Stockholm School of Economics
Master Thesis in Finance

Post Earnings Announcement Trading Strategy

– A Study on the Swedish Stock Market during January 2001-July 2006

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Abstract

A puzzling stock market anomaly is the post earnings announcement drift (PEAD), where stock prices continue to drift in the direction of the earnings surprise after the earnings is publicly known. This thesis examines the PEAD in Sweden during January 2001 to July 2006 and investigates whether it is possible to build a successful trading strategy based on this anomaly. We used the standardized unexpected earnings (SUE) metric to form portfolios and calculate the abnormal returns subsequent to an earnings announcement. We found that a long position in stocks with unexpected earnings in the highest quintile combined with a short position in stocks in the lowest quintile yield a significant annual abnormal return of 18.65% for a 60 day holding period.

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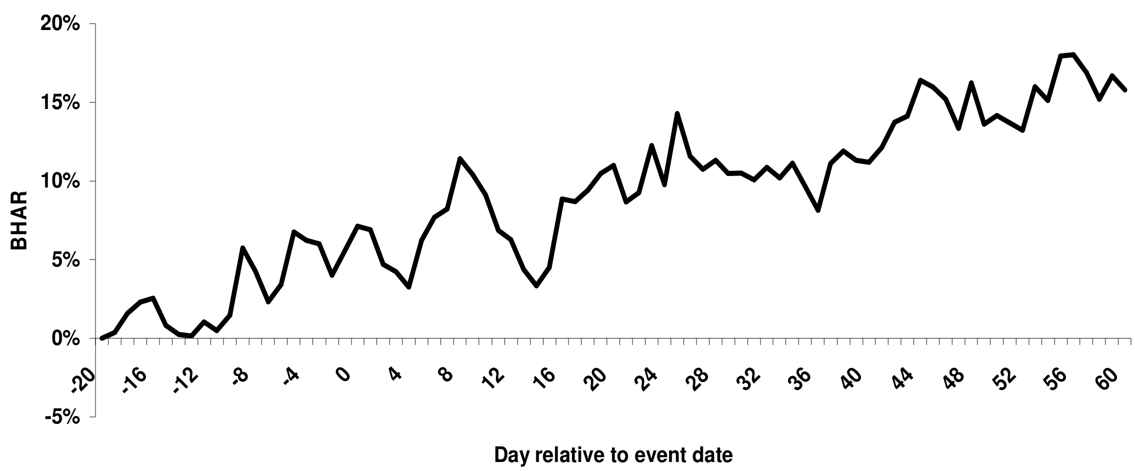
1. Introduction

One of the most puzzling stock market anomalies is the post earnings announcement drift (PEAD), where stock prices continue to move in the direction of the earnings surprise up to a year after the earnings is publicly known. Before we dwell into the thesis and different theories let's illustrate this with a simple example. On 25 April 2006, Swedish Match, the Swedish-based manufacturer of tobacco products, announced its first quarter earnings. The company reported 1st quarter pre-tax profits of 696 million SEK. The market only expected a pre-tax profit of 628 million SEK[1]. In the chart below, we illustrate the abnormal returns around the earnings announcement[2].

Figure 1.1: Swedish Match Buy & Hold Abnormal Return (BHAR), 2006Q1



In figure 1.1 above we can see that the Swedish Match share price reacted positively to the earnings announcement, with a 1.56% buy & hold abnormal return on the announcement day (day: 0). The figure also shows that Swedish Match have since then continued to outperform the market and generate abnormal returns. In fact, if you buy Swedish Match at the closing price on the announcement day and take advantage of the PEAD you earn an abnormal return of 8.68%. Without insider information it is of course not possible in advance to know that Swedish Match is going to beat market expectations. However, knowing that "good news firms" like Swedish Match will continue to drift after

[1] Analysts polled by SME Direkt
[2] Expected return measured by the capital asset pricing model (CAPM)

the announcement makes arbitrage opportunities possible. In practice this would involve going long in the "good news firms" and shorting the "bad news firms". The aim is to become market neutral, so that the combined portfolio's beta is close to zero and positive alpha returns are generated. This is of course easier said than done. What exactly is the definition of a "good news firm"? In academic research, scholars use a variety of metrics. The most common is called SUE, which stands for standardized unexpected earnings. A company that surprise the market very positively will get a high SUE score and vice versa. By then ranking companies according to this metric, one could easily test for positive abnormal returns for "good news firms" and negative abnormal returns for "bad news firms".

Ball & Brown (1968) were the first to discover and prove the existence of post earnings announcement drift. Since then, a number of research studies have verified this phenomenon but how can it be explained? Competing explanations for PEAD fall into two categories. One class of explanations suggests that at least a portion of the price response to new information is delayed. The delay might occur either because traders fail to incorporate available information or because the costs of implementing a trading strategy exceed gains from immediate exploitation of information. A second class of explanations suggests that, because the capital asset pricing model (CAPM) used to calculate abnormal returns is either incomplete or misestimated, researchers fail to adjust raw returns fully for risk. As a result, the abnormal returns are nothing more than fair compensation for bearing risk that is priced but not captured by the CAPM estimated by researchers (Bernard & Thomas, 1989).

Practitioners, particularly hedge funds, take advantage of this anomaly by taking market neutral positions to create so called "alpha returns". One could argue that the similarity in the risk characteristics for firms with extreme earnings surprises suggest that such a market neutral portfolio will result in a trading strategy with little risk exposure. However, from an arbitrage perspective, this argument does not hold because investors will have to incur high costs on both the buy and the sell side of the PEAD strategy, i.e., the transaction cost cannot be hedged away.

As we can see, a number of questions arise when one is studying this phenomenon. Is there really a drift? Is it widespread across different markets and stocks? How can we explain it? How large is the drift? Is it possible to exploit the drift profitably? In this thesis we have chosen not to take transaction costs into consideration or try to explain what causes this drift. Neither have we decided to join the debate of market efficiency. Instead, we aim to quantify the PEAD for the Swedish market and different types of stocks and to test whether it is possible to exploit this drift.

1.1 Purpose

The purpose of this thesis is to, by using accounting data and analyst forecasts, examine the post earnings announcement drift (PEAD) in Sweden during 1 January 2001 to 31 July 2006 and investigate whether it is possible to build a successful trading strategy by using the PEAD.

2. Previous Research

Several studies using US data have documented a systematic pattern in abnormal returns related to corporate earnings announcements known as the post earnings announcement drift (PEAD). Cumulative abnormal returns for stocks announcing extreme positive (negative) unexpected earnings drift upwards (downwards) for an extended period after the announcement. The initial discovery is due to Ball and Brown (1968) over thirty years ago. They found that estimated cumulative abnormal returns continue to drift upwards for "good news firms" and downwards for "bad news firms". Since this unique finding, many researchers have verified the existence of post earnings announcement drift. Foster, Olsen, and Shevlin (1984) are among the many who have examined the phenomenon. They estimate that over the 60 trading days subsequent to an earnings announcement, a long position in stocks with unexpected earnings in the highest decile combined with a short position in stocks in the lowest decile yields an annualized abnormal return of about 25% before transactions costs.

