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THE EFFECT OF THE MORNINGSTAR RATING ON FUND FLOWS IN THE NORWEGIAN MUTUAL FUND MARKET

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ABSTRACT

This thesis analyzes the effect of Morning rating changes in equity funds available for sale in Norway. A study carried out in USA (Del Guercio & Tkac, 2008), reported that the Morningstar rating has significant independent influence amongst retail investors, resulting in abnormal inflows to top-rated funds. The findings are important because the large abnormal flows associated with top Morningstar ratings cause incentives for portfolio managers to chase higher ratings in order to attract fund flows. Contrary to findings from the US market, the results in this study indicate only weak evidence that the Morningstar rating has influence in the Norwegian market. The study goes on to investigate whether Norwegian retail investors should take the Morningstar rating into account in the investment decision to achieve higher future returns. The method partially follows Blake & Morey (2000) to investigate if the Morningstar rating is a predictor of mutual fund performance for funds in the Norwegian market. The results exhibit that average ratings decrease over time for top-rated funds and increase for lower-rated funds. The absence of performance persistence is consistent with the patterns that can be observed in the overall mutual fund industry. The lack of predictive power in Morningstar ratings can rationalize why Norwegian retail investors neglect to move flows to the top-rated funds.

RESUMO

Esta tese estuda os efeitos das alterações de Morningstar rating de fundos de ações disponíveis para venda na Noruega. Estudos para os EUA, encontraram que os ratings Morninstar influenciavam as decisões de alocação dos fluxos monetários dos investidores. Este resultados são importantes na medida em que sugerem que os gestores de fundos têm incentivos a alcançar top ratings. Os nossos resultados sugerem diferenças face aos resultados dos EUA, os ratings de fundos não parecem ter influência na alocação de fluxos monetários nos fundos de ações vendidos na Noruega usando a metodologia de Del Guercio and Tack (2008). Todavia, usando fluxos monetários relativos, encontramos evidencia que upgrades de rating atraem fluxos monetários e downgrades induzem a desinvestimento nos fluxos monetários. No seguimento, é analisado se os ratings conseguem prever a rendibilidade futura dos fundos, seguindo para esse fim a metodologia de Blake & Morey (2000). Os resultados evidenciam uma tendência de reversão para a média. Fundos com níveis elevados de rating vem nos meses seguintes baixar o seu rating, enquanto que fundos com rating levado vêm o seu rating subir nos meses seguintes. A ausência de persistência na performance é consistente com os resultados da literatura de fundos. Esta ausência de previsibilidade dos ratings pode racionalizar o facto de os investidores na Noruega não reagirem aos ratings da Morningstar. Uma outra explicação plausível pode ser a Morningstar gozar de pouca notoriedade na Noruega.

Keywords: *mutual funds; ratings; fund flows; investor behavior*

JEL classification codes: G230, G11

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1 Introduction

Over the last couple of decades, the mutual fund industry has exploded on a global basis. As the fund industry continues to grow, the investment decision becomes gradually more challenging for retail investors. In a progressively more complex investment world, with an array of new investment products and an abundance of information, the issue of where to place money has become an impossible task for the common investor. Morningstar seeks to provide a quick source of information for retail investors, which often lack the financial expertise to evaluate the quality of investment products. The star rating incorporates an array of information in an easy-to-understand one- to five star rating system of mutual funds.

Since the Morningstar rating debut in 1985, it has managed to become an undisputed market leader among retail investors in the US. According to data from Investment Company Institute (ICI), in 2004, the US mutual fund industry was the global leader with 59% of the worldwide market share. By the end of 2010, the US industry total had reached 11.8 trillion USD. Morningstar has earned its presence in the world's largest fund market, due to the unbiased and independent information service with an investor-first focus.

After Morningstar built a solid reputation in the US, it moved into other markets, making it more able to provide local information in 27 countries. The global market outside the US is fragmented and investors in the various domiciles may behave very differently. In the dataset from ICI, in 2010, there is a significant jump in market share of nearly 50% between US, the world's largest fund market, and France, the second largest market, with 10% market share of the global industry. Brazil has 4.6% of the market share, which makes it the third largest market. Italy has 3.7%, closely followed by United Kingdom at 3.6%. Although these markets are smaller than the US, they produce higher growth rates. In terms of growth rate over the years 2004-2010, Brazil is the most explosive market with a 24% growth rate. Followed by India at 19%, Chile at 17%, Russia at 16.5%, and Norway at 16%. Norway is the only developed market amongst the high growth mutual fund markets. This study investigates topics that will help determine if Morningstar has been able to successfully bring the brand name to markets outside the US.

There are three Morningstar offices in the Nordic region; Norway, Sweden, and Denmark. The offices are responsible for offering local information to investors in these markets. Although neighboring countries, the markets vary significantly in size. According to data from ICI, in 2004, the Swedish fund market had a total net asset value of 107 million

USD, the Danish market was 65 million USD, the Finnish market was 38 million USD, and Norway was the smallest market with 30 million USD. Sweden has maintained the largest market size in the Nordic region. Denmark has remained the second largest market in the Nordics. The Finnish market size was larger than the Norwegian market from 2004 until 2008, however, was surpassed by Norway in 2009 and 2010. When it comes to market growth rates, the order differs from that of market size figures. From 2004 to 2010, the fund capital grew 4.8% in Denmark, 9.5% in Finland, 9.8% in Sweden and 16% in Norway. Norway was the smallest market in 2004, but grew the most over the six years; with a growth rate almost double the other Nordic countries.

Mutual funds are the preferred means of stock investment for retail investors in Norway. There are 26 Norwegian fund companies that offer funds to retail investors. Many of these companies advertise the Morningstar star ratings of their funds, though 10 of these companies neglect to present their fund ratings. The top three companies in terms of fund capital: DnB, Skagen, and Nordea include the star rating in their fund lists. However, Storebrand and Odin, the fourth and fifth largest fund companies, do not mention the Morningstar ratings on their websites, despite some of their funds having achieved top ratings. Even though some of the fund companies choose to leave out the star rating from their website, the Morningstar Norway website is easily accessible with readily available quick-rank fund lists containing star ratings.

The abundant use of the star rating in advertising within the U.S. market suggests that fund companies believe that investors care about the Morningstar rating. Most U.S. fund companies present the star ratings in their fund lists. Fidelity and JP Morgan, two of the largest U.S.-based fund companies, offer separate fund lists of four- and five star rated funds, making it easier for the investor to find top rated funds. Nonetheless, the Morningstar rating has been criticized in news articles the last years. A study by Burns Advisory Group studied the 10-year performance of five star-rated funds from December 1999 to 2009 (Mamudi, 2010). They found that only four out of 248 top-ranked equity funds maintained their rank after the 10 year-period. The main issue of using the star-rating as a selection criterion is that a backward-looking measure is not an indicator of future performance.

Despite sporadic critiques, Morningstar remains the main provider of fund information, with the primary goal to make the investment decision easier for investors. Even Morningstar publish articles that request investors not to depend exclusively on star ratings. A

Morningstar-published research article (Kinnel, 2010) stated that expense ratios should be the primary test in the fund selection decision. The study showed that fund selection based on expense ratios works every time, whereas an investment decision based on the star rating works only occasionally. Simply put, costs were always deducted from returns in spite of the market conditions. On the other hand, the star rating is a historical risk-adjusted performance measure, which makes the rating highly sensitive to market swings. Perhaps the ability to self-critique is what enables them to maintain the reputation as an unbiased provider of information?

This study contributes to current mutual fund flow research in several different ways. While the global fund industry has flourished, research studies of mutual funds have remained geographically restricted. The majority of the research involving the Morningstar rating has concentrated on the U.S., with the exception of a few insightful national studies. This study tests whether the Morningstar rating has an effect on fund flows in the Norwegian market, a much smaller and less liquid market than the U.S. It examines whether the star rating is a primary input to many investors' decisions and as a consequence, influence fund flows in a market where the rating has not been around as long as in the U.S.

The study seeks to capture fund flow patterns that explains investor behavior using methodology similar to the study by Del Guercio & Tkac (2008). The purpose is to find empirical evidence of whether or not a change in the star rating has an effect on the fund flows independent from any other common fund performance measure. The study examines if an upgrade (downgrade) in the star rating, results in additional inflow (outflow) that can be linked to the change in Morningstar rating. Also, it investigates if there is a difference between a change in the top ratings and the lower ratings. Moreover, we analyze whether fund ratings are a good measure to predict performance.

The rest of the paper is structured in the following way. Section 2 contains a description of the Morningstar rating methodology. Section 3 is a review of the relevant literature. Section 4 describes the data. Section 5 explains the methodology. Section 6 presents and discusses the empirical results. The 7th and final section gives the concluding remarks.

2 The Morningstar Rating

In 1985, the original Morningstar Rating was introduced to the U.S. market and has since been recognized for influencing trillions of dollars of fund flows. The Morningstar rating is a quantitative evaluation system of a fund's historical performance. Since the beginning, the ratings have been calculated for the trailing three-, five-, ten year periods and an overall rating based on broad asset classes. The original rating scale of one- to five stars, has allowed investors and advisors to easily discern winning funds.

The Morningstar rating methodology is based on two key characteristics: the Morningstar categories and historical risk-adjusted returns. Morningstar rating based on peer groups was introduced in 1996. The funds were rated within focused categories as well as the initial broader asset classes. Investors were encouraged to use both performance measures. Since then, the Morningstar rating methodology has been redesigned to ensure that high ratings would only result from manager skill rather than category performance. The ratings are based on ranking of funds within more narrowly defined category peer groups, replacing the old system of broad asset classes.

The categories are peer groups of funds, similar enough in risk exposures that return comparisons are meaningful. Since the funds in a peer group are comparable in the nature of risk exposure, the return variations between the funds relate to differences in security selection or market timing, and the amount of exposure to the risk factors. The return differences are therefore contributed by manager skill in terms of market timing ability, stock picking, and/or appropriately calculated asset weighting, and not merely based on category returns.

The Morningstar algorithm grades funds on a curve within each peer group based on a one- to five-star rating scale. The highest-ranking 10% within a category achieve five stars, the next highest 22,5% earn four stars, the next 35% receive three stars, the next 22,5% get two stars, and the last 10% one star. The ratings are calculated for the trailing three-, five- and ten-year periods. The overall rating is a weighted average of available time period ratings. A fund must, therefore, have at least 36 continuous months of total returns to receive a rating. For a fund that is at least three years old and less than five years, the overall rating is 100% three year rating. For a fund that is at least five years and less than 10 years, the overall rating is 60% five year rating and 40% three year rating. For funds that are at least 10 years, the overall rating is 50% 10-year rating, 30% five-year rating, and 20% three-year rating. The 10-

year period appears to give highest weight to the 10-year rating; however, the latest three-year rating is most-heavily weighted because it is part of all three periods.

Table 1. Morningstar Rating structure	
Fund percentile	**Rating**
Top 10%	5*
10% to 32.5%	4*
32.5% to 67.5%	3*
67.5% to 90%	2*
Bottom 10%	1*

Over time there has been increasing focus on the fact that the majority of investors buy funds as part of a portfolio and not in isolation. For this reason, Morningstar changed the methodology in 2002 by introducing a new improved risk-adjusted return measure and new peer groups. The original rating defined risk as; underperformance based on the 90-day U.S. Treasury bill return rate. If the returns exceeded the benchmark each month, the fund was considered riskless. However, any fund can experience consecutive months with excess returns and still eventually produce losses.

The current Morningstar risk-adjusted return (MRAR) is based on expected utility function, which acknowledges that investors are more concerned with possible losses rather than potential gains. This function implies risk aversion and downside risk is always penalized. It also considers that investors are willing to give up some expected return for greater certainty of return. Hence, the new risk measure gives more weight to downside variation since investors dislike downside volatility more than upside volatility.

In September 2006, Morningstar launched yet another revised methodology to make it less U.S.-centric and more suitable for a global market. The document included a rating suspension policy that defined situations where funds would be suspended from rating. Rating suspension is intended for situations where return comparisons are meaningless until the fund has 36 new continuous monthly returns, such as when funds undergo significant changes in investment strategy, resulting in a Morningstar category change. Return comparisons within the new peer group is meaningless until the fund has three years of monthly returns with the new investment strategy.

2.1 The Morningstar Rating in Europe

In 2001, Morningstar introduced the rating to the European market, but limited to the three-year rating. Although only one time period was launched in Europe, the rating algorithm remained the same as the U.S.-version. The two main factors: category peer groups and historical risk-adjusted returns were also fundamental for the European ratings. The later revisions of the rating methodology were applied to both the European- and U.S. ratings, including the addition of the narrowly defined peer group system, replacing the old structure of four broad asset classes. The newest European category methodology document from April 2012 explains a peer group system with 11 asset classes and 315 categories. The purpose of these narrow peer groups was to revamp the rating system to be less sensitive to the effect of investment trends and styles.

On 31 October 2006, the five-year-, ten-year-, and overall star ratings were introduced to the European market. The ratings were based on historical monthly total returns adjusted for front loads, deferred loads and redemption fees. The Morningstar rating methodology has undergone significant improvements, though the fundamental one- to-five star system remains the same. Over the past 10 years, the famous star rating has been made available for a larger investor group as it has gradually been introduced to global markets.

Table 2. Chronology of the changes of Morningstar ratings methodology		
	US	Europe and rest of the world
1985	Introduction of Morningstar rating in the US	
1996	Morningstar narrow investment categories ; Rating based on peer groups	
2001		Morningstar introduces rating in the European market but limited to three year rating
2002	Revision of the methodology: introduction of new improved risk-adjusted return measure and peer groups	Same
2006	Revision of methodology	Same Morningstar introduces five- and ten-year ratings
2012		Changes in the peer group systems with 11 assets and 315 categories

3 Literature review

Prior research analyzes the suitability of Morningstar ratings as an information source of fund performance for retail investors. Morningstar has also conducted internal research on the rating and discovered weaknesses in the rating system. The Morningstar rating methodology has been revised to deal with the flaws. Supplementary research has been performed post-revision in order to test whether or not the revisions were, in fact, improvements to the old methodology. Researchers have tested for convexity in the flow-performance relationship, and found the relationship to be highly convex. Investors are more likely to chase winning funds rather than to withdraw fund flows from losing funds.

3.1 Potential Age Bias in Morningstar Rating Methodology

Some researchers have studied the existence of biases in the Morningstar rating. The age bias in the rating system is the most prominent research topic. Blume (1998) was amongst the first researchers to study the relationship between fund age and the Morningstar rating. He found that the star ratings for younger funds were more variable than those of mature funds. Moreover, older funds earned top-ratings more seldom than younger funds.

