

Stockholm School of Economics

MSc Thesis in Finance

# Can Mutual Funds Signal M&A Deal Performance? Evidence from the Scandinavian Market

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## ABSTRACT

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This paper provides a study on the signals of M&A deal performance provided by mutual fund-related ownership variables. We conduct an analysis on 445 mutual funds domiciled in Sweden holding stocks of 211 bidder companies incorporated in Northern Europe between 2000 and 2008. We find evidence that deal performance is increasing in the average stake owned by mutual funds in the bidder company and decreasing in the aggregate stake owned by mutual funds in the bidder company. We further explore the issue by measuring the effect of the concentration level of the stake of bidder capital controlled by mutual funds. We find that deal performance is increasing in the concentration level of mutual fund bidder ownership, but only when the aggregate stake of bidder capital controlled by mutual funds is large. Neither mutual fund past performance, nor focus on domestic equities, nor the relative amount of fund AUM invested in the bidder company provide signals about future deal performance in our analysis.

**Keywords:** Mutual Funds, M&A, Event Study, Activism, Monitoring.

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# 1. Introduction

The frequency and high impact on firm value of mergers and acquisitions has made M&A one of the most extensively analyzed corporate finance phenomena. Theories suggest that mergers can occur for good reasons, such as capturing synergy gains and creating shareholder value, or for bad reasons, such as agency costs (Qiu 2006). The increasingly strong presence of institutional investors in the ownership structure of publicly traded companies has raised significant questions about their role as monitoring shareholders and their ability to influence firm decisions. Gopalan (2008) identifies three possible reactions of monitoring institutional shareholders to information about declining firm prospects. Institutions could: take a public activist role, privately attempt to influence management, sell their holdings. This paper aims to shed light on the behavior of a particular category of institutional investors – mutual funds – as shareholders of companies involved in major corporate events, namely acquisitions of other companies.

While a substantial number of studies analyze factors strictly related to the bidder or target company, a thinner body of literature examines the behavior of investors (see Massa, Gaspar and Matos (2004); Gopalan (2008); Chen, Harford and Li (2004); Qiu (2006)). We intend to contribute to such a line of research by analyzing factors related to mutual funds. The analysis conducted here aims at understanding if it is possible for investors to uncover signals concerning the future performance of a M&A deal by exploring characteristics related to the institutional investors present in the capital structure of the bidder company. Our intention is to test four separate hypotheses, related to (1) strength and concentration of mutual fund presence in the bidder company; (2) proportion of mutual fund Assets Under Management (AUM) invested in the bidder; (3) home equity focus of the mutual funds in the bidder capital structure; (4) past performance of the mutual funds owning a stake in the bidder. We aim at understanding if any of the four factors described above significantly suggests a stronger or weaker performance of the acquisitions carried out by the companies analyzed.

We gather data on the Scandinavian market. Specifically, by accessing disclosure data reported by *Finansinspektionen*, the Swedish financial market regulator, we build a sample of fund stock positions in companies that enter into mergers or acquisitions during the period between the fourth quarter of 2000 and the third quarter of 2008. Through an event study methodology we compute the performance of each of the 211 M&A deals announced during the period, by calculating Cumulative Abnormal Returns (CAR) for each deal. Subsequently, we build six mutual fund-related variables to implement the tests of the hypotheses formulated. The analysis is con-

ducted through the widely employed technique of multiple linear regression, throughout four different econometric specifications.

Results from the analysis highlight an economically and statistically significant relationship between mutual fund ownership concentration and deal performance, opening up for the possibility of an activist and monitoring role of mutual funds in bidder companies.

The rest of the paper is organized as follows: section 2 provides a summary of facts related to the listing of companies in Northern Europe, the Swedish mutual fund industry and the market for M&A deals in Scandinavia; section 3 summarizes the main bodies of research related to the topic analyzed in this paper; section 4 formalizes our research question and the hypotheses that our analysis aims to test; section 5 describes the structure and econometric details of the analysis carried out; section 6 summarizes, discusses and challenges the results; section 7 concludes.

## 2. Main Facts

### 2.1 Nordic Listed Companies

Financial infrastructures in the Nordic region have been increasingly integrating in the last decade. The modern process of integration of the Nordic capital markets began in 2003 when OM AB, the Stockholm Stock Exchange and HEX plc, the Helsinki stock exchange merged into OMX AB. OMX acquired then the Copenhagen Stock Exchange in 2005, the Iceland Stock Exchange and 10% of the Norwegian one in 2006. In 2007, OMX AB was bought by the American NASDAQ and renamed in NASDAQ OMX Group. The company's activities in the Nordics are now categorized under the name of the Nordic Market division and comprehend Copenhagen, Stockholm, Helsinki and Iceland.

Industry	XSTO			XHEL			XCPH			XICE			Total
	Large	Medium	Small	Large	Medium	Small	Large	Medium	Small	Large	Medium	Small	
Oil & Gas	2	2	2	1	0	0	1	0	1	0	0	1	10
Basic Materials	6	2	7	4	5	1	0	1	2	0	0	0	28
Industrials	16	15	38	8	14	22	6	5	22	0	2	0	148
Consumer Goods	6	9	10	3	5	6	2	6	9	0	0	0	56
Health Care	4	6	21	1	2	2	7	5	6	0	1	0	55
Consumer Services	4	13	8	3	5	3	0	1	14	0	1	2	54
Telecommunications	3	0	2	1	0	0	1	0	0	0	0	1	8
Utilities	0	0	2	1	0	0	0	1	0	0	0	0	4
Financials	16	17	8	2	5	6	5	8	49	0	0	2	118
Technology	2	3	27	2	2	15	0	1	7	0	0	1	60
<b>Total</b>	<b>59</b>	<b>67</b>	<b>125</b>	<b>26</b>	<b>38</b>	<b>55</b>	<b>22</b>	<b>28</b>	<b>110</b>	<b>0</b>	<b>4</b>	<b>7</b>	<b>541</b>

**Table 1** - Breakdown of number of Nordic Listed companies divided by size, industry and stock exchange. Data has been obtained from NASDAQ OMX Nordic dataset and is updated to February 20<sup>th</sup>, 2013.

In comparison to other capital markets, the Nordic markets have seen a higher stability in the last years of crisis. This may be due not only to their level of integration but also to their geographical position, their insularity that has demonstrated to have some advantages to what concerns the possibility for companies to have a good access to diverse financing sources, giving them more financial and strategic flexibility in comparison to their more international competitors. In particular, the limited number of participants in the market has guaranteed them the opportunity to establish very strong relationships between market participants, which proved to be a great asset in times of market turmoil.

As shown by Table 1, currently the Nordic Stock Exchanges lists a total of 541 companies, of which 46% are listed on the Stockholm Stock exchange, 22% on the Helsinki Stock Exchange, 30% on the Copenhagen one and 2% in Iceland. If we analyze the listed companies per sector,

we see that 27% of them belong to the “Industrials” category, followed by “Financials” that cover 22% of the total public companies. “Consumer Goods”, “Health Care” and “Consumer Services” all follow with a 10% each of listings. Finally, 55% of the listed companies belong to the category “Small”, 25% to the category “Medium” and 20% to the “Large” companies group.

	<b>XSTO</b>	<b>XHEL</b>	<b>XCPH</b>	<b>XICE</b>	<b>Total</b>
Oil & Gas	8	0	0	0	<b>8</b>
Basic Materials	11	0	0	1	<b>12</b>
Industrials	18	0	2	0	<b>20</b>
Consumer Goods	6	0	1	3	<b>10</b>
Health Care	17	0	1	0	<b>18</b>
Consumer Services	15	1	4	0	<b>20</b>
Telecommunications	0	0	0	0	<b>0</b>
Utilities	1	0	1	0	<b>2</b>
Financials	11	1	2	0	<b>14</b>
Technology	19	1	4	0	<b>24</b>
<b>Total</b>	<b>106</b>	<b>3</b>	<b>15</b>	<b>4</b>	<b>128</b>

**Table 2** - Breakdown of number of companies listed on the First North Stock Exchange. Data has been obtained from NASDAQ OMX Nordic dataset on February 20<sup>th</sup>, 2013.

Nasdaq OMX also offers an alternative stock exchange, named “First North”. This division has been launched for the first time in Copenhagen in 2005 and has then expanded to the other Nordic countries in the following years. First North, differently from the other divisions of Nasdaq OMX, does not have the legal status as an EU-regulated market and the companies listed in this market are subject only to the legal requirements imposed by the market provider itself. The risk for investors in this particular division is thus higher, but finance theory tells us that expected returns may also be higher. In fact, the division was specifically designed to address the financing needs of so-called “growth” companies that can access the capital markets in order to realize their growth potentials. First North represents a concrete possibility for smaller companies to concentrate on the development of their business and constitutes an intermediate step towards becoming a public company on a regulated market. As indicated by Table 2, currently, 128 companies are listed on the First North Stock Exchange, of which 83% are listed on the Stockholm First North Exchange.

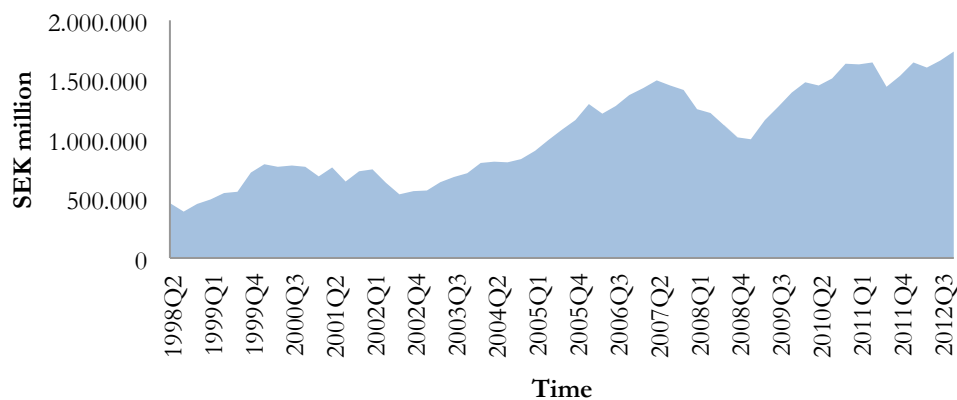
First North Premier is a sub-division of First North and it is targeted to companies that aim to comply with disclosure rules more stringent than those of the First North stock exchange. Currently, 27 firms are listed on First North Premier<sup>1</sup>.

<sup>1</sup> Source: Nasdaq OMX website <http://www.nasdaqomxnordic.com/shares>

## 2.2 Swedish Mutual Fund Industry

The introduction of mutual funds in Sweden dates back to 1958, when two brothers, Ragnar and Gösta Åhlén, created the Aktietjänst foundation, with the purpose of encouraging equity-based savings in Sweden. Mutual funds had grown in popularity in other developed economies – for instance, the USA – since the 1940s. Swedish legislation set up a mutual fund legal framework inspired to that introduced in West Germany in the same years.

The rise in popularity of mutual funds has been significant, especially after the 1980s, largely due to favorable regulation (see Figure 1 for the growth in the market value of Swedish mutual funds).



**Figure 1** - Evolution of aggregate market value of funds in Sweden. Values are reported in millions of Swedish Kronor (SEK). Data has been obtained from Statistics Sweden: <http://www.scb.se>.

In 1978, Sweden passed a set of regulations that favored the development of mutual fund investments: savers were entitled to a 20 percent income tax deduction on the amounts that they invested in funds and the returns made on such investments were tax-free for five years.

In 1984, the Social Democratic government instituted the “*allemans*” funds (literally: every man’ funds), which resulted being major drivers in the popularity of fund investments among savers. The “*allemans*” funds benefited from a tax exemption of returns for an unlimited period of time, at least until 1990, when the law was changed. Savers could also choose whether to invest in equities or fixed income. In 1990, Sweden counted a total of 1.7 million “*allemans*” fund accounts.

In 1985, the EU issued the UCITS directive, aimed at harmonizing the European fund regulatory framework, and ultimately promoting cross-border trading of mutual funds within the European Union. In the late 1990s, Sweden’s first hedge funds were launched. Contrarily to the

policies in place in many developed countries, Swedish private savers were allowed to invest a small proportion of their savings into hedge funds.

The 1990s also marked the beginning of an era of mutual fund investments for pension purposes. Individual pension savings, IPS, allowed Swedish citizens to set up private pension schemes without any insurance link. In 1994 a national pension system was put in place. Under such an arrangement, 2.5 percent of every citizen's salary would go to the premium pension scheme. Savers could choose which funds they wanted to invest in.

Currently, 98 percent of Swedes (aged 18-74) invest part of their savings in funds. In 2009 the Swedish fund market counted more than 4,000 funds, for a total of SEK 1,200 billion invested. Pension savings constitute the largest share of fund investments today, amounting to roughly 90 percent of total fund assets. Funds also make up for a large part of household savings: such a share amounted to 27 percent in 2008. Around 46% of savings are invested in equity funds, 32% is invested in fixed income funds, 17% in balanced funds and 5% in hedge funds. Among equity funds, Swedish equities went from representing 86% of assets in 1990 to accounting for 27% in 2008<sup>2</sup>.

### **2.3 Nordic M&A activity**

The European markets have been undergoing a significant process of economic integration in the last two decades, driven by the European Union's efforts to develop a single economic market, with a unique currency, market integration and a wave of deregulations and privatizations. This has contributed to the creation of a single European market that has seen the surge in cross-border M&A activities in Europe. In fact, in 2007 the volume of M&A transactions led by European companies surpassed for the first time in history the volume of their US counterparts<sup>3</sup>. At the same time, this integration process has represented a double-edged sword with the crisis that caused a significant drop in M&A activities in the Euro countries.