Subsequently, the PEAD phenomenon has proved robust to more sophisticated controls for risk and to other efficient markets explanations. Initial studies in establishing PEAD as a market anomaly beside Foster, Olsen, and Shevlin (1984) is Bernard and Thomas (1989). They found that a long position in the highest unexpected earnings decile and a short position in the lowest decile yield an estimated annualized abnormal return of approximately 18% for portfolios over the 60 days subsequent to the earnings announcement. A different approach was used by Abarbanell & Bernard (1992). They grouped firms into quintiles based on the magnitude of analysts' earnings forecast errors (scaled by stock price 10 days prior to the forecast date) within that quarter. For a combined long position in firms within the highest quintile of unexpected earnings and short position in the lowest quintile, the total post earnings announcement cumulative abnormal return is about 8%. Ke & Ramalingegowda (2004) state that institutional investors exploit the PEAD and that their arbitrage generates an annual abnormal return of 22 percent after transaction costs.

The PEAD contradicts the theory of efficient markets first proposed by Fama (1970). However, Fama (1998) admits to PEAD as the "granddaddy of underreaction events" and as the only established anomaly above suspicion. Recent research has focused on the findings of Bernard and Thomas (1989), which state that a large proportion of the drift occurs subsequent to earnings announcement dates and on whether this can be explained by the failure of investors to understand the US quarterly earnings generation process. Bernard and Thomas (1989) hypothesize that investors naively assume earnings follow a seasonal random walk and fail to understand the implications of current earnings for future earnings. Furthermore, recent research on the drift also investigates factors that are associated with different drift levels according to prior intuition about the effects of these factors on investors' underreaction. For example, Bartov et al. (2000) show that the drift is lower for companies with higher proportions of institutional investors, who are more sophisticated and less prone to underreactions. Mikhail et al. (2003) provide evidence that the drift is smaller when companies are followed by more experienced analysts, who tend to incorporate the earnings surprise more fully in their forecasts and reduce the underreaction typically observed for less experienced analysts. Mendenhall (2004) shows that the drift is stronger for firms subject to higher arbitrage risks, consistent with market equilibrium of investors who initially underreact to earnings announcements and arbitragers who are unwilling to completely eliminate the underreaction effects on prices due to large arbitrage costs.

Several studies have tried to characterize the companies that have large PEAD drifts. Johnson & Schwartz Jr (2000) argue that the post announcement drift persists where arbitrage costs are highest; that is, among small firms, and among firms with few or no analyst following or with low stock prices. The findings are consistent with the notion that practitioners used earnings surprise trading strategies to arbitrage the drift once the phenomenon had been well documented in academic research. Ng, Rusticus & Verdi (2006) argue that the PEAD trading strategy likely involves high transaction costs because firms that announce extreme earnings surprises tend to be different from firms that announce moderate earnings surprises. Evidence suggests that those firms announcing extreme earnings surprises have higher beta, smaller capitalization, and higher return volatility compared to the firms announcing moderate earnings surprises. These characteristics are expected because firms with extreme earnings surprises are more likely to be younger firms and/or have operations that are more risky.

PEAD is often explained as an underreaction by the market. In some cases the opposite can occur, i.e. an overreaction. DeBondt and Thaler (1986) document long-run reversals of prior stock price changes, which they interpret as corrections of prior overreactions to news events. They show that a strategy of buying prior extreme losers and selling prior extreme winners measured in terms of stock price performance generates positive market-adjusted returns of approximately 12% per year over the next three years. Ball and Kothari (1989) suggest that when one controls for nonstationary betas, these market-adjusted returns can be explained as a risk premium. However, Chopra, Lakonishok, and Ritter (1992) argue that Ball and Kothari overstate the influence of the beta adjustment, by assuming that market price of risk is as implied by the CAPM. When they instead rely on an empirical estimate of the market price of risk, the DeBondt and Thaler portfolios generate abnormal returns of approximately 5% per year, even after controlling for nonstationary betas and the size effect. DeBondt and Thaler (1986) suggest that stock market participants may overreact to current earnings, not recognizing that extreme annual earnings changes tend to be partially reversed in the future.

Most studies on PEAD have used the standardized unexpected earnings (SUE) metric to form portfolios. Brandt, Kishore, Santa-Clara & Venkatachalam (2006) explore an alternative measure of the surprise in a company's earnings announcement: the stock's abnormal return around the announcement date. They argue that this earnings announcement return (EAR) captures the market reaction to unexpected information contained in the company's earnings release like sales, margins, investment, and other less tangible information communicated around the earnings announcement. A strategy that buys and sells stocks sorted on EAR produces an average abnormal return of 6.3% per year, which is 0.6% more than a strategy based on the traditional measure of earnings surprise. Moreover, they find that the EAR and SUE strategies appear to be independent of each other. A strategy that exploits both pieces of information generates abnormal returns of about 11% on an annual basis.

Research has also been carried out for non-US markets such as in the UK where Liu et al. (2000) found that the PEAD portfolio generates significant profits. Further, authors like Womack (1996) and Barber, Lehavy et al. (2001) have studied the overreaction of earnings announcements based on analyst recommendations. Womack (1996) found that for buy recommendations, the mean post event drift is 2.4% and short lived but -9.1% for sell recommendations and extends for six months. Barber, Lehavy et al. (2001) founds an average annual abnormal return of 4.13% for the most favourable recommended stocks and -4.91% for the least favourable recommended stocks.

3. Theoretical Framework

In this section we present the theories that serve as a foundation of the post earnings announcement drift on which this thesis is built.

3.1 Efficient Markets

The efficient market hypothesis (EMH) was developed by Eugene Fama (1970). According to Fama (1970) the primary role of the capital market is the allocation of ownership of the capital stock within the economy and a perfect market is one where prices fully reflect all available information. This would mean that this type of market provides accurate signals for the allocation of resources and is thereafter called an efficient market. Fama (1970) defined three different subsets of market efficiency based on the amount of information incorporated in each.

In the weak form of efficiency the prices are assumed to reflect all the information included in the historical prices. This means that prices follow a random walk and that it is impossible to earn abnormal returns by just observing past prices. The reasoning is that if it is possible to use historical prices to find certain patterns, this opportunity would immediately be exploited and prices would then adjust accordingly. The PEAD that we are studying do not solely rely on historical prices but also on publicly available information.

The semi-strong form of efficiency requires prices to reflect not just past prices, but also all publicly available information. This includes announcements of new share issues, annual reports, mergers between companies, stock splits, and other similar publicly available information. To investigate if the semi-strong form holds, one would have to study the share price development before and after the announcement of an event and the speed with which the price adjusts to new information. The faster the adjustment of the share price after the release of new information, the more efficient is the market. In this thesis, we argue that the adjustment to earnings announcement does not take place immediately, but rather over time as the market initially underreacts. Therefore, the PEAD is a violation of the semi-strong form of efficiency.