Morey (2002) used regression techniques to investigate the relationship between overall star ratings and fund age. Similar to Blume (1998), he found that star ratings of young funds were more volatile than mature funds, which are defined as funds with more than 10 years return history. Contrary to previous results, he found that the overall ratings were sticky downward, meaning that mature funds achieved higher overall ratings than younger funds. The tendency for the star ratings to be sticky downward would not be a problem assuming that the ratings were sticky upward as well. This could be the case as young funds typically rise more easily in ratings compared to older funds. However, he found that the overall rating was consistently higher for mature funds rather than younger funds. He linked the results to the weighting system of the overall star rating, which he stated to be the main cause for why star ratings of older funds were less likely to decline than for young funds.

Vinod & Morey (2002) investigated the age bias in Morningstar rating system as a possible source of estimation risk. The results insinuated that Morningstar generates uncertainty through its rating system because it overlooks differences in fund age. Investors should be less confident that ratings for young funds are accurately estimated and they should not base their investment decisions solely on ratings. Since these studies, the Morningstar

methodology has undergone a revision. Newer studies investigate whether the age bias persists, while also pinpointing the weighting system and other problematic areas.

Adkisson & Fraser (2003) and the subsequent Adkisson & Fraser (2004), studied three main sources to age bias; the market climate during the evaluation period, the Morningstar weighting system, the relationship between fund age and fund size. The research examined if there still is age bias in the new Morningstar methodology. The revised methodology intends to make the ratings less sensitive to return variations resulting from performance of different investment styles. Although the revision with more narrowly defined categories strengthens the rating methodology, the research results showed that the influence of the overall market conditions and cycles were not eliminated by the amendments. There was an inverse relationship between fund age and rating, for both the overall rating and the time-specific ratings. The consistency across the overall rating and the time-specific ratings meant that the correlation between fund age and star rating was robust to market conditions.

Adkisson & Fraser (2004) found that mature funds were still unlikely to receive top overall ratings, which was consistent with Morey (2002). Moreover, they found that older funds were less likely to receive the lowest one-star overall rating. They also explained the age bias in terms of the relationship between fund age and fund size. Young funds tend to be smaller than older funds, making younger funds more prone to manipulative techniques, that may lead to higher ratings. On the other hand, older funds are usually larger and less subject to manipulation. Mature funds, therefore, tend to receive lower ratings regardless of bull and bear market cycles. They concluded that the relationship between fund age and fund size is potentially the most apparent source for age bias.

3.2 Related literature on the Morningstar rating

Many researchers have investigated the predictive ability of the star rating on future fund performance. Blake & Morey (2000) examined the predictive power of the Morningstar rating on the mutual fund performance for U.S. domestic equity funds. The results indicated that low star ratings generally pointed to relatively poor future performance. However, when it came to five-star funds there was little statistical proof that they outperformed the four-star funds. The study also found that the Morningstar rating was only slightly better at predicting future performance than the standard performance measures. The study concluded that poor performance was easier to predict than excellent performance.

Morey (2005) moved on to study the effect an initial five-star rating has on future fund performance, strategy, risk-taking, expenses, and portfolio turnover. The research results indicated that after receiving the first five-star rating, the risk level increased and the fund was unable to take on momentum stocks, as well as it did before receiving the top star rating. These patterns pointed out that those top-ranking funds, to some extent, changed their portfolios after receiving a five-star rating, showing that investors should be careful about using the top star rating as an indicator of future performance.

The predictive power of the star rating was an important issue because studies provided evidence that highly ranked funds drew the greatest investor inflow (Sirri & Tufano, 1998; Goetzmann & Peles, 1997). Nevertheless, the results from the previous studies suggested that those cash inflows did not necessarily generate future returns (Blake & Morey, 2000; Morey, 2005). Even so, advisors and investors used the rating system as a predictor of future performance. Since high ratings are strongly correlated to large capital inflows, many mutual fund companies use the Morningstar ratings in marketing mutual funds to the public. Most U.S. fund companies present the star ratings in their fund lists. Fidelity and JP Morgan, two of the largest US-based fund companies, offer separate fund lists of four- and five star rated funds, making it easier for the investor to find top-rated funds.

The aforementioned studies are based on the old Morningstar rating system that was in place before June 2002. Since these studies were conducted prior to the revisions, their relevance to the current Morningstar rating methodology is unknown. Several researchers have performed studies to examine if the revised rating system has improved predictive ability compared to the old system.

Morningstar has conducted in-house research on the revised methodology. Kinnel (2005) examined the predictive power of the new rating system three years after the methodology change in 2002. The results suggested that the star ratings generally point investors in the right direction as the top-rated funds continued to produce superior returns in the three subsequent years. Five-star funds outperformed four-star funds from mid-2002 through mid-2005, four-star funds surpassed three-star funds, and so on. Nonetheless, the outperformance was for the most part modest. Among international funds, five-star funds in mid-2002 received an average rating of 3.4 stars in mid-2005, whereas one-star funds received an average of 2.4 stars. In any case, five-star funds outplayed lower-rated funds across each asset class. These findings gave notions that the new rating generally has some predictive

capabilities. The results confirmed the early patterns of predictive ability that were found after only two years of the new rating system (Kinnel, 2004). Both studies showed that the revised rating provides directionally correct guidance for investors. However, even with the new improved rating system, the rating is still merely intended to be a reflection of past risk-adjusted performance.

Kräussl & Sandelowsky (2007) conducted an empirical study of the old system with four broad asset classes and the revised rating system with 64 asset categories. They found that the predictive ability of the revised Morningstar rating system did not beat the random walk. The old system was able to predict severe underperformance, but failed to distinguish between funds with three-, four- and five stars. They found that the new rating system is not able to identify significant difference in future performance between one- and five-star funds. They concluded that the old system was superior to the new system in its ability to predict future performance. This conclusion conflicted with Morningstar's internal research (Kinnel, 2005; Kinnel, 2004). However, Kräussl & Sandelowsky (2007) agree that the new system has superior predictive power for a limited number of categories, such as Europe Stock. Even so, they emphasized that the rating does not show any forecasting ability in any of the other categories and should therefore not be used for these categories.

Morey & Gottesman (2006) also studied how the revised Morningstar rating system predicts future fund performance. They found that higher rated funds, for the most part, outplayed lower rated funds. Four star-rated funds generally had higher average performance than three-, two-, and one-star rated funds. Three star-rated funds had higher average performance than two- and one-star rated funds. Even two-star rated funds significantly outperformed one-star rated funds. Previous research concluded that the old rating system was able to predict underperformance, but not able to discern between three-, four-, and five stars (Morey, 2002; Blake & Morey, 2000). This newer research study provides support to Kinnel (2005) in indicating that the revised system predicts future performance better than the old system.

Winston (2005) stated that the Morningstar rating diminishes multidimensional fund performance information to a single scalar measure. Although this simplification is the main reason for the star rating's popularity, it has some drawbacks. No single measure is sufficient to evaluate performance, because there are too many significant elements that describe portfolio management. Winston (2005) said that users should be wary of using it in isolation

because one–dimensional measures are naturally flawed. Firstly, most investors do not buy mutual funds in isolation, but as a part of a portfolio. The star rating does not take into account the mutual fund's correlation with the rest of the portfolio. According to modern portfolio theory, it is the correlation with the rest of the portfolio that impacts the investor's total return and risk. Secondly, the star rating is an indicator of past performance, which, according to existing research, is not a good estimator of future performance (Morey, 2005). The star rating is intended to provide analysis on past performance; however, top ratings are commonly used for portfolio selection despite lacking proof of performance persistence. Thirdly, the rating system also has a tendency to reward extreme leverage and the use of options or dynamic option replication. This means that a fund rating can be manipulated by using leverage or options. Investors should be aware of these manipulative techniques, so it is possible to discern star ratings accomplished through manager skill from ratings achieved through manipulation. As concluding point, Winston stated that the Morningstar rating is faulty and should therefore not be used as the only source of information in the fund performance evaluation.

Antypas, Caporale, Kourogenis, & Pittis (2009) is the most recent research paper that investigated the performance persistence in top-rated fund portfolios. More specifically, they sought evidence of whether higher-rated funds consistently outperform lower-rated funds, and if the higher rating reflect superior management skills of managers of those funds. They compared the risk-adjusted returns on portfolios of five-star funds with portfolios with lower-rated funds. The idea was that if top-rated funds were a result of manager skills, then portfolios of top-rated funds should outperform portfolios of lower-rated funds. The results showed that there were significant return differentials between the portfolios, meaning that higher ratings can be associated with higher returns. They estimated asset pricing models for risk-adjusted returns to distinguish whether or not these findings were a result of manager skill. The results imply that Morningstar star ratings were most effective in identifying poorly performing funds, rather than picking out the best performing funds. They concluded that the ratings can be used as a guide to avoid lower rated funds, but is inappropriate for discerning between three-, four and five-star funds. These findings are consistent with the majority of existing research on the Morningstar rating.

All research concludes that the Morningstar rating should not be used as an indicator of future performance. This conclusion does not disprove the Morningstar rating system. Morningstar's in-house research (Kinnel, 2005) stated that the star rating is not intended to be

a predictor of future performance. Instead it is meant to be an indicator of past performance and is intended only as a first step in the assessment process. An investor should not make investment decisions solely based on high ratings.

3.3 Convexity in the performance-flow relationship

Investors base allocation decisions on prior performance information, however, they do so asymmetrically. Losing funds experience modest outflows, whereas top funds are rewarded with disproportionate inflows (Sirri & Tufano, 1998; Chevalier & Ellison, 1997). Their results did not answer the question of which performance measures were used to determine the allocation decision.

Del Guercio & Tkac (2008) showed that there is a strong relationship between Morningstar ratings and fund flows for domestic U.S. equity funds. They found that the Morningstar rating had a quantifiable and independent effect on fund flows, which could be separated from other standard measures such as Jensen alpha, Sharpe ratio, three years of cumulative returns, and return rank. The results demonstrated that positive abnormal flows followed rating upgrades, and negative abnormal flows followed rating downgrades, ranging from 13 to 30 percent of expected levels. They suggested that it is the change itself and not the rating that affected the fund flows. An upgrade from four- to five stars had a large effect of 25% above normal fund flows that lasted for seven months after the rating change. An initial five-star rating generated inflows of 53% beyond the normal flow. Contrarily, certain rating downgrades generated substantial outflows above what is normally expected. A downgrade from five- to four stars was considered a non-event as the rating change had no significant effect on fund flows. A downgrade from four- to three stars had a large negative response of twelve times the normal flow. This study found that investors rewarded five-star funds and punished poor performance when the rating fell to three stars. The funds experienced significant outflows relative to inflows the fund would have if it maintained a four-star rating.

Knuutila, Puttonen, & Smythe (2007) extended the research by Del Guercio & Tkac (2008) to examine the Morningstar effect on Finnish mutual funds. They distinguished between non-bank managed funds and bank-managed funds to investigate whether the bank dominance in the Finnish fund industry would lead to different flow patterns from the U.S. market. They found that flow patterns of Finnish bank-managed funds did not demonstrate the same relationship between ratings and fund flows as in the U.S. However, top-rated non-bank

managed funds captured flows similar to the findings from the U.S. market. The research suggested that five-star funds are not valued as highly in Finland as in the U.S., where flows tend to follow good performers. The study found that 7.32% of bank managed funds earned five stars, whereas 19.02% of non-bank managed funds received top ratings. These results demonstrate that bank managed equity funds were unable to compensate for higher fees with superior risk-adjusted returns. Contrary to expected flow patterns, the top-rated bank funds did not attract more flows than the average bank funds, meaning that Finnish banks sell funds to clients based on characteristics other than costs and performance. As a result of the random distribution of flows for bank managed funds, the positive and convex relationship between performance and flow appear to be non-existent in the Finnish market. In the non-bank section of the market, however, top-rated funds attracted almost 80% of total capital invested in non-bank funds, indicating that non-bank funds exhibit patterns that are consistent with the positive and convex relationship between performance and flows.

Faff, Parwada, & Poh (2007) analyzed the effect of fund ratings on flows on an Australian sample of funds. Their results showed that investors flock to newly upgraded funds and penalize those that have been downgraded by withdrawing funds. They also analyzed the hypothesis that money flows may induce rating changes, particularly in circumstances where flows are large. The methodology used the popular value-at-risk (VAR) measure that considers that investors are more concerned with downside risk. The results provided only weak evidence of rating changes resulting from abnormal money flow.

What does a convex performance-flow relationship mean for investors? Investors form a set of beliefs of a fund's ability to generate excess returns during the investment allocation decision. Investors seek to maximize risk-adjusted returns, whereas fund managers primarily strive to increase inflow to their funds. Chevalier & Ellison (1997) investigated what types of agency conflicts arise between investors and managers based on the shape of the performance-flow relationship. The resulting shape of the curve signifies that there is incentive for fund managers to alter the risk level of their portfolios in order to become a winning fund, and finally, obtaining additional flows.

4 Data

4.1 Description of Sample

The data set is compiled of open-end equity funds that are available for sale in Norway. The sample is extracted from Morningstar Direct, which is an investment analysis platform that uses data from the Morningstar database. Direct has filters that allows for a dataset based on a selection of data points and time periods from the database. The chosen set is a monthly time series of Morningstar overall star ratings for the nine-year period from January 2003 to December 2011. The sample includes equity funds available for sale in Norway, but may be registered in a different country (see table 26 for domiciles). The sample is more recent and covers a longer period than previous studies (Del Guercio & Tkac, 2008; Knuutila, Puttonen, & Smythe, 2007).

The sample includes funds that exists in the Morningstar database and received a rating as of December 2011. We recall that a fund must have 36 continuous months of returns to achieve a rating. Funds that have not earned a rating during the sample time period are excluded from the sample, implying that funds with inception date after December 2008 are disqualified from the sample.

The dataset is supplemented with monthly returns and total net assets from Lipper. The data has gone through checks to make sure that the two databases are correctly matched. The final dataset has 446 funds from 45 fund companies and a total of 29 451 rating months. The sample has 117 funds with full rating history and 329 funds with reduced rating history. There are several reasons for why some of the funds have incomplete rating history such as inception date, rating suspension or category change.

The Morningstar style codes are used to classify the sample mutual funds into style categories. The dataset has a total of 59 different investment styles with varying number of rating months across the style groups (see table 25). Morningstar assigns the category to each fund based on the fund's average investment style over the past three years. The judgment is based on the size and style of the stocks in the fund's portfolio. As mentioned before in the section on the Morningstar rating in Europe, Morningstar has revised their category methodology. After redefining categories to make the system more reliable to investors, a handful of the sampled funds have been moved to unrated categories and therefore have incomplete rating history.

