private information. Smaller funds with fewer resources will more often have to mimic each others trading decisions, Bikhchandani et al. (1992).
Hypothesis 5: The level of herding is higher for small funds than for large funds.

5. Data

5.1 Description of data

Our database consists of portfolio holdings of 124 Sweden domiciled equity mutual funds.[1] We have selected those funds that are specializing in Swedish stocks. According to the categorization of Morningstar a fund should hold at least 75 percent of it's assets in Swedish equity in order to be included in the category of funds specialising in Swedish stocks (Morningstar, 2005).[2] The portfolio holdings are collected from reported holdings to the Swedish financial supervisory authority, *Finansinspektionen*. The funds are obliged to report a snapshot picture of their portfolios at the end of each quarter to Finansinspektionen.

Our database covers quarterly holdings over the period September 30, 2000 to June 30, 2007. The time period chosen is due to the fact that Finansinspektionen does not have recorded holdings further back than September 30, 2000 for the Swedish mutual funds. To our knowledge, all of the previous studies on herding behavior are based on less recent time-periods. The period of 2002 to 2007 has probably never been investigated before regarding the subject of herding by mutual funds. The holdings-data collected from Finansinspektionen has been merged with stock information extracted from the Thomson database Datastream. The stock information consists of stock prices, market capitalization and number of shares, for all Swedish stocks covered by Datastream during the investigated time period. Information from Datastream could not be extracted for all Swedish stocks traded by the funds in the sample. This is mainly due to either incorrect reported information to Finansinspektionen by the funds or that Datastream does not have records of the specific stock in their database. A minor bias could occur from that Datastream does not cover some stocks, but these stock most certainly have a low capitalization and low liquidity, and are not widely traded among the funds in the sample. Adjustments in our dataset have been done in order to partly correct for the reporting errors, e.g. renaming of holdings where the name for an underlying holding differ between the two datasets. There could be some errors in the data received from Finansinspektionen since they couldn't guarantee the accuracy in the reported holdings. We estimated the effect from the non-corrected errors on the

[1] A company is considered domiciled in Sweden if their registered office lies within Sweden (http://www.fi.se/Templates/NewsLetterPage____8757.aspx).
[2] All funds in the original dataset which invested between 50 and 100 percent of their total assets in Swedish equity were manually checked if to be included or not, by looking at the fund's investment objective reported by www.morningstar.se.

results to be small considering the large amount of observations in the sample. The data provided from Finansinspektionen has advantages compared to much of the data used in previous studies since the information is reported in a consistent manner from the funds. The time for the snapshots of the holdings is the same for all the funds, which it has not been in some of the other studies of herding behavior.[3]

Wylie (2005) addresses the possible problems with survivorship and selection biases when determining the data. We have not imposed any minimum number of quarters for a fund to be selected, any fund reporting to Finansinspektionen during a quarter is included. This will minimize the possible survivorship bias, which otherwise could create an illusion of herding. We estimated the selection bias to be very small since we have extracted info about all Swedish mutual funds reporting to Finansinspektionen and then narrowed it down to the funds specializing in the Swedish stock market. Passively managed funds, i.e. index funds, have been excluded from the database since measuring herding is only meaningful if the managers can adjust their portfolios, e.g. in accordance with expectations of market development.

Adjustments for stock-periods where the trading could be due to an increased number of issued shares, e.g. stock-splits, have been done since we are looking at active trading decisions. The data for the adjustments have been provided by Datastream. When a fund starts or closes, all the trading activity will either be on the buy or the sell side. Therefore, a fund is excluded from the calculations of the herding behavior in the first and last quarter each individual fund appears in the dataset. Consequently, the third quarter of 2000 and second quarter of 2007 is not incorporated in the estimations of herding. Since the holdings are snapshots of the funds assets in the end of each quarter, we cannot measure possible intra-quarter trading. Some previous studies on the herding behavior were based on semi-annual and/or annual holdings, where the intra-period trading must be considered to be more elevated than in our sample. [4]

Presented in Table 2 below are the overall statistics for the Swedish equity mutual fund holdings database. As stated previously, the dataset consists of 124 distinctive funds specialising in Swedish equity. After extracting required information from the first and the last quarter of holdings, the remaining sample covers 26 quarters over the period of December, 2000 to March,

[3] If the time of reported holdings differs among the funds in the sample the measure of herding may be biased, see e.g. Wermers (1999).
[4] Examples of studies based on semi-annual data are Wylie (2005), Voronkova (2005) and Walter (2006).

2007. Over the whole sample 321 different Swedish stocks are traded by at least one fund. The number of stocks within a quarter traded by at least one fund summed over the total period provides us with 3943 stock-quarters. Finally, the dataset consists of 54714 observations of changes in stock holdings in Swedish equity by the funds.

TABLE 2 Overall statistics for Swedish equity mutual fund holdings database

	Total
Overall counts	
Number of distinctive active funds in database	124
Number of quarters in database	26
Number of distinctive traded Swedish stocks	321
Number of stock-quarters	3943
Number of trades	54714

NOTES:
The Swedish Equity mutual fund holdings database contains of portfolio holdings data from quarterly reports to the Swedish Financial Supervisory Authority during the period September 30, 2000 to June 30, 2007. The overall statistics of the funds in the database are reported above as for the sum over the quarterly periods over December, 2000 to March, 2007. The first figure shows how many distinctive funds counted for in the sample. The second row displays the total number of quarters included in the estimations of the model. The number of distinctive traded Swedish stocks in the sample displays the different stocks where data of the specific asset could be extracted from the Thomson Datastream database. The total number of stock-quarters represents the number of stocks traded by at least one fund within a quarter summed over the sample period. The final figure displayed is the total number of trades in the sample.