The strong form of efficiency means that prices does not just reflect all publicly available information and historical prices, but that it fully reflects all available information that exist in the market, both public and private. Thus, no individual can generate returns above the expected returns by using inside information and that there would be no point for insiders to trade in order to take advantage of their information. This means that we could not expect to find any investors that consistently beat the market. However, there are evidence that insiders can earn abnormal returns and that there are investment managers, traders, and others that do in fact beat the market on a regular basis. This would be incompatible with the strong form of market efficiency. The PEAD is therefore also a violation of the strong form efficiency.

3.2 CAPM

The capital asset pricing model (CAPM) quantifies a relationship between the risk and the expected return of a risky asset. The major insight of CAPM is that the risk is not the variance of the assets return but rather the covariance of its return with the return of the market portfolio. This risk affects the expected return. The market portfolio is defined as a combination of all risky assets available on the market where each assets weight is based upon its market value. The expected return of an asset is only affected by the risk component that cannot be diversified away, i.e. the systematic risk, which is captured by the beta. Beta is the only firm specific explanatory variable in the CAPM formula stated below:

$$E(r_i) = r_f + \beta_i \cdot \left[E(r_m) - r_f \right] \qquad (3.1)$$

The CAPM is a crucial model for research on PEAD. As mentioned before, the CAPM is used to calculate abnormal returns. If it is either incomplete or misestimated, one will fail to adjust raw returns fully for risk. As a result, the so called abnormal returns are nothing more than fair compensation for bearing risk that is priced but not captured by the

CAPM. In this thesis, we have adjusted raw returns with the CAPM model and thereby accounted for market risk.

3.3 Fama-French Factors

An alternative to using CAPM is to regress and estimate a multiple factor model. The rational is that there are infinite numbers of factors that constitute risk for companies. Fama and French (1992) find that the value and size factors are the most significant factors, in addition to market risk for explaining realized returns. The two additional factors are defined as small minus big (SMB) and high minus low (HML), which represents size and value risk. The SMB factor accounts for the size premium to investors for holding companies with relatively small market values. Small firms can be assumed to be more sensitive to several risk factors, due to their undiversified nature and their sensitivity to negative events.

The high minus low (HML) factor measures the "value premium" for investing in companies with low market-to-book, which is the actual market value divided by the book value in accountancy terms. The HML factor indicates that the risk is higher for value stocks, hence adding a risk premium for value risk. Furthermore, a low market-to-book ratio suggests that the market value has fallen. These firms posses a greater level of risk since investors may fear bankruptcy or other financial trouble, leading to a risk premium defined as HML.

In this thesis, we test the post earnings announcement returns of different market-to-book portfolios and size portfolios in the spirit of Fama French. This is done in order to quantify the PEAD for different types of stocks.

3.4 Behavioral Finance

Behavioral finance attempts to explain the reasoning patterns of investors, including the psychological processes involved in investing and the degree to which they influence the decision-making process. Essentially, behavioral finance attempts to explain aspects of finance and investing, from a human perspective. For example, behavioral finance studies financial markets as well as provide explanations to many stock market anomalies such as the January effect, speculative market bubbles (the recent Internet bubble of 1999), and stock market crashes (crash of 1929 and 1987). Behavioral finance has gained tremendously in popularity since traditional finance theories such as CAPM and the EMH have failed to explain many phenomena. One of these phenomena is the PEAD drift. (Ricciardi & Simon, 2000)

Recent empirical research in finance has uncovered two families of persistent regularities: underreaction of stock prices to news such as earnings announcements, and overreaction of stock prices to a series of good or bad news. A common explanation for this is that investors do not always react in proper proportion to new information. For example, in some cases investors may overreact to performance, selling stocks that have experienced recent losses or buying stocks that have enjoyed recent gains. Such overreaction tends to push prices beyond their fair or rational market value, only to have rational investors take the other side of the trades and bring prices back in line eventually. In other cases, investors underreact to good/bad news and prices will instead not adjust immediately, but rather over time. This precise phenomenon can be exploited in the post earnings announcement drift. However, another implication is that contrarian investment strategies, strategies in which “losers” are purchased and “winners” are sold will earn superior returns due to the opposite effect, namely overreaction. Thus, behavioral finance can be used to predict overreaction sometimes, and at other times it predicts underreaction. According to Fama (1998), this double sidedness of underreaction and overreaction cancel each other out and therefore the EMH still holds.

4. Method

Before we present the data used and the result of our study we go through the scientific method we used step-by-step. We start off with explaining the SUE-variable since this is the variable we base our trading strategy upon and then go on to explain how we measured returns and formed portfolios and sub-portfolios.

4.1 Standardized Unexpected Earnings (SUE)

The basics of the implemented trading strategy are quite simple; go long in stocks that beat their quarterly expectations and short those that do not fulfil this criterion. In order to quantify this investment decision a standardized unexpected earnings (SUE) variable is created. This metric captures the market reaction to unexpected information contained in the company's earnings release. This is a metric well used by researchers, although the exact definition differs somewhat. In this thesis we define SUE mathematically as:

$$SUE_{i,q} = \frac{X_{i,q} - E(X_{i,q})}{\sigma(E(X_{i,q}))} \qquad (4.1)$$

where $X_{i,q}$ is the actual pre-tax earnings number for firm i in quarter q, $E(X_{i,q})$ is the expected pre-tax earnings, measured as the consensus estimate by analysts. The number of analysts for each company ranges from 4 to 46. Finally, $\sigma(E(X_{i,q}))$ is the standard deviation of analysts' consensus forecast. We have chosen to define SUE in this way since if all analysts have similar opinions on a certain expected pre-tax profit the surprise will be bigger if the result differs from the expected value.

The SUE-variable is then used to rank the companies according to their earnings surprise. The higher earnings surprise the better ranking. This ranking of companies is done in order to place the stocks in five different portfolios depending on their SUE-value. These quintiles are called SUE1 (bottom 20%) to SUE5 (top 20%). In our thesis we have chosen to build up the SUE-variable gradually in order to make the trading strategy forward-looking instead of backward-looking. This means that in the first quarter (2001Q1) we take no positions since we then start to gather SUE-data. However, for the second quarter we use the SUE-values from 2001Q1 to decide in which quintile the stock should be placed. For the following quarter, i.e. 2001Q3, we use the previous SUE-values from 2001Q1 and 2001Q2 to set the limits for the five different quintiles.

4.2 Buy & Hold Abnormal Return (BHAR)

In order to evaluate our trading strategy we have to see if it creates abnormal returns or not. The CAPM is used to risk-adjust the returns. This means that the required return for a company is:

$$E(r_{i,t}) = r_{f,t} + \beta_i \cdot \left[E(r_{m,t}) - r_{f,t}\right] \tag{4.2}$$

The abnormal return is then calculated as:

$$AR_{i,t} = \left(r_{i,t} - E(r_{i,t})\right) \tag{4.3}$$

These abnormal returns are then used to create buy & hold abnormal returns (BHAR). The BHAR is defined as the geometrically compounded return of the stock:

$$BHAR_{i,q} = \prod_{j=0}^{T}\left(1 + AR_{i,j}\right) \tag{4.4}$$

where T is the holding period of the stock. In our study we have set T equal to 1, 5, 10, 20, 30, 45 and 60 trading days. We have chosen different holding periods to investigate how the BHAR evolves over time and to determine which holding period is optimal. Note that the maximum holding period is set to 60 trading days since shortly after this holding period a new earnings release is issued that could contradict the previous input signal. It should also be noted that we act upon the signal at the closing of the earnings announcement day. This is done in order to eliminate the sudden shock to an earnings announcement, where it can be hard to obtain shares and the prices moves quickly.