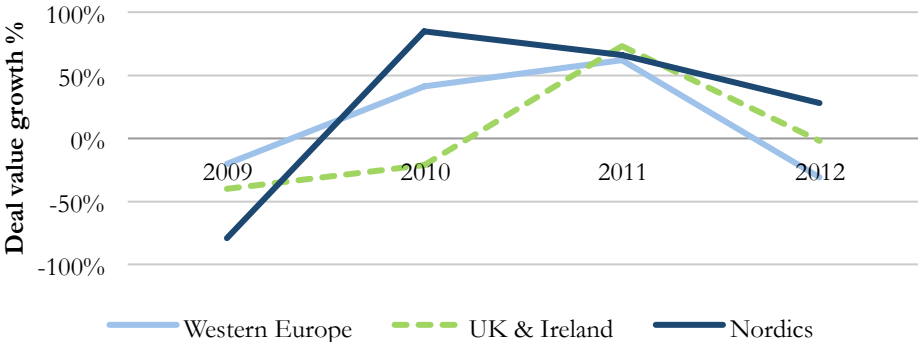
Even though the Nordic markets have always been very connected to neighboring countries, during the 2007 crisis the Nordic M&A market appeared to be in a healthier state than any others. Such a feature is probably related to a number of influencing factors. First of all, in terms of macroeconomic figures: GDP growth in the Nordic countries was quite stable during the crisis, whereas GDP in many of the Euro countries contracted until Q3-Q4 in 2012. Also, when

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<sup>2</sup> Source: the Swedish Investment Fund Association

<sup>3</sup> "The European M&A Industry : A market in the process of construction", Moschieri and Campa, 2009.

we look at S&P ratings, we notice that analysts have always been quite positive about the credit market in the Nordics; at the time of writing all 4 Nordic countries have a triple A rating with stable economic outlook. Another key factor that favored a positive M&A environment in the Nordics are the fundamentals of both publicly and privately held companies. Revenue growth figures were generally very strong, as well as operational performance and current ratios. All these factors have increased investor confidence in the region, which were therefore more inclined to pursue M&A transactions than in other countries<sup>4</sup>.



**Figure 2 -** Year-on-year M&A deal value growth in Europe. Data has been obtained from S&P Capital IQ and is part of the analysis conducted in the 2012 Nordic M&A Report.

If we have a deeper look at the numbers we see that the total M&A value grew by almost 28% in 2012, despite a slowdown from 2011, while at the same time contracting by more than 30% in Western Europe, as reported in Figure 2. The total M&A deals value in the Nordics was up to \$19 billion, of which \$9 billion of M&A transactions were recorded by Sweden, \$5 billion by Norway and \$4,5 billion by Denmark. Finland’s M&A activity during 2012 was sluggish but this may be attributed to the high level of R&D spending of the Finnish companies, which should see an increase in M&A activities in the coming years<sup>5</sup>

More than 77% of M&A transactions in the Nordic market have targeted SME companies (market cap < \$100 million), with the peak of Finland where 91% of the transaction (30 out of 33) have targeted small or medium firms. These findings are also supported by the fact that more than 80% of the companies listed in the Nordic markets are small and medium sized companies.

Finally, the major buyers of Nordic companies in 2012 were the United States with 12 transactions, including the largest acquisition in the market for \$4.09 billion of the Swedish manufacturer of medical equipment Gambro by US healthcare company Baxter International, fol-

<sup>4</sup> Linklaters M&A Barometer, May 2013

<sup>5</sup> “M&A in the Nordic Region Boosted by the Fundamental Health of Private and Public Companies”, S&P Capital IQ, February 2013

lowed by the UK with 10 successfully completed transactions and Germany with 8 transactions, including chemical company BASF's takeover of fish oils maker Pronova.

The outlook for M&A activities in the Nordic market remains thus strong, as flows of revenues and economic conditions appear to be stable. One major drawback for transaction volumes could be caused by the level of indebtedness of the Nordic private sector, which could require companies to more carefully craft their M&A strategies if they want to maintain a strong and competitive market positioning.

## 3. Previous Research

### 3.1 Merger Performance

There exists a wide literature studying the drivers of corporate acquisition performance. Literature has so far dealt with seven main factors that affect corporate performance: (1) the method of payment of a transaction; (2) relatedness of an acquisition; (3) Tobin's q ratio; (4) firm size effects; (5) domestic or cross-border merger deals; (6) macroeconomic conditions; (7) bidder cash holdings.

The method of payment is one of the first variables that drew the attention of researchers: scholars such as Rau and Varmaelen (1998) and Andre, Kooli and L'her (2004) argued that transactions financed with cash outperform stock-financed transactions, whereas another line of research, represented by King, Dalton and Daily (2004) found no evidence regarding an improved performance with a particular acquisition method of payment. Travlos (1987) concluded that financing an acquisition with common stock conveys the negative signal that the bidding firm is overvalued and hence leads acquiring companies to experience lower abnormal returns following the takeover bid announcement.

Deal performance could depend on similarities between the business focus of bidder and target companies. Waegelein and Ramaswamy (2003) study the financial performance of combined target and acquiring firms over a 5 year post-merger period. In particular, they find that firms that acquire companies in unrelated industries experience a better post-merger related performance in comparison to related mergers. In contrast to this study, Choi and Russel (2004) conduct an analysis on the financial performance of 171 M&A deals in the construction industry in the US, do not find any significant improvement in performance of unrelated deals over related ones. Finally, Morck, Shleifer and Vishny (1990) identify three subsamples of acquisitions that generate systematically lower and predominantly negative announcement period returns for acquiring firms: unrelated diversification, buying growth and bad managers. Executives of undiversified firms might pursue diversifying acquisitions even if they reduce shareholder value: diversification could reduce risk on their human capital, ensure the survival of a firm on the verge of liquidation, or give managers a chance to enter new lines of business at which they might be better. Buying growth – i.e. acquiring a firm whose sales are rapidly growing – might be convenient to managers even if value-reducing: rapidly growing sales create increasing demand for management positions, hence generating opportunities for insiders and ensuring long-run survival of

the corporation as an independent entity. Bad managers might pursue value reducing acquisitions simply due to their lack of skill or in order to ensure survival of the firm. Megginson, Graham and Nail (2004) dedicate their study on the relationship between change in corporate focus and long post-merger performance. They find that the timing of the transaction does not significantly affect the performance of a merger deal. On the contrary, change in focus – i.e. the expansion in business lines different from the bidder's core business – has a significant and decreasing impact on merger performance.

Lang, Stulz and Walkling (1991) analyze the performance of M&A activities undertaken by bidders with low Tobin's  $q$  – the measure that Nobel Prize James Tobin developed to describe the ratio between the market value of a firm's assets and its replacement value – and found that bidder returns are significantly lower for low  $q$  firms with high rather than low cash-flow. A low Tobin's  $q$  indicates that the firm is likely to lack positive NPV projects, and hence should invest in zero NPV projects or pay out its cash-flow to shareholders.

Concerning the effect of firm size on post-merger performance, this topic is still debated and no real consensus has been reached so far. Moeller, Schlingemann and Stulz (2004) conduct a study on a sample of 12,023 acquisitions by public companies from 1980 and 2001; they calculate that on aggregate shareholders of bidding firms lost \$218 billion when acquisitions were announced. They conclude that small firms gain systematically more than large firms and that the firm size effect has more relevance on gains than the method with which the acquisition is financed. One possible explanation is the hypothesis that agency problems are more widespread in large firms, and by undertaking an acquisition a large firm signals that it has exhausted all the internal growth opportunities. Reddy and Mantravadi (2007) conduct a study on the impact of merger deals on the operating performance of the acquiring corporates on the Indian market. They find that post-merger performance is negatively associated with the relative size of the target company.

Rau and Varmaelen (1998) use a sample of 3169 mergers and 348 tender offers in a time frame between 1980 and 1991 and analyze the long term horizon performance of these deals. They find that acquiring firms in merger deals underperform in three years after acquisition, whereas acquirers involved in tender offers earn a small but statistically significant positive abnormal return. However, the underperformance of firms in merger deals is not uniform across industries and is mostly due to the poor performance of low book to market acquirers. The reasons for the outperformance are not yet identified.

There is no evidence supporting the hypothesis that merger performance depends on the geographical location of the companies involved. Gugler, Müller, Yurtoglu and Zulehner (2003) conduct the largest cross-national comparison of merger effects existing in financial literature to date. They find similar patterns for what concerns profits and sales changes across different countries, however they do not find significant differences between the performances of cross-border and domestic mergers.

Very few studies take into consideration the economic conditions in the market when analyzing the post-merger performance of deals. Tse and Soufani (2001) introduce an analysis of abnormal returns in the UK in two different economic periods, one boom period, characterized by high merger activity and a bad period, characterized by low merger activity. The introduction of so-called business cycles allows to better identify the wealth effects of the takeovers, which appear to be related to the overall performance of the economy.

The amount of cash holdings held by the bidder company could provide a signal about future merger performance. Martynova, Oosting and Renneboog (2006) analyze a set of takeovers where the companies involved are either from the UK or Continental Europe over the time period 1997-2001. They study a group of measures related to operational performance and conclude that pre-deal bidder cash holdings are negatively correlated with the post-deal operational performance of the combined company. They argue that high cash holdings may signal agency problems that could lead the company to undertake bad acquisitions.

### **3.2 Institutional Investor Trading Strategies and Corporate Events**

Shareholder investment horizon influences the performance of corporate events. Massa, Gaspar and Matos (2004) test the impact of shareholder horizon on M&A activity: they conclude that short-term shareholders in the bidder firm enhance the probability of a takeover attempt and the likelihood of overbidding for the deal. Long-term investors have higher incentives to spend resources in monitoring and more time to learn about the firm. Weaker monitoring by short-term institutional investors could enable managers to undertake value-reducing acquisitions and focus away from shareholder wealth maximization in their search for personal benefits.

The type of investor provides information about shareholder reaction to merger announcement. Ashraf and Jayaraman (2007) investigate how institutional investors react upon announcement of merger deals and how they adapt their trading strategies to the new information received. Among their findings, they make a distinction between active investors

(investment companies and advisors) and passive ones (banks and insurance companies), and find that active investors are the most dynamic momentum traders, whereas passive institutions tend to adapt to changes more slowly. In addition, they study how the two different types of investors process information and they find that their results are consistent with the behavioral model of gradual diffusion of information developed by Hong and Stein (1999).

Availability of non-public information could influence institutional investors' trading activity. Daouk and Li (2011) argue that even if institutional investors are not homogeneous in terms of their trading strategies, regulations they have to respect or information gathering processes, they surprisingly show similar patterns in their trading prior to the event. This may indicate that institutional investors could potentially be using information not available on the market. The two researchers rule out the possibility that institutional investors have better takeover prediction models rather than inside information. The trading behavior of institutional investors is then different on and after the announcement day and is in line with the trading strategies of active and passive institutions (Ashraf and Jayaraman 2007).

In a potential target company, the trading behavior of large institutional shareholders provides information about the takeover probability. Gopalan (2008) argues that large institutional shareholder trading can influence a firm's governance by affecting the probability of being the target for a takeover. Takeovers are more likely to happen when a large shareholder sells, because the selling process depresses prices and increases a stock's liquidity. Such findings are in line with Chen, Harford and Li (2004).

Post-acquisition institutional trading can provide information about the deal's future performance. Gopalan (2008) finds that the largest institutional shareholder's trading has a predictive power on post-deal stock performance. In bidders that undertake large acquisitions, institutions that own a large block of shares might benefit from more detailed information about the synergy exploitation process after the deal has actually occurred.

Cella, Giannetti and Ellul (2013) demonstrate that during periods of market turmoil stocks mostly held by short term holders most often experience larger price drops than the stocks held by long term investors. First, they investigate the investors' characteristics that existing theoretical literature suggests to be related to investors' trading horizons and find that investment horizons are associated with firms' specific characteristics, such as a firm's organizational structure, funding structure, trading strategy, managerial turnover and compensation. Secondly, after they demonstrate that stocks owned by shorter time investors experience larger drops during market

ups and downs, they also show that these types of stocks are characterized by stronger reversals in comparison to the stocks owned by longer term horizon investors. Finally, their studies exclude the possibility that these results do not depend on the firms' betas and Fama French factors or other characteristics of the investors other than their horizon.

### **3.3 Investor Activism in M&A Bidder Companies**

The study of monitoring of M&A activities by different classes of investors is a relatively recent phenomenon. Qiu (2006) detects a strong effect on corporate M&A activity by one class of institutional investors, public pension funds (PPF). The presence of PPF in the firm's ownership structure reduces the likelihood of future acquisitions. Furthermore, PPF ownership leads to a greater likelihood reduction for the categories of M&A deals with higher potential for poor performance, namely those involving low q cash-rich acquirers and "buying growth" types of acquisitions. PPF ownership is also positively correlated with long-run abnormal returns of the acquiring firm. Such positive evidence is not associated with ownership by investment companies (banks, insurance firms and mutual funds), labeled as the least likely monitors among all types of institutions, whose presence encourages value-reducing acquisitions (Qiu 2006). PPF are at the forefront of shareholder activism due to their size and independence (Black 1990), furthermore, they are virtually the only institutional investors that retain effective voting control of their assets. Investment companies, on the other hand, have several reasons to be pro-manager: banks and insurance companies might be afraid of losing future business with the company involved, mutual funds might manage pension plans for corporations and incur in similar conflicts of interest.

It is documented that the presence of institutional investors as blockholders can influence the outcome of an M&A deal. Li, Harford and Chen (2007) test the hypotheses that large institutional investors are (1) effective monitors and (2) better informed investors. They find evidence that the presence of block institutional investors in the bidding firm is associated with better post-merger performance, as well as that institutional blockholders decrease their holdings prior to an unsuccessful acquisition. Institutional investors have better information processing technology, are able to invest more in the assessment of the firms which they own and benefit from cost advantages arising from their scale.