5.2 Descriptive statistics of dataset

Table 3 displays summary statistics of the holdings in the Swedish equity mutual fund database. The average number of funds trading during a quarter is 84 mutual funds. The number of funds differs over the quarters, mainly due to changes in the composition of the funds in the Swedish mutual fund market. The number of funds peaks with 94 different funds in 2005. The drop after 2005 is consistent with mergers of some funds during that period. This is also seen in the net asset value of the average fund for the first quarter 2006 of SEK 2.4 billion, almost the double of the value of the first quarter 2005. The average total net asset value of the funds within a quarter is SEK 115.9 billion. With the exception of the first quarter of 2003, the total net assets of the funds steadily increase. From a value of total net assets of SEK 75.5 billion in the first quarter of 2001 to SEK 212.2 billion in the first quarter of 2007, which is almost an increase of 200 percent.

The average net asset value of a fund is SEK 1.4 billion. The selection of funds was under the condition that at least 75 percent of the funds' assets were invested in stocks. Thus, the

predominant part of the value of the funds' assets consists of holdings in Swedish stocks. On average a fund held 43 different Swedish stocks and the proportion of those covered by the Datastream data was approximately 87 percent. In the first quarter of 2007 the proportion was 98 percent. The total number of trades within a quarter increased from 1408 in the first quarter of the sample to 2633 changes in holdings in the last quarter. In the majority of quarters the purchases outweighed the sales, with a total average of trades that were buys of 54.3 percent. In the last panel the number of distinctive stocks traded within a quarter by at least a certain number of funds is presented. The average number of stocks within a quarter traded by at least 1 fund is 152. The number of stocks traded decreases substantially between each level of minimum funds. In the appendix more detailed statistics for each quarter in the sample are presented.

TABLE 3 Summary statistics for Swedish equity mutual fund holdings database

	Year							
	01	02	03	04	05	06	07	Average
A. Fund counts								
Number of active funds in database	83	73	85	91	94	77	76	84
B. Net asset fund value								
Total net assets of funds (SEK billion)	75.5	89.3	64.3	107.1	136.1	184.9	212.2	115.9
Net assets of average fund (SEK billion)	0.9	1.2	0.8	1.2	1.4	2.4	2.8	1.4
C. Asset counts								
Number Swedish stocks held per fund	37	41	41	41	41	50	51	43
Proportion of stocks held per fund covered by Datastream (%)	70.3	80.5	85.4	87.8	87.8	92.0	98.0	86.8
D. Trading statistics								
Total number of trades	1408	1620	2101	2524	2437	2585	2633	2104
Percent of trades that are buys	52.4	56.2	59.7	57.4	55.5	51.0	47.3	54.3
Number of stocks traded by								
≥ 1 Fund	134	141	144	153	154	183	192	152
≥ 2 Funds	107	100	113	120	124	147	156	119
≥ 5 Funds	59	67	73	84	88	103	106	81
≥ 10 Funds	38	41	50	64	65	69	76	55

NOTES:
The Swedish Equity mutual fund holdings database contains of portfolio holdings data from quarterly reports to the Swedish Financial Supervisory Authority during the period September 30, 2000 to June 30, 2007. Summary statistics of the funds in the sample are reported above as for the first quarter within each year and for the average values of the overall sample in the rightmost column. Panel A records how many funds counted for in each quarter. Panel B presents the total net assets held by the funds in the dataset and the average fund net asset value. Panel C displays summary statistics on the average number of Swedish stocks held per fund and the proportion of these stocks covered by the Thomson Datastream database. Panel D presents trading statistics of the total number of trades, the proportion of the trades that are buys and the number of distinctive stocks traded by at least a given number of funds within the quarter.

6 Methodology

6.1 The LSV measure of herding

We use the measure of herding designed by Lakonishok et al. (1992), the so-called LSV measure. This is the measure most widely used in empirical studies of mutual fund herding behavior. Using the LSV measure will therefore permit the obtained results to be straightforwardly compared with the majority of previous studies.

Not all market participants can group together in a herd since the market consists of both a supply and a demand side. Hence, possible herding is only likely to occur when a subgroup of participants is examined. The LSV measure estimates the degree of correlated trading among a specific group of investors. Herding behavior is defined as the average tendency of mutual funds to trade a given asset (stock) in the same direction under the same time period above what would be expected if the funds were trading independently.

The LSV herding measure, *HM*, for stock *i* in period *t* is defined as:

$$HM_{i,t} = \left| p_{i,t} - p_t \right| - AF_{i,t}$$

where

$$p_{i,t} = \frac{B_{i,t}}{B_{i,t} + S_{i,t}} \quad \text{and} \quad p_t = \frac{\sum_{i=1}^{n} p_{i,t}}{n}$$

$B_{i,t}$ ($S_{i,t}$) is the number of funds that buy (sell) the stock *i* during the period *t*. Thus, $p_{i,t}$ is the proportion of funds trading the stock *i* during the period *t* that were buyers. p_t is the average proportion of trades over all funds that were purchases in the period *t*. p_t corrects for the expected proportion of buyers under the null hypothesis of independent trading. It is calculated separately for each time period, since it could depend on the net capital inflows to the funds during the period.