Over the chosen sample time period, there was a change in the methodology which is not significant to the statistical tests, but is worth mentioning. In October 2006, Morningstar introduced the five-year and ten-year rating to Europe, meaning that the current European overall rating is based on the weighted average of the three-year, five-year and ten-year rating. Previously, the overall rating in Europe was only based on the three-year rating. Additionally, Morningstar started to apply deferred loads and redemption fees to the risk-adjusted returns calculation.

4.2 Potential bias in the sample

Survivorship bias may be induced by poorly performing funds that drop out of the database during the sample period. In the study by Del Guercio & Tkac (2008) there was an issue of survivorship bias, resulting from a high number of liquidation and mergers over the time period. Even though this study has 329 funds with incomplete rating history, survivorship is much less of a problem in this study. Most of the funds have partial rating record, because the fund is young and the rating does not commence until after the chosen time period has started. Another group of funds lack ratings due to a category switch, which results in 36 months suspension period before it will receive a rating again. Rating suspension occurs if there is a significant change in investment strategy or if the fund holds 100% cash for more than a year after the inception date (unless it is a money market fund). The last set that has reduced rating history is funds that have moved into categories that are not rated. There are a few categories that are not rated because the funds vary widely in risk exposure so that performance comparisons would have little value. The incomplete rating histories in the study are not due to poorly performing funds that were merged or liquidated, but merely a consequence of Morningstar rating policy.

Age bias is a latent issue in research studies that use the Morningstar overall rating. As mentioned before, age bias originates fundamentally from the weighting system. The overall rating assigns differential weight to the last 36 months of return history based on fund age. As a part of the methodology, the funds are grouped into portfolios based on the overall star ratings. The oldest funds are on average in the three or four star portfolios. Since the mature funds dominate neither the top nor the bottom ratings, the potential age bias is less of an issue in this event study.

4.3 Descriptive Summary Statistics

In the sample, the stars are distributed slightly higher than the Morningstar algorithm in the top ratings and slightly lower in the bottom ratings.

Table 3. Distribution of funds according to star rating months.			
Rating	**Frequency**	**Percent**	**Morningstar Algorithm**
5	3 435	11.66 %	10 %
4	7 654	25.99 %	22.5 %
3	10 599	35.99 %	35 %
2	5 876	19.95 %	22.5 %
1	1 887	6.31 %	10 %
Total	**29 451**	**100 %**	**100 %**

Table 3 shows that the distribution of overall star ratings is slightly skewed toward the top rankings. The sample has 11.66% of funds with five stars rating, which is slightly higher than the Morningstar algorithm, that allocates the top 10% of the funds in each category to this ranking group. Also the group of funds with four stars rating is somewhat higher at 25.99% versus the Morningstar algorithm at 22.5%. The number of funds that receive three stars rating is 35.99% closer to the Morningstar allocation rule at 35%. The funds that get two- and one star rating are slightly below the Morningstar algorithm at a level of 19.95 % versus 22.5% and of 6.31% versus 10%, respectively.

The ratings are distributed quite evenly across the domiciles. However, funds domiciled in the UK have the highest average rating of 3,6 and the lowest standard deviation of 0,8. Funds domiciled in Norway and Sweden both have a mean rating of 3,3 and standard deviation of 1,1, slightly lower rating and higher standard deviation than UK. Funds domiciled in Finland and Denmark have a mean rating of 3,1 and standard deviation of 1 and 0,9, respectively. Irish funds have an average rating of 2,9 and standard deviation of 1,1. Funds domiciled in Estonia comes in at the bottom with a mean rating of 2,5 and standard deviation of 1. UK funds appear to have the highest average rating and with the lowest standard deviation they are the most stable ratings. For the full table of the distribution of average ratings across the domiciles see table 27.

In terms of geographical investment focus, the average ratings range from 2 to 4,4. The top three regional areas are Finland, Baltic States, and Latin America. Funds that focused on investing in these regions came out with the highest mean ratings during the sample

period. The bottom three geographic areas are Global excluding USA, Turkey, and Denmark. Funds that focused on these areas received the lowest average ratings during the sampled time period. The three areas with ratings experiencing the highest standard deviations were Greater China, Sweden, and the USA. Funds that focused on the investing in these regions had the most volatile ratings. For more details, see table 28.

In terms of total net assets, the UK is the largest fund market in the sample. Sweden and Ireland are the next largest markets but are far behind the UK. Although the UK is the largest markets in the sample in absolute dollar terms, it is the smallest in the sample in regards to relative flows. When it comes to percentage flows, Sweden is by far the largest followed far behind by Ireland. For more details, see table 27.

4.4 Variables

4.4.1 Ratings

The ratings used in the study are the overall rating, which is a weighted average of the time specific three-, five-, and ten year rating.

Table 4. Transition Matrix of Morningstar fund ratings					
	New Rating				
Original Rating	**1**	**2**	**3**	**4**	**5**
1	1972	291	8	0	0
2	275	4707	768	10	0
3	7	760	8794	857	9
4	1	17	863	6279	382
5	0	1	11	403	2982
Total	**2255**	**5776**	**10444**	**7549**	**3373**

This table exhibits the number of rating-month observations with the respective old fund rating and the new rating in the following month. Total Observations: 29397, Total Upgrades: 2325, Total Downgrades: 2338.

Table 4 presents the rating transition matrix for the sample. The rows show the original ratings, whereas the columns exhibit the new ratings. Each cell signifies the number of fund months with corresponding initial - and new ratings. The main diagonal of the matrix indicates the number of fund ratings which remain unchanged during two consecutive months. For example, 6279 funds that originally received four stars, remains a four-star rated fund.

There are in total 24734 observations (approximately 84%) where ratings are unchanged in two subsequent months.

The two minor parallel diagonals show the number of one-star upgrades and downgrades. For example, there are 760 funds that have been downgraded from three- to two stars, and 768 funds have been upgraded from two- to three stars. The sample has a total of 2325 upgrades and 2338 downgrades.

The next two parallel diagonals show the events of extreme rating changes. The table indicates that only a small number of the funds experience changes of more than one star. There are only two cases in the sample that undergoes rating greater than one star, compared 4663 observations of upgrade or downgrade of one star. Since the majority of the rating changes are within upgrade or downgrade of one star, this group of changes is the basis of the research.

Table 5 provides a complementary view on the evolution of ratings. Five portfolios are constructed based on the rating and their performance is followed in the next eight months.

Table 5. Average rating over time				
Rating				
1	**2**	**3**	**4**	**5**
month				
1,16	2,09	3,01	3,93	4,87
1,25	2,13	3,01	3,90	4,82
1,31	2,16	3,02	3,88	4,77
1,37	2,18	3,02	3,86	4,72
1,41	2,20	3,02	3,85	4,68
1,46	2,23	3,03	3,83	4,63
1,51	2,25	3,03	3,81	4,60
1,55	2,27	3,03	3,80	4,56

Table 5 demonstrates that five star funds tend to fall in the months preceding the top rating. In contrast, one star funds tend to rise during the subsequent months. This is consistent with the results in Morey (2005), who found that after receiving an initial five-star rating, fund performance declines as a result of manager incentive to increase risk levels. Although the intention is to ensure continued top ratings, taking on added risk actually harms future performance. The results also confirm the reported evidence on the absence of performance persistence on the mutual fund industry.

4.4.2 Returns

The raw returns are drawn from Lipper database. As in U.S. studies, raw returns are gross of taxes and net of total expenses. The measure is risk-adjusted returns based on the local currency Norwegian Krone.

4.4.3 Timing and Measurement of Fund Flows

The monthly net percentage fund flows is defined according to the standard definition in the literature; change in total net assets minus appreciation divided by total net assets from last period:

$$Flow_{it} = \frac{TNA_{it} - TNA_{it-1}(1 + R_{it})}{TNA_{it-1}} \qquad (2)$$

The definition assumes that the flows take place at the end of the month. The updated monthly star ratings reflect the most recent monthly return and are available for investors at the start of the subsequent month. This means that if a rating change occurs in February 2003, then March 2003 is recorded as the month of the rating change. The month end-flow of March is the first monthly that is potentially impacted by the change.

The study also uses net dollar flow as a second measure of fund flows. Absolute dollar flows is measured as follows:

$$abs\_Flow_{it} = TNA_{it} - TNA_{it-1}(1 + R_{it}) \qquad (3)$$

This is defined as; total net assets less total net assets from the previous period minus appreciation.

Another measure is the abnormal flows used in the regression approach of the study to measure the excess inflows (outflows) from funds as a result of changes in the Morningstar rating. The abnormal flows are computed in two different ways. The first calculates abnormal flows at time *t* as the absolute flows at time *t* divided by the average flows over the past 12 months.

$$abn\_flow_{i,t} = \frac{abs\_Flow_{it}}{\sum_{j=1}^{12} abs\_Flow_{it-j}} \qquad (4)$$

The second abnormal flows measure follows an equation similar to the formula in the study by Del Guercio & Tkac (2008). This calculation of abnormal flows is describe in detail in the methodology section.

4.4.4 Fund size

In the regression approach, the study controls for fund size by computing the natural logarithm of total net assets. Total net assets is the fund's assets minus the liabilities. Fund size is an important control variable, because at certain levels fund size can work to the advantage of the portfolio manager. Smaller funds are more prone to manipulative techniques that may result in higher ratings.

4.4.5 Loads

In addition to controlling for fund size, the study controls for loads to see if fees impact fund flows. Fee structures vary from fund to fund, but they are typically based on a percentage of assets under management. Annual charge is a fee levied by an investment manager for managing an investment fund. The initial charge is the fee charged when an investor buys into the mutual fund. Lastly, the redemption charge is the sales fee charged when an investor redeems the mutual fund shares.

The study controls for potential influence of charges for several reasons. First, investors might be sensitive to costs, i.e. they can avoid funds with higher loads, as high fees depletes returns. Second, Morningstar ratings are net of fees, meaning they take fees into account. Third, research provides evidence that actively managed funds with high fees generally underperform index funds with low fees (Miller, 2010). We, therefore, expect that investors react to research findings by factoring in charges in their allocation decision. For these reasons, the study controls for the influence of loads in the calculation of flows.

4.4.6 Dummy variables

The study uses dummy variables to identify the effect of the rating level and the ratings changes (upgrade and downgrades). Since Del Guercio & Tkac (2008) reported that the effects on flows may be different depending on the initial level of rating, the study utilizes dummies that distinguish between upgrades (or downgrades) from a two star level, or three star level, and so on. The study also uses dummy variables to identify domiciles of the

portfolio management company, geographical focus and distribution channels (bank or non-bank managed).

4.5 The Potential Impact of Distribution Channels

Knuutila, Puttonen, & Smythe (2007) investigated the impact of distribution channels on fund flows in Finnish funds. They distinguished between bank managed funds and non-bank managed funds. The study found that Finnish non-bank managed funds followed similar performance-flow patterns to the U.S. fund market, where there was strong evidence that Morningstar ratings impact fund flows. On the other hand, Finnish bank managed fund flows did not show the same correlation between performance and flow.

Given the evidence from the Finnish market, this study also tests to see whether there is significant difference in flow patterns between bank managed and non-bank managed funds in the Norwegian market. To have a snapshot of this potential effect, the sampled funds were grouped into non-bank managed and bank managed funds and by domicile of the portfolio management firm.

Rating	Non-Bank (Norway)	%	Bank (Norway)	%	Bank (Scandinavia)	%	Morningstar Algorithm
1	40	3,5 %	54	23,5 %	142	17,5 %	10,0 %
2	271	23,8 %	60	26,1 %	137	16,9 %	22,5 %
3	434	38,1 %	85	37,0 %	307	37,9 %	35,0 %
4	293	25,7 %	25	10,9 %	187	23,1 %	22,5 %
5	101	8,9 %	6	2,6 %	38	4,7 %	10,0 %
Total	**1139**	**100%**	**230**	**100 %**	**811**	**100 %**	**100 %**

Table 6. Distribution of star rating changes for bank managed versus non-bank managed funds

Table 6 shows the distribution of non-bank managed funds and bank managed funds across the star rating scale. The bank managed funds are heavily represented in the one star rating group with 23,5% for the Norwegian bank managed funds and 17,5% for the Scandinavian bank managed funds. Both regional groups are more bottom heavy than the Morningstar algorithm, which places 10% of funds in the lowest rating. Contrarily, non-bank managed Norwegian funds have 3,5% of funds in the one star rating, which is much lower than the Morningstar algorithm. Bank funds are more heavily represented in the bottom rating groups than non-bank funds.

For the top star rating, bank managed funds have received fewer top ratings than non-bank managed funds. Bank managed funds for Norway and Scandinavia have 2,6% and 4,7%, respectively, which is lower than the Morningstar scale that places 10% of funds in the top rating. Non-bank managed Norwegian funds, with 8,9% of funds in the top rating, are slightly less represented in the five star rating than the Morningstar distribution scale. However, this group of funds still outshines both sections of the bank managed funds. The question remains whether or not distinguishing between non-bank managed- and bank managed funds has any impact on determining fund flow patterns as it does in the Finnish market.

Since investors care about past performance, it is possible that foreign companies only choose to market the best rated funds abroad, making it more likely that they will attract flows. Nevertheless, the table above does not eradicate the interest of the study's analysis, which is whether investor's flows are sensitive to Morningstar ratings. On the contrary, it makes the analysis of the distribution channels more interesting.

5 Methodology

Many studies have investigated the importance of past performance on how investors choose to allocate their money. Existing literature states that the allocation decision is highly convex. Investors base their decisions on past performance information, although, they do so disproportionately. Consumers are slow to withdraw flows from poor performers, while funds awarded with a spot on top-rated lists experience sharply higher flows (Chevalier & Ellison, 1997). The disposition effect is a well-known behavioral bias. Investors are more prone to realize gains by selling winning stocks than to limit losses by selling loser stocks. This investor bias has also been reported for mutual funds. Researchers still remain uncertain about which type of performance measures investors typically use in the decision making process.

Del Guercio & Tkac (2008) studies the relationship between rating changes and corresponding flow response. By analyzing the effect of changes in performance on fund flows, instead of the relationship between performance level and fund flows, they forego the issue of strong correlation between performance variables. Strong correlation makes it difficult to get an accurate estimate of the marginal effect of any given measure on fund flows. This study also separates the Morningstar effect from other determinants on flows. By isolating the flow response to rating changes, the chosen approach provides a pure analysis of whether investors use star ratings.