Shivdasani (1993) explains the relationship between the probability of a hostile takeover and the structure of the corporate governance of a firm. In particular, he finds that ownership by the management and affiliated blockholders decreases the probability of a takeover, whereas the ownership by non-affiliated blockholders increases this probability. This result supports the

analysis of Schleifer and Vishny (1986), who document the role of large blockholders in a company. Their main conclusions are that, even though for minority shareholders it may not pay off to monitor the management, the presence of large institutional investors helps in overcoming the monitoring free rider problem in a firm. In addition, the presence of large shareholders is also a necessary condition for the occurrence of value-increasing takeovers.

### **3.4 Contribution to Previous Research**

The existing body of research on the cross-sectional drivers of M&A performance is quite substantial and comprised of studies that investigate the phenomenon over diverse economic periods. Very frequently, however, researchers focus on the study of factors generated from the analysis of financial reports or company-specific variables (for instance Morck, Shleifer and Vishny (1990); Lang, Stulz and Walkling (1991); Moeller, Schlingemann and Stulz (2004)). Our paper follows a more recent and less developed line of research, which expands the analysis to companies' ownership structure (see Massa, Gaspar and Matos (2004); Li, Harford and Chen (2007); Qiu (2006)).

We analyze a market underrepresented in mainstream corporate acquisitions research – the Scandinavian one – which however we believe has very strong potential due to very detailed data availability. We enrich previous studies on merger performance with a detailed analysis of one specific category of owners – mutual funds – and study the signals that they provide about deal performance with their presence in the bidder capital structure.

Findings from this paper could constitute a valid basis for the decision-making process of managers of corporations undertaking acquisitions, as well as for traders, fund managers or retail investors interested in being active in financial markets around corporate acquisition announcements.

## 4. Theoretical Framework

### 4.1 Research Questions

The objective of this paper is to provide an analysis of merger performance in the Nordic market. By analyzing one particular type of investor (mutual funds), we aim to shed light on investor-specific factors that have a significant impact on the financial market performance of companies entering into M&A deals.

In particular, we want to test whether some mutual funds, or a particular type of mutual funds, are consistently able to identify bidder companies which are efficient in the choice of their acquisition targets. Our goal is to identify specific patterns in the investment dynamics of mutual funds around M&A events.

First of all, we formulate hypotheses related to factors that could influence deal performance. Such hypotheses are based on intuition as well as findings from previous studies, and they provide the framework to implement our subsequent analysis.

The first part of our analysis focuses on measuring the performance of the M&A deals relevant to the analysis that we aim to implement. Deal performance is measured to the calculation of Cumulative Abnormal Returns over periods of 3, 6 and 12 months including the month in which the deal was announced. The value of the cumulative abnormal return of the bidder company on the twelfth (sixth, third) month after the announcement is used as an indicator of the performance of the deal.

The second part of the analysis aims at studying the characteristics of the mutual funds involved in the deals considered as bidder owners and identifying systematic features that could suggest the funds' ability to recognize successful bidder companies. Through the use of the widely employed linear regression techniques, we aim to test our hypotheses related to signals provided by ownership-related mutual fund variables concerning the performance of the transaction carried out by the bidder companies in the sample.

### 4.2 Hypotheses

Do ownership-specific mutual fund variables provide signals regarding the performance of a M&A transaction at announcement? This paper sets out to identify patterns in investor-specific

characteristics and studies how they are related with the performance of the bidder company through the deal carried out.

We aim to observe ownership characteristics in a situation free from endogeneity issues related to after-announcement bidder performance. For such reason, following Qiu (2006), we make the assumption that institutional preferences are stable over a horizon of one year. Building on such an assumption, we measure all of the ownership-specific variables at the end of the quarter preceding the announcement of the transaction.

A non-negligible line of research argues that institutional investors are better informed than other investors, in particular they are better informed than private investors (see Parrino, Sias and Starks (2003); Wermers (1999); Nofsinger and Sias (1999)). We hypothesize that institutional investors are able to influence, directly or indirectly, the bidder company throughout the decision of carrying out an acquisition, given that their ownership standing in the bidder company is not trivial. Our first hypothesis goes as follows:

*H1: A strong and concentrated presence of institutional investors in the ownership of the bidder company is associated with a higher deal performance.*

This captures the idea that institutional investors are effective corporate monitors and will exercise their monitoring potential on the M&A deal decision process if the conditions to do so are in place. We expect to fail to reject such a hypothesis. A fund with a substantial equity stake in the bidder company not only could benefit from a higher availability of related information, but also could have greater influence on the company's management, and hence, for instance, stop an acquisition expected to destroy shareholder value. Such expectations are coherent with the evidence provided by Chen et al. (2004).

The resources deployed by a fund in the analysis of a potential candidate for an investment decision could also depend on the relative amount that the fund itself invests in the company. We expect funds that invest high proportions of their assets under management into a bidder company to predict more accurately the performance of such a company in relation to an M&A transaction. Our second hypothesis states:

*H2: Funds that invest a higher proportion of assets under management in the bidder company benefit from a higher post-deal performance of the bidder.*

This captures the idea that funds that invest a higher share of their assets under management have a higher incentive to uncover information on the bidder company. We expect to fail to

reject such a hypothesis on grounds that it is rational to assume that funds that invest substantial proportions of their resources in a company undertake significant analysis efforts in the company and hence could better predict the company's performance in the transaction.

A fund's ability to choose shares of a successful bidder could also be dependent on the specific knowledge of the asset class that the fund has as a consequence of its investments. A fund specialized in equities or equities of a particular geographical region could have a better incentive to concentrate its resources more specifically on the asset class to which the bidder company belongs, and hence be more successful in choosing companies to invest in. From that arises our third hypothesis:

*H3: The presence of Swedish funds that invest a high proportion of their assets in Swedish equities in the ownership of Swedish bidder companies signals future positive deal performance.*

This captures the idea of the information benefits arising from a home bias behavior undertaken by funds. We expect to fail to reject such hypotheses, as increased focus of a fund on a specific asset class rationally leads to a better analysis of the market related to the asset class itself. In the case of Swedish mutual funds trading exclusively Swedish equities, the availability of information could be even higher due to geographical proximity, information spillovers and the absence of language barriers. Coval and Moskowitz (2001) present evidence that funds which concentrate their investments in local stock markets achieve higher returns on local investments. Our hypothesis is in line with such findings.

A fund's choice to invest in a bidder which in turn chooses to undertake a successful M&A could rationally depend on the stock-picking skill of the fund manager. Is past performance a reliable indicator of such a skill? Does stock-picking skill translate into the selection of investing in successful bidders? Mutual fund returns strongly persist over multi-year periods (Wermers 2003). We hypothesize that such a persistent performance is translated into the ability of top-performing mutual funds to invest in successful bidder companies. Our fourth hypothesis goes as follows:

*H4: Mutual funds with strong past performance invest in companies that undertake successful M&A transactions.*

This captures the idea that "smart money" flows to companies with successful acquisition prospects. Nevertheless, we are skeptical about clearly failing to reject such a hypothesis. Even though the persistence of mutual fund performance is documented by research, the bidder ab-

normal return component might not necessarily be part of the reason for such a performance. Wermers (2003) in fact states that one of the primary reasons for persistence in performance is that successful funds receive money inflows from retail investors and they, in turn, use that money to buy stocks that have performed well in the past, benefiting from momentum. Such an explanation of performance persistence might not necessarily translate into the best-performing funds being able to pick successful M&A bidder companies.

## 5. Analysis

### 5.1 Structure

The empirical analysis conducted in this paper aims to test some of the features of mutual funds trading equities of listed Nordic companies involved in M&A deals. The time frame taken into consideration covers an 8-year period from the fourth quarter of 2000 to the third quarter of 2008. We believe such a period is long enough to include at least one economic cycle, and studies similar to ours consider time periods of a similar length, e.g. Qiu (2006).

The study has been structured in a 7- step procedure, with the purpose of gathering the highest amount of information relevant to the research conducted:

- Step 1: retrieval of information about M&A transactions occurred in Northern Europe during the period on which the study focuses.
- Step 2: collection of mutual fund holding data reported in disclosure documents from *Finansinspektionen* and aggregated by the Swedish House of Finance.
- Step 3: Selection of relevant fund holdings by retrieving the ISIN code of bidder companies and matching it with that associated with fund holding data.
- Step 4: calculation of long-term and short-term merger performance of each bidder's share price in each deal by the computation of Cumulative Abnormal Returns (CAR); share price and factor data has been downloaded from Datastream or obtained from the Swedish *Riksbank*.
- Step 5: harmonization of fund position values by conversion into their equivalent in SEK, where exchange rates data has been obtained from the Swedish House of Finance.
- Step 6: creation of additional quantitative, instrumental and dummy variables for the purpose of completing and refining the analysis; additional data has been collected from Datastream and the Swedish House of Finance.
- Step 7: analysis of statistical properties of panel data relative to mutual fund positions in Nordic bidders, employment of multivariate regressions to test whether the initial hypotheses are confirmed in the sample analyzed.

In the following chapters a more detailed explanation of the research steps and data gathering process is provided. A description of the sample considered and a comparison of the most relevant features with related research findings, and brief discussion of the implication is included.

## 5.2 Data Gathering

The preliminary part of the research consists in collecting the data relevant to the analysis. To the best of our knowledge, there exists no database that reports extensive mutual fund data in relation to ownership of companies involved in M&A transactions as bidders in the Nordic market. We therefore collect information from different sources and gather them together to build an ad-hoc database specific to this analysis.

Our starting point is individuating merger and acquisition transactions relevant to the market that our study focuses on, the Nordics. Through Mergermarket<sup>6</sup> we collect data concerning 3,367 deals. Such transactions involve both public and private companies and report relevant information such as bidder and target company name, announcement date, country in which the bidder company is domiciled, etc. Such a dataset exhaustively represents the universe of M&A transactions for the geography and the time period considered.

The next phase consists in gathering data relative to mutual fund holdings. Using data provided by the Swedish House of Finance, we access holding figures concerning holdings of mutual funds active on the Swedish market. Due to availability constraints arising from reporting regulation, we are only able to access information from mutual funds domiciled in Sweden. Only such funds, in fact, are by law required to disclose their holdings with quarterly frequency to *Finansinspektionen*, Sweden's supervisory authority for the Swedish financial markets. The search yields 1,610,470 quarterly observations for the period considered, for a total of 920 unique mutual fund investors. Regardless of the limitations of the sample characteristics, we deem the number of observation to be by far large enough to provide variability in the data. Biases and implications arising from the geographical domiciliation of the investing entities have been considered throughout the whole analysis and are discussed in a separate section.

The following step consists in understanding which of the bidder companies involved in M&A transactions in the period considered are owned by the mutual funds during the an-

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<sup>6</sup> The leading publisher of forward looking intelligence and analysis for M&A professionals and corporates (source: <http://www.mergermarket.com/info>)

nouncement quarter. In order to do that, we associate each publicly traded bidder company to an International Security Identification Number (also known as ISIN code). Such a procedure is lengthy and tricky, since it is not rare that companies change name or ISIN code over the course of time. We retrieve data on ISIN history for Nordic companies from the data bank of the Swedish House of Finance. Once associated an ISIN code to each bidder company, we match the bidder ISIN code and quarter in which the deal is announced with information from mutual fund holdings. The result is a database of 8,895 observations, reporting data on 211 M&A deals, 445 participating mutual funds from 71 asset management companies.

For the calculation of merger performance, we download monthly share prices for each bidder company around the month in which the deal is announced. For the calculation of abnormal returns we use monthly Fama-French and momentum factors as well as risk-free rate, which are provided by the Swedish House of Finance. Since our analysis concentrates on the Nordics, the factors that we employ are all specific to the Swedish market. Further data specific to mutual funds that is not already included in the previous dataset is retrieved from the Swedish Riksbank. Such information concerns, for instance, funds' past performance figures. In order to calculate mutual funds' ownership stakes in bidder companies, market capitalizations are retrieved from Datastream.

Our initial mutual fund database contains holdings in 45 different currencies. In order to have a common basis of comparison, we convert all of the position values into their equivalent in Swedish Kronor (SEK). The exchange rates are provided by the Swedish House of Finance in the mutual fund dataset we use for our analysis. Nevertheless, given the heterogeneity encountered in the dataset, the median of the exchange rate values of each currency to SEK in each quarter is taken as the common exchange rates for all the transactions. This approach is used because most exchange rates were checked and valid but a few happened to be incorrect. By taking the median value of a series of exchange rates we are sure that the value taken is homogeneous and reliable for all transactions in each different quarter.

Further variables are created ad-hoc in order to facilitate certain aspects of our analysis. For instance, a variable describing the proportion of assets under management invested in Swedish companies is created for each quarterly fund observation. More information on the creation of new ad-hoc variables to test the hypotheses formulated is provided in Section 5.5.

### 5.3 Sample Characteristics

Detailed summary statistics relative to the sample used for the analysis can be found in Table 3 and Table 4. As previously mentioned, the relevant sample used for the study includes data from the fourth quarter of 2000 to the third quarter of 2008, for a total of 8,895 open positions, 445 mutual funds and 211 announced deals.

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
<i>stake_in_bidder (%)</i>	8872	0.1989	0.0194	0.5395	-0.0209	9.1857
<i>perc_aum_invest (%)</i>	8414	1.1126	0.2799	2.7693	-0.8390	89.153
<i>reportedtotaum (bn SEK)</i>	8428	14.5	3.73	19.8	0.0000	87.4
<i>perc_swed_eq (%)</i>	8895	38.050	27.074	35.835	0	100
<i>past_perf (%)</i>	5899	-0.0772	-0.1018	0.5507	-4.014	3.4168

**Table 3** - Summary statistics of fund-specific variables. This table reports summary statistics of the fund-specific variables included in the sample of the analysis. The sample contains 8895 quarterly fund-specific observations gathered across the period Q4 2000 – Q3 2008.