The first part of the LSV measure, $|p_{i,t} - p_t|$, is defined in absolute value and as a result the expected value would under random variation differ from zero. The adjustment factor, AF_i, corrects for this randomness. AF_i is the expected value of $|p_{i,t} - p_t|$ estimated under the assumption that the direction of the trades follows a binominal distribution with B_i and $S_{i,t}$ as possible outcomes. Under the null hypothesis of independent trading the probability of B_i equals p_t. The adjustment factor accounts for bias that would occur in $|p_{i,t} - p_t|$ for stocks traded by a low number of funds.

An illustration of the calculation of the adjustment factor follows. If we are examining the trades of 10 mutual funds, then we can look at it as if we were taking a random draw of 10 from a population in which the proportion of buyers is pt. Since we don't really know what p_t is, we use the proportion of stock trades that are buys (across all stocks) during that time period as a proxy for p_t. Then, for that draw of 10, we compute the AF_t. We are modelling the draw as being binomially distributed and we need to compute the expectation in the same manner. By setting up a table with the figures, assuming in this case that p_t was 0.5 we can calculate the adjustment factor.

$p_{i,t}$	$\lvert p_{i,t} - p_t \rvert$	Probability ($\lvert p_{i,t} - p_t \rvert$
0	0.5	(binomial probability of 0 successes in 10)
0.1	0.4	(binomial probability of 1 successes in 10)
0.2	0.3	(binomial probability of 2 successes in 10)
etc.	-	-
1	0.5	(binomial probability of 10 successes in 10)

By multiplying the second column with the third column and then summing the products we get the expected adjustment factor.

A positive value of $HM_{i,t}$ gives evidence of herding within a stock-quarter. The calculated values of $HM_{i,t}$ are averaged for a given subgroup of funds and then over time periods. The adjustment factor and p_t for each subgroup of funds are based only on the trading of that subgroup.

6.2 The modified LSV measure

The ordinary LSV measure does not take into account if the herding behavior is more pronounced in one direction of the trading. Wermers (1999) modified the measure and designed

a buy-side and a sell-side herding measure, $BHM_{i,t}$ and $SHM_{i,t}$ respectively. The measures are calculated in the same manner as the ordinary LSV measure, but conditioned:

$$BHM_{i,t} = HM_{i,t} \mid p_{i,t} > p_t$$
$$SHM_{i,t} = HM_{i,t} \mid p_{i,t} < p_t$$

The $BHM_{i,t}$ measure includes the stock-quarters where the tendency to buy, $p_{i,t}$, is higher than the average tendency, p_t , for the period. The $SHM_{i,t}$ measure calculates herding within the stock-quarters where the tendency to buy is lower than the average tendency.

6.3 Critique of the LSV measure

The LSV measure has been criticized in a paper by Bikhchandani and Shama (2000). The measure does not distinguish between rational response to publicly available information and herding behavior. It is not possible to determine whether a participant persists to go with the herd, since inter-quarter trading is non-traceable with the LSV measure. These shortcomings could have an effect on the reliability of the results, but a more appropriate alternative to the LSV measure has not yet been designed. Furthermore, no statistical approach to measure herding can distinguish between intentional and unintentional herding. In addition, the focus is on the herding phenomenon, not to distinguish traders that show a tendency to herd. Wylie (2005) carries out accuracy tests on the LSV measure for the effect on crucial underlying assumptions. The measure is, according to these tests, not biased in calculating herding except when the number of active funds in a stock-quarter is very small.

7. Empirical Results and Analysis

7.1 Overall levels of herding in the sample

Table 4 presents the overall levels of herding calculated with the LSV measure for our sample period December, 2000 to March, 2007. The average *HM* computed over all stock-quarters is 6.88 percent, with a restriction regarding the minimum number of 5 funds trading a given stock within a quarter. We can interpret this result as if 100 funds trade a given stock, then approximately 7 more funds trade on the same side of the market, than would be expected if the fund managers chose their stocks independently and randomly. If, a priori, the number of changes in stock holdings were equally balanced between negative and positive changes, then 56.88 percent (50 % + 6.88 %) of the funds traded in one direction and 43.12 percent (50%-6.88%) in the opposite direction.

The results in Table 4 show a clear tendency of an increased level of herding when imposing a higher minimum number of funds in a stock-quarter, in order to be included in the calculations of the average herding behavior. When restricting to 20 or more funds the *HM* decreases, possibly this could be attributed to the sharp decrease of stock-quarters used. The lowest number of funds trading in a stock-quarter used in the calculations of herding by previous researchers differ, as displayed in table 1, section 3. Wermers (1999) points out that one or a few number of funds trading in a stock could not be considered to be part of a herd. Therefore, he only includes the stock-quarters traded by a minimum of five funds in the measure of overall herding. We have calculated the herding measure for a range of least numbers of funds, but will make our overall conclusions mostly supported on the *HM* based on the minimum of 5 funds in a stock-quarter.