Another measure that could have been used to evaluate the trading strategy is the cumulative abnormal return (CAR), which simple is a summation of abnormal returns.

However, a drawback with the CAR measure is that it does not accurately reflect investor return as it does not take the compounding of returns into account. For a long holding period the compounding effect can have a large impact on the return and we have therefore decided to use the BHAR measure.

To estimate BHAR we need to estimate AR and thereby calculate $r_{i,t}$ and $E(r_{i,t})$. In order to calculate $E(r_{i,t})$, β_i need to be estimated. For our dataset we use Affärsvärlden General Index (AFFGENL) as a proxy for the market portfolio, and the Swedish 30 Day Treasury Bill (SDTB30D) as a proxy for the risk-free rate. These variables together with return series of the companies included in our dataset are used to calculate the individual company's beta. The companies' betas are calculated by regressing the excess returns of the individual company against the excess return of the market portfolio according to the formula below:

$$r_{i,t} - r_{f,t} = \alpha_{i,t} + \beta_i \cdot \left[r_{m,t} - r_{f,t} \right] \tag{4.5}$$

where $\alpha_{i,t}$ is the abnormal return for company i at time t. The betas are calculated using monthly data and a time period of five years and roll it over each year. More exact, for calculating the beta for a company during 2001 monthly data is gathered for the time period January 1996 to December 2000. This means that the beta-value for a company does not change within a year but between years. We use the constraint that the beta must have a t-value greater than or equal to 1.96, i.e. a 95% significance interval, otherwise we use two year weekly observations with the same constraint. For those companies that still have not got a significant beta for a certain year it is given the same beta as the following year. This is done in order to maintain a full set without compromising the validity of the results.

Once the companies in the portfolios are decided for each quarter and the companies' BHAR are calculated the portfolio BHAR is calculated by assigning weights for the individual companies' returns using its market value of equity. The market values are calculated as the equity value at the end of each year. The same market value is therefore used for the company within a year, but the weight changes between years. In this report, the weights for individual companies stay the same for the whole quarter, regardless if the event date differs slightly and the portfolio thereby alters its appearance slightly within quarters. We have thereby simplified the portfolio to a static portfolio during the holding period. Note that this assumption only changes the weights assigned to the individual companies and not its actual abnormal returns.

The main reason for using value weights instead of equal weights is according to Barber, Lehavy et al (2001) that an equally weighted portfolio assumes daily rebalancing due to changes in market values and that larger firms attract more investors and thereby should have larger weights. Another reason for using value weights is that larger firms are more liquid, hence it is easier to take larger positions in them without affecting the share price. In other words, value weights are used in order to preserve the validity of the study.

4.3 Portfolios and Sub-Portfolios

As mentioned before portfolios are created based on their SUE-values. For every quarter, we form portfolios as follows:

i) We calculate SUE for all the stocks and their corresponding event dates as described in equation 4.1.
ii) We calculate quintile breakpoints by ranking SUE observations. This is done by adding SUE-observations as event dates passes and recalculating the breakpoints each quarter.
iii) We form 5 portfolios based on SUE and examine BHAR in accordance to formula 4.4 with 1, 5, 10, 20, 30, 45 and 60 trading days holding period subsequent to an earnings announcement.

A market neutral portfolio, or at least a portfolio with a beta close to zero, can be obtained by going long in the SUE5 portfolio, i.e. “good news firms”, and going short in the SUE1 portfolio, i.e. “bad news firms”. This means that the abnormal return of this market neutral portfolio is:

$$BHAR(SUE\ spread)_T = BHAR(SUE5)_T - BHAR(SUE1)_T \qquad (4.6)$$

where T is the holding period. Note that it is this market neutral portfolio that we will use in order to test whether there exist an exploitable post earnings announcement drift.

4.3.1 Market-to-Book and Market Value Portfolios

We use rolling market values (MV) and market-to-book (MB) ratios to categorise the companies into 5 different groups (MV1-MV5, MB1-MB5) for each variable. The different MV and MB portfolios were created by grouping the companies according to certain limits. These limits were determined by using historical averages in order to have roughly one fifth of the companies in each portfolio. For example, all companies with higher market-to-book ratio than 5.5 were grouped in portfolio MB5. Companies with higher market value than 30bn SEK was grouped in portfolio MV5. The limits for the MV and MB portfolios are shown in table 4.1.

Table 4.1: Limits for market-to-book (MB) and market value (MV) sub-portfolios

MB	*Limit*	*MV*	*Limit*
5	MB5 > 5,5	**5**	MV5 > 30bn SEK
4	3,5 < MB4 ≤ 5,5	**4**	15bn SEK < MV4 ≤ 30bn SEK
3	2,5 < MB3 ≤ 3,5	**3**	7,5bn SEK < MV3 ≤ 15bn SEK
2	1,5 < MB2 ≤ 2,5	**2**	3,75bn SEK < MV2 ≤ 7,5bn SEK
1	MB1 ≤ 1,5	**1**	MV1 ≤ 3,75bn SEK

In table 4.2 the number of observations for each sub-portfolio is listed. Note that the number of observations differ to some extent due to that we chose to keep the limits constant during the whole set although the proportion of companies did not.

Table 4.2: Number of observations for MB and MV sub-portfolios

	Observations, MB							*Observations, MV*					
	SUE5	**SUE4**	**SUE3**	**SUE2**	**SUE1**	**Sum**		**SUE5**	**SUE4**	**SUE3**	**SUE2**	**SUE1**	**Sum**
MB1	52	55	61	52	60	280	**MV1**	27	41	40	39	54	201
MB2	53	49	57	33	52	244	**MV2**	28	22	24	31	37	142
MB3	26	26	24	21	24	121	**MV3**	46	47	34	36	30	193
MB4	25	38	21	32	29	145	**MV4**	29	30	33	17	24	133
MB5	28	34	20	35	26	143	**MV5**	54	62	52	50	46	264

For each of these 10 sub-portfolios we form portfolios based on SUE, i.e. step iii) in section 4.3 is calculated. This data is then used to analyze differences in BHAR based on market value and market-to-book ratio. Note that MV1 consist of the quintile of companies with lowest market value and MB5 consist of companies with highest market-to-book ratio.