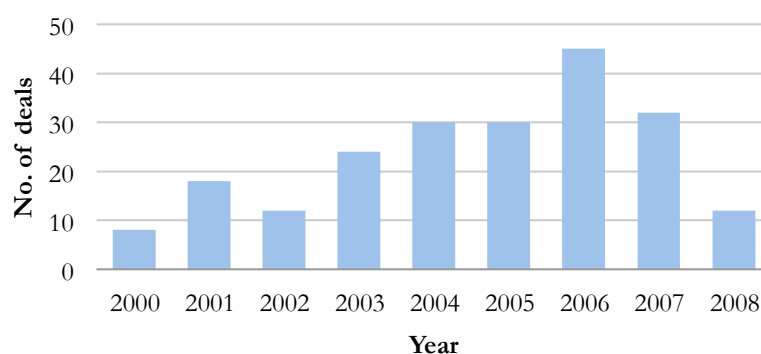
The average amount of Assets Under Management (AUM) in a mutual fund involved in the ownership of a bidder company is 14.2 billion SEK, while the median size is 3.12 billion SEK, according to the values reported by the funds to the regulator. The market capitalization of bidder companies is on average 34.6 billion SEK, with a median of 5.07 billion SEK. As can be inferred by the comparison of the mean and median statistics, the two variables mentioned above have a lognormal frequency distribution.

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
<i>car_12m (%)</i>	211	-13.406	-13.1756	42.2803	-131.339	146.286
<i>car_6m (%)</i>	211	-3.436	-1.95295	27.6553	-86.215	100.472
<i>car_3m (%)</i>	211	-0.034	-1.8741	18.5177	-47.405	86.0882
<i>avg_fundsize (bn SEK)</i>	203	15.3	4.9	20.1	0.007	78.9
<i>bidder_mktcap (bn SEK)</i>	207	34.6	5.07	88.1	0.09	987
<i>tobins_q</i>	198	0.9605	0.87348	1.0700	0.2039	13.7676
<i>avg_stake (%)</i>	206	0.5333	0.22132	0.7866	0.0003	5.718
<i>avg_invest (%)</i>	203	0.9013	0.48109	1.5667	0.0001	12.973
<i>avg_swed (%)</i>	211	39.7525	42.40151	30.5193	0	98.8276
<i>inst_pres (%)</i>	211	8.3669	6.37144	8.2997	0	35.4927
<i>berfindabl</i>	211	0.26109	0.15643	0.283201	0	1
<i>avg_past_perf (%)</i>	209	0.08494	0.02358	0.52867	-2.0484	2.03573

**Table 4** - Summary statistics of deal-specific variables. This table reports summary statistics of the fund-specific variables included in the sample of the analysis. The sample contains 211 deal-specific observations gathered across the period Q4 2000 – Q3 2008.

There are, on average, 42 funds present in the ownership structure of each M&A bidder, however those numbers vary greatly across deals. For instance, 245 mutual funds participated to the cross-border acquisition of the Danish company Din Bank announced by SkandiaBanken in February 2001. On the other hand, there are 20 deals to which only one among the funds in the sample participated. The year with the fewest deals announced is 2002 (12 deals), while the year with the most deals announced is 2006 (45 deals). Details about the number of deals per year can be found in Figure 5.

The ownership stakes that, through the shares held, funds have in bidder companies are generally rather low. On average a fund in our sample has a 0.2 percent stake in the bidder company, while 50 percent of the ownership stakes in bidders are below 0.02 percent. Such findings are in line with previous research, e.g. Giannetti and Laeven (2007) state that mutual funds are, on average the 82<sup>nd</sup> largest shareholder in the ownership structure of Swedish companies. That could lead to some issues in the part of our research that considers the potential of mutual funds to constitute activist investors, and could reinforce the belief that when considering an evaluating the acquisition prospects of a portfolio company, many unsatisfied mutual funds would take the “Wall Street walk” and sell their holding rather than engage in activism (Massa, Gaspar and Matos 2004). All considerations regarding mutual fund activism potential are discussed in a separate section.



**Figure 5** - Number of M&A deals per year. This figure reports the count of the deals considered in our final analysis dataset, divided by year, after having excluded from the sample the bidder companies whose stock was not owned by any of the 920 mutual funds present in our dataset during the period considered (Q4 2000 – Q3 2008).

A similar reasoning applies to the proportion of fund AUM invested in a company in the announcement quarter. On average, funds invest 1.11 percent of their AUM in bidder companies, with the median being 0.28 percent. Some interesting cases can be noted, for instance, there is a fund named Skanska Sparfond, which invested 49 percent of its assets in Skanska shares in the third quarter of 2000. The proportion of AUM invested in a company can be important in

the analysis of the fund cross-sectional determinants of bidder performance, as it represents a proxy for the relative amount of resources that the company deploys in order to collect information on the portfolio company.

## 5.4 Measurement of Merger Performance

### 5.4.1 Calculation of Cumulative Abnormal Returns

The performance of the M&A deals is evaluated through an event study methodology. Following techniques employed in similar studies (see Qiu (2006); Chen et al. (2004); Massa et al. (2004)) we compute Cumulative Abnormal Returns (CAR) for the stock price of each bidder company considered in the sample.

Abnormal returns represent the deviation of the evolution of a company's stock price from its expected path (Barber and Lyon 1997). The calculation of abnormal returns for the sample firm  $i$  at time  $t$  is represented by:

$$AR_{it} = R_{it} - E(R_{it})$$

The CAR of a firm is then computed by adding the abnormal returns for the  $N$  periods considered by the analysis:

$$CAR_{itN} = \sum_{t=1}^N AR_{it}$$

Where  $R_{it}$  is the period return on the sample firm,  $E(R_{it})$  is the firm's expected return and  $N$  is the number of periods covered by the analysis.

To this day, researchers have found no consensus over how to best estimate the theoretical path of a company's stock price. Some studies build ad-hoc benchmark indexes reflecting firm-specific characteristics (e.g. firm size, industry, book-to-market), some others use the market index as a benchmark, others estimate the benchmark through a market model. Similarly to Bernard and Thomas (1989) and Loughran and Ritter (1995), we employ market models to compute the expected return for each firm.

### 5.4.2 Choice of Asset Pricing Models

Different asset pricing models have been developed by researchers to describe the evolution of stock prices. In order to mitigate the risk of model mining in our analysis, we simultaneously employ two of the best known asset pricing models to build the benchmark returns: the Capital Asset Pricing Model (CAPM) (Sharpe 1964) and the Fama-French plus Momentum (FFM) four-factor model (Carhart 1997).

The CAPM describes a stock's exposure to non-diversifiable risk, which is represented by the market excess return, through the coefficient  $\beta_i$ . The model states that a stock's return trend in excess of the risk-free rate is described by a linear combination of the market excess return and the  $\beta_i$  coefficient, as described below:

$$E(R_{it} - R_{ft}) = \beta_i * E(R_{mt} - R_{ft})$$

Where  $R_{it}$  is the period return on the sample firm;  $R_{ft}$  is the period risk-free return;  $R_{mt}$  is the period market return and  $\beta_i$  is the firm-specific factor of exposure to idiosyncratic risk.

The FFM model argues that sources of idiosyncratic risk are manifold. Stocks are not only exposed to one source of non-diversifiable risk, represented by the market coefficient  $\beta_i$ , but also to risk linked to firm size, book-to-market (B/M) ratio and past performance, as described below:

$$R_{it} - R_{ft} = \alpha + \beta_M * (R_{Mt} - R_{ft}) + \beta_{SMB} * R_{SMBt} + \beta_{HML} * R_{HMLt} + \beta_{MOM} * R_{MOMt} + \varepsilon$$

Where  $R_{it}$  is the period return on the sample firm;  $R_{ft}$  is the period risk-free return;  $R_{Mt}$  is the period market return,  $R_{SMBt}$ ,  $R_{HMLt}$  and  $R_{MOMt}$  the returns of zero-cost portfolios of, respectively: stocks of small firms minus stocks of large firms, stocks of firms with high B/M minus stocks of firms with low B/M, stocks with positive past performance minus stocks with negative past performance; the coefficients  $\beta_M$ ,  $\beta_{SMB}$ ,  $\beta_{HML}$ ,  $\beta_{MOM}$  are the coefficients of a multiple linear regression which has  $\alpha$  as constant and  $\varepsilon$  as estimation error.

### 5.4.3 Estimation and Event Windows

The market model coefficients described above are estimated, for each bidder firm, by using monthly stock returns over an estimation window of 24 months prior to the month in which the firm announced the deal. Due to stock price data availability, 66 return periods have to be removed from the sample, which then yields CAR estimates for a total of 300 bidder return

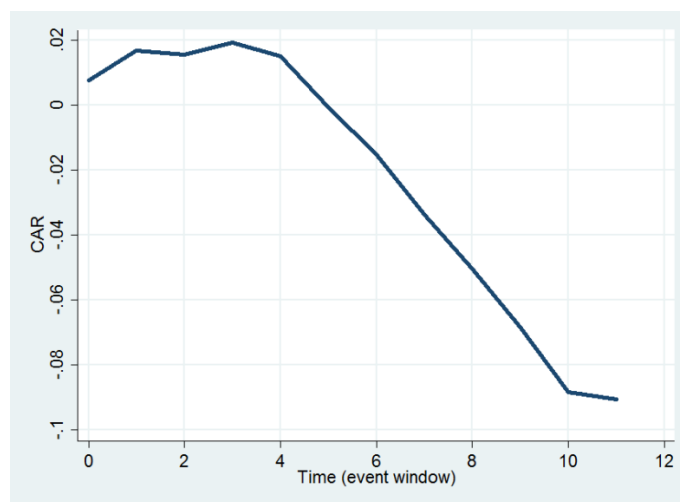
periods. As a robustness check, the same coefficients are also computed over an estimation window of 60 months. The estimates are not significantly different, with the exception that the return periods to exclude due to data unavailability are now 113. Due to a more limited loss of information not compensated by an increase in the quality of the estimates, we choose to keep the 24-month estimation window.

Deal performance can be measured over many time periods. For the sake of completeness of the analysis, we choose to compute cumulative abnormal returns over three different event windows of respectively 3, 6 and 12 months after the announcement date, including the announcement month. Other studies such as Qiu (2006) and Chen, Harford and Li (2004) use similar time horizons to evaluate deal performance.

The final deal performance figure that we employ in the subsequent analysis is the arithmetic average of the CAR given by the two market models described above, each average CAR is calculated for the 3, 6 and 12 month horizons respectively.

#### 5.4.4 Deal Performance Description

Post-announcement month Cumulative Abnormal Returns on bidder shares are, on average, negative, except for the 3-month figure. In the short term the average CAR is positive (+1.15 percent), over the 6-month window it is moderately negative (-0.07 percent) and over the long estimation window it is more strongly negative (-9.04 percent). Figure 3 shows the evolution of the average CAR over the estimation window.



**Figure 3** - Average Cumulative Abnormal Return of bidder companies over estimation window. The sample contains 300 return periods referring to bidder companies involved in M&A deals during the period Q4 2000 - Q3 2008.

A t-test is performed to determine if the estimates produced are significantly different from zero, the results can be found in Table 6. The 12-month figure is significantly different from zero and the sign is in line with previous research, e.g. Kennedy and Limmack (1996) and Gregory (1997).

	<b>Obs</b>	<b>Mean</b>	<b>Std. Err.</b>	<b>Std. Dev.</b>	<b>T-stat</b>	<b>P-value</b>
car_12m	300	-0.09042	0.026955	0.466882	-3.3544	0.0009
car_6m	300	-0.00078	0.017904	0.310098	-0.0437	0.9652
car_3m	300	0.015569	0.011929	0.206617	1.3052	0.1928

**Table 6** - Summary statistics and t-test of CAR estimates. The sample contains 300 return period observations referring to bidder companies involved in M&A deals during the period Q4 2000 - Q3 2008. The number of observations is 300 and not 211 (number of bidders in our final database) because some companies undertake more than one acquisition in the period considered by the study.

## 5.5 Fund-Specific Cross-Sectional Signals of Merger Performance

The objective of this paper is to test if some characteristics of mutual funds present in the ownership of companies that undertake mergers or acquisitions are indicators of the future performance of the deal. Namely, we test for the significance of: (1) strong presence of mutual funds in the bidder capital structure; (2) the relative amount of fund AUM invested in the bidder company; (3) the proportion of fund AUM invested in Swedish equities; (4) the past performance of the funds owning a stake in the bidder company. Such an analysis is aimed at testing the hypotheses that we formulated, whose detailed description can be found in the Theoretical Framework section.

Measuring fund-specific variables at a point in time immediately preceding to or shortly following the announcement of the M&A transaction to the public could lead to a problem of endogeneity. Close to the announcement date, mutual funds could benefit from information leakage or post-merger performance data that could lead to a biased evaluation of the transaction from their point of view. Since fund-specific information is reported quarterly, we choose to analyze the cross-section of fund-specific data reported at the end of the quarter *preceding* the date when the M&A deal was announced. In doing so, we make the assumption that institutional investor preferences are stable over the horizon of one year. Such an assumption is employed in similar studies, e.g. Qiu (2006).

The following subsections explain how we measure and report the data related to the hypotheses that we aim to test through our analysis.

### 5.5.1 Institutional Investor Presence

We analyze how the presence and concentration of institutional investors, namely Swedish mutual funds, in the capital structure of bidder companies, provides signals about the future performance of the acquisition. We conduct such an analysis first through the variables *avg\_stake* and *inst\_pres* and finally by substituting *avg\_stake* with the *herfindahl* index variable.