Our average herding behavior of 6.88 percent in the Swedish mutual funds compared with values from other studies gives us a further implication of the results. The Swedish mutual funds seem to herd more often than the funds in the mature markets as US and UK, but evidently less than the managers in the emerging markets. Consequently, the Swedish capital market seems to be at a stage in between a fully developed market and an emerging market. Notable is that our sample consists of a clear defined subgroup of funds, investing in the same type of assets and based on consistently reported snapshots of holdings. Thus, the difference could partly depend on those facts applied to a sample of funds during a time period previously not investigated. Previous research have found that the herding behavior is more elevated when diving the dataset into

categories depending on the funds' investment objectives, see e.g. Grinblatt *et al.*(1995) or Wermers (1999).

TABLE 4 Mean herding levels in Swedish mutual funds
[*HM* in percent]

	Number of funds trading in the quarter				
	≥ 1	≥ 2	**≥ 5**	≥ 10	≥ 20
Mean herding results					
HM for all funds in database	5.20	6.49	**6.88**	7.04	6.84
(Number of stock-quarters)	(3943)	(3102)	**(2094)**	(1429)	(938)

NOTES:
Above are the results of the LSV herding measure applied to the Swedish mutual fund database presented. The reported *HM* is computed as an average of the stock-quarter results during the period December, 2000 to March, 2007. The number of funds trading in the quarter indicates the minimum number of active funds within a stock-quarter to be included in the computed average herding value. The number of stock-quarters used to calculate the herding behavior is presented in parenthesis below the *HM* value. Due to the large sample sizes, all *t*-statistics are highly significant.

7.2 Buy- and sell-side levels of herding

The mean herding levels, conditioned on if the proportion of buyers is higher or lower than the average within a quarter, are reported in Table 5 below. Buy-side herding seems to be more prominent than the sell-side herding for our sample of funds. The average *BHM* is 7.23 percent when imposing a minimum level of 5 funds trading an underlying stock within a quarter. This figure of herding is above the mean herding of the ordinary unconditioned *LSV* measure for the same minimum number of funds trading. Mean herding formed on the sell-side is 6.52 percent, with at least 5 funds in a stock-quarter, which is below the unconditioned herding level presented in section 7.1. We can conclude that the Swedish equity mutual funds tend to herd more often when purchasing a stock. This is similar to the results from some previous studies, e.g. Wylie (2005), but other researchers have also reported the opposite conclusion, e.g. Wermers (1999).

TABLE 5 Mean buy- and sell-herding levels
[*BHM* and SHM in percent]

	Number of funds trading in the quarter			
	≥ 1	≥ 2	**≥ 5**	≥ 10
A. Mean buy-side herding results				
BHM for all funds in database	5.20	7.57	**7.23**	7.22
(Number of stock-quarters)	(2542)	(1701)	**(1067)**	(726)
B. Mean sell-side herding results				
SHM for all funds in database	5.19	5.19	**6.52**	6.85
(Number of stock-quarters)	(1401)	(1401)	**(1027)**	(703)

NOTES:
The results of the modified LSV herding measure applied to the Swedish mutual fund database are presented above. The reported *BHM*/*SHM* is computed as averages of the results from the stock-quarters over the period December, 2000 to March, 2007 for the buy- and sell-side herding respectively. The values of *BHM* and *SHM* are calculated over the stock-quarters with a proportion of buyers higher respective lower than the average within the quarter. The number of funds trading in the quarter indicates the minimum number of active funds within a stock-quarter to be included in the computed average herding value. The number of stock-quarters used to calculate the herding behavior is presented in parenthesis below the herding value. Due to the large sample sizes, all *t*-statistics are highly significant.

7.3 Mean herding segregated by stock size

We have divided the traded stocks in sub-groups segregated by the market capitalization of the stocks. The stocks have been divided by ranking the stocks on their market value at the beginning of each quarter. Three groups of stocks have been computed, so called terciles, with each tercile containing one third of the total sample of stocks. A stock could belong to different terciles between the quarters, since the ranking is computed separately for each period. The results of the *LSV* measure for each subgroup are displayed in Table 6.

The Swedish mutual funds seem to herd more in large stocks compared to smaller stocks, with an average level of *HM* in large capitalized stocks of 6.82 percent. In small stocks the funds herd in a level of 5.65 percent and the difference to large stocks is 1.17 percent less. The probability of the two means to be the same is 0.0426, i.e. the difference in means is significant at the 5 percent level. This contradicts the theories of herding behavior, which foresees a higher tendency to herd in smaller stocks. Other studies have also received results that could not confirm the theories of more elevated herding in small stocks, see e.g. Walter (2006).

From Table 6 it is possible to see the evident higher number of funds trading large stocks, than the stocks with smaller capitalisation.