4.4 Test of Significance

In order to test for significance of our abnormal returns for the different portfolios we compared the full sample of BHARs with our portfolio BHARs. The two-sample t-test (Snedecor and Cochran, 1989) is used to determine if two population means are equal. The t-statistic is calculated in the following way:

$$T = \frac{Y_1 - Y_2}{s_p \sqrt{1/N_1} + 1/N_2} \qquad (4.7)$$

where

$$s^2{}_p = \frac{(N_1 - 1)s_1^2 + (N_2 - 1)s_2^2}{N_1 + N_2 - 2} \qquad (4.8)$$

where N_1 and N_2 are the sample sizes, and Y_1 and Y_2 are the sample means, and s_1^2 and s_2^2 are the sample variances. In our case, N_2, Y_2 and s_2^2 are the sample size of the full sample of available positions to take, sample mean measured by an average BHAR and the variance of this sample. Further, N_1, Y_1, and s_1^2 are the sample size of the positions we take in the portfolio chosen, portfolio average BHAR and the portfolio variance.

We compute these t-statistics using the rule that if the *t*-value is equal to or greater than 1.96 it indicates that our results are significant within a 95% confidence interval, assuming that the two samples have equal distributions. We also look at a 99% significance level which is equivalent to a t-value equal to or greater than 2.33.

5. Data

Due to the nature of our report there was extensive data collection to be carried out. In this section will present the sources we used, give an overview of the data gathering process and discuss any imperfections associated with the data.

5.1 Selection of Companies

Initially we limited our dataset to only include companies listed at the Stockholm Stock Exchange. This felt natural because studies similar to ours have been made, but, as far as we know, never on a Swedish dataset. Out of all Swedish companies, we kept those companies for which SME Direkt gathers analysts' forecasts. Our dataset then consisted of 67 companies currently listed on the Stockholm Stock Exchange. For a list of companies included in the dataset, see appendix 4. The companies included have different characteristics when it comes to industry and market size and the dataset includes a good mixture of growth and value firms. Overall, the dataset can very well be used as a proxy for the market portfolio when it comes to comparing significance results for trading strategy performance.

The chosen time-period is 1 January 2001 to 31 July 2006, i.e. 2001Q1-2006Q1. The time-period was chosen in order to evaluate our trading strategy in the present economy with enough data points. This period includes both a significant downturn and upturn in the Swedish stock market. The dataset, consisting of 67 companies and 21 quarters makes room for a maximum of 1407 quarterly observations. However, due to missing forecasts and companies listed after 2001Q1 the actual number of observations in the dataset is 971.

To prevent the influences of outliers, we have scrutinised our data and deleted obvious outliers in the raw returns. This resulted in deletion of 8 data points, i.e. less than 1% of the sample and thus our sample consist of 963 observations. We found that the healthcare companies were overrepresented among the outliers. Another 30 observations are removed in 2001Q1 since we implement our trading strategy from 2001Q2 and onwards as explained in section 4.1. This leads to a final sample of 933 observations. For a list of number of observations per quarter, after outliers have been removed, see appendix 2.

5.2 Gathering of Company Data

The data collection started off by gathering data for the SUE variable, which is the decision maker of our trading strategy. By using SME Direkt we gathered data on the companies' quarterly pre-tax profits ($X_{i,q}$), expected pre-tax profits ($E(X_{i,q})$) and the standard deviation of the analysts' forecasts ($\sigma(E(X_{i,q}))$).

When all SUE variables had been calculated for all companies and quarters we had to find out at which dates (event dates) the earnings announcements were published. The correctness of these event dates is extremely important since we implement our trading strategy at the event date's closing. The main source used to gather information regarding event dates was SIX Trust. This data was then validated and complemented by checking the OMX homepage[3], Thomson DataStream and the individual companies' homepages for earnings releases and its corresponding dates.

DataStream was also used to obtain historical series of data for the individual companies and to obtain indices. The data collected for the individual companies were daily price series, market-to-book ratio and market value. All of this data were collected for the time-period 1 January 2001 to 31 July 2006. In order to estimate the market portfolio, the index used is the Affärsvärlden General Index (AFFGENL). As proxy for the risk-free rate we chose the Swedish 30 Day Treasury Bill (SDTB30). All of this data was also gathered daily for the same time-period as stated above.

In order to calculate company betas 5-year monthly and 2-year weekly data were used. This means that monthly data was gathered for individual companies' price index, risk-

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[3] http://www.omxgroup.com/nordicexchange/marknadsnyheter/foretagsmeddelanden

free rate and market index for the time period 1 January 1996 to 31 July 2006 and weekly data for 1 January 1999 to 31 July 2006.

6. Results & Analysis

In this section we will present the main findings of our study. We will start off by presenting and analysing our general results. Thereafter we move on to our sub-samples based on market value and market-to-book ratio in order to understand the PEAD of different types of stocks. However, the data in the sub-samples used for analyzing market value and market-to-book effects is limited and these results are therefore not as valid as the general results.

6.1 General Results

Table 6.1 below shows the resulting BHAR for the different portfolios chosen based on SUE-values for various holding periods. From the table we can see that the SUE5 portfolio, i.e. the portfolio consisting of "good news firms" generates a maximum annual abnormal return of 12.02% for a holding period of 60 trading days. The result is significant at the 1% level. The SUE1 portfolio, i.e. "bad news firms" generates an annual negative abnormal return of -6.63% for the same holding period, also this is significant. A long position in stocks with unexpected earnings in the highest quintile (SUE5) combined with a short position in stocks in the lowest quintile (SUE1) yield a significant annual abnormal return of 18.65%, not taking transaction costs into account.

Table 6.1: BHAR for complete set

		Buy & hold abnormal returns, complete set					
		SUE5	**SUE4**	**SUE3**	**SUE2**	**SUE1**	**SUE spread**
Trading days following earnings announcement	**1**	-0,32	-0,60	-0,89	-2,32**	-2,11**	1,79*
	5	1,18	1,31	1,98*	1,53	-2,98**	4,16*
	10	-1,81	1,93	1,37	3,87**	-2,45**	0,65
	20	0,50	1,91	3,91**	0,89	0,00	0,50
	30	3,78*	2,73	7,58**	-1,83	0,74	3,04
	45	6,56**	2,00	-0,20	-6,09**	-5,79*	12,35**
	60	12,02**	0,79	0,65	-7,45**	-6,63*	18,65**

* Significant at the 5% level
** Significant at the 1% level

In table 6.2 we list the number of observations for each SUE portfolio. We can see that each portfolio represents approximately a quintile of the total sample.

Table 6.2: Number of observations for complete set

	Observations, complete set					
	SUE5	**SUE4**	**SUE3**	**SUE2**	**SUE1**	**Sum**
Complete set	184	202	183	173	191	933

The PEAD is consistent with the notion of underreaction by market participants, a concept that steams from the area of behavioral finance. Underreaction causes the prices not to adjust immediately to earnings surprises, but rather over time. Our results also contradict with Fama (1990) and his theory of strong and semi-strong form of market efficiency. Further, the results show that investors can beat the market consistently by using the PEAD anomaly.