The first variable that we test is *avg\_stake*. Such a variable indicates the arithmetical average of the stakes that mutual funds own in the capital of the bidder company. The variable is calculated as follows:

$$avg\_stake_i = \frac{\sum_{j=1}^K \frac{value\_of\_position\_local_{ji}}{bidder\_mktcap\_local_i}}{fundcount_i}$$

Where *value\_of\_position\_local<sub>ji</sub>* is the amount invested by fund *j* in firm *i* in the currency in which the bidder is traded; *bidder\_mktcap\_local<sub>i</sub>* is the market capitalization of the bidder firm *i* in the currency in which the bidder is traded; *fundcount<sub>i</sub>* is the total number of Swedish mutual funds invested in the bidder firm *i*. A high average stake indicates that, on average, the mutual funds present in the bidder capital structure own a significant proportion of the bidder's capital.

The second measure that we employ is *inst\_pres*. Such a variable indicates the aggregate presence of institutional investors (namely, Swedish mutual funds) in the capital of the bidder company. The computation of the variable is the following:

$$inst\_pres_i = \sum_{j=1}^K \frac{value\_of\_position\_local_{ji}}{bidder\_mktcap\_local_i}$$

Where, as explained above *value\_of\_position\_local<sub>ji</sub>* is the amount invested by fund *j* in firm *i* in the currency in which the bidder is traded; *bidder\_mktcap\_local<sub>i</sub>* is the market capitalization of the bidder firm *i* in the currency in which the bidder is traded. A high institutional presence indicates that the share of the bidder's capital owned by Swedish mutual funds is high.

After the first specification with the two variables *avg\_stake* and *inst\_pres*, we have introduced the variable Herfindahl-Hirschman Index, more commonly known as the Herfindahl Index (HHI) as a proxy to measure the concentration of mutual funds invested in a bidder. The index first appeared in economic literature in 1976, to describe Cournot competition (Cowling and Waterson 1976). It is defined as the sum of squared market shares of firms in a market and hence provides a measure of concentration easy to interpret (Lijesen 2004). Due to its versatility, a significant number of researchers also use the HI to describe ownership concentration in companies' capital structures (e.g. Goergen and Renneboog (2001); Jiang, Habib, Smallman (2009)). We compute the HHI statistic with the objective of understanding if there is a causal relationship between the CAR of a bidder and the concentration of its institutional investors and to be able to test hypothesis *H1* without incurring in multicollinearity issues. The variable is a non-linear combination of the variable of institutional ownership (*inst\_pres<sub>i</sub>*) that we plan to exclude, hence we expect to find a rather strong correlation between HHI and the excluded variables, allowing us to use HHI as a proxy. The computation of the variable HHI is described below:

$$herfindahl_i = \sum_{j=1}^K \left( \frac{value\_of\_position\_local_{ji}}{bidder\_mktcap\_local_i} * \frac{1}{inst\_pres_i} \right)^2,$$

As explained above *value\_of\_position\_local<sub>ji</sub>* is the amount invested by fund *j* in firm *i* in the currency in which the bidder is traded; *bidder\_mktcap\_local<sub>i</sub>* is the market capitalization of the bidder firm *i* in the currency in which the bidder is traded. A high institutional presence indicates that the share of the bidder's capital owned by Swedish mutual funds is high. As a consequence, the higher the HHI index, the more concentrated the institutional ownership holdings in the bidder.

### 5.5.2 Proportion of AUM Invested

We analyze the signal provided by the amount of AUM that the funds commit to an investment in the bidder company, in relative terms. Our hypothesis is that a higher proportion of AUM invested by funds in the bidder company signals a higher post-deal performance. The variable that we employ is *avg\_invest*, which indicates the average proportion of AUM invested in the bidder company by each fund in the ownership structure. The computation is the following:

$$avg\_invest_i = \frac{\sum_{j=1}^K \frac{value\_of\_position\_sek_{ji}}{reportedtotaum_j}}{fundcount_i}$$

Where  $value\_of\_position\_sek_{ji}$  is the amount invested by fund  $j$  in firm  $i$ , converted in the equivalent amount in Swedish kronor (SEK);  $reportedtotaum_j$  is the total amount of assets managed by fund  $j$ , in Swedish kronor;  $fundcount_i$  is the total number of Swedish mutual funds invested in the bidder firm  $i$ . A high average proportion of fund AUM invested in the bidder company indicates that funds are, on average, prone to commit a large portion of their assets to an investment in the bidder company.

### 5.5.3 Swedish Equity Focus

We test whether the presence of Swedish mutual funds with a particular focus on Swedish equities is an indicator of positive future merger performance, in Swedish bidders. In order to conduct such an analysis we construct an interaction variable,  $swedeq\_intvar$ , which indicates the average proportion of AUM invested in Swedish equities by funds in the bidder capital structure, when the bidder is a Swedish company. The computation of the variable follows two steps. The first step is the creation of the variable  $avg\_swed$  and the second step is the interaction of such a variable with  $dummyswedish$ , a dummy variable that indicates whether the bidder is Swedish or not.

The variable  $avg\_swed$  is computed as following way:

$$avg\_swed_i = \frac{\sum_{j=1}^K perc\_swed\_eq_j}{fundcount_i}$$

Where  $perc\_swed\_eq_{ji}$  is the amount of AUM invested by fund  $j$  in Swedish equities<sup>7</sup>;  $reportedtotaum_j$  is the total amount of assets managed by fund  $j$ , in Swedish kronor;  $fundcount_i$  is the total number of Swedish mutual funds invested in the bidder firm  $i$ .

The interaction variable is then generated by:

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<sup>7</sup> The variable  $perc\_swed\_eq$  was previously created by us from the dataset reporting all the quarterly mutual fund disclosures to *Finansinspektionen*. Swedish equities were identified through an ISIN search and the value of each position was aggregated by fund and disclosure date. The value of each fund's amount invested in Swedish equities was then normalized by the fund's total amount of AUM. The formula is:

$$perc\_swed\_eq_{jt} = \sum_{i=1}^N \frac{value\_of\_position\_sek_{jit} * dummyswedish_i}{reportedtotaum_{jt}}$$

$$swedeq\_intvar_i = avg\_swed_i * dummyswedish_i$$

A high value of *swedeq\_intvar* indicates that the bidder company is Swedish and the average proportion of AUM that the funds in its capital structure invest in Swedish equities is high.

#### 5.5.4 Past Performance

We analyze the past performance of the mutual funds present in the bidder capital structure and test whether it provides any signal about the performance of the deals that the company enters into. The variable that we compute to undertake such a test is *avg\_past\_perf*, which describes the alpha generated by mutual funds during the 12 months prior to the deal announcement, averaged across the mutual funds present in the capital of each bidder company. The average past performance variable is hence calculated in the following way:

$$avg\_past\_perf_i = \frac{\sum_{j=1}^K past\_perf_j}{fundcount_i}$$

Where *past\_perf<sub>j</sub>* indicates the *alpha* generated by fund *j* prior to the deal announcement date; *fundcount<sub>i</sub>* is the total number of Swedish mutual funds invested in the bidder firm *i*.

A mutual fund's *alpha* can be estimated either by comparing the fund's performance with that of its benchmark portfolio, or by regressing the fund's returns against a factor model (Nitzsche, Cuthbertson, O'Sullivan 2006). Following a non-negligible number of studies (e.g. Wermers 1997; Otten and Bams 2000) we choose to employ factor models to extract alpha from the funds' return history.

The computation of the variable *past\_perf* is the result of the estimation of two different types of *alpha*. The asset pricing models employed in the computation are those that are also employed in the estimation of firm-specific Cumulative Abnormal Returns.

The first estimate follows the methodology first described by Jensen (1967), who employs the CAPM model developed by Sharpe (1964) to calculate a risk-adjusted measure of fund performance, called *Jensen's alpha*. The formula for the variable is reported below:

$$\alpha_{jt} = R_{jt} - [R_{ft} + \beta_{jm} * (R_{mt} - R_f)]$$

Where *R<sub>jt</sub>* is the period return for fund *j*; *R<sub>ft</sub>* is the risk-free rate for the period, *R<sub>mt</sub>* is the market return and *β<sub>jm</sub>* is the fund-specific factor of exposure to market risk.

The second estimate follows a similar methodology but instead employs the asset pricing model developed by Carhart (1997), which identifies idiosyncratic risk in four factors: market, size, book-to-market ratio and momentum, as explained more in detail in the section that describe the computation of firm-specific CAR. The formula for *alpha* computed with the Carhart asset pricing model is the following:

$$\alpha_{jt} = R_{jt} - [R_{ft} + \beta_{jm} * (R_{mt} - R_f) + \beta_{jSMB} * R_{SMBt} + \beta_{jHML} * R_{HMLt} + \beta_{jMOM} * R_{MOMt}]$$

Where  $R_{jt}$  is the period return for fund  $j$ ;  $R_{ft}$  is the risk-free rate for the period,  $R_{mt}$  is the market return;  $\beta_{jm}$  is the fund-specific factor of exposure to market risk;  $R_{SMBt}$ ,  $R_{HMLt}$  and  $R_{MOMt}$  are the returns of zero-cost portfolios of, respectively: stocks of small firms minus stocks of large firms, stocks of firms with high B/M minus stocks of firms with low B/M, stocks with positive past performance minus stocks with negative past performance; the coefficients  $\beta_{jm}$ ,  $\beta_{jSMB}$ ,  $\beta_{jHML}$ ,  $\beta_{jMOM}$  are fund-specific factors of exposure to idiosyncratic risks.

The variable *past\_perf* is then calculated by computing the arithmetical average of the *alphas* estimated with the two models described above.

### 5.5.5 Time Fixed Effects

In addition to fund-specific variables, we want to analyze if the time period considered has a role in determining the performance of a M&A transaction. For that reason we introduce a set of eight dummy variables that describe the years when the transaction was announced. Such variables behave as controls and allow us to better isolate the effects of the other variables that we test.

The timeframe of the analysis is 2000-2008. Such a period includes years of economic growth, rising financial markets and relatively expensive valuations (the years 2003-2006), prone to fostering executives' confidence and lead to a surge in acquisition activity. The years 2007 and 2008, in turn, saw a slowdown in global economic growth and an erosion in investor confidence. Such effects can be seen from the changes in the number of deals across years, presented earlier in Figure 5. Time fixed effects allow us to determine if not only the number of deals, but also their performance, followed global economic conditions.

### 5.5.6 Bidder specific control variables

We include company-specific control variables to isolate some of the effects on merger performance described in the literature.

The first variable that we control for is company size. Since in our model we test for the effect of the size of mutual fund stakes, at the single mutual fund level as well as on aggregate, our intention is to eliminate the effect that the company size might have on the ability of mutual funds to engage in monitoring. For instance, given a positive effect of mutual fund stake on deal performance, it could be the case that mutual funds had relatively large stakes only in small companies and, in turn, small bidder companies delivered higher post-merger cumulative abnormal returns. By controlling for bidder size such an effect is excluded from our models.

The variable that we employ to measure bidder size is *bidder\_mktcap\_sek<sub>i</sub>*. In situations where the company's market capitalization is denominated in a currency different from *Swedish Kronor* (SEK), we convert it into its equivalent SEK amount by applying quarterly median exchange rates, according to the procedure already described in the Data Gathering section.

Secondly, we control for bidder-specific Tobin's q ratio, described by *tobins\_q<sub>i</sub>*. As already explained in the Merger Performance section of our analysis of previous research, a firm's Tobin's q describes the ratio between the market value of a firm's assets and their replacement value. Lang, Stultz and Walkling (1991) find that bidder abnormal returns are significantly lower for companies with a low Tobin's q ratio, explaining that a low Tobin's q indicates that the company is likely to lack positive NPV projects to invest in. Although an analysis of the effect of bidder-specific factors on merger performance is outside of the scope of this thesis, we still deem important to control for Tobin's q in order to further isolate the effect of mutual fund-specific variables.

Finally, the third control variable that we employ is related to the method of payment. We employ a dummy variable - *payment\_method<sub>i</sub>* - that takes the value of 1 if the acquisition is entirely financed by cash and 0 otherwise. As already described in our analysis of previous literature, there is no consensus regarding the effect of payment method on merger performance. For instance, while Rau and Vermaelen (1998) find that cash-financed transactions outperform those financed with cash, others such as King, Dalton and Daily (2004) find no such effect. As above, the purpose of including the variable in our analysis is not to analyze the effect of payment method but rather to control for it.

## 5.6 Econometric Specifications

We employ the variables described in the previous section to test our set of aforementioned hypotheses. In order to do so we use a set of OLS multivariate linear regressions.. Potential shortcomings arising from the way models are specified are discussed in a separate section.