TABLE 6 Mean herding levels by stock size
[*HM* and difference in mean in percent]

		Number of funds trading in the quarter		
	Stock size tercile	≥ 1	≥ 2	**≥ 5**
A. Mean herding results				
HM for stock-quarters in subgroup (Number of stock-quarters)	S1 (small cap)	3.05 (1296)	5.60 (678)	**5.65** **(178)**
HM for stock-quarters in subgroup (Number of stock-quarters)	S2 (medium cap)	5.24 (1325)	6.03 (1139)	**6.52** **(720)**
HM for stock-quarters in subgroup (Number of stock-quarters)	S3 (large cap)	6.55 (1322)	6.72 (1285)	**6.82** **(1196)**
B. Differences mean				
Difference in mean S1− S3 (p-value)	S1− S3 (small vs. large)	−3.50 0.0000	−1.12 0.0031	**−1.17** **0.0426**

NOTES:
The LSV herding measure is applied on subgroups based on stock sizes in the Swedish mutual fund database. Each stock is assigned to a size tercile from 1 to 3 by market cap at the beginning of each quarter period. The smallest stocks are allocated in tercile 1 (S1), the medium size stocks in tercile 2 (S2) and finally the large cap stocks in tercile 3(S3). The reported *HM* in Panel A are computed as averages of the results within the subgroup from the stock-quarters over the period December, 2000 to March, 2007. The number of funds trading in the quarter indicates the minimum number of active funds within a stock-quarter to be included in the computed average herding value. The number of stock-quarters used to calculate the herding behavior is presented in parenthesis below the herding value. Due to the large sample sizes, all *t*-statistics within each subgroup are highly significant. In panel B the differences in mean between the small and large stocks are displayed. Then p-values are derived from the t-tests demonstrating the probability of that the means in the two terciles are equal.

7.4 Mean herding segregated by fund size

The sample has also been segregated in subgroups by the net asset values of the mutual funds in the dataset. The funds have been separated in the same manner as the stocks in section 7.3, by ranking the funds on their net asset value in the beginning of each period. Three terciles of funds have been constructed, with each tercile containing one third of the total sample of stocks. A fund could belong to different terciles between the quarters, since the ranking is computed for each period separately. The average values of the *HM* for each subgroup are presented in Table 7.

In the case of mean herding levels within each fund subgroup, our results seem to confirm the theories of smaller funds herding to a larger degree. The average herding for the small funds is

7.88 percent, which is the highest value of herding found in any of our calculations. Medium and large funds seem to herd to a much lesser extent. The difference in means between the smallest and the largest funds is 2.05 percent, with a probability of the means to be equal of 0.0000.

TABLE 7 Mean herding levels by fund size
[*HM* and difference in mean in percent]

		Number of funds trading in the quarter		
	Fund size tercile	≥ 1	≥ 2	**≥ 5**
A. Mean herding results				
HM for stock-quarters in subgroup (Number of stock-quarters)	F1 (small)	4.81 (2530)	6.97 (1627)	**7.88** **(933)**
HM for stock-quarters in subgroup (Number of stock-quarters)	F2 (medium)	3.53 (3081)	5.05 (2065)	**5.27** **(1147)**
HM for stock-quarters in subgroup (Number of stock-quarters)	F3 (large)	4.37 (3195)	5.57 (2461)	**5.83** **(1494)**
B. Differences in mean				
Difference in mean F1− F3 (p-value)	F1− F3 (small vs. large)	0.44 0.0214	1.41 0.0000	**2.05** **0.0000**

NOTES:
The LSV herding measure is applied on subgroups based on fund sizes in the Swedish mutual fund database. Each fund is assigned to a size tercile from 1 to 3 by market value of net assets at the beginning of each quarter period. The smallest funds are allocated in tercile 1 (F1), the medium size funds in tercile 2 (F2) and the funds with a large value of net assets in tercile 3(F3). The reported *HM* in Panel A are computed as averages of the results within the subgroup from the stock-quarters over the period December, 2000 to March, 2007. The number of funds trading in the quarter indicates the minimum number of active funds within a stock-quarter to be included in the computed average herding value. The number of stock-quarters used to calculate the herding behavior is presented in parenthesis below the herding value. Due to the large sample sizes, all *t*-statistics within each subgroup are highly significant. In panel B the differences in mean between the small and large funds are displayed. Then p-values are derived from the t-tests demonstrating the probability of that the means in the two terciles are equal.

7.5 Summary of results compared to predictions

Of the five hypotheses stated in section 4, only the results regarding hypothesis 4 contradicts the predictions. In our sample the funds seem to herd more often in large cap stocks, this is the opposite of the forecasts from the theories regarding the herding behavior. Therefore, we must reject the hypothesis that the herding level is higher in small stocks. A result giving the opposite indication than the tested hypothesis cannot directly be assumed to hold. However, the numbers give a clear indication that the funds herd more in larger stocks. For the other hypotheses we can conclude that the results were significant in the direction of the predictions.

Hypothesis 1: The Swedish mutual funds exhibit herding behavior.

The results from the analysis support the hypothesis.

Hypothesis 2: The tendency to herd increases with the number of funds trading a specific stock within the period.

The results from the analysis support the hypothesis.

Hypothesis 3: The level of herding in the Swedish fund market is more elevated than for more mature markets.

The results from the analysis support the hypothesis.

Hypothesis 4: Higher level of herding is found in trading of small capitalization stocks.

The results from the analysis do not support the hypothesis.

Hypothesis 5: The level of herding is higher for small funds than for large funds.

The results from the analysis support the hypothesis.

8. Conclusions

This master thesis provides further evidence of the tendency of mutual funds to form herds. Herding behavior has been investigated for a sample of quarterly holdings for 124 Swedish equity mutual funds in the period December, 2000 to March, 2007. The approach used to calculate herding is the measure developed by Lakonishok *et al* in their study from 1992, which is the most frequently used measure in studies about herding. Herding is measured as the proportion of funds that trade a stock on the same side of the market above what would be expected from independently trading investors.