Our results, an annual abnormal return of 18.65%, can be compared to previous research. A similar pioneering study conducted in the US markets by Foster, Olsen, and Shevlin (1984) showed that over the 60 trading days subsequent to an earnings announcement, a long position in the highest decile, combined with a short position in stocks in the lowest decile, yields an annualized abnormal return of about 25%, before transactions costs. Furthermore, Bernard and Thomas (1989) found that long position in the highest unexpected earnings decile and a short position in the lowest decile would have yielded an estimated annual abnormal return of approximately 18% over the 60 days subsequent to the earnings announcement. These results come even closer to our findings. Our results 23 years after this study and conducted on the Swedish market is of the same magnitude and implies that the PEAD anomaly still exists. A final comparison can also be done with a very recent study conducted by Brandt, Kishore, Santa-Clara & Venkatachalam (2006). They find that a strategy that buys and sells companies sorted on SUE produces an average abnormal return of 5.6% per year over 240 days subsequent to the earnings announcement. The trend over time in the US is that the abnormal return is decreasing since it was first noticed. However, our results on the Swedish market are still of large magnitude.

It becomes clearer to understand our results by looking at the figures 6.1 and 6.2 below. We can see that the high SUE (SUE5) portfolio is not so good for short holding periods of 1, 5, 10 and 20 days. Instead, returns take off for 30, 45 and the 60 days holding periods. For the low SUE (SUE1) portfolio we can see that returns are fluctuating over different holding period portfolios. However, the 45 and 60 day portfolios are negative as expected. Figure 6.2 below plots the combined long/short strategy. It is clearly shown that a maximum abnormal return of 18.65% is achieved with a 60 days holding period for the combined SUE5/SUE1 portfolio.

Figure 6.1: BHAR for SUE5 & SUE1

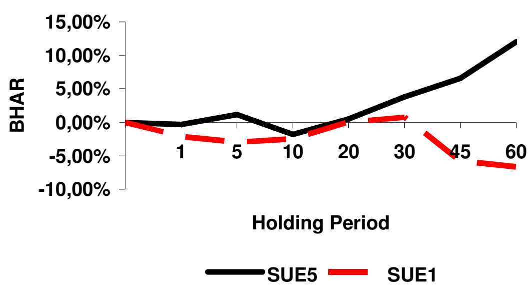
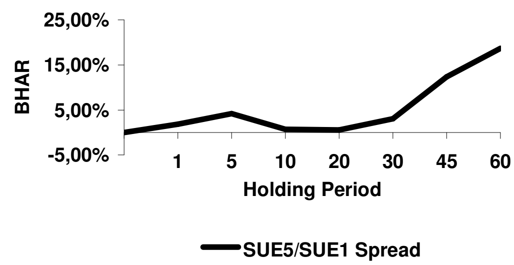


Figure 6.2: Trading Strategy



The fact that a 60 day holding period yields better results is also supported by previous studies by FOS (1984) and Bernard & Thomas (1989) who also report best results for the same holding period. In the following sections we look at the PEAD based on the Fama French factors in order to see if we can explain the drifts better. However, it is worth mentioning again that these datasets are rather limited.

6.2 Small versus Large Firms

As mentioned earlier we performed the same analysis as in section 6.1 after dividing firms according to their market value. In table 6.3 below, we can see the returns for the SUE1 and the SUE5 portfolio for small firms (MV1) and large firms (MV5) over the different holding periods. The “good news firms” (SUE5) portfolios for small firms (MV1) generate an insignificant annual abnormal return of 7.34% for the 60 days holding period and a significant annual abnormal return of 9.26% for large firms (MV5). The results for small firms are not consistent with Fama & French (1992), i.e. that there should be a risk premium for small firms. For “bad news firms” (SUE1), we obtain a positive abnormal return of 12.90% for the 60 day holding period for small firms. However, this result is also not significant. For the large "bad news firms" (SUE1) portfolio on the other hand we obtain a significant annual negative abnormal return of 8.03%, which was more expected. The SUE spread for small firms generates an insignificant negative abnormal return of -5.56% over the 60 day holding period. The SUE spread for large firms on the other hand generates a significant annual abnormal return of 17.29% for the same holding period.

Table 6.3: BHAR for MV1 (SUE5 & SUE1) and MV5 (SUE5 & SUE1)

Buy & hold abnormal returns, MV1 and MV5							
		MV1			**MV5**		
		SUE5	**SUE1**	**SUE spread**	**SUE5**	**SUE1**	**SUE spread**
Trading days following earnings announcement	**1**	-2,11	-2,05	-0,06	-1,03	-2,44**	1,41
	5	-1,22	0,83	-2,04	-0,05	-2,49**	2,44
	10	1,79	1,62	0,17	-3,66**	-3,17**	-0,48
	20	0,05	-0,96	1,01	-1,59	-0,02	-1,58
	30	-0,67	-0,27	-0,40	1,12	-2,85*	3,97
	45	4,58	0,87	3,71	4,73**	-6,60**	11,33**
	60	7,34	12,90	-5,56	9,26**	-8,03**	17,29**

*   Significant at the 5% level
** Significant at the 1% level

Based on the signs, magnitude and significance of our results we can conclude that the PEAD work well for large firms but not for small firms. Johnson & Schwartz Jr (2000) argue that the post announcement drift persists where arbitrage costs are highest, that is among small firms and firms with few or no analyst following or with low stock prices. Thus, the market is more inefficient for small firms. The evidence is consistent with the notion that practitioners used earnings surprise trading strategies to arbitrage the drift once the phenomenon had been well documented in academic research. Ng, Rusticus & Verdi (2006) also argue that one of the characteristic of the firms that announce extreme earnings surprises is that they have smaller market capitalization.

In figures 6.3 and 6.5 below, we have plotted the BHARs over different holding periods for both small firms (MV1) and large firms (MV5). In figure 6.4, we can now better see that a market neutral portfolio for small firms does not work, since it generates an abnormal return of -5.56% for the 60 day holding period. The good news quintile performs as expected but the bad news quintile clearly does not. For the large firms, the hedge strategy works better, and we can see in figure 6.6 that the spread between the SUE1 and the SUE5 portfolio is increasing after the 30 day holding period and culminates at 60 days with an annual significant abnormal return of 17.29%.

Figure 6.3: BHAR for MV1 (SUE5 & SUE1)

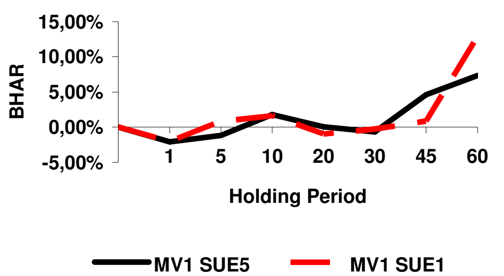


Figure 6.4: Trading Strategy MV1

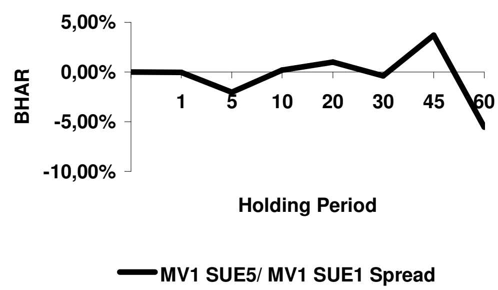


Figure 6.5: BHAR for MV5 (SUE5 & SUE1)