The first specification that we test entails a total of five independent variables plus time fixed effects and the bidder specific control variables. Two variables describe the effect of institutional investor presence (*avg\_stake*, *inst\_pres*), and three additional variables describe the effect of, respectively, proportion of AUM invested (*avg\_invest*), Swedish equity focus (*swedeq\_intvar*) and mutual fund past performance (*avg\_past\_perf*). A vector  $\mathbf{X}_i$  of dummy variables describes the year in which the transaction was announced by the bidder firm describes the year fixed effects, a vector  $\mathbf{K}_i$  includes three company-specific control variables: *bidder\_mktcap*, *payment\_method* and *tobins\_q*. We also considered the possibility of controlling for *month* instead of *year* fixed effects, the results of the regression were reasonably similar. We choose to use year fixed effects because that also allows to meaningfully interpret each year's coefficient, in case of significant results, and perform a yearly instead of monthly analysis of general trends in deal performance. The specification is the following:

$$(1) \quad CAR_{-t_i} = \alpha_i + \beta_{1a} * avg\_stake_i + \beta_{1b} * inst\_pres_i + \beta_2 * swedeq\_intvar_i + \beta_3 * avg\_invest_i + \beta_4 * avg\_past\_perf_i + \gamma * \mathbf{X}_i + \delta * \mathbf{K}_i + \epsilon_i$$

$$\mathbf{X}_i = [2000; 2001; \dots ; 2008]$$

The specification is tested on a set of 187 bidder companies  $i$ , which reflects the number of observations in our sample that report complete information about all the variables tested. As previously indicated in the Theoretical Framework section, the variable  $CAR_i$  is measured across three different time horizons:  $t = 3, 6$  and  $12$  months after the deal announcement date. Hence, three different regressions are performed, respectively, for  $CAR_{3m}$ ,  $CAR_{6m}$ ,  $CAR_{12m}$ . The following specifications follow the same procedure.

While the reasons for employing one variable each for hypotheses  $H2$ ,  $H3$  and  $H4$  are rather straightforward and have been discussed in the previous section, it is worth explaining the reason why we utilize two different variables to describe the effect of institutional investor presence and test hypothesis  $H1$ . Our objective is to understand the signals provided by the presence and the concentration of institutional investors in the bidder company, at the aggregate and individual

level. Given the potential problems arising by using the variable of institutional ownership we first identify the effect of, for instance, having on average high stakes owned by mutual funds (high *avg\_stake*), while keeping the aggregate share of the capital owned by mutual funds (*inst\_pres*) fixed.

As reported in Table III in the Appendix, the model features a rather good ability of describing changes in the performance of M&A deals, measured by CAR. The  $R^2$  of the regressions are 15.5 percent, 24.7 percent and 41.4 percent for the 3,6 and 12 month horizons respectively. The variable *avg\_stake* is significant in all three regressions as well as *inst\_pres*, which appears to influence cumulative abnormal returns negatively. Such results indicate that, controlling for the average size of the stake that mutual funds own in bidder companies, a larger share of the company owned by Swedish mutual funds is a signal for a worse performance of the deal. Economically speaking, such findings are slightly puzzling: does that mean that mutual funds in aggregate are less ‘smart’ than the average investor? Is that an indicator that a few mutual funds can put in place an effective activist policy, while many funds fail to agree on a common ground? We discuss the interpretation to these and other issues more in detail in the Results section.

	<i>car_12m</i>	<i>car_6m</i>	<i>car_3m</i>	<i>avg_invest</i>	<i>swedeq_intvar</i>	<i>inst_pres</i>	<i>avg_stake</i>	<i>herfindabl</i>	<i>avg_past_perf</i>
<i>car_12m</i>	1.0000								
<i>car_6m</i>	0.7798	1.0000							
<i>car_3m</i>	0.5712	0.7336	1.0000						
<i>avg_invest</i>	-0.0527	-0.0841	-0.0733	1.0000					
<i>swedeq_intvar</i>	-0.0453	-0.0300	0.0777	0.0986	1.0000				
<i>inst_pres</i>	-0.0367	-0.0900	-0.0380	-0.0436	0.3720	1.0000			
<i>avg_stake</i>	0.1343	0.1580	0.1885	0.0951	0.2391	0.1583	1.0000		
<i>herfindabl</i>	0.0963	0.1446	0.0974	0.0818	-0.1600	-0.4751	0.3988	1.0000	
<i>avg_past_perf</i>	0.0283	0.0177	-0.0154	-0.0211	0.0394	-0.0617	0.1755	0.2260	1.0000

**Table 7** - Variable correlation of main coefficients. The table contains the correlation coefficients of the variables employed in the analysis. Data refers to specifications (1), (2), (3) and (4).

Holding the variable of aggregate institutional presence constant, a higher average stake of mutual funds signal better deal performance. But could it be that also the concentration of mutual funds in the aggregate institutional holdings stake matters? We complement the study of *H1* with the introduction of the Herfindahl index, which describes the concentration of mutual funds in the aggregate institutional ownership stakes of every bidder. In order not to lose any important information from the regressions, we modify (1) by substituting the variable *avg\_stake* with *herfindahl*, while all other variables remain the same.

Variable	VIF	SQRT-VIF	Tolerance	R-Squared
<i>herfindabl</i>	1,26	1,12	0,795	0,205
<i>inst_pres</i>	1,57	1,25	0,638	0,362
<i>avg_invest</i>	3,86	1,97	0,259	0,741
<i>swedeq_intvar</i>	1,93	1,39	0,518	0,482
<i>avg_past_perf</i>	1,21	1,10	0,829	0,171
<i>bidder_mktcap_sek</i>	3,99	2,00	0,250	0,750
<i>tobins_q</i>	1,02	1,01	0,981	0,020
<i>payment_method</i>	1,06	1,03	0,945	0,055
<b>Mean VIF</b>	<b>1,99</b>			

**Table 8** – This table reports the calculation of the Variance Inflation Factor (VIF) for the fund-specific variables included in the sample of our analysis. The sample contains 211 deal-specific observations gathered across the period Q4 2000 – Q3 2008.

When checking the correlations between variables, we acknowledge there could be multicollinearity in the regressions performed. In econometrics, the variance inflation factor (VIF) commonly quantifies the severity of multicollinearity in OLS regressions and tells us how much the variance of a coefficient increases because of multicollinearity. A common rule is that when VIF is greater than 5, then there is a multicollinearity problem. As we can see from Table 8, our coefficients do not seem influenced by collinearity and we thus repute our analysis as viable. The specification is the following:

$$(2) \quad CAR_{-t_i} = \alpha_i + \beta_{1a} * herfindahl_i + \beta_{1b} * inst\_pres_i + \beta_2 * swedeq\_intvar_i + \beta_3 * avg\_invest_i + \beta_4 * avg\_past\_perf_i + \gamma * \mathbf{X}_i + \delta * \mathbf{K}_i + \epsilon_i$$

$$\mathbf{X}_i = [2000; 2001; \dots ; 2008]$$

Where all variables have already been defined and CAR time horizons also are the same as in specification (1), i.e. 3, 6 and 12 months.

The number of company observations on which specification (2) can be tested corresponds to 187, the same set of bidder companies run for the first specification. The model fit is slightly lower than for our first regression. We report R<sup>2</sup> statistics of 13.2 percent, 23.7 percent and 40.3 percent for the 3, 6 and 12-month regressions respectively.

From Table IV in the Appendix it can be noted that the variable *inst\_pres* does not lose its significance. As in the previous specification, the aggregate mutual funds ownership stake variable appears negative and significant at least at 10% level in two of the three regressions. At the same time, when holding *inst\_pres* as well as all the other variables fixed as a control variable, it seems that an increase in concentration does not lead to an increase in merger performance. Such

findings indicate that merger performance seems not at all related to the concentration level of the bidder's institutional holdings. But is that the whole story? We may reasonably believe that the concentration of mutual funds may play a role in signaling a bidder deal performance only when the aggregate institutional ownership stake reaches a certain threshold. In fact, mutual funds may exercise an active role in the bidder company's decision only when possessing a certain relevant stake in the firm. Accordingly, when the aggregate institutional holdings are relatively low, concentration may not be important since even by coordinating their efforts, mutual funds would not be able to exercise any control on the bidder company.

In order to test this so-called "*stake size*" hypothesis, we proceed by dividing our sample of observations in two buckets, one considering only the bidders where the aggregate ownership stake is lower than 5 percent and the other group that gathers all the bidders with an institutional stake greater or equal 5 percent. We then run specification (2) on the two sub-samples. We define as specification (3) the set of regressions with a sample of bidders with aggregate institutional presence lower than 5 percent and as specification (4) the remaining sample of bidder companies.

Table V describes the sample of the bidders with an aggregate institutional presence lower than 5 percent. The regression is tested on a set of 81 observations, which is statistically a significant number to consider the validity of the results. We report  $R^2$  statistics of 23.4 percent, 36.9 percent and 53.4 percent for the 3, 6 and 12-month regressions respectively. The regression does not give us any significant result. We therefore can deduce that when the institutional aggregate stake is less than 5 percent, concentration does not play any significant role in signaling positive M&A deal performance, but rather it is not worth for mutual funds to coordinate given the irrelevant aggregate institutional ownership stake. The institutional ownership coefficient is positive in all 3 regressions, but significant at a 10 percent level only in one. Nevertheless, we see that the positive coefficients imply that with everything else equal, an increase in the aggregate institutional stake leads to greater possibilities of the mutual funds to monitor and act as active investors in the bidder.

Table VI gives us the results of specification (4) on the sub-group of bidders with an institutional aggregate stake equal or greater to 5 percent. The set of observations is equal to 106 bidders and the reported  $R^2$  statistics are 22.1 percent, 30.1 percent, 44.3 percent for the 3, 6 and 12-month regressions respectively. Not surprisingly, the Herfindahl Index coefficients result for two of the three regressions significant at least at a 10 percent level. This confirms the fact that by keeping all other variables fixed, an increase of 1 percent in the mutual fund concentration leads to a 0.245 percent, 0.29 percent and 0.491 percent increase in bidder deal performance for the 3, 6

and 12-month regressions respectively. From an economical point of view, the findings support the intuition that when the institutional ownership stake is large enough, a greater concentration of the funds guarantees the possibility to better coordinate and monitor the activities of the bidder. At the same time, when the institutional presence stake is small, concentration does not matter much for mutual funds because even if they would invest their time and efforts into coordination activities, their aggregate capacity to influence firm's decisions would still be limited.

From the four specifications in the Appendix it can be noted the variable *avg\_stake*, *inst\_pres* and *herfindahl* do not allow *H1* to lose its significance. In the first specification, both *avg\_stake* and *inst\_pres* are significant at least at a 10 percent level in all three regressions. Such findings indicate the deal performance is positively related to the average stakes of mutual funds and negatively to the aggregate stake of institutional ownership. In addition, the performance is also positively related to the concentration level of the bidder's institutional holdings whenever the aggregate stake is large enough to count for monitoring and activism purposes.

None of the other variables tested is significant, which leads us to conclude that hypotheses which, so far, have never encountered significant results, are rejected by our analysis. Such hypotheses are *H2*, which describes the effect of relative amounts of AUM invested by the funds in the bidder capital structure, *H3*, which checks the local market investments hypothesis and *H4*, which tests for fund past performance.

## 6. Results

Throughout our analysis we test four hypotheses related to signals provided by mutual funds in the capital structure of companies involved in M&A transactions. In the first section we outline, throughout four paragraphs, the findings related to each of such hypotheses. Following that, we discuss in a separate section the economic implications of the significant and insignificant findings produced by our analysis. We then follow with a discussion of the main limits, practical and econometrical, of the analysis. We conclude the Results section with our suggestions for future research on the topic.

### 6.1 Summary of Findings

The first hypothesis we test is related to the signals provided by the presence of mutual funds in the bidder company prior to acquisitions. Results from specification (1) indicate that a high average ownership stake of mutual funds in the bidder company leads to a higher performance in the deals carried out, *ceteris paribus*. As shown in Table IV, the coefficients on *avg\_stake* are positive and significant for all three time horizons. Such results are also economically significant and indicate that a 1 percent increase in the average stake leads to a 4.11 percent, 4.98 percent and 7.1 percent increase in the bidder CAR over, respectively, the 3, 6 and 12 month after the acquisition announcement. Conversely, the coefficients on *inst\_pres* from specification (2) are negative and significant. Such findings indicate that, on average, a 1 percent increase in the bidder share owned by mutual funds leads to a loss of performance of 0.31, 0.71 and 0.84 percent in the bidder CAR over, respectively, 3, 6 and 12 months.

The same results are confirmed in specification (2) to (4), where we drop *avg\_stake*, with the objective to focus on mutual funds concentration signaling power, and substitute them with *herfindahl*, positively correlated with *avg\_stake* and negatively correlated with *inst\_pres*.

The findings reported in Table VI indicate that a 1 percent increase in the Herfindahl Index leads to an increase of 0.245, 0.29 and 0.49 percent in deal performance over, respectively, 3, 6 and 12 months after the announcement, whenever the institutional presence is greater than 5 percent. Due to the findings reported, we can state that we partially fail to reject hypothesis *H1*, hence a strong and concentrated presence of institutional investors in the ownership of the bidder company is associated with a higher deal performance as long as the aggregate institutional ownership stake is big enough to have some impact.

The second hypothesis that we test is related to the signals provided by the relative amount of fund AUM invested in the bidder company prior to the announcement of the acquisition. Across specifications (1), (2), (3) (4) we fail to observe any form of significance, as can be seen in the results reported in Tables III, IV, V and VI. Even though the intuitive argument formulated by hypothesis *H2* might make sense, we certainly do not have enough empirical evidence to confirm it in this analysis. Hypothesis *H2* is therefore rejected.

The third hypothesis tested concerns the signals provided by the amount of fund AUM invested in Swedish equities when the bidder company is Swedish. Such a hypothesis aims at understanding if an increased focus on local stocks leads to a higher availability of information, which translates in an increase in the ability to pick successful bidders. Results from specifications (1) to (4), indicate that there is no evidence in support for such an argument. The coefficient on *swedeq\_intvar* is in fact positive but never significant. We therefore fail to reject hypothesis *H3* for all time periods, we believe it is reasonable to argue that the effect of a focus in Swedish equity would be significant if the sample considered would include bidders from other geographical regions.

The fourth and last hypothesis that we test concerns the ability of mutual fund past performance to provide a signal about the future performance of the deals that the company enters into. In line with previous research, across specifications (1) to (4) we found strongly insignificant results, leading us to conclude that mutual fund past performance provides no clues related to the future performance of the bidder companies that mutual funds invest in. In accordance with our expectations, we reject hypothesis *H4*.