5.1 Statistical tests

This study tries to capture the flow response similar to the methodology of Del Guercio & Tkac (2008). In line with their study, the abnormal flows are computed taking the control variables into account. Furthermore, the study distinguishes upgrades from downgrades and between different initial rating levels. The results will indicate whether Norwegian fund investors use the Morningstar rating in their investment decisions in the same manner as in the U.S. market. If there is a Morningstar effect amongst Norwegian investors, the expectation is that outflows (inflows) follow downgrades (upgrades).

5.1.1 Regression Approach

The event study methodology on fund flows aims to eliminate the influence of all performance and non-performance characteristics, except for the changes in star rating, from fund flows. This allows us to determine the incremental flows resulting from a rating change. The normal flows are computed as a time-series benchmark regression for each fund:

$$Flow_t^i = \gamma^i + \beta_1^i RET_{t-1}^i + \beta_3^i \Delta rating_{t-1}^i + \beta_2^i (RET_{t-1}^i)^2 + \beta_4^i Controls_{t-1}^i + \varepsilon_1 \qquad (5)$$

The first month an investor has information available about a new Morningstar rating is defined as time zero. A fund's return in month *t-1* occurs simultaneously to the rating change. Since returns may independently influence flows, it is important to include this variable. The equation also takes into account a squared returns term to deal with potential convexities in the flow-performance relationship. The regression model includes control variables that current literature considers to be determinants of fund flows. The control variables include lagged flows, fund size, and loads. The lagged flow contains the fund`s complete performance history and is therefore an excellent control for the impact of long-term performance. Additionally, dummies are created to control for investment style trends, for the importance of distribution channels and for domiciles.

Abnormal flows for the months around the rating change are computed as follows:

$$AbnFlow_t^i = Flow_t^i - \gamma^i - \beta_1^i RET_{t-1}^i - \beta_2^i \Delta rating_{t-1}^i - \beta_3^i (RET_{t-1}^i)^2 - \beta_4^i Controls_{t-1}^i \qquad (6)$$

The abnormal flow to fund *i* at time *t* is the actual flow at time *t* minus the expected flow due to lagged return, lagged change in rating, the square lagged returns, and minus the control variables. By sorting funds according to star rating changes, the study defines an event as

upgrades- and downgrades of one star. The event is evaluated for statistical significance of the flow response from the month when the rating change is made available and for the six subsequent months. In contrast to new stock price information, where market reaction is immediate, there is no issue of mispricing in the mutual fund market, and so, the impact of a rating change may last for several months. Although some investors monitor their investments closely, retail investors are generally unsophisticated investors and for the most part reevaluate their portfolio only sporadically, and thus, some delayed response is expected.

To deal with the issue of outliers in our sampled fund flow data, the study focuses on standardized abnormal flows using estimated forecast variance of the abnormal flow. This means that funds with lower forecast variance are weighted more heavily in the calculation of average abnormal flows across the funds each month.

5.1.2 Portfolio Approach

Del Guercio & Tkac (2008) found that ratings are not created equal. This means that a downgrade from five- to four stars is not the same as a downgrade from three- to two stars, and upgrades from four- to five stars versus upgrade three- to four stars, and so on. The portfolio approach is another method for testing the impact of rating changes across the different rating levels in the fund sample.

The rating events are sorted into five portfolios, one portfolio for each rating one- to five stars. The funds are grouped into the portfolios according to the pre-change star rating. Dummy variables distinguish between the rating changes from five- to four stars, from four- to three stars, etc, making it possible to evaluate the fund flow response across the different rating levels. A weakness with this approach is that it does not provide p-values proving statistical significance. However, it does provide information about the performance-flow relationship.

Based on a study of the Finnish market (Knuutila, Puttonen, & Smythe, 2007), the portfolio approach is repeated to determine the impact of distribution channels on fund flows. In order to perform the test, dummies are created to differentiate between funds that are distributed by banks and those that are sold by independent fund companies. This is an interesting separation, because banks have the advantage that they already have an existing customer base from other bank services and advisors that can promote the bank's funds,

whereas independent fund companies are expected to be more dependent on proving superior performance in order to attract flows.

As a by-product of the study of the distribution channels, the study also investigates if the domicile of the firms has an effect on the flows. Although the sample is constructed of funds that are available for sale in Norway, there are several domiciles in the final dataset. Domicile dummies can determine if there exists different behavioral patterns in the various sampled countries.

The test uses relative flows over the event window starting one month after the rating change is made available and for eight subsequent months. Like in the regression approach, the expectation is that the impact of the rating change may persist for several months.

6 Empirical Results

This section presents the results of the analysis that intends to isolate and measure the effect of the Morningstar rating on fund flows, also controlling for other determinants of fund flows. The study is based on two approaches; a regression approach and a portfolio approach.

The results are based on the sample of funds that undergo rating changes, including those that experience succeeding rating changes within the event window. Consequently, flow estimates represent the unconditional Morningstar effect equal to the expected value of a Morningstar rating change before the rating change happens. Including subsequent rating changes is appropriate because investors are unable to foresee and to base their investment decisions on whether a rating change will reoccur.

6.1 Regression approach results

The regression approach tests both standardized abnormal flows and relative flows to attain test statistics that can determine the null hypothesis of zero abnormal flows. Table 7 shows the results from regressing abnormal standardized flows, calculated as described in equation 6, and the control variables; lagged relative flows, lagged returns, log size, dummy variables for change of rating, upgrades- and downgrades of one star.

Table 7.Relationship between abnormal standardized flows and control variables

Dependent variable: abnormal standardized flows

Variables:	flows_rel	flows_rel	per_ret	per_ret	ln_tna	ln_tna	change_rating	change_rating	d_up_1stars	d_down_1stars
L1	0.0003	-0.0001	0.2712	-.0044	0.0153	-.0000	0.0007	-0.0001	0.0000	0.0003
p-value	0.060	0.106	0.000	0.610	0.000	0.957	0.503	0.692	0.955	0.629
L2	0.0004	-0.0000	-.0366	0.0047	-.0142	0.0000	0.00122	-0.0002	-0.0004	0.0000
p-value	0.002	0.583	0.000	0.230	0.000	0.971	0.251	0.676	0.481	0.939
L3	0.0003	0.0000	0.0267	-.0035	-.0034	0.0004	0.00092	-0.0001	0.0000	0.0006
p-value	0.077	0.822	0.000	0.394	0.035	0.481	0.375	0.731	0.957	0.247
L4	0.0001	0.0000	-.0764	0.0052	0.0011	-.0004	0.00100	0.0003	0.0010	-0.0002
p-value	0.000	0.061	0.000	0.223	0.576	0.392	0.248	0.270	0.042	0.722
L5	0.0000	-0.0000	0.0105	0.0011	0.0020	-.0003	0.00021	-0.0001	-0.0006	0.0001
p-value	0.215	0.599	0.006	0.833	0.200	0.547	0.835	0.719	0.373	0.848
L6	0.0000	0.0000	0.0494	0.0006	-.0040	0.0002	-0.0007	0.0000	0.0001	-0.0001
p-value	0.133	0.461	0.000	0.913	0.000	0.511	0.464	0.948	0.885	0.915
Constant	-0.0219	0.0045	-.0223	0.0041	-.0153	0.0044	-0.0237	-0.0143	-0.0143	-0.0145
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.009	0.009
Observations	8,171	8,171	8,824	8,824	8,304	8,304	5,907	5,907	5,907	5,907
R-squared	0.001	0.813	0.392	0.810	0.036	0.811	0.001	0.848	0.848	0.848
Number of funds	236	236	237	237	236	236	193	193	193	193
Fund dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies	No	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes

Using the time dummies and fund dummies, the regression achieves a high r-square. Even so, the results do not show any statistically significant relationship between abnormal standardized flows and the variables. None of the coefficients are statistically different from zero, making it impossible to determine whether any of the variables influence abnormal flows. The expectation is to observe dominance of negative coefficients for downgrades and positive coefficients for upgrades. Since these numbers are also statistically insignificant, it is not possible to verify if downgrades and upgrades result in abnormal flows.

The test is repeated to control for domicile and for popularity of style by adding style dummies to the regression. The regression focuses on funds domiciled in Norway since this is the primary market examined in the study. The results are compared to Ireland-domiciled funds, because it is the domicile with the highest frequency of observations. The regression is

conducted using relative flows calculated as in equation 2. The results are presented in table 8 (only the categories with the largest number of funds were selected).

Table 8. Relationship between relative flows and rating changes using dummy variables								
Dependent variable: relative flows								
Panel A. Relative flows after upgrade of one star								
		Domicile		**Geographical focus**				
	All sample	Norway	Ireland	Norway	Nordic	Europe	Global	USA
l1_d_up_1stars	**0.003**	**0.007**	0.002	0.004	0.005	0.012	0.004	0.002
	(0.222)	**(0.032)**	(0.728)	(0.305)	(0.640)	(0.392)	(0.373)	(0.824)
l2_d_up_1stars	**0.006**	0.005	0.000	-0.003	0.001	0.004	0.011	0.001
	(0.091)	(0.221)	(0.963)	(0.501)	(0.898)	(0.700)	(0.251)	(0.927)
l3_d_up_1stars	**0.009**	**0.013**	0.008	0.009	0.007	0.007	0.014	0.020
	(0.005)	**(0.006)**	(0.195)	(0.196)	(0.612)	(0.443)	(0.123)	(0.106)
l4_d_up_1stars	0.001	**0.007**	**-0.010**	0.000	0.013	-0.001	-0.004	-0.002
	(0.709)	**(0.097)**	**(0.038)**	(0.966)	(0.233)	(0.877)	(0.537)	(0.856)
l5_d_up_1stars	0.003	0.003	0.007	-0.002	0.004	-0.003	0.007	**0.020**
	(0.261)	(0.423)	(0.294)	(0.731)	(0.721)	(0.793)	(0.299)	**(0.055)**
l6_d_up_1stars	0.003	0.002	**0.011**	-0.002	0.017	0.004	0.001	0.005
	(0.241)	(0.564)	**(0.055)**	(0.801)	(0.268)	(0.596)	(0.890)	(0.606)
Constant	0.038	-0.009	-0.017	-0.008	-0.026	-0.028	0.006	0.015
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	22850	10947	6879	4537	1746	2607	4355	2943
R-squared	0.039	0.032	0.046	0.038	0.024	0.025	0.032	0.056
Panel B. Relative flows after one star downgrade								
l1_d_down_1stars	**-0.008**	**-0.009**	**-0.014**	-0.008	**-0.017**	**-0.021**	-0.004	**-0.023**
	(0.003)	(0.014)	(0.014)	(0.112)	(0.007)	(0.014)	(0.544)	(0.033)
l2_d_down_1stars	-0.004	-0.006	-0.001	**-0.012**	0.001	-0.014	0.000	0.011
	(0.150)	(0.100)	(0.918)	**(0.006)**	(0.904)	(0.130)	(0.980)	(0.379)
l3_d_down_1stars	**-0.005**	-0.001	**-0.012**	**-0.007**	-0.006	-0.008	-0.003	**-0.018**
	(0.092)	(0.704)	**(0.034)**	**(0.074)**	(0.245)	(0.372)	(0.645)	**(0.052)**
l4_d_down_1stars	0.000	0.004	-0.001	0.006	0.009	-0.001	-0.006	-0.003
	(0.866)	(0.286)	(0.923)	(0.317)	(0.540)	(0.850)	(0.401)	(0.793)
l5_d_down_1stars	-0.004	0.004	**-0.013**	0.005	0.008	-0.013	-0.009	-0.007
	(0.124)	(0.186)	**(0.025)**	(0.339)	(0.466)	(0.247)	(0.154)	(0.400)
l6_d_down_1stars	0.001	0.004	0.003	0.006	-0.009	-0.007	-0.003	0.003
	(0.670)	(0.214)	(0.645)	(0.214)	(0.081)	(0.392)	(0.660)	(0.731)
Constant	0.045	-0.007	-0.010	-0.007	-0.020	-0.021	0.010	0.020
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	22850	10947	6879	4537	1746	2607	4355	2943
R-squared	0.039	0.032	0.047	0.041	0.024	0.027	0.031	0.057

In panel A, column (1) with all sample there is flow response following upgrades for the first three observations. The results are similar for Norway-domiciled funds, whereas for Irish funds there is weaker evidence flow response associated with the rating upgrade. As

expected, the coefficients for upgrades (downgrades) are positive (negative), meaning that funds experience inflows (outflows) following upgrades (downgrades). Panel B shows that response for downgrades is immediate both in the all sample and for the two domiciles. The response is slightly weaker for Norwegian funds than for Irish funds. The results indicate that Norwegian investors are more sensitive to upgrades than downgrades.

For geographical focus, the results show no evidence of flow response based on investment style for upgrades, but is somewhat noticeable response following downgrades. This is aligned with the early findings of Capon, Fitzsimons, & Prince (1996) that found that 75% of mutual fund investors that were surveyed did not know investment style of their funds. Consequentially, it is likely that investors are irresponsive to the market expectations of certain styles.

The next table presents the relative flow response also taking into account from which rating level the change in rating takes place. This is similar to Del Guercio & Tkac (2008) that studies the flow response for different rating levels. Table 9 shows similar testing but using relative flows instead of abnormal flows.

Table 9. Relationship between relative flows, returns and rating levels		
Dependent variable: relative flows		
Panel A. Relative flows based on returns		
raw_return$_{t-1}$		**0,109**
		(0,000)
raw_return$_{t-2}$		**0,034**
		(0,005)
raw_return$_{t-3}$		**0,057**
		(0,000)
Panel B. Relative flows after upgrade of one star		
from 4star	**0,022**	**0,021**
	(0,023)	**(0,031)**
from 3star	0,000	-0,001
	(0,900)	(0,740)
from 2star	0,001	0,000
	(0,892)	(0,991)
Constant	0,039	0,035
	(0,000)	(0,000)
Observations	24526	24509
R-squared	0,042	0,048
Panel C. Relative flows after downgrade of one star		
from 5star	-0,002	0,000
	(0,801)	(0,975)

from 4star	-0,004	-0,001
	(0,370)	(0,802)
from 3star	**-0,012**	**-0,0099**
	(0,018)	**(0,056)**
from 2star	**-0,025**	**-0,02188**
	(0,002)	**(0,005)**
Constant	0,042	0,03851
	(0,000)	(0,000)
Observations	24526	24509
R-squared	0,043	0,048

In panel A, the results show that there is strong evidence of flow response based on the last three months of returns. Panel B shows the flow response following upgrades of one star from various rating levels. According to expectations, the table presents statistically significant positive coefficient for upgrades from four- to five stars. This result is in line with Del Guercio & Tkac (2008) that found that funds experience large inflows following a five star rating. In panel C, the flows are statistically significant for downgrades from three- to two stars and from two- to one star. The results indicate that investors neglect to withdraw funds until the rating reaches a two star level, whereas in the U.S. (Del Guercio & Tkac, 2008) funds suffer outflows already for downgrades from four- to three stars.