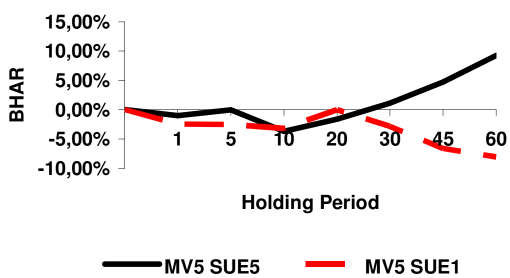
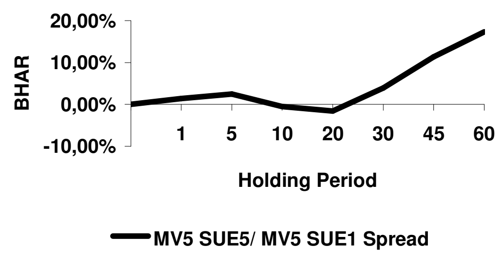


Figure 6.6: Trading Strategy MV5



To conclude, the PEAD trading strategy works better for large firms than small firms. In the next section we finally also look at the PEAD for growth and value firms.

6.3 Growth versus Value Firms

In table 6.4 below, we illustrate the annual buy & hold abnormal returns for different SUE portfolios and holding periods for value firms (MB1) and growth firms (MB5). From the table, we can see that the "good news firms" (SUE5) portfolio for value firms (MB1) generates an annual insignificant abnormal return of 6.91% over 60 day holding period. For growth firms (MB5), the "good news" portfolio generates as much as a significant annual abnormal return of 22.43%. These results are not consistent with Fama & French (1992) who states that there should be a premium for investing in low market-to-book companies. For "bad news firms", we obtain an insignificant positive abnormal return of 7.72% over the 60 day holding period for value firms. For growth firms, the equivalent return is -2.44%, although also insignificant.

Table 6.4: BHAR for MB1 (SUE5 & SUE1) and MB5 (SUE5 & SUE1)

Buy & hold abnormal returns, MB1 and MB5							
		MB1			**MB5**		
		SUE5	**SUE1**	**SUE spread**	**SUE5**	**SUE1**	**SUE spread**
Trading days following earnings announcement	**1**	-0,90	-0,71	-0,19	0,64	-1,66	2,31
	5	1,15	4,08**	-2,93	2,61	-8,34**	10,95**
	10	2,10	0,43	1,66	-2,76	-6,30**	3,53
	20	6,16	0,78	5,38	7,42	-1,98	9,40
	30	11,31**	3,78	7,53	10,96*	1,55	9,41
	45	1,21	1,36	-0,15	19,32**	-12,50	31,82**
	60	6,91	7,72	-0,80	22,43**	-2,44	24,87*

* Significant at the 5% level
** Significant at the 1% level

In figures 6.7 and 6.9 below, we illustrate the BHARs over different holding periods for value firms (MB1) and growth firms (MB5). Figure 6.8 show that the hedge strategy for value firms generates an abnormal return of -0.80% for the 60 day holding period. However, this result is insignificant as shown in table 6.4. For the growth firms, the hedge strategy works better than for value firms. In figure 6.10 we can see that the spread between the SUE5 and the SUE1 portfolio is generally increasing and culminates at 45 days with a significant annual abnormal return of 31.82%.

Figure 6.7: BHAR for MB1 (SUE5 & SUE1)

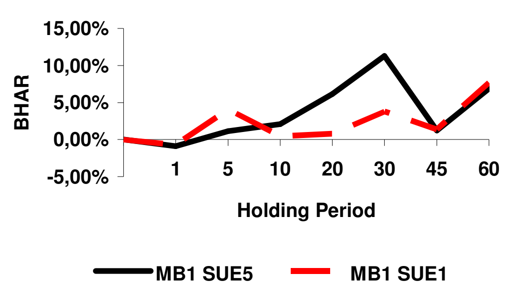


Figure 6.8: Trading Strategy MB1

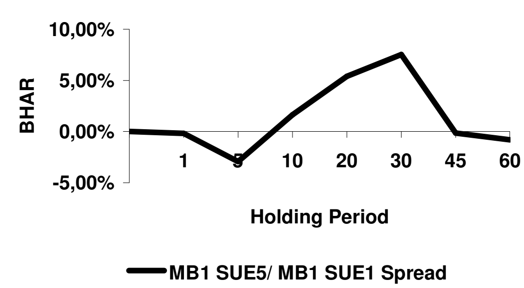


Figure 6.9: BHAR for MB5 (SUE5 & SUE1)

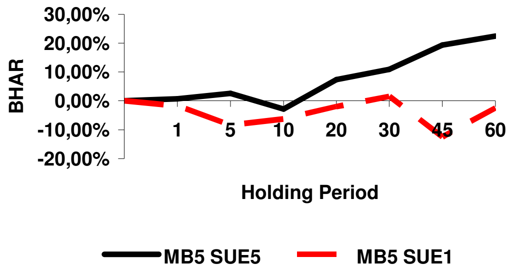
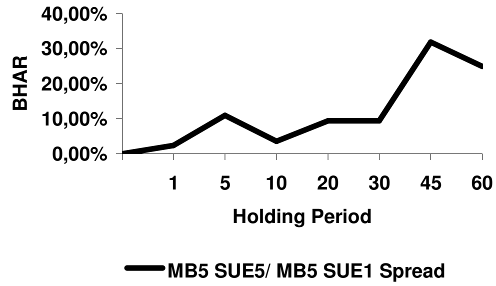


Figure 6.10: Trading Strategy MB5



To conclude, the PEAD is more evident for growth firms than for value firms, although these results should are not very robust due to a limited dataset. A more comprehensive discussion of our results will be covered in the next section.

7. Discussion

The purpose of this thesis was to examine the post earnings announcement drift in Sweden during 1 January 2001 to 31 July 2006 and investigate whether it is possible to build a successful trading strategy using this drift. We used a comprehensive dataset of 67 Swedish companies that varied in terms of size, growth prospects and industry classification and this resulted in 963 observations. The conclusion is that we found evidence of the PEAD anomaly in Sweden. A long position in stocks with unexpected earnings in the highest quintile (SUE5) combined with a short position in stocks in the lowest quintile (SUE1) yielded a significant annual abnormal return of 18.65%, not taking transaction costs into account. For "good news firms" there is a positive PEAD drift and for "bad news firms", there is a negative PEAD drift. The general results showed that the SUE5 portfolio, i.e. "good news firms" generated a significant annual abnormal return of 12.02% for a holding period of 60 trading days. The SUE1 portfolio, i.e. "bad news firms" generated a significant annual negative abnormal return of -6.63% for the same holding period. The natural question is how is this possible? Although this question has not been the aim of the thesis the most accepted answer in the current academic research is that the PEAD is a cause of underreaction of market participants, i.e. it is explained by psychological biases. This area of research has gained a lot of attention recently since it has been able to explain a lot of anomalies in finance. The more traditional finance theories covered in the theoretical framework, the efficient market hypothesis, the CAPM and the Fama French three factor model have not been able to explain this phenomenon. Our results are based on risk-adjusted returns using the CAPM framework. This yields that the correctness of our findings is heavily linked with CAPM and its validity. The defence for using the CAPM framework is that it is the best financial model recognised and the fact that it is common in practice as almost all funds are benchmarked using CAPM.