## 6.2 Discussion of Results

Results of the test of hypothesis *H1* are those that have the highest significance in our analysis. A positive relationship between the average stake that mutual funds own in the bidder and deal performance might indicate two things: (a) funds with high stakes successfully engage in individual activism and prevent companies from undertaking bad deals; (b) funds do not engage in individual activism but use their position to enter into agreements with other funds with high stakes in the bidder company to monitor and influence corporate decisions. Descriptive statistics from Table 4 indicate that the average value of *avg\_stake* is 0.5 percent where the maximum value is 5.7 percent. While it cannot be totally ruled out that in a few bidder companies there could be one mutual fund that could make the difference in terms of activism, due to the low

value of ownership stakes we can conclude that individual activism should not be the first priority of mutual funds when investing in a company.

The results from the analysis of *inst\_pres* provide additional evidence in the same direction. Everything else equal, a higher proportion of the bidder company in the hands of mutual funds on aggregate signals a worse performance post-deal announcement. Some could interpret such findings as an indicator that the mutual fund industry as a whole is not able to ‘beat the market’ and generate superior performance, we however believe that the interpretation is more subtle. Holding *avg\_stake* fixed, the coefficient on *inst\_pres* is negative, meaning that deal performance worsens as the bidder institutional ownership structure becomes less concentrated. Potential for activism could therefore materialize when the institutional share of the bidder company is in the hands of few, highly invested, mutual funds. Finally, results from specification (4) confirm our intuition that, indeed, it is concentration that makes the difference: through *herfindahl* we measure precisely the level of concentration of the bidder institutional holdings. Once again, results indicate that for bidders with a consistent share of institutional firms invested in the company, the more concentrated is the institutional share of the bidder company, the better is the future deal performance, for all investment horizons. Such findings are consistent with evidence provided by Chen et al. (2006). In line with our expectations and with the previous literature (Qiu 2006), we thus partially fail to reject H1. Such findings are supported by our analysis and consolidate the thin body of literature on the fact that long-term institutional investors such as mutual funds, do have a key role in determining a positive M&A deal performance.

*H2* was based on a simple risk aversion intuition. If you invest more in a stock, you have a higher incentive in controlling the movements of this stock and in being sure you have a better information availability. Surprisingly, we reject *H2* since no significance of the related variable appears in our specifications. Economically, we may justify this by saying that the relative higher stake of AuM invested and the higher incentives to monitor may not directly be translated in a higher monitoring capability of the mutual fund on the bidder, given the relatively low average stakes of mutual funds in the bidders and the difficulties that may arise by the coordination and the different types of investors in a company.

Results from the test of hypothesis *H3* may be predictable. We can state that we reject hypothesis *H3*. Such findings do not support the argument that funds with a strong focus on Swedish equities are better able to identify successful Swedish bidder companies and they are therefore not consistent with the findings of Coval and Moskowitz (2001). In our defense for the results not in line with the literature, the reader should keep in mind that the sample on which we

performed the analysis was limited to companies domiciled in Northern Europe, hence it is reasonable to state that the funds in our sample had a rather high amount of information on most of the bidder companies considered, due to the economic and political similarities among Scandinavian countries. It would be interesting to analyze if this phenomenon of home equity focus yields more significant results if tested on mutual funds and bidder companies from more heterogeneous clusters of countries. Our speculation is that there would be significance of home equity focus in such cases.

Surprisingly enough, fund past performance does not provide any guidance to deal future performance. Such findings support the line of research that argues that fund managers do not possess any type of superior information about the companies that they invest in (Jensen 1967). Coherent with an 'efficient markets' view of the investing world, these findings confirm that mutual fund performance, at least in relation to M&A events, is not persistent over time and hence it is not a consequence of skill, but rather of luck of the fund manager.

It is worth noting that year fixed effects explain a great deal of the variation in deal performance in all our four specifications, especially over longer periods of time (coefficients are more strongly significant in the 12-month regressions). Specifically, we notice consistently positive coefficients for the years 2003, 2004 and negative coefficients for 2002, 2007 and 2008 throughout all our specifications. The first two were years of rising stock markets, positive economic growth and expensive equity valuations, characteristics that could have helped generating positive market reactions to the announcement of the deals, even for sustained periods of time such as 12 months after the announcement. Accordingly, 2007 and 2008 have been the years of the breakout of the economical and financial crisis and it makes thus sense for them to be negative and affect deal performance negatively. We can hence conclude that the timing of acquisition decisions is crucial in determining their performance.

All the specifications include company specific control variables to isolate some of the well-known effects on merger performance. Surprisingly, we do not find any significance for any of the controlled variables in any of our specifications, with the exception of firm size for the 12 months returns, which are significant in our last two specifications. This lack of significance cannot be explained by the correlation with the other explanatory variables since in univariate regressions of bidder returns on these variables, the coefficients are still not significant. However, we can still see check if the coefficients' signs are in line with the ones suggested by the literature. First of all, concerning the effect of firm size on post-merger performance, this topic is still debated and no real consensus has been actually reached so far. The effect of firm size on deal

performance is anyway very small and negative, meaning that bigger sized firms may suffer more agency problems than smaller firms. Secondly, Lange, Stultz and Walking (2001) write in their research that deal performance is lower for companies with a lower Tobin's q ratio, given the fact that a low Tobin's q evidences the lack of positive NPV projects to invest in. In the regressions, we identify a negative relation between Tobin's q and the deal performance, which is however in line with the literature signs given the fact that approximately 75 percent of our companies sample has a Tobin's q ratio smaller or equal 1, and would therefore be defined as "low". Finally, payment method coefficients appear mainly positive for the returns in the short time horizon of 3 months and become then negative for the two longer periods of 6 and 12 months. King, Dalton and Daily (2004) found no evidence regarding an improved performance with a particular acquisition method of payment. This would justify the insignificance of the coefficients.

### **6.3 Biases and Limits of the Study**

We would have very much liked to include an additional variable in our study: mutual fund investment horizon. Past studies (e.g. Massa, Gaspar and Matos 2004; Cella, Giannetti and Ellul 2013) have found a positive relationship between investor horizon and performance of M&A deals. In fact, short term shareholders do normally increase the probability of overbidding for a target company. We had to rule out the possibility of including investment horizon in our study due to issues related to data availability and and capacity constraints of the data processing equipment that we used. We are aware that the analysis might be incomplete without considering the effect of investment horizon, however we deem reasonable to argue that our findings remain a valid contribution to the existing literature.

Some might state that the exclusion of investment horizon may lead to Omitted Variable Bias (OVB), a flaw in the econometric specification that generates biased estimates for all coefficients. However, OVB does not arise in two cases: when (1) the coefficient on the omitted variable is zero, (2) the correlation of the omitted variable with the other variable specified in the model is zero (Woolridge 2009). While literature tells us that case (1) would almost not certainly be verified in our analysis, we may reasonably assume that investment horizon is not significantly correlated with any of the other variables we consider, hence case (2) would be respected.

Critics might also question the validity of our findings outside the Scandinavian market. While such a conclusion is outside of the scope of this paper (an interesting research idea would be to perform the same analysis on a sample from a different region), it should be noted that there are no apparent dissimilarities that lead to consider the Scandinavian market different from

any other market in the developed world, from the point of view of the analysis that we perform in this paper.

Finally, if we look at our findings, we may raise some limitations in their interpretation of the bidder related control variables. According to the literature, the bidder related control variables included in our study should influence deal performance. This was however not the focus of our paper and the limitations raised in these study may be definitely object of further research.

#### **6.4 Suggestions for Future Research**

As stated above, researchers with more powerful data processing equipment could enlarge the sample of study and test the hypotheses we make in a market different from the Scandinavian one. The fund holdings dataset comprised of Swedish funds alone yielded a total of 1,610,470 quarterly observations, which, at times, was a size fairly challenging to handle. An information frequency higher than quarterly might also be desirable, as it will be useful to more closely study the evolution of the trading behavior of mutual funds around the days of deal announcement.

As already mentioned above, a study of the investment horizon component would almost certainly add value to this analysis, allowing researchers to uncover further significant relationships with deal performance. Moreover, in testing the significance of funds' focus on local equities, it would be interesting to study the effect of such a variable in different geographical areas and compare the different magnitudes.

Finally, our study could be replicated on other types of institutional investors other than mutual and pension funds (Qiu 2006) to further enlarge the still thin body of literature on investor activism in M&A bidder companies.

## 7. Conclusion

In this paper, we conduct a study on signals about the performance of M&A transactions provided by the characteristics of mutual funds present in the capital structure of the bidder company. We measure deal performance through bidder Cumulative Abnormal Returns over periods of 3, 6 and 12 months after the announcement of the deal. We test our hypotheses on a dataset of 8,895 fund-holding observations, comprised of 445 unique mutual funds domiciled in Sweden and 211 M&A transactions where the bidder company is incorporated in Northern Europe (Sweden, Norway, Denmark, Finland) and announced the acquisition between Q4 2000 and Q3 2008.

We test four hypotheses related to the signals provided by mutual funds: (1) strength and concentration of mutual fund ownership in the bidder company; (2) relative amount of fund Assets Under Management (AUM) invested in the bidder company; (3) mutual fund focus on local equities; (4) mutual fund past performance. We employ two different econometric specifications including time fixed effects and company-specific control variables. Evidence provided by the first specification suggests that merger performance is increasing in the average stake owned by mutual funds into the bidder company and decreasing in the aggregate bidder stake owned by mutual funds. We interpret the results as preliminary evidence that high stakes in the bidder company enable mutual funds to influence the bidder company in pursuing value-generating deals through coordinated activism while in turn when the aggregate mutual fund stake grows larger (keeping average mutual fund stake constant) it becomes more difficult for mutual funds to coordinate and merger performance is impacted negatively. Such results suggest that ownership concentration within the share of bidder capital owned by mutual funds is a positive driver of deal performance.

We further explore such findings by constructing a second specification, which analyzes the level of concentration in the aggregate stake owned by mutual funds in the bidder company, which we define as *institutional presence*. We find that concentration of mutual fund ownership within the aggregate share of bidder capital owned by mutual funds is not a determinant of merger performance for the sample as a whole, when controlling for the level of institutional presence. However, when the specification is tested on bidder companies with relatively large shares of capital controlled, on aggregate, by mutual funds (above 5% of the company's total market capitalization), the effect of institutional ownership concentration becomes positive and significant in two out of three of the post-merger periods analyzed.

We conclude that the more concentrated the institutional holdings of a bidder company are, the higher the deal performance is expected to be. Such findings indicate that mutual funds are effective monitors of corporate acquisitions, but only when their aggregate presence in the capital structure of the bidder company is large enough to allow them to exercise meaningful influence on the management of the bidder company. The more concentrated the institutional ownership of a company is, the easier it is for mutual funds to coordinate their monitoring efforts and lead management to undertake only those transactions that are value-creating for shareholders. Other researchers such as Chen et al. (2004) reach similar findings, by concluding that block institutional investor's monitoring role has a significantly positive impact in the bidder's first year post-merger stock performance. Announcement year fixed effects, in addition, have a high explanatory power for years of sustained economic growth, i.e. 2003, 2004 and 2005.

Future research should further investigate some of the issues outlined in this paper. Specifically, it should test whether the findings we present here are also verified in different markets. Of particular interest would be a multi-country study similar to this, where the effects of the variables considered here would be compared across different geographical markets. The findings presented in this paper aim at providing insights on the stock market performance of bidder companies around M&A announcements, and could prove interesting to corporate management, Boards of Directors, brokers, dealers, traders, fund managers, and any type of investor interested in operating in financial markets around M&A announcements.

## APPENDIX

**Table I: Description of fund-specific variables.** This table reports descriptions and sources of the fund-specific variables included in the sample of the analysis. The sample contains 8895 quarterly fund-specific observations gathered across the period Q4 2000 – Q3 2008.

Fund-specific variables	Description	Source
<i>fundcompanyid</i>	Identification number that allows to categorize the Asset Management Company that operates the mutual fund	Finansinspektionen
<i>fundid</i>	Identification number that allows to categorize the single mutual fund.	Finansinspektionen
<i>number_of_securities</i>	Number of shares of a particular bidder company held by the fund at a specific point in time.	Finansinspektionen
<i>price_of_securities</i>	Price of the shares of the bidder company in the fund's portfolio at the point in time when the information was reported.	Finansinspektionen
<i>value_of_position_local</i>	Calculation of the aggregated value of the bidder shares held by the single mutual fund at the point in time when the information was reported. Figures in local currency.	Finansinspektionen; our analysis
<i>value_positions_sek</i>	Calculation of the aggregated value of the bidder shares held by the single mutual fund at the point in time when the information was reported. Figures in SEK.	Finansinspektionen; our analysis
<i>reportedtotaum</i>	Value of Assets Under Management (AUM) reported by the fund at a particular point in time.	Finansinspektionen
<i>exch_matched</i>	Value of the one unit of currency of the listing country of the bidder company in Swedish Kronor (SEK) at a particular point in time.	Datastream; our analysis
<i>timefund</i>	Variable that reports jointly the fund ID and the time code. It is used to analyze fund-specific time-varying variables.	Finansinspektionen; our analysis
<i>perc_swed_eq</i>	Percentage of Assets Under Management invested in Swedish Equities by each fund at a particular point in time.	Finansinspektionen; our analysis
<i>stake_in_bidder</i>	Percentage of the bidder Market Capitalization owned by the mutual fund at a particular point in time.	Finansinspektionen; Datastream; our analysis
<i>perc_aum_invest</i>	Percentage of Assets Under Management invested the bidder company by the mutual fund at a particular point in time.	Finansinspektionen; our analysis
<i>swedeq_intvar</i>	Interaction variable that indicates the percentage of Assets Under Management invested in Swedish Equities by each fund at a particular point in time when the bidder company is Swedish.	Finansinspektionen; Swedish House of Finance; our analysis
<i>past_perf</i>	Abnormal return generated by the fund in the 12 month before deal announcement. The alpha calculated is the arithmetic average of alphas calculated by regressing fund monthly returns with the CAPM and FFM asset pricing models.	Finansinspektionen; Swedish House of Finance; our analysis

**Table II: Description of deal-specific variables.** This table reports descriptions and sources of the fund-specific variables included in the sample of the analysis. The sample contains 211 deal-specific observations gathered across the period Q4 2000 – Q3 2008.