The results indicate little flow response for abnormal flows similar to the Del Guercio & Tkac (2008) method. However, using relative flows, there is some evidence that rating changes influence allocation decisions. In the next section, the portfolio approach is used to examine differences in rating changes from four- to five stars and five- to four stars, etc. in search of an explanation of what determines fund flows for Norwegian fund investors.

6.2 Portfolio approach results

6.2.1 Relative flow response to star rating changes

This section presents the results from the event study for monthly star rating changes during the period January 2003 to December 2011. In the portfolio approach, the fund flows are all relative flows computed according to equation 2. The effect a rating change has on fund flows is presented in table 10. Panel A and B describe the impact upgrades- and downgrades of one star have on percentage flows. The events are grouped into portfolios according to the initial rating before the rating change of one star occurred. The first column presents the months following the rating change, starting the month the rating change is made

available until eight months after the event. The following columns are average relative flows during the event window for each portfolio.

Table 10. Relationship between past fund flows and rating changes				
Panel A. Relative flows after upgrade of one star				
	Initial rating			
	1	**2**	**3**	**4**
Months				
1	7,26 %	15,77 %	19,20 %	12,48 %
2	12,13 %	19,43 %	16,82 %	11,50 %
3	10,95 %	28,15 %	14,00 %	9,46 %
4	7,89 %	24,22 %	3,16 %	8,38 %
5	10,84 %	33,93 %	3,16 %	7,24 %
6	16,53 %	30,00 %	3,04 %	5,65 %
7	15,70 %	21,18 %	7,56 %	4,89 %
8	13,32 %	30,50 %	6,59 %	2,60 %
Panel B. Relative flows after downgrade of one star				
	Initial rating			
	2	**3**	**4**	**5**
Months				
1	2,97%	18,21%	14,22%	6,55%
2	6,20%	13,91%	12,58%	5,35%
3	10,25%	18,15%	8,55%	5,37%
4	11,44%	25,23%	8,41%	5,77%
5	10,25%	19,09%	8,80%	5,36%
6	11,08%	25,55%	8,53%	5,82%
7	7,19%	21,59%	0,12%	3,75%
8	9,71%	25,89%	4,84%	4,38%

Panel A exhibits that funds experience positive inflows in the months after a rating upgrade. The relative flows are positive across the rating levels. The flow response is smallest for upgrades from one- to two stars, whereas the largest and most long-lasting impact is seen for upgrades from two- to three stars. The same test is repeated with a different event window, starting four months before the rating change and ending four months after the upgrade. The results in table 29 show that the largest flows occur two months before the rating upgrade, meaning that the rating change may not be the determinant of fund flows.

For downgrades, there are positive flows across the rating levels. This is contradictory to expectations of negative flows following downgrades. Again, the test is repeated with the event window that includes the four months before the downgrade. Table 29 exhibits one

observation with negative flows of -2,19% in the month following downgrades from two- to one star. The results are consistent with Del Guercio & Tkac (2008) that found only modest evidence of negative flow response following downgrades from two- to one star. For the other rating levels, it is difficult to see if there is any flow response associated with the rating change. This differs from Del Guercio & Tkac (2008) that found negative flow response following downgrades for all rating levels except for downgrades from five- to four stars. Similar to the findings in the U.S. market, the results also show evidence of positive flow response after downgrades from five- to four stars.

The results show only weak evidence of any investor response to rating changes. The study is extended study further to investigate whether distribution channels and/or domiciles explain relative fund flows.

6.3 The impact of distribution channels

The purpose of this section is to reveal determinants of fund flows since the previous sections have not provided strong evidence. This part of the event study is similar to the research conducted by Knuutila, Puttonen, & Smythe (2007) that distinguished between bank-managed and non-bank managed funds in the Finnish market. However, in this study the process goes a step further by also testing the influence of the domicile of the firms.

6.3.1 Results for non-bank managed Norway-domiciled firms

The impact of ratings changes on fund flows for non-bank managed Norway-domiciled firms are exhibited in table 11. Panel A and B summarize relative fund flows associated with upgrades- and downgrades of one star. The first column shows the event months associated with the flows in the eight months subsequent to the rating change. Columns 2-5 present the percentage flows based on an upgrade from the initial rating.

Table 11. Relationship flows and rating changes for non-bank managed Norway-domiciled firms				
Panel A. Fund flows after upgrade of one star				
	Initial Rating			
	1	**2**	**3**	**4**
Months				
1	**12,39 %**	**8,01 %**	**22,81 %**	**13,57 %**
2	**11,83 %**	**9,05 %**	**13,09 %**	**11,58 %**
3	6,11 %	**15,61 %**	**15,93 %**	**12,62 %**

4	4,34 %	**14,51 %**	5,65 %	**13,61 %**
5	3,91 %	**12,65 %**	2,95 %	**11,86 %**
6	24,16 %	**10,74 %**	1,96 %	**12,29 %**
7	20,41 %	-2,29 %	5,67 %	**11,88 %**
8	18,90 %	-1,22 %	5,66 %	7,23 %

Panel B. Fund flows after downgrade of one star

	Initial Rating			
	2	**3**	**4**	**5**
Months				
1	0,50 %	4,17 %	10,54 %	4,67 %
2	2,17 %	1,49 %	10,46 %	7,88 %
3	1,62 %	2,46 %	6,66 %	9,33 %
4	6,84 %	2,25 %	6,35 %	9,30 %
5	3,79 %	0,42 %	3,00 %	10,62 %
6	2,77 %	-1,06 %	2,55 %	8,48 %
7	24,25 %	0,79 %	-0,38 %	6,07 %
8	22,73 %	2,06 %	0,34 %	4,83 %

In panel A, upgrades across all rating levels experience significant inflows directly after the positive rating change. The positive impact on inflows continues into the months following the rating upgrade, though for various lengths of time. The inflows are most long-lasting for upgrades from four- to five stars. Del Guercio & Tkac (2008) found that funds that receive five stars are rewarded with large abnormal flows of approximately 25% for more than seven months following the upgrade. The results from this test suggests that a five star rating is also regarded highly in the Norwegian market, but not to the same extent as in the U.S. market.

Panel B displays fund flows correlated to downgrades of one star. The expectation is for some negative flow response following a downgrade. However, there is little evidence of falling flows despite a downgrade. The largest flow response for the downgrade is from four- to three stars, although still positive, relative flows fall with approximately 4% in the third month after a rating downgrade. The results are incoherent with Del Guercio & Tkac (2008) that found a general negative flow response to downgrades. Only downgrades from five- to four stars lacked response, and therefore, was defined as the only non-event. Conversely, in the results in this study it appears that all downgrades, regardless of rating level, are non-events in terms of investor flow.

6.3.2 Results for bank managed Norway-domiciled firms

The effect of ratings changes on fund flows for bank managed funds from Norway-domiciled firms are presented in table 12. Panel A shows relative fund flows associated with upgrades of one star. The first column shows the event months related to the fund flows. Columns 2-5 exhibit the flows corresponding to the upgrade from the original rating. Panel B presents flows to funds in months after a downgrade of one star.

Table 12. Relationship flows and rating changes for bank managed Norway-domiciled firms				
Panel A. Fund flows after upgrade of one star				
	Initial Rating			
	1	**2**	**3**	**4**
Months				
1	**8,97 %**	**4,24 %**	**25,88 %**	**6,67 %**
2	**9,95 %**	**4,32 %**	**25,86 %**	**13,37 %**
3	0,28 %	**37,69 %**	**24,45 %**	**14,32 %**
4	-2,21 %	**35,79 %**	0,36 %	**15,46 %**
5	-0,99 %	**33,28 %**	0,14 %	**12,78 %**
6	-2,99 %	**32,17 %**	1,88 %	6,49 %
7	0,62 %	-1,16 %	3,17 %	8,42 %
8	3,15 %	-2,12 %	1,76 %	7,44 %
Panel B. Fund flows after downgrade of one star				
	Initial Rating			
	2	**3**	**4**	**5**
Months				
1	9,00 %	**-3,61 %**	25,91 %	10,13 %
2	10,47 %	34,35 %	26,66 %	11,03 %
3	10,52 %	35,38 %	28,49 %	11,94 %
4	1,19 %	34,89 %	27,53 %	11,28 %
5	1,03 %	36,56 %	**-0,83 %**	2,10 %
6	1,01 %	0,65 %	**-0,39 %**	3,72 %
7	**-0,95 %**	**-1,57 %**	**-0,94 %**	6,11 %
8	**-2,06 %**	**-1,17 %**	**-0,08 %**	5,25 %

The performance-flow relationship is more consistent for bank managed than non-bank managed funds in Norway-domiciled firms. For upgrades, we observe significant positive flows and negative flows for downgrades. The results are inconsistent with findings in the Finnish market (Knuutila, Puttonen, & Smythe, 2007; Kasanen, Lipponen, & Puttonen, 2001). They found little evidence of a logical link between change in performance and/or ratings and fund flows. They concluded that Finnish banks sold funds using other characteristics than past performance and popular ratings. However, for Norwegian bank-managed funds it appears that flows do follow expected performance-flow patterns. An

upgrade is followed by positive flow response that varies in length. The positive flow after upgrades from one- to two stars stabilizes after only a couple months. The influence of upgrades from two- to three stars lasts for six months after the rating change. Rating changes in the top three sections can report double digit relative flows following the upgrade.

In panel B, the flow response is negative, which is in line with expectations for downgrades. Yet, the impact of the rating downgrade appears to be delayed for most rating levels. Only for downgrades from three- to two stars is there a negative response in the month directly following the rating change. However, the negative flows is short-lived, because it bounces back already by the second month after the downgrade. Rating changes from two- to one star is the group that is slowest to react to the downgrade with negative flows. This is consistent with Del Guercio & Tkac (2008) that found that changes from two- to one star exhibit only weak evidence of flow response. Similar to the results in table 12, they found that downgrades from five- to four stars was the only group that lacked any negative flows following the event.

6.3.3 Results non-bank managed Sweden-domiciled firms

Table 13 presents the impact of rating changes on fund flows for non-bank managed funds from Sweden-domiciled firms. Panel A and B show relative flows linked to rating changes of one star. The first column shows the event months associated with the fund flows. Columns 2-5 present the flows following to the upgrade from the original rating.

Table 13. Relationship flows and rating changes for non-bank managed Sweden-domiciled firms				
Panel A. Fund flows after upgrade of one star				
	Initial rating			
	1	**2**	**3**	**4**
Months				
1	-0,09 %	1,21 %	3,83 %	**14,68 %**
2	0,83 %	2,51 %	-4,43 %	**8,40 %**
3	6,86 %	3,87 %	-9,22 %	**4,98 %**
4	4,79 %	1,59 %	-6,74 %	0,24 %
5	8,84 %	0,82 %	-10,37 %	-1,98 %
6	13,16 %	-1,73 %	-5,89 %	-0,80 %
7	8,44 %	-2,92 %	-5,47 %	-2,60 %
8	6,10 %	-0,78 %	-1,01 %	-2,29 %
Panel B. Fund flows after downgrade of one star				
	Initial rating			
	2	**3**	**4**	**5**

Table 13. Relationship flows and rating changes for non-bank managed Sweden-domiciled firms			
Panel A. Fund flows after upgrade of one star			
Initial rating			
1	**2**	**3**	**4**
Months			
1 -4,41 %	0,66 %	-11,26 %	-2,88 %
2 -2,68 %	-5,04 %	-13,43 %	-2,95 %
3 -1,07 %	-6,66 %	-11,31 %	-7,99 %
4 -2,61 %	-6,43 %	-11,01 %	-8,90 %
5 1,87 %	-3,87 %	-9,42 %	-9,26 %
6 5,33 %	-2,32 %	-6,40 %	-8,03 %
7 10,24 %	-0,57 %	-7,49 %	-4,20 %
8 9,58 %	-0,44 %	-8,20 %	-4,97 %

Panel A shows the fund flows in the eight months following an upgrade. For non-bank Sweden domiciled firms, the greatest impact is for upgrades from four- to five stars. However, the positive effect on flows is short-lived and stabilizes by the fourth month after the rating change. The effect is not as obvious across the rating levels as for the non-bank Norwegian funds and is not as long-lasting. Surprisingly, in the months following upgrades from three- to four stars there is negative flow response. However, the initial response for this group is positive, which is consistent to expectations. For upgrades from one- to two stars there is an immediate negative flow response to the upgrades, but small enough to be considered immaterial.

The results for downgrades as exhibited in panel B are more aligned with expectations. Fund flows in the months after a rating downgrade are negative. Downgrades from five to four stars and four- to three stars experience the most long-lasting negative flow response, lasting throughout the event window eight months. The hardest impact can be observed for downgrades from four- to three stars with double-digit negative flows in the four months following the rating change. Investors are delayed by one month in their response to downgrades from three- to two stars, but last until the end of the event window. Consistent with Del Guercio & Tkac (2008), the weakest evidence of flow response is for downgrades from two- to one star. The response is immediate, but is modest and normalizes by the fourth month after the rating change.

6.3.4 Results bank managed Sweden-domiciled firms

Table 14 presents the impact of a rating change on fund flows for bank managed for Sweden-domiciled firms. Panel A and B exhibit relative flows corresponding to upgrades and downgrades of one star. The first column shows the event months related to the fund flows. Columns 2-5 exhibit relative flows associated with rating changes from the original rating level.