The overall *HM* computed over all stock-quarters is 6.88 percent, under the restriction of at least 5 funds trading a specific stock within the quarter. The result can be interpreted as if 100 funds trade a given stock, then approximately 7 more funds trade on the same side of the market, than would be expected if the fund managers chose their stocks independently. The Swedish mutual funds seem to herd more than the mature markets, but less than the emerging markets. Thus, the current level of the Swedish mutual fund market could be considered to be in between a mature market and an emerging market. Our dataset consists of a clear defined group of funds, investing in the same type of holdings and based on consistent reported snapshots of holdings. Hence, the difference compared to the more developed markets could to some extent depend on those facts applied to a sample of funds during a different time period. Furthermore, the Swedish mutual funds tend to herd more often when purchasing than when selling a stock, and when trading large stocks. This contradicts some of the theories of herding behavior, which foresees a higher tendency to herd in smaller stocks. Swedish mutual funds with a low value of net assets seem to trade more often in the same direction than larger funds, which is consistent with theories about herding.

We have not looked into the potential effect of the herding behavior on the performance of individual stocks, since quarterly data hardly could be accurate to use in the estimations of that effect. The effect on individual stocks has been studied by some previous papers, but no comprehensible evidence has been shown. Lakonishok *et al.* (1992) concludes in their study that there is no clear proof in their data that funds destabilize prices of individual stocks. The effects on individual stocks have been calculated by quarters, while estimates based on daily or weekly observations should give more profound results.

9. Suggestions for further research

Even though the herding behavior has been examined in some studies, there are still many questions left unanswered. Our study covers a recent time period, to our knowledge, not investigated before. The main papers in the area, with results from the more mature markets, were computed over a much less recent period of time. Further research on these developed markets on a recent time period would both increase the comparison possibility to our computed level of herding, since the underlying time period would be the same, and give input on how the mutual funds behavior has changed between these time periods.

We have used the herding measure by Lakonishok *et al.* (1992), with some drawbacks regarding the computation and interpretation as presented in section 6.3. There are less common measures of herding proposed by some researchers. Nofsinger and Sias (1999) studied herding at the asset allocation level using aggregate data on stock holdings. Investigating the Swedish mutual funds with their measure would indicate the robustness of our results and making the interpretations easier.

Even though the majority of the studies on herding behavior are based on mutual fund data, some studies have applied the LSV measure on other areas, like Jaffe and Mahoney's (1999) who studies the performance of investment newsletters. Using the LSV measure on other entities than mutual funds could give new insights into the phenomenon herding behavior.

10 References

10.1 Literature

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10.2 Databases

Thomson Datastream Advance

10.3 Internet sources

http://www.fondbolagen.se

http://www.morningstar.com

http://www.fi.se

http:// www.fi.se/Templates/NewsLetterPage____8757.aspx

http://www.ici.org

The Investment Company Institute (2007), *2007 Investment Company fact book*:

http://www.ici.org/stats/latest/2007_factbook.pdf

10.4 Publications

Fondbolagens förening (2006), Fondsparandet i Sverige 2006, Stockholm.

Morningstar (2005), *Morningstar category classifications: Morningstar Europe and Morningstar Asia*, Morningstar Methodology paper, November 1.

11. Appendix

11.1 Tables of statistics for each quarter

TABLE 8 Descritive statistics of database for quarters in year 2000

	Quarter			
	Q1	Q2	Q3	Q4
A. Fund counts				
Number of active funds in database	–	–	–	76
B. Net asset fund value				
Total net assets of funds (SEKbillion)	–	–	–	83.5
Net assets of average fund (SEKbillion)	–	–	–	1.1
C. Asset counts				
Number of Swedish stocks held per fund	–	–	–	38
Proportion of stocks held per fund covered (%)	–	–	–	71.1
D. Trading statistics				
Total number of trades	–	–	–	1347
Percent of trades that are buys	–	–	–	58.8
Number of stocks traded by				
≥ 1 Fund	–	–	–	141
≥ 2 Funds	–	–	–	102
≥ 5 Funds	–	–	–	66
≥ 10 Funds	–	–	–	39

NOTES:
The Swedish Equity mutual fund holdings database contain portfolio holdings data from quarterly reports to the Swedish Financial Supervisory Authority during the period September 30, 2000 to June 30, 2007. Summary statistics of the funds in the sample are reported above as for the quarters within the year presented in the table's headline. Panel A records how many funds counted for in each quarter. Panel B presents the total net assets held by the funds in the dataset and the average fund net asset value. Panel C displays summary statistics on the average number of Swedish stocks held per fund and the proportion of these stocks covered by the Thomson Datastream database. Panel D presents trading statistics of the total number of trades, the proportion of the trades that are buys and the number of distinctive stocks traded by at least a given number of funds within the quarter.