Deal-specific variables	Description	Source
<i>ann_date</i>	Year and month when the M&A transaction was announced to the public.	Mergermarket
<i>car_3m</i>	Arithmetic average of the 3-month cumulative abnormal bidder returns calculated with the CAPM and Fama-French plus Momentum four factor model. Normal returns have been estimated over the window [-24,0], where 0 corresponds to the announcement month. Return observations are monthly.	Datastream; our analysis
<i>car_6m</i>	Arithmetic average of the 6-month cumulative abnormal bidder returns. For calculation and event window please refer to the description of <i>car_3m</i> .	Datastream; our analysis
<i>car_12m</i>	Arithmetic average of the 12-month cumulative abnormal bidder returns. For calculation and event window please refer to the description of <i>car_3m</i> .	Datastream; our analysis
<i>bidder_mktcap_sek</i>	Market value of the capitalization of the bidder company. Values related to companies traded in countries different from Sweden have been converted in Swedish Kronor (SEK).	Datastream; our analysis
<i>tobins_q</i>	Ratio between the market value of a company's assets and their replacement value.	Datastream
<i>payment_method</i>	Dummy variable equal to one if the deal was entirely financed in cash and zero otherwise	Mergermarket
<i>dummyswedish</i>	Dummy variable equal to one if the bidder company is listed in Sweden and zero otherwise.	Swedish House of Finance
<i>securityisin</i>	International Security Identification Number (ISIN) of the shares of the bidder company. This code has been used to retrieve historical return data and match the bidder company with ownership-specific fund information.	Swedish House of Finance
<i>inst_pres</i>	Aggregate value of all the ownership stakes in the bidder possessed by the mutual funds in our sample at each point in time.	Finansinspektionen; Datastream; our analysis
<i>herfindabl</i>	Measures institutional ownership concentration with the Herfindahl coefficient.	Finansinspektionen; Datastream; our analysis
<i>avg_stake</i>	Measures the average percentage value of the ownership stake that each mutual fund has in the bidder company.	Finansinspektionen; Datastream; our analysis
<i>avg_invest</i>	Measures the average percentage of Assets Under Management (AUM) invested by each fund in the bidder company.	Finansinspektionen; Datastream; our analysis
<i>avg_swed</i>	Measures the average percentage of Assets Under Management (AUM) invested in Swedish Equities by each fund owning a stake in the bidder.	Finansinspektionen; Datastream; our analysis
<i>avg_past_perf</i>	Measures the average <i>alpha</i> generated by the funds in the bidder capital structure over the 12 months prior to the end of the quarter preceding the deal announcement.	Finansinspektionen; Swedish House of Finance; our analysis

**Table III: Results of First Specification.** We regress deal CAR over 3, 6 and 12 months against average mutual fund stake in the bidder company (*avg\_stake*), the aggregate stake of the firm owned by Swedish mutual funds (*inst\_pres*), the average proportion of fund AUM invested by mutual funds in the bidder company (*avg\_invest*), the interaction variable between the proportion of fund AUM invested in Swedish equities and a dummy variable indicating if the bidder company is Swedish (*swedeq\_intvar*), the average past performance of the mutual funds in the capital structure of the bidder (*avg\_past\_perf*), a vector of year dummy variables (*\_Iann\_year*) and three bidder related control variables (*bidder\_mktcap\_sek*, *tobins\_q*, *payment\_method*). P-values are in parentheses. Significance is \*\*\* p<0.01, \*\* p<0.05, \* p<0.1..

(1) FIRST SPECIFICATION			
VARIABLES	car_3m	car_6m	car_12m
avg_stake	4.110** (0.0177)	4.980* (0.0521)	7.100* (0.0578)
inst_pres	-0.312* (0.0645)	-0.705*** (0.00519)	-0.841** (0.0219)
avg_invest	-0.272 (0.805)	-0.405 (0.804)	0.510 (0.831)
swedeq_intvar	0.0489 (0.281)	0.0413 (0.539)	0.0480 (0.624)
avg_past_perf	-2.461 (0.344)	-1.711 (0.657)	-1.120 (0.842)
bidder_mktcap_sek	-0 (0.734)	-0 (0.408)	-0 (0.365)
tobins_q	0.00321 (0.785)	-0.0158 (0.365)	-0.0414 (0.106)
payment_method	0.0126 (0.653)	-0.0207 (0.617)	-0.0740 (0.221)
_Iann_year_2001	-0.0225 (0.725)	0.0193 (0.839)	-0.0728 (0.599)
_Iann_year_2002	-0.0168 (0.761)	-0.0527 (0.520)	-0.202* (0.0929)
_Iann_year_2003	0.0885* (0.0905)	0.206*** (0.00822)	0.276** (0.0152)
_Iann_year_2004	0.0129 (0.720)	0.118** (0.0279)	0.264*** (0.000843)
_Iann_year_2005	0.0127 (0.778)	0.125* (0.0624)	0.0599 (0.540)
_Iann_year_2006	0.0197 (0.594)	0.0645 (0.241)	0.0279 (0.728)
_Iann_year_2007	-0.0686* (0.0603)	-0.110** (0.0434)	-0.391*** (1.54e-06)
_Iann_year_2008	-0.122** (0.0127)	-0.172** (0.0172)	-0.315*** (0.00296)
Observations	187	187	187
R-squared	0.155	0.247	0.414

**Table IV: Results of Second Specification.** We regress deal CAR over 3,6 and 12 months against the Herfindahl coefficient of the institutional ownership share of the bidder company (*herfindahl*), the aggregate stake of the firm owned by Swedish mutual funds (*inst\_pres*), the average proportion of fund AUM invested by mutual funds in the bidder company (*avg\_invest*), the interaction variable between the proportion of fund AUM invested in Swedish equities and a dummy variable indicating if the bidder company is Swedish (*swedeq\_intvar*), the average past performance of the mutual funds in the capital structure of the bidder (*avg\_past\_perf*), a vector of year dummy variables (*lann\_year*) and three bidder related control variables (*bidder\_mktcap\_sek*, *tobins\_q*, *payment\_method*). P-values are in parentheses. Significance is \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

VARIABLES	(2) SECOND SPECIFICATION		
	car_3m	car_6m	car_12m
herfindahl	0.0534 (0.321)	0.0961 (0.226)	0.0669 (0.564)
inst_pres	-0.223 (0.235)	-0.551** (0.0473)	-0.724* (0.0747)
avg_invest	0.0301 (0.979)	-0.183 (0.912)	1.148 (0.634)
swedeq_intvar	0.0694 (0.126)	0.0673 (0.314)	0.0826 (0.398)
avg_past_perf	-2.175 (0.422)	-1.807 (0.650)	-0.266 (0.964)
bidder_mktcap_sek	-0 (0.627)	-0 (0.422)	-0 (0.285)
tobins_q	0.00602 (0.612)	-0.0129 (0.462)	-0.0362 (0.159)
payment_method	0.00465 (0.869)	-0.0312 (0.452)	-0.0869 (0.154)
_lann_year_2001	-0.0335 (0.627)	-0.00798 (0.937)	-0.0804 (0.589)
_lann_year_2002	-0.0385 (0.517)	-0.0905 (0.301)	-0.230* (0.0737)
_lann_year_2003	0.0828 (0.139)	0.188** (0.0232)	0.275** (0.0233)
_lann_year_2004	0.00690 (0.865)	0.1000* (0.0952)	0.262*** (0.00303)
_lann_year_2005	0.0149 (0.759)	0.117 (0.102)	0.0724 (0.490)
_lann_year_2006	0.00538 (0.896)	0.0373 (0.538)	0.0110 (0.901)
_lann_year_2007	-0.0698* (0.0941)	-0.123** (0.0453)	-0.383*** (3.00e-05)
_lann_year_2008	-0.139*** (0.00965)	-0.205*** (0.00946)	-0.335*** (0.00385)
Observations	187	187	187
R-squared	0.132	0.237	0.403

**Table V: Results of Third Specification.** We regress deal CAR over 3,6 and 12 months against the Herfindahl coefficient of the institutional ownership share of the bidder company (*herfindahl*), the aggregate stake of the firm owned by Swedish mutual funds (*inst\_pres*) restricted for values  $< 5\%$ , the average proportion of fund AUM invested by mutual funds in the bidder company (*avg\_invest*), the interaction variable between the proportion of fund AUM invested in Swedish equities and a dummy variable indicating if the bidder company is Swedish (*swedeq\_intvar*), the average past performance of the mutual funds in the capital structure of the bidder (*avg\_past\_perf*), a vector of year dummy variables (*lann\_year*) and three bidder related control variables (*bidder\_mktcap\_sek*, *tobins\_q*, *payment\_method*). P-values are in parentheses. Significance is \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

(3) THIRD SPECIFICATION			
VARIABLES	car_3m	car_6m	car_12m
herfindahl	0.0180 (0.798)	0.0837 (0.401)	0.103 (0.463)
inst_pres	2.682 (0.173)	5.093* (0.0686)	3.850 (0.322)
avg_invest	1.135 (0.660)	3.027 (0.406)	0.511 (0.920)
swedeq_intvar	-0.0412 (0.650)	-0.190 (0.140)	-0.0728 (0.685)
avg_past_perf	-3.896 (0.310)	-4.016 (0.458)	-5.669 (0.455)
bidder_mktcap_sek	-0 (0.142)	-0 (0.107)	-0* (0.0676)
tobins_q	-0.00459 (0.866)	-0.0222 (0.563)	-0.0609 (0.259)
payment_method	0.0616 (0.163)	-0.0393 (0.526)	-0.0225 (0.795)
_lann_year_2001	-0.00954 (0.930)	0.0423 (0.782)	-0.115 (0.592)
_lann_year_2002	-0.0619 (0.432)	-0.108 (0.333)	-0.275* (0.0805)
_lann_year_2003	0.0127 (0.879)	0.0296 (0.802)	0.148 (0.371)
_lann_year_2004	-0.0502 (0.471)	0.0318 (0.746)	0.135 (0.329)
_lann_year_2005	-0.0184 (0.841)	0.0702 (0.588)	0.0259 (0.886)
_lann_year_2006	-0.0112 (0.865)	0.0938 (0.316)	0.0665 (0.611)
_lann_year_2007	-0.0914 (0.200)	-0.192* (0.0577)	-0.519*** (0.000418)
_lann_year_2008	-0.117 (0.151)	-0.262** (0.0252)	-0.355** (0.0299)
Observations	81	81	81
R-squared	0.234	0.369	0.534

**Table VI: Results of Fourth Specification.** We regress deal CAR over 3,6 and 12 months against the Herfindahl coefficient of the institutional ownership share of the bidder company (*herfindahl*), the aggregate stake of the firm owned by Swedish mutual funds (*inst\_pres*) restricted for values  $\geq 5\%$ , the average proportion of fund AUM invested by mutual funds in the bidder company (*avg\_invest*), the interaction variable between the proportion of fund AUM invested in Swedish equities and a dummy variable indicating if the bidder company is Swedish (*swedeq\_intvar*), the average past performance of the mutual funds in the capital structure of the bidder (*avg\_past\_perf*), a vector of year dummy variables (*lann\_year*) and three bidder related control variables (*bidder\_mktcap\_sek*, *tobins\_q*, *payment\_method*). P-values are in parentheses. Significance is \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

(4) FOURTH SPECIFICATION			
VARIABLES	car_3m	car_6m	car_12m
herfindahl	0.245* (0.0555)	0.290 (0.129)	0.491* (0.0867)
inst_pres	-0.137 (0.580)	-0.572 (0.126)	-0.670 (0.229)
avg_invest	-1.420 (0.293)	-2.217 (0.274)	-2.298 (0.447)
swedeq_intvar	0.0424 (0.544)	0.0795 (0.449)	-0.0381 (0.808)
avg_past_perf	6.154 (0.195)	8.297 (0.243)	16.15 (0.130)
bidder_mktcap_sek	0 (0.102)	0* (0.0821)	0** (0.0158)
tobins_q	0.00791 (0.575)	-0.0236 (0.267)	-0.0403 (0.205)
payment_method	-0.0358 (0.412)	-0.0107 (0.870)	-0.0855 (0.382)
_lann_year_2001	-0.0743 (0.441)	-0.0858 (0.552)	-0.0613 (0.776)
_lann_year_2002	0.0198 (0.856)	-0.0427 (0.794)	-0.0921 (0.707)
_lann_year_2003	0.0817 (0.339)	0.281** (0.0300)	0.320* (0.0967)
_lann_year_2004	-0.0149 (0.801)	0.0804 (0.363)	0.240* (0.0710)
_lann_year_2005	-0.0358 (0.575)	0.0790 (0.410)	0.000611 (0.997)
_lann_year_2006	-0.0291 (0.639)	-0.0617 (0.507)	-0.0739 (0.596)
_lann_year_2007	-0.101* (0.0897)	-0.165* (0.0641)	-0.396*** (0.00346)
_lann_year_2008	-0.140* (0.0703)	-0.189 (0.102)	-0.265 (0.124)
Observations	106	106	106
R-squared	0.221	0.301	0.443

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