Table 14. Relationship flows and rating changes for bank managed Sweden-domiciled firms				
Panel A. Fund flows after upgrade of one star				
	Initial rating			
	1	**2**	**3**	**4**
Months				
1	-2,48 %	1,02 %	**11,17 %**	**25,25 %**
2	-1,17 %	-1,07 %	**20,04 %**	**27,25 %**
3	-2,54 %	-0,72 %	**21,95 %**	1,56 %
4	-3,78 %	0,55 %	**13,73 %**	0,01 %
5	-0,35 %	15,23 %	**15,26 %**	2,27 %
6	0,85 %	17,05 %	6,25 %	0,52 %
7	-0,03 %	17,45 %	5,69 %	-0,73 %
8	-3,45 %	16,41 %	3,94 %	-1,78 %
Panel B. Fund flows after downgrade of one star				
	Initial rating			
	2	**3**	**4**	**5**
Months				
1	**-3,75 %**	**-1,91 %**	19,36 %	22,10 %
2	**-1,41 %**	**-0,82 %**	21,49 %	**-4,65 %**
3	**-3,30 %**	**-0,90 %**	10,71 %	**-6,07 %**
4	**-3,47 %**	**-0,05 %**	12,01 %	3,73 %
5	**-1,59 %**	**-0,88 %**	2,48 %	2,84 %
6	**-4,86 %**	1,14 %	1,95 %	20,06 %
7	**-2,22 %**	19,12 %	2,64 %	21,40 %
8	**-1,71 %**	19,25 %	2,78 %	15,19 %

The results for bank managed funds from Sweden-based firms are more conflicting with the expected performance-flow relationship. Panel A shows that there is weak evidence of flow response following an upgrade from one- to two stars since the response is negative where positive flows is anticipated. For upgrades from two- to three stars, there is an immediate positive response, however, small and followed by negative flows for the two subsequent months. The results are in accordance with expectations only in the top two groups. Upgrades from four- to five stars show the most significant immediate positive flows, however, for upgrades from three- to four stars the flow response lasts three months longer.

For upgrades of non-bank funds for Sweden, the flow response is only evident in the top group, while for bank-managed funds, the response is also apparent for upgrades from three- to four stars in addition to the top section.

For upgrades, the flow response was most significant for the top two portfolios, whereas for downgrades, the response is hardest felt in the bottom two groups as exhibited in panel B. Fund flows following a downgrade from two- to one star is immediate and lasts the entire event window. Downgrades from three- to two stars also induce quick flow reaction, but is not quite as long-lasting as flows stabilize by the fourth-fifth month after the rating change. The most astonishing results is for downgrades from four- to three stars, where the investor response to a rating change appears to be absent. For downgrades from five to four stars, the investor reaction is delayed by one month and is quick to normalize. Downgrades of non-bank managed funds for Sweden have negative flow response spread across all rating levels, whereas for bank-managed funds the results are more heavy in the two lowest groups.

6.3.5 Results non-bank managed Denmark-domiciled firms

Table 15 exhibits the effect of a rating change on fund flows for non-bank managed funds from Denmark-domiciled firms. Panel A and B present relative flows corresponding to upgrades and downgrades of one star. The first column presents the event months associated to the fund flows. Columns 2-5 show relative flows linked to the upgrade or downgrade from the initial rating level.

Table 15. Relationship flows and rating changes for bank managed Denmark-domiciled firms			
Panel A. Fund flows after upgrade of one star			
Initial Rating			
1	**2**	**3**	**4**
Months			
1 57,87 %	40,58 %	20,77 %	8,47 %
2 115,07 %	44,04 %	19,20 %	3,65 %
3 104,85 %	14,11 %	-4,91 %	5,55 %
4 53,20 %	17,53 %	-3,46 %	1,26 %
5 70,09 %	1,03 %	-4,73 %	1,74 %
6 102,37 %	12,81 %	-6,19 %	3,31 %
7 118,43 %	12,66 %	-1,85 %	1,49 %
8 120,88 %	5,91 %	-3,53 %	-1,17 %
Panel B. Fund flows after downgrade of one star			
Initial Rating			
2	**3**	**4**	**5**

Table 15. Relationship flows and rating changes for bank managed Denmark-domiciled firms				
Panel A. Fund flows after upgrade of one star				
	Initial Rating			
	1	**2**	**3**	**4**
Months				
1	45,78 %	44,53 %	8,63 %	**-3,23 %**
2	50,41 %	9,03 %	**-2,77 %**	0,87 %
3	110,95 %	8,59 %	**-2,96 %**	0,02 %
4	105,47 %	**-2,18 %**	**-3,52 %**	3,97 %
5	52,00 %	**-2,36 %**	**-4,16 %**	2,82 %
6	73,07 %	**-1,76 %**	**-3,87 %**	3,54 %
7	104,33 %	**-2,24 %**	**-2,47 %**	3,12 %
8	116,04 %	**-6,31 %**	**-1,53 %**	-2,33 %

Panel A shows percentage fund flows in the eight months after a rating upgrade. In contrast to the other domiciles, the most material flow reaction is for upgrades from one- to two stars. The flow response is substantial in terms of the amount and the duration of the reaction. The results are also apparent for upgrades from two- to three stars, but not as extensive as for the bottom group. Upgrades from three- to four stars are still significant, but the flow response quickly passes after only two months. For the five star funds, the relative flows are positive, but far from the figures in the other portfolios. This is in contrast to the US market, where five star funds are awarded with large abnormal flows (Del Guercio & Tkac, 2008).

In panel B, in contrast to expectations, the flow response following a downgrade from two- to one star is significant and positive. There is little difference in the flow response for upgrades from one- to two stars and downgrades from two- to one star, so there is little evidence of flow response as a result from the rating change in the bottom section. For downgrades from three- to two stars, the flows are declining from the month of the rating change, but is not negative until the fourth month after the downgrade. For downgrades from four stars to three stars, the negative response is observable already by the second month after the rating change is available to investors. Only for downgrades from five to four stars is the investor reaction immediate, but it passes quickly.

6.3.6 Results bank managed Denmark-domiciled firms

Tabe 16 shows the consequence of a rating change on fund flows for bank managed funds from Denmark-domiciled firms. Panel A and B exhibit relative flows related to upgrades- and downgrades of one star. The first column presents the event months associated to the fund flows. Columns 2-5 show relative flows linked to the upgrade or downgrade from the original rating level.

Table 16. Relationship flows and rating changes for bank managed Denmark-domiciled firms				
Panel A. Fund flows after upgrade of one star				
	Initial Rating			
	1	**2**	**3**	**4**
Months				
1	-4,01 %	**6,58 %**	**6,37 %**	-0,92 %
2	-3,63 %	**8,06 %**	**12,04 %**	-0,99 %
3	-2,72 %	**8,18 %**	**10,27 %**	2,54 %
4	-2,75 %	**11,67 %**	**10,39 %**	0,55 %
5	-2,63 %	**11,58 %**	**7,11 %**	3,13 %
6		**9,16 %**	**9,89 %**	2,88 %
7		**10,87 %**	**11,83 %**	2,58 %
8		**10,08 %**	**11,85 %**	1,82 %
Panel B. Fund flows after downgrade of one star				
	Initial Rating			
	2	**3**	**4**	**5**
Months				
1	**-4,67 %**	4,85 %	11,85 %	**-1,08 %**
2	**-4,58 %**	3,93 %	9,71 %	**-3,86 %**
3	**-4,27 %**	10,38 %	12,18 %	**-4,79 %**
4	**-4,03 %**	8,53 %	10,66 %	**-2,56 %**
5	**-4,01 %**	8,36 %	7,22 %	**-2,69 %**
6	**-3,63 %**	6,36 %	6,41 %	2,92 %
7	**-2,72 %**	3,90 %	10,37 %	5,26 %
8	**-2,75 %**	4,25 %	9,12 %	5,33 %

In panel A, upgrades from two- to three stars and three- to four stars experience positive flows following the rating changes. The positive effect lasts throughout the event window. In contrast to expectations, upgrades from one- to two stars and four- to five stars suffer negative flows after the upgrades. Upgrades from one- to two stars showed only weak evidence of positive flow also in the U.S. market (Del Guercio & Tkac, 2008), so for this group it is not surprising that the results are not in accordance with the performance-flow relationship. However, for upgrades to five stars the negative flow response is surprising since US-based funds experience large abnormal flows following upgrades. These results differ

from the non-bank managed funds for Denmark-based firms that show positive flows following upgrades across all rating levels.

For downgrades, there are negative flows only for downgrades from two- to one stars and from five- to four stars. These results are also unaligned with expectations based on the U.S. study (Del Guercio & Tkac, 2008) that found only weak evidence of flow response for downgrades from two- to one stars, and downgrades from five- to four stars were considered non-events in terms of fund flows. These results imply that investors in bank managed funds in Danish based firms are most concerned with downgrades in the bottom- and the top rating section. On the other hand, fund flows are positive in the months following downgrades from four- to three stars and three- to two stars. As for the results for upgrades, there is a difference in the fund flow response following downgrades for bank managed funds and non-bank managed funds from Denmark-based firms.

6.4 Predictability of returns

The results in the previous sections show only weak evidence of flow response to changes in the Morningstar ratings. A related question is whether ratings have predictability power regarding future returns. If ratings lack predictive power, then it can rationalize why investors neglect to move flows to the best rated funds. On the other hand, if the Morningstar rating shows ability to predict future returns, then this says something about how investors should use ratings in the allocation decision. This subsection analyzes predictability of returns to investigate whether Morningstar ratings predict performance.

Table 17 shows results for predictability of returns for portfolios sorted according to the level of past performance. At time zero, funds are divided into four portfolios according to the level of returns. Q1 is the portfolio with lowest returns and Q4 is the portfolio with highest returns. The results show the performance of these portfolios in the subsequent months.

Table 17. Predictability of returns (portfolio approach)					
Month	**Q1**	**Q2**	**Q3**	**Q4**	**Q1-Q4**
-4	0.92%	0.73%	0.50%	0.66%	-0.26%
-3	0.38%	0.45%	0.56%	0.98%	0.60%
-2	0.67%	0.59%	0.70%	0.89%	0.21%
-1	0.46%	0.63%	0.70%	0.85%	0.40%
0	-3.35%	-0.36%	1.58%	4.74%	8.10%
1	0.63%	0.52%	0.71%	0.88%	0.25%
2	0.49%	0.68%	0.73%	0.94%	0.44%

Table 17. Predictability of returns (portfolio approach)

Month	Q1	Q2	Q3	Q4	Q1-Q4
3	0.48%	0.61%	0.80%	0.99%	0.51%
4	0.81%	0.68%	0.56%	0.64%	-0.17%
5	0.72%	0.73%	0.77%	0.40%	-0.32%
6	0.70%	0.50%	0.66%	0.61%	-0.09%

The results show that in the three consecutive months after the construction of the portfolio at time zero, the portfolio of funds in the top quartile still achieve higher returns than the funds in the three lower groups, thereby suggesting short-term predictability.

The next table sorts funds according to the level of Morningstar rating. Funds are divided into five portfolios according to the number of stars the fund has achieved at time zero.

Table 18. Predictability of returns using the ratings (portfolio approach)

Month	Rating					R5-R1
	1	**2**	**3**	**4**	**5**	
0	-0.26%	0.12%	0.36%	0.69%	**1.08%**	1.34%
1	0.34%	0.30%	0.43%	0.47%	**0.69%**	0.34%
2	0.46%	0.31%	0.46%	0.53%	**0.62%**	0.16%
3	0.40%	0.37%	0.42%	**0.54%**	**0.51%**	0.10%
4	**0.53%**	0.24%	**0.51%**	0.44%	0.37%	-0.17%
5	**0.46%**	0.21%	**0.47%**	0.41%	0.37%	-0.10%
6	0.25%	0.17%	**0.39%**	**0.39%**	0.35%	0.11%

The results indicate that funds with five stars will continue to have the highest return in the next couple months, but performance in the five star portfolio is surpassed by the lower ratings starting in the third month. The signs of decreasing performance in top rated funds is similar to the results in table 5 that indicate that average ratings tend to decrease in the months following a five star rating.

The predictability of returns are investigated further by using a regression that allows for controlling several possible explanatory variables. The test follows the model presented in Blake and Morey (2000) using the equation:

$$r_{it} = \gamma_{0i} + \sum_{j=1}^{n} \gamma_{1,ij} \cdot r_{it-j} + u_{it} \qquad (7)$$

Where

r_{it} = the total return for fund i in month t,

γ_{0i} = the intercept for fund i,

$\gamma_{1,ij}$ = the sensitivity of fund i's past returns j

r_{it-j} = the return of the fund i in month t

u_i = the random error for fund i in month t

In this equation, raw returns are only explained by past returns. The portfolio approach indicates that predictability lasts for three months, so the model uses three lagged returns periods.

Additionally, the rating dummies are tested to see if they have predictive power. In order to do so, the following equation estimates raw returns:

$$r_{it} = \gamma_0 + \sum_{j=1}^{n} \gamma_{1,j} \cdot r_{it-j} + \gamma_2 D4_{i,t-1} + \gamma_3 D3_{i,t-1} + \gamma_4 D2_{i,t-1} + \gamma_5 D1_{i,t-1} + u_i \qquad (8)$$

Where

r_{it} = is the return of for fund i,

$D4_i$ = 1 is a dummy that indicates if the fund is a 4-star fund at time t-1, 0, if not,

$D3_i$ = 1 is a dummy that indicates if the fund is a 3-star fund at time t-1, 0, if not,

$D2_i$ = 1 is a dummy that indicates if the fund is a 2-star fund at time t-1 2, 0, if not,

$D1_i$ = 1 1 is a dummy that indicates if the fund is a 1-star fund at time t-1, 0, if not,

i = 1 through N, where N is the total number of funds in the subsample

According to Blake and Morey (2000), the five-star fund group is the reference group for the dummy variable regression. The five-star funds as a reference group provides an upper limit, from which it is possible to evaluate the performance of the lower groups. If the star ratings accurately forecast out-of-sample performance, the expectation is to observe increasingly negative and significant coefficients moving from γ2 to γ5. For example, negative γ2 implies the group of four-star funds perform worse than the five-star funds, and a positive γ2 indicates that four-star funds surpass five-star funds.