TABLE 9 Descritive statistics of database for quarters in year 2001

	Quarter			
	Q1	Q2	Q3	Q4
A. Fund counts				
Number of active funds in database	83	77	78	82
B. Net asset fund value				
Total net assets of funds (SEKbillion)	75.5	89.6	67.7	89.0
Net assets of average fund (SEKbillion)	0.9	1.2	0.9	1.1
C. Asset counts				
Number of Swedish stocks held per fund	37	40	40	40
Proportion of stocks held per fund covered (%)	70.3	75.0	77.5	80.0
D. Trading statistics				
Total number of trades	1408	1262	1398	1623
Percent of trades that are buys	52.4	60.5	60.1	53.4
Number of stocks traded by				
≥ 1 Fund	134	120	121	140
≥ 2 Funds	107	95	94	114
≥ 5 Funds	59	51	60	59
≥ 10 Funds	38	32	33	37

NOTES:
The Swedish Equity mutual fund holdings database contain portfolio holdings data from quarterly reports to the Swedish Financial Supervisory Authority during the period September 30, 2000 to June 30, 2007. Summary statistics of the funds in the sample are reported above as for the quarters within the year presented in the table's headline. Panel A records how many funds counted for in each quarter. Panel B presents the total net assets held by the funds in the dataset and the average fund net asset value. Panel C displays summary statistics on the average number of Swedish stocks held per fund and the proportion of these stocks covered by the Thomson Datastream database. Panel D presents trading statistics of the total number of trades, the proportion of the trades that are buys and the number of distinctive stocks traded by at least a given number of funds within the quarter.

TABLE 10 Descritive statistics of database for quarters in year 2002

	Quarter			
	Q1	Q2	Q3	Q4
A. Fund counts				
Number of active funds in database	73	86	89	84
B. Net asset fund value				
Total net assets of funds (SEKbillion)	89.3	77.9	59.0	60.2
Net assets of average fund (SEKbillion)	1.2	0.9	0.7	0.7
C. Asset counts				
Number of Swedish stocks held per fund	41	40	44	42
Proportion of stocks held per fund covered (%)	80.5	80.0	81.8	83.3
D. Trading statistics				
Total number of trades	1620	1790	2036	2109
Percent of trades that are buys	56.2	57.5	44.5	53.5
Number of stocks traded by				
≥ 1 Fund	141	142	146	143
≥ 2 Funds	100	101	110	113
≥ 5 Funds	67	63	71	79
≥ 10 Funds	41	40	48	52

NOTES:
The Swedish Equity mutual fund holdings database contain portfolio holdings data from quarterly reports to the Swedish Financial Supervisory Authority during the period September 30, 2000 to June 30, 2007. Summary statistics of the funds in the sample are reported above as for the quarters within the year presented in the table's headline. Panel A records how many funds counted for in each quarter. Panel B presents the total net assets held by the funds in the dataset and the average fund net asset value. Panel C displays summary statistics on the average number of Swedish stocks held per fund and the proportion of these stocks covered by the Thomson Datastream database. Panel D presents trading statistics of the total number of trades, the proportion of the trades that are buys and the number of distinctive stocks traded by at least a given number of funds within the quarter.

TABLE 11 Descritive statistics of database for quarters in year 2003

	Quarter			
	Q1	Q2	Q3	Q4
A. Fund counts				
Number of active funds in database	85	89	90	89
B. Net asset fund value				
Total net assets of funds (SEKbillion)	64.3	77.4	86.0	99.5
Net assets of average fund (SEKbillion)	0.8	0.9	1.0	1.1
C. Asset counts				
Number of Swedish stocks held per fund	41	39	39	40
Proportion of stocks held per fund covered (%)	85.4	87.2	87.2	90.0
D. Trading statistics				
Total number of trades	2101	2194	2098	2240
Percent of trades that are buys	59.7	61.9	59.7	55.3
Number of stocks traded by				
≥ 1 Fund	144	135	144	135
≥ 2 Funds	113	108	115	109
≥ 5 Funds	73	71	78	75
≥ 10 Funds	50	52	55	56

NOTES:
The Swedish Equity mutual fund holdings database contain portfolio holdings data from quarterly reports to the Swedish Financial Supervisory Authority during the period September 30, 2000 to June 30, 2007. Summary statistics of the funds in the sample are reported above as for the quarters within the year presented in the table's headline. Panel A records how many funds counted for in each quarter. Panel B presents the total net assets held by the funds in the dataset and the average fund net asset value. Panel C displays summary statistics on the average number of Swedish stocks held per fund and the proportion of these stocks covered by the Thomson Datastream database. Panel D presents trading statistics of the total number of trades, the proportion of the trades that are buys and the number of distinctive stocks traded by at least a given number of funds within the quarter.

TABLE 12 Descritive statistics of database for quarters in year 2004

	Quarter			
	Q1	Q2	Q3	Q4
A. Fund counts				
Number of active funds in database	91	91	92	91
B. Net asset fund value				
Total net assets of funds (SEKbillion)	107.1	114.0	114.1	119.2
Net assets of average fund (SEKbillion)	1.2	1.3	1.2	1.3
C. Asset counts				
Number of Swedish stocks held per fund	41	41	41	41
Proportion of stocks held per fund covered (%)	87.8	87.8	87.8	90.2
D. Trading statistics				
Total number of trades	2524	2501	2136	2401
Percent of trades that are buys	57.4	67.5	49.0	49.7
Number of stocks traded by				
≥ 1 Fund	153	152	148	157
≥ 2 Funds	120	123	113	122
≥ 5 Funds	84	87	83	89
≥ 10 Funds	64	62	60	64

NOTES:
The Swedish Equity mutual fund holdings database contain portfolio holdings data from quarterly reports to the Swedish Financial Supervisory Authority during the period September 30, 2000 to June 30, 2007. Summary statistics of the funds in the sample are reported above as for the quarters within the year presented in the table's headline. Panel A records how many funds counted for in each quarter. Panel B presents the total net assets held by the funds in the dataset and the average fund net asset value. Panel C displays summary statistics on the average number of Swedish stocks held per fund and the proportion of these stocks covered by the Thomson Datastream database. Panel D presents trading statistics of the total number of trades, the proportion of the trades that are buys and the number of distinctive stocks traded by at least a given number of funds within the quarter.