Table 19. Predictability of returns using the ratings and past returns								
	Dependent Variable: Raw returns$_t$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
raw_return$_{t-1}$	0.180	0.028			0.179	0.021	0.176	0.038
	(0.000)	(0.001)			(0.000)	(0.009)	(0.000)	(0.012)
raw_return$_{t-2}$	-0.002	0.023			0.020	0.021	-0.010	0.021
	(0.753)	(0.000)			(0.000)	(0.003)	(0.388)	(0.081)
raw_return$_{t-3}$	0.104	0.044				0.049	0.126	0.046
	(0.000)	(0.000)				(0.000)	(0.000)	(0.000)
1star			0.007	**0.006**	**0.009**	**0.007**	-0.002	0.007
			(0.039)	**(0.000)**	**(0.001)**	**(0.000)**	(0.789)	(0.063)
2star			0.004	**0.004**	**0.006**	**0.004**	**0.007**	0.005
			(0.121)	**(0.001)**	**(0.007)**	**(0.000)**	**(0.098)**	(0.047)
3star			0.001	**0.002**	0.003	0.003	0.002	0.002
			(0.636)	**(0.053)**	(0.125)	(0.008)	(0.716)	(0.471)
4star			-0.001	0.001	0.000	**0.002**	0.001	0.001
			(0.633)	(0.147)	(0.891)	**(0.064)**	(0.867)	(0.648)
flows_rel$_{t-1}$							0.000	0.000
							(0.607)	(0.654)
ln(tna)$_{t-1}$							-0.012	-0.006
							(0.000)	(0.000)
Launch_Date							0.000	0.000
							(0.965)	(0.192)
Annual_Charge							0.003	0.018
							(0.700)	(0.000)
Initial_Charge							-0.004	0.001
							(0.004)	(0.236)
Redemption_Charge							-0.043	-0.022
							(0.000)	(0.000)
Constant	0.015	0.097	0.021	-0.014	0.017	0.103	0.103	0.265
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.539)	(0.004)
Observations	38539	38539	28637	28637	28506	28375	7419	7419
R-squared	0.056	0.702	0.014	0.715	0.048	0.718	0.069	0.693
Fund Dummies	Yes	Yes	Yes	yes	Yes	Yes	yes	Yes
Time Dummies	No	Yes	No	yes	No	Yes	no	Yes

Table 19 presents the results of testing for predictability of returns. In column (1) and (2), the coefficient for the previous month's raw returns is statistically significant, which suggests the presence of predictability. Columns (3) and (4) show whether the level of rating indicates what the future returns will be. The results are different from Blake and Morey (2000) since funds with lower ratings are likely to have higher returns in the next period. The coefficient is also decreasing with increasing number of stars, i.e., funds with one star have a higher coefficient than those funds with two stars. The results are robust after adding several

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controls and time dummies (column (4)), lagged returns (column (5)), time dummies and lagged returns (column (6)), and other control variables such as total net assets (tna) and annual charges (column (7) and (8)). For the latter control variables, the coefficient for tna is negative, suggesting diseconomies of scale of funds, i.e., an increase in fund size predicts lower returns.

The next table exhibits the results by domicile and by geographical focus (only the categories with the largest number of funds were selected). The results in table 20 highlight some differences in ability to predict returns. Lagged raw returns indicate predictability for funds domiciled in Norway, whereas star ratings show signs of predictability for funds domiciled in Ireland. There are signs of predictability of ratings for funds that have geographical focus on the regions: Norway, Europe and Global, whereas predictability is generally not present for Nordic-focused funds. U.S- focused funds show signs of predictability, but only for the one-star ratings. Similar to the previous results, these results also differ from the findings in the U.S. market as shown in Blake and Morey (2000).

Table 20. Predictability returns by domicile and geographical focus							
	Domicile		**Geographical focus**				
	Norway	**Ireland**	**Norway**	**Nordic**	**Europe**	**Global**	**USA**
raw_return t-1	**0.0728**	-0.0113	0.0296	-0.0034	**-0.0845**	**0.0534**	0.0112
	(0.000)	(0.443)	(0.130)	(0.913)	**(0.000)**	**(0.026)**	(0.722)
raw_return t-2	**0.0596**	-0.0062	0.0695	-0.0200	0.0080	-0.0007	-0.0101
	(0.000)	(0.643)	(0.000)	(0.676)	(0.644)	(0.965)	(0.487)
raw_return t-3	**0.0378**	0.0731	0.0327	0.0133	0.0569	0.0853	0.1326
	(0.000)	**(0.000)**	(0.084)	(0.559)	(0.015)	(0.000)	(0.000)
1star	**0.0042**	**0.0149**	**0.0048**	-0.0025	**0.0066**	**0.0155**	**0.0097**
	(0.020)	**(0.000)**	**(0.001)**	(0.521)	**(0.029)**	**(0.000)**	**(0.005)**
2star	0.0015	**0.0096**	**0.0037**	0.0017	**0.0064**	**0.0071**	0.0059
	(0.217)	**(0.000)**	**(0.001)**	(0.473)	**(0.014)**	**(0.019)**	(0.125)
3star	0.0007	**0.0065**	**0.0021**	-0.0002	**0.0071**	**0.0058**	0.0034
	(0.513)	**(0.000)**	**(0.035)**	(0.954)	**(0.004)**	**(0.036)**	(0.281)
4star	0.0010	**0.0052**	0.0010	0.0010	**0.0042**	**0.0045**	0.0009
	(0.322)	**(0.001)**	(0.274)	(0.760)	**(0.063)**	**(0.085)**	(0.720)
Constant	0.1051	0.0445	0.1294	0.1182	0.0885	0.0567	0.0714
	(0.000)	(0.022)	(0.000)	(0.000)	(0.000)	(0.000)	(0.005)
Observations	13739	8372	5668	2119	3439	5318	3433
R-squared	0.779	0.781	0.948	0.897	0.839	0.728	0.826
Fund Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The results show that the Morningstar rating system appears to be a poor predictor of performance. Moreover, an upgrade in rating is likely to predict decreasing subsequent returns. This differs from the results of Blake and Morey (2000) that find that lower ratings point to relatively poor performance. However, it is noteworthy that their study used the old Morningstar methodology. Similar to Blake and Morey (2000), the results suggest that five-star funds (and 4-star funds) have little predictability. The results are aligned with existing literature that discusses absence of performance persistence (Kräussl & Sandelowsky, 2007).

The results presented in table 21 analyzes whether change of rating is able to predict return. Column (1) shows that the coefficient of the dummy variable, which indicates a change in rating at time *t,* is negative and statistically significant at 90% confidence level. To analyze this issue deeper, the test distinguishes between downgrades and upgrades and introduce two lags in the rating change variable.

Table 21. Downgrades and predictability of returns						
Dependent Variable: Raw returns						
	(1)	(2)	(3)	(4)	(5)	(6)
raw_return$_{t-1}$	0.177	0.173	0.178	0.182	0.176	0.177
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
raw_return$_{t-2}$	-0.001	-0.001	-0.010	-0.010	-0.002	-0.011
	(0.819)	(0.870)	(0.355)	(0.357)	(0.738)	(0.317)
raw_return$_{t-3}$	0.104	0.105	0.125	0.126	0.105	0.128
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
change_rating$_{t-1}$	**-0.002**			**-0.004**		
	(0.099)			**(0.007)**		
change_rating$_{t-1}$= -3		-0.004				
		(0.866)				
change_rating$_{t-1}$= -2		**-0.043**	-0.016			
		(0.002)	(0.455)			
change_rating$_{t-1}$= -1		0.001	0.004			
		(0.385)	(0.237)			
change_rating$_{t-2}$= -3		**0.075**				
		(0.061)				
change_rating$_{t-2}$= -2		0.008	-0.006			
		(0.557)	(0.814)			
change_rating$_{t-2}$= -1		0.001	0.000			
		(0.457)	(0.901)			
l.cr_down_3_or_4					**-0.032**	
					(0.000)	
l.cr_down_3_or_5					**0.026**	

Table 21. Downgrades and predictability of returns						
Dependent Variable: Raw returns						
	(1)	(2)	(3)	(4)	(5)	(6)
					(0.000)	.
l.cr_down_2_or_5					**-0.069**	**-0.054**
					(0.002)	(0.003)
l.cr_down_2_or_4					-0.021	0.003
					(0.167)	(0.913)
l.cr_down_2_or_3					-0.057	**-0.020**
					(0.124)	(0.026)
l.cr_down_1_or_4					-0.005	-0.003
					(0.191)	(0.549)
l.cr_down_1_or_3					0.001	0.003
					(0.721)	(0.436)
l.cr_down_1_or_2					0.003	0.008
					(0.214)	(0.203)
l.cr_down_1_or_5					**0.007**	0.009
					(0.056)	(0.251)
ln(tna)t-1			-0.012	-0.012		-0.012
			(0.000)	(0.000)		(0.000)
Launch_Date			0.000	0.000		0.000
			(0.000)	(0.000)		(0.000)
Annual_Charge			-0.026	-0.027		-0.025
			(0.000)	(0.000)		(0.000)
Initial_Charge			-0.005	-0.005		-0.005
			(0.000)	(0.000)		(0.000)
Redemption_Charge			-0.045	-0.043		-0.044
			(0.000)	(0.000)		(0.000)
Constant	0.015	0.015	0.232	0.244	0.016	0.220
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	28057	27735	7639	7728	28375	7814
R-squared	0.057	0.058	0.072	0.073	0.059	0.074

The results in table 21 show that a downgrade of two stars is likely to predict a decrease in returns. A downgrade of three stars is likely to predict an increase of returns two months later. A downgrade of one star, the most common event in the sample, lacks predictability. Columns (5) and (6) analyze predictability of downgrade taking into account the level of original rating. The results show that being downgraded one star from five- to four stars, and three stars from five- to two stars, predicts positive returns. However, if a fund is downgraded from five- to three stars, the negative coefficient indicates decreasing performance in the next month. If a fund has four stars and is downgraded to only one star, the subsequent returns are negative.

Table 22 presents predictability of returns for rating upgrades. Column (1) shows that an upgrade of one star is followed by lower returns in the subsequent month. Column (3) and (4) examine the results from the first column further. Funds that initially have three stars and rise one star are likely to experience decreasing returns. Column (4) shows that funds that an increase from three- to four stars suffer falling returns, and funds that move from two- to three stars also endure declining returns in the succeeding month.

Table 22. Rating upgrades and predictability of returns				
	Dependent Variable: Raw returns			
	(1)	(2)	(3)	(4)
raw_return$_{t-1}$	0.175	0.179	0.178	0.178
	(0.000)	(0.000)	(0.000)	(0.000)
raw_return$_{t-2}$	-0.002	-0.010	-0.002	-0.011
	(0.731)	(0.340)	(0.694)	(0.311)
raw_return$_{t-3}$	0.105	0.125	0.105	0.127
	(0.000)	(0.000)	(0.000)	(0.000)
change_rating$_{t-1}$= 2	0.008	-0.040		
	(0.568)	(0.117)		
change_rating$_{t-1}$= 1	**-0.004**	**-0.007**		
	(0.006)	**(0.004)**		
change_rating$_{t-2}$= 2	0.013	**0.046**		
	(0.172)	**(0.000)**		
change_rating$_{t-2}$= 1	0.001	-0.001		
	(0.459)	(0.649)		
l.cr_up_2_or_3			-0.003	-0.043
			(0.855)	(0.094)
l.cr_up_1_or_4			-0.005	-0.007
			(0.164)	(0.158)
l.cr_up_1_or_3			**-0.007**	**-0.006**
			(0.002)	**(0.091)**
l.cr_up_1_or_2			-0.001	**-0.008**
			(0.578)	**(0.067)**
ln(tna)t-1		-0.012		-0.012
		(0.000)		(0.000)
Launch_Date		0.000		0.000
		(0.000)		(0.000)
Annual_Charge		-0.027		-0.027
		(0.000)		(0.000)
Initial_Charge		-0.005		-0.005
		(0.000)		(0.000)
Redemption_Charge		-0.043		-0.042
		(0.000)		(0.000)
Constant	0.015	0.265	0.016	0.264
	(0.000)	(0.000)	(0.000)	(0.000)

Table 22. Rating upgrades and predictability of returns				
	Dependent Variable: Raw returns			
	(1)	(2)	(3)	(4)
Observations	27735	7639	28375	7814
R-squared	0.057	0.073	0.058	0.074

Overall, the results indicate that there is little evidence of predictive power in the Morningstar rating system, and the pattern is different for upgrades and downgrades. All the coefficients of upgrades are negative, signifying that returns are likely to decrease following an upgrade. In regards to actual annual charges, there is a statistically significant negative coefficient, suggesting that low fees gives higher future returns. This is consistent with a previous study (Miller, 2010). Since investors are interested in maximizing total returns and fees diminish returns, the expectation is that investors would react to such findings.

The test is repeated to investigate the existence of predictability with dummy variables for domicile and for geographical focus. Again, the regression differentiates between downgrades and upgrades, starting with predictability of returns following rating downgrades presented in table 23.

Table 23. Predictability of downgrades by domicile and geographical focus							
	Domicile		**Geographical focus**				
	Norway	Ireland	Norway	Nordic	Europe	Global	USA
raw_return$_{t-1}$	0.216	0.139	0.205	0.247	0.149	0.185	0.161
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
raw_return$_{t-2}$	0.008	-0.047	0.052	-0.034	-0.085	-0.071	-0.057
	(0.233)	(0.000)	(0.000)	(0.006)	(0.000)	(0.000)	(0.000)
raw_return$_{t-3}$	0.060	0.166	0.054	0.137	0.152	0.094	0.149
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
l.cr_down_3_or_4	**-0.023**					**-0.039**	
	(0.000)					**(0.000)**	
l.cr_down_3_or_5	**0.041**					**0.014**	
	(0.000)					**(0.000)**	
l.cr_down_2_or_5	**-0.132**	**-0.071**		**-0.142**	**-0.121**	**-0.140**	**-0.026**
	(0.000)	**(0.023)**		**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
l.cr_down_2_or_4	-0.021	**-0.021**	-0.020	**-0.020**	0.000	**-0.059**	**-0.058**
	(0.362)	**(0.022)**	(0.712)	**(0.000)**	.	**(0.002)**	**(0.000)**
l.cr_down_2_or_3	**-0.125**	0.026		**-0.039**	**-0.010**	**-0.172**	
	(0.003)	(0.310)		**(0.000)**	**(0.000)**	**(0.000)**	
l.cr_down_1_or_4	-0.003	0.002	-0.007	0.002	-0.010	-0.004	0.013

	(0.601)	(0.747)	(0.570)	(0.901)	(0.370)	(0.648)	(0.095)
l.cr_down_1_or_3	-0.004	**0.007**	0.001	-0.012	0.003	-0.005	0.006
	(0.224)	**(0.068)**	(0.823)	(0.108)	(0.422)	(0.229)	(0.366)
l.cr_down_1_or_2	0.001	0.004	0.005	-0.004	0.003	-0.002	0.000
	(0.769)	(0.293)	(0.559)	(0.701)	(0.710)	(0.672)	(0.987)
l.cr_down_1_or_5	0.011	0.007	**0.021**	-0.003	0.003	-0.003	**0.015**
	(0.113)	(0.236)	**(0.006)**	(0.760)	(0.739)	(0.741)	**(0.066)**
Constant	0.010	0.001	0.010	0.006	0.005	0.006	0.004
	(0.000)	(0.024)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	13739	8372	5668	2119	3439	5318	3433
R-squared	0.065	0.055	0.061	0.09	0.052	0.066	0.05

The results do not differ significantly from the previous table with results for the full sample. However, for downgrades from four- to two stars, the statistically significant negative coefficient signifies lower future returns, except for Norway-domiciled funds and for funds geographically focused on the Norwegian market. The regression discovers that the downgrade of three stars from five- to two stars coming from globally focused funds, indicates increasing future returns.

Table 24. Predictability of upgrades by domicile and geographical focus

	Domicile		Geographical focus				
	Norway	Ireland	Norway	Nordic	Europe	Global	USA
raw_return_{t-1}	0.218	0.139	0.204	0.250	0.152	0.203	0.158
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
raw_return_{t-2}	0.008	-0.046	0.052	-0.032	-0.086	-0.071	-0.056
	(0.240)	(0.000)	(0.000)	(0.010)	(0.000)	(0.000)	(0.000)
raw_return_{t-3}	0.059	0.165	0.055	0.140	0.150	0.097	0.149
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
l.cr_up_2_or_3	-0.006	-0.006	-0.008	**-0.017**	-0.014	**-0.079**	0.010
	(0.853)	(0.736)	(0.896)	**(0.000)**	(0.780)	**(0.000)**	(0.548)
l.cr_up_1_or_4	-0.002	-0.002	0.000	-0.009	-0.009	**-0.013**	-0.004
	(0.665)	(0.837)	(0.974)	(0.277)	(0.297)	**(0.078)**	(0.645)
l.cr_up_1_or_3	**-0.009**	**-0.010**	-0.008	0.000	**-0.020**	-0.001	-0.007
	(0.005)	**(0.008)**	(0.252)	(0.989)	**(0.000)**	(0.647)	(0.248)
l.cr_up_1_or_2	-0.004	0.002	-0.001	-0.013	0.001	-0.004	0.005
	(0.213)	(0.509)	(0.830)	(0.169)	(0.859)	(0.234)	(0.430)
Constant	0.011	0.002	0.010	0.006	0.006	0.005	0.005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	13739	8372	5668	2119	3439	5318	3433
R-squared	0.064	0.054	0.06	0.087	0.054	0.058	0.048

Regarding upgrades by geographical focus, upgrades only predict negative returns for funds that are geographically focused on the Nordic countries, the European- and the Global market. Upgrades neglect to predict raw returns for funds that focus on the Norwegian- and the U.S. market. The results regarding domicile are very similar to the previous results, an upgrade from three- to four stars predicts lower returns in the next period. Overall, the results are consistent with absence of performance persistence in the mutual fund industry.

7 Conclusion

The investor's choices in the fund industry have become progressively more difficult due to the proliferation of funds and investment styles. Morningstar has been around in the US market since 1985 with the aim of helping investors doing good investment choices by providing clear, simple and unbiased information about mutual fund performance. Past studies attempt to measure the influence of the Morningstar ratings in investor flows in the US market, but the studies conducted outside the U.S. are scant.

The methodology is based on discrete changes in the star rating and various flow measures. The flow response is weak in the tests based on abnormal standardized flows similar to the U.S. study (Del Guercio & Tkac, 2008) and in the portfolio approach. Some flow response is observed using the regression approach with relative flows. Overall, there is only weak evidence suggesting that investors in the Norwegian marketplace take the Morningstar ratings into account in their allocation decisions. Thus, the results differ from findings in the U.S. market, that found evidence of significant positive flow response following five star, and that funds suffered substantial outflows following a downgrade from four- to three star rating (Del Guercio & Tkac, 2008).

The event study is unable to reveal any patterns of investor response following rating changes. The results raise the question of whether investors should pay attention to the star ratings? Based on further testing, the study is unable to find predictive power of ratings on subsequent returns. One-star ratings predict higher returns in succeeding months, whereas five-star ratings are followed by decreasing returns. The results are also different from studies (Morey & Gottesman, 2006; Antypas, Caporale, Kourogenis, & Pittis, 2009) that found widespread support for predictive power in the rating for the revised rating methodology. The results are more in line with studies confirming the opposite (Kräussl & Sandelowsky, 2007), the Morningstar rating system does not beat the random walk.

The controls for alternative determinants of fund flows also result in weak evidence. According to the results, past performance is not an apparent explanation of fund flows. The same applies to the controls for investment style. Since research shows that the majority of retail investors are not aware of the investment style of their funds (Capon, Fitzsimons, & Prince, 1996), it is likely that investors are irresponsive to the market expectations of certain styles.

Studying the influence of distribution channels in the flow pattern, there is some indication of investor sensitivity to upgrades for both non-bank- and bank managed funds in Norway. For downgrades, there is no sensitivity for non-bank managed funds, whereas there is some delayed investor response for bank managed funds. By and large, there is little evidence of differences in the performance-flow relationship for bank managed versus non-bank managed funds. This is inconsistent with a Finnish study (Knuutila, Puttonen, & Smythe, 2007) that found that distribution channels matter. Non-bank managed Finnish fund flows followed top performers similar to the US market, whereas top performing bank managed funds did not attract more flows than poor performers. The test is also conducted for neighboring markets, Sweden and Denmark, and the flow patterns are different. The variation in results makes it difficult to draw conclusions about the influence of the Morningstar rating in the Nordic region.

Nevertheless, the results suggest that Morningstar ratings are not so influential in investors decisions as reported in the U.S., keeping in mind that the Morningstar rating was first introduced to the European markets in 2001, 16 years later than in the US. Therefore it makes sense that the brand name is not as well known by retail investors in markets outside U.S. Besides, the advertising focus may still be in the US market since this is still by far the largest market.

The Morningstar rating has been criticized in terms of its informative value. In line with critical literature, this study also find that Morningstar ratings lack predictability when it comes to future returns. According to the results, funds are generally more likely to endure decreasing flows following upgrades. Moreover, funds may well experience positive flows after downgrades. The lack of pattern in the results makes it tricky to determine how investors use the Morningstar rating in the Norwegian market.

The study shows only weak evidence that Norwegian investors consistently consider the Morningstar rating in their decisions, yet, the study is unable to find evidence of other

determinants. However, a weakness in the study is the issue of extreme outliers. The impact of the outliers is unknown, so the study neglects to refute the Morningstar system. Nevertheless, since the results show little evidence of predictability in the rating structure, as many previous studies, the conclusion is that sole reliance on the Morningstar rating to select funds may not produce an optimal allocation across style categories for a multi-asset portfolio.

For future study, it is recommended to conduct more studies for mutual fund markets outside the U.S. Since there may be differences between markets in how investors view the Morningstar rating, it is impossible to deduce results from the US to other markets. Additional studies may provide answers to better understand the investors' response to the Morningstar rating outside the US, where the brand name may not be as strong. Studies that compare the influence of local rating systems such as the dice rating presented by Dine Penger, a financial magazine in Norway, to the Morningstar rating may offer insightful information. Furthermore, the effect of distribution channels can be investigated focusing on the influence of financial advisors in commercial banks. For now, the question of which factors matter to Norwegian retail investors remains a mystery.

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Appendix

Table 25. Morningstar Style Categories	
Morningstar Category	**Number of rating months**
Europe OE Africa Equity	54
Europe OE Asia ex Japan Equity	561
Europe OE Asia-Pacific ex-Japan Equity	779
Europe OE Asia-Pacific inc. Japan Equit	190
Europe OE China Equity	226
Europe OE Denmark Equity	108
Europe OE EMEA Equity	83
Europe OE Emerging Europe Equity	747
Europe OE Emerging Europe ex-Russia Equity	403
Europe OE Europe Flex-Cap Equity	760
Europe OE Europe Large-Cap Blend Equity	1707
Europe OE Europe Large-Cap Growth Equity	214
Europe OE Europe Large-Cap Value Equity	698
Europe OE Europe Mid-Cap Equity	108
Europe OE Europe Small-Cap Equity	108
Europe OE Europe ex-UK Large-Cap Equity	358
Europe OE Eurozone Mid-Cap Equity	68
Europe OE Finland Equity	108
Europe OE Germany Large-Cap Equity	108
Europe OE Global Emerging Markets Equity	1168
Europe OE Global Equity - Currency Hedge	139
Europe OE Global Flex-Cap Equity	108
Europe OE Global Large-Cap Blend Equity	3056
Europe OE Global Large-Cap Growth Equity	240

Europe OE Global Large-Cap Value Equity	1091
Europe OE Global Small-Cap Equity	108
Europe OE Greater China Equity	349
Europe OE India Equity	222
Europe OE Japan Large-Cap Equity	837
Europe OE Japan Small/Mid-Cap Equity	164
Europe OE Latin America Equity	432
Europe OE Nordic Equity	2098
Europe OE Norway Equity	5273
Europe OE Property - Indirect Other	92
Europe OE Russia Equity	361
Europe OE Sector Equity Agriculture	8
Europe OE Sector Equity Alternative Energy	146
Europe OE Sector Equity Communications	104
Europe OE Sector Equity Energy	101
Europe OE Sector Equity Financial Services	205
Europe OE Sector Equity Healthcare	467
Europe OE Sector Equity Natural Resources	96
Europe OE Sector Equity Other	3
Europe OE Sector Equity Technology	471
Europe OE Sweden Large-Cap Equity	188
Europe OE Sweden Small/Mid-Cap Equity	583
Europe OE Switzerland Large-Cap Equity	61
Europe OE Turkey Equity	71
Europe OE UK Flex-Cap Equity	63
Europe OE UK Large-Cap Growth Equity	141
Europe OE UK Large-Cap Value Equity	85

Europe OE US Flex-Cap Equity	524
Europe OE US Large-Cap Blend Equity	1417
Europe OE US Large-Cap Growth Equity	843
Europe OE US Large-Cap Value Equity	287
Europe OE US Small-Cap Equity	461
Total	**29451**

Table 26. Distribution of rating months in each domicile

Domicile	Frequency	Percent
Ireland	30780	53.98 %
Norway	17604	30.87 %
Sweden	3348	5.87 %
Finland	1836	3.22 %
Denmark	1620	2.84 %
United Kingdom	1296	2.27 %
Estonia	540	0.95 %
Total	**57024**	**100 %**

Table 27. Summary statistics

Domicile	Rating		Relative Flows		TNA		Raw Returns		Actual Charges		N
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	
Denmark	3,13	0,95	5 %	0,72	313,3	1409,4	0,9%	0,07	1,17	0,16	1620
Estonia	2,48	1,01	2 %	0,33	35,0	33,7	0,0%	0,08	1,90	0,20	540
Finland	3,14	0,98	4 %	0,33	101,0	100,4	0,6%	0,06	1,69	0,20	1836
Ireland	2,89	1,10	28 %	12,37	1120,9	11842,4	0,3%	0,06	1,34	0,47	16632
Norway	3,29	1,06	3 %	0,89	1097,5	3078,4	0,9%	0,06	1,43	0,58	16848
Sweden	3,29	1,06	141 %	37,33	2019,6	2340,7	0,9%	0,07	1,85	0,54	3348
United Kingdom	3,56	0,77	1 %	0,64	52056,0	44817,5	1,0%	0,05	0,93	0,26	1296
Max	3,6		1,4		52056,0		1,0%		1,9	0,53	
Min	2,5		0,0		35,0		0,0%		0,9		
Median	3,1		0,0		1097,5		0,9%		1,4		

Table 28. Summary statistics geographical focus					
geographical_focus	**Rating**		**Relative Flows**		
	mean	sd	mean	sd	N
Global Ex US	2,0	0,3	11 %	86 %	322
Turkey	2,2	0,7	-2 %	6 %	141
Denmark	2,5	0,7	-1 %	11 %	108
Africa	2,6	0,5	3 %	11 %	134
USA	**2,7**	**1,2**	**14 %**	**170 %**	**6328**
Greater China	2,7	1,4	4 %	20 %	435
India	2,8	0,9	4 %	32 %	397
North America	2,9	0,3	36 %	394 %	146
United Kingdom	3,1	0,8	123 %	2423 %	563
Eastern Europe	3,1	1,1	1 %	20 %	1184
Switzerland	3,1	0,6	0 %	7 %	96
Japan	3,1	1,0	4 %	59 %	1273
Germany	3,1	1,1	9 %	77 %	95
Norway	**3,1**	**1,1**	**3 %**	**64 %**	**6459**
China	3,2	0,9	1 %	13 %	594
Global	**3,2**	**1,1**	**6 %**	**128 %**	**7366**
Europe	**3,2**	**1,0**	**40 %**	**1625 %**	**5121**
Global Emerging Ma	3,3	0,9	12 %	261 %	1927
Far East exc Japan	3,3	0,6	5 %	58 %	108
Russia	3,3	1,0	290 %	5259 %	504
Sweden	3,4	1,2	1 %	10 %	854
EuroZone	3,4	0,9	96 %	891 %	103
Europe exc UK	3,4	0,8	5 %	98 %	422
Nordic	**3,5**	**1,0**	**56 %**	**2397 %**	**2438**
Asia Pacific	3,5	0,7	1 %	8 %	288
Asia (ex-Japan)	3,7	1,0	76 %	3068 %	2072
Latin America	3,8	0,8	4 %	34 %	432
Baltic States	3,9	1,0	2 %	6 %	108
Finland	4,4	0,5	1 %	5 %	108
Max	4,4		2,9		
Min	2,0		0,0		
Median	3,2		0,0		

Table 29. Test with different event window

Panel A. Fund after upgrade of one star

Months	Initial rating			
	1	**2**	**3**	**4**
-4	-0,81 %	4,05 %	1,84 %	346,94 %
-3	-2,06 %	5,74 %	143,21 %	1,47 %
-2	0,96 %	151,76 %	2,44 %	5,65 %
-1	1,00 %	9,73 %	5,26 %	2,40 %
0	0,83 %	4,05 %	2,27 %	2,38 %
1	-1,05 %	3,92 %	4,15 %	3,28 %
2	2,91 %	6,32 %	3,05 %	3,36 %
3	5,09 %	6,82 %	11,41 %	2,64 %
4	-0,35 %	2,95 %	0,50 %	2,62 %

Panel B. Fund after downgrade of one star

Months	Initial rating			
	2	**3**	**4**	**5**
-4	1,06%	2,00%	0,04%	0,95%
-3	0,42%	7,07%	1,69%	1,52%
-2	-1,41%	0,51%	3,47%	1,76%
-1	-2,00%	4,26%	3,52%	1,32%
0	0,66%	8,40%	1,74%	1,88%
1	-2,19%	9,73%	2,08%	1,80%
2	1,37%	0,61%	4,44%	1,24%
3	-0,12%	6,13%	0,14%	0,44%
4	4,43%	5,46%	7,61%	2,60%