TABLE 13 Descritive statistics of database for quarters in year 2005

	Quarter			
	Q1	Q2	Q3	Q4
A. Fund counts				
Number of active funds in database	94	97	76	77
B. Net asset fund value				
Total net assets of funds (SEKbillion)	136.1	144.2	149.9	161.5
Net assets of average fund (SEKbillion)	1.4	1.5	2.0	2.1
C. Asset counts				
Number of Swedish stocks held per fund	41	40	47	48
Proportion of stocks held per fund covered (%)	87.8	90.0	91.5	91.7
D. Trading statistics				
Total number of trades	2437	2084	2213	2347
Percent of trades that are buys	55.5	56.8	48.4	44.9
Number of stocks traded by				
≥ 1 Fund	157	149	164	164
≥ 2 Funds	124	115	126	132
≥ 5 Funds	88	84	95	99
≥ 10 Funds	65	59	68	62

NOTES:
The Swedish Equity mutual fund holdings database contain portfolio holdings data from quarterly reports to the Swedish Financial Supervisory Authority during the period September 30, 2000 to June 30, 2007. Summary statistics of the funds in the sample are reported above as for the quarters within the year presented in the table's headline. Panel A records how many funds counted for in each quarter. Panel B presents the total net assets held by the funds in the dataset and the average fund net asset value. Panel C displays summary statistics on the average number of Swedish stocks held per fund and the proportion of these stocks covered by the Thomson Datastream database. Panel D presents trading statistics of the total number of trades, the proportion of the trades that are buys and the number of distinctive stocks traded by at least a given number of funds within the quarter.

TABLE 14 Descritive statistics of database for quarters in year 2006

	Quarter			
	Q1	Q2	Q3	Q4
A. Fund counts				
Number of active funds in database	77	77	78	78
B. Net asset fund value				
Total net assets of funds (SEKbillion)	184.9	166.3	181.1	204.6
Net assets of average fund (SEKbillion)	2.4	2.2	2.3	2.6
C. Asset counts				
Number of Swedish stocks held per fund	50	50	51	49
Proportion of stocks held per fund covered (%)	92.0	94.0	96.1	98.0
D. Trading statistics				
Total number of trades	2585	2452	2634	2541
Percent of trades that are buys	51.0	50.3	50.2	50.9
Number of stocks traded by				
≥ 1 Fund	183	164	187	187
≥ 2 Funds	147	137	150	156
≥ 5 Funds	103	92	109	104
≥ 10 Funds	69	67	69	70

NOTES:
The Swedish Equity mutual fund holdings database contain portfolio holdings data from quarterly reports to the Swedish Financial Supervisory Authority during the period September 30, 2000 to June 30, 2007. Summary statistics of the funds in the sample are reported above as for the quarters within the year presented in the table's headline. Panel A records how many funds counted for in each quarter. Panel B presents the total net assets held by the funds in the dataset and the average fund net asset value. Panel C displays summary statistics on the average number of Swedish stocks held per fund and the proportion of these stocks covered by the Thomson Datastream database. Panel D presents trading statistics of the total number of trades, the proportion of the trades that are buys and the number of distinctive stocks traded by at least a given number of funds within the quarter.

TABLE 15 Descritive statistics of database for quarters in year 2007

	Quarter			
	Q1	Q2	Q3	Q4
A. Fund counts				
Number of active funds in database	76	–	–	–
B. Net asset fund value				
Total net assets of funds (SEKbillion)	212.2	–	–	–
Net assets of average fund (SEKbillion)	2.8	–	–	–
C. Asset counts				
Number of Swedish stocks held per fund	51	–	–	–
Proportion of stocks held per fund covered (%)	98.0	–	–	–
D. Trading statistics				
Total number of trades	2633	–	–	–
Percent of trades that are buys	47.3	–	–	–
Number of stocks traded by				
≥ 1 Fund	192	–	–	–
≥ 2 Funds	156	–	–	–
≥ 5 Funds	106	–	–	–
≥ 10 Funds	76	–	–	–

NOTES:
The Swedish Equity mutual fund holdings database contain portfolio holdings data from quarterly reports to the Swedish Financial Supervisory Authority during the period September 30, 2000 to June 30, 2007. Summary statistics of the funds in the sample are reported above as for the quarters within the year presented in the table's headline. Panel A records how many funds counted for in each quarter. Panel B presents the total net assets held by the funds in the dataset and the average fund net asset value. Panel C displays summary statistics on the average number of Swedish stocks held per fund and the proportion of these stocks covered by the Thomson Datastream database. Panel D presents trading statistics of the total number of trades, the proportion of the trades that are buys and the number of distinctive stocks traded by at least a given number of funds within the quarter.