Despite the risk of small samples we also wanted to test the Fama French factors in order to see if we could explain the drifts better. We here found that the PEAD is more evident for growth firms compared to value firms and for large firms compared to small firms. If we combine all our results for our sub-samples based on market value and market-to-book ratio it would suggest that it would be most optimal to go long in “good news growth companies” and short “bad news large companies”. How can we explain these results? A possible explanation for the growth firm effect is that growth firms (MB5) have a high market-to-book ratio. Thus, investors believe that their pre-tax profits will grow at a high rate and if they underperform, they are punished heavily in the stock market and vice versa. This is mainly due to that their value is not backed up by their assets but by their future profits. The reverse reasoning can be applied for value firms (MB1). Hence, due to their low market-to-book values their value is backed up by their balance sheet and this makes them less sensitive to earnings announcement shocks.

Our results are economically significant since it would be profitable to trade on this anomaly in the market. The question is if it is really possible in practice? How large are the transactions costs and is it possible to short all stocks? We have investigated this as well and found that almost all of our 67 companies have securities available for lending in first week of December 2006[4]. However, the number of shares available for lending varies significantly between different companies and one could suspect limited supply after a negative earnings announcement. A good example of this is the spin-off of Palm by 3Com in March 2000, where 3Com sold an approximate 5% stake of Palm in an IPO. This later resulted in the anomaly of Palm being heavily overpriced compared to 3Com as the market value of 3Com deducting its 95% stake-hold in Palm was negative. Many investors therefore found it lucrative to go long in 3Com and short sell Palm and thereby create an arbitrage position. However, shorting Palm during this period was both very expensive and difficult. This case illustrates that some anomalies might be strong in theory but more difficult to exploit profitably in practice.

In terms of going long, the only problem is the transaction costs, i.e. the commission of a trade and the bid-ask spread. For an individual investor the strategy would be costly since they pay high commissions and the bid-ask spread. For institutions it is however less costly and more viable since they have the scale to achieve low costs. Therefore, it could

[4] Appendix 5

be more possible for institutions to use the PEAD to achieve abnormal returns in a hedge strategy.

7.1 Reliability

In order to determine the strength of our thesis we also discuss the reliability and validity of our study. Reliability refers to whether the result is replicable and validity refers to whether the measurement of data is accurate and whether they are actually measuring what they are supposed to measure. We start by discussing the reliability of the thesis.

Joppe (2000) defines reliability as to which extent the results are consistent over time and if it is an accurate representation of the total population under study. Basically, if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable. Embodied in this citation is the idea of repeatability of the results. Kirk and Miller (1986) identify three types of reliability referred to in quantitative research, which relate to: (i) the degree to which a measurement, given repeatedly, remains the same; (ii) the stability of a measurement over time; and (iii) the similarity of measurements within a given time period.

We have chosen the period between 1 January 2001 to 31 July 2006, which covers both a significant downturn and upturn in the Swedish stock market. Therefore, the period is representable over time. Since we have used publicly available information mainly taken from SIX Trust, DataStream, SME Direkt and OMX homepage it should not be a problem to re-obtain the data. We also believe that the 67 companies are a good representation of the general population since they vary in terms of size, growth prospects and industry. Furthermore, we have in our method shown our research procedure on a step-by-step basis. The purpose of this is to make the reader aware of our approach and also to be able to replicate our study. We have consciously chosen not to disclose our Stata code. The reason for this is that it would take up large proportions of the paper. Further, we believe our method is explained well enough for anyone to understand how one should reproduce our study. To conclude, we believe that the reliability of this thesis is strong.

7.2 Validity

Joppe (2000) states that validity determines whether the research truly measures what it is intended to measure and how truthful the research results are. Researchers generally determine validity by asking a series of questions, and will often look for the answers in the research of others. Wainer and Braun (1998) state that quantitative researchers actively cause or affect the interplay between construct and data in order to validate their investigation, usually by the application of a test or other process. This is sometimes also referred to as “data mining”.

In our thesis, we argue that we have used a relatively large dataset considering the fact that we are analyzing the Swedish stock market. The dataset consists of 67 companies and a total of 971 observations. This would be considered low in the US where it is common to have more than 1000 companies. However, in Sweden the availability of analyst forecasts is restricted but due to our access to SME Direkt database we have been able to gather this data. Therefore, the amount of data does not disturb our general results. However, in our analysis of the Fama French factors and the creation of sub-samples based on market-to-book ratios and market values a limited dataset is obtained. Therefore these results do not have very strong validity. Further, there is a risk of errors in the reported data for the complete set and the sub-samples. But in this case we have double-checked all the data from SIX Trust with the data from the company homepages, OMX homepage and DataStream. We have also thoroughly checked the accuracy of stock returns, market values and market-to-book ratios.

The validity of our thesis is strengthened by the fact that we used value weights since we then does not need to rebalance our portfolios daily and the trading costs are thereby heavily reduced. Our findings are also very much dependent on the CAPM and the estimations of betas. Although we have been very thorough in estimating beta, there is no guarantee that CAPM is applicable in practice. However, in current finance theory there is no better asset pricing model that is widely used. Finally, we want to argue that we have not done any data mining, although we have removed a few outliers. Therefore, we believe that our general results represent the raw truth. To conclude, we believe that the validity for the results for the market value and market-to-book sub-portfolios is not as strong as the general results.

7.3 Suggestions of Further Research

In this thesis we have chosen to quantify the PEAD in Sweden by using the SUE metric as our decision maker. We have chosen to use actual analysts' forecasts for this metric whereas it is also common to use an autoregressive function to determine expected earnings. This is something that could be exploited in further research as well as looking at other metrics. One interesting metric to explore is the EAR, which is the Earnings Announcement Return. This measures the return in a three day window surrounding the earnings announcement and thereafter uses this as a signal like the SUE. Some research in US have suggested that using this metric to determine portfolios may lead to higher abnormal returns. It would be interesting to see whether this is valid for the Swedish market? Furthermore, it would also be interesting to expand the time period and see if our method can be replicated for the entire Nordic stock market. This is interesting since the stock markets in Sweden, Denmark and Finland have recently been consolidated into one single Nordic market. Finally, an examination of the underlying reasons for PEAD is something that is difficult to quantify and it is something that we leave for future research as well.

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Appendix 1: T-statistics for Portfolios

T-values, complete set

Trading days following earnings announcement	SUE5	SUE4	SUE3	SUE2	SUE1	SUE spread
1	-0,21	-0,62	-1,06	-3,61	-3,29	2,07
5	1,14	1,15	2,11	1,51	-3,71	2,29
10	-1,62	1,32	1,54	4,02	-2,38	0,33
20	0,18	1,00	2,46	0,46	-0,21	-0,02
30	1,96	1,22	3,15	-1,50	0,12	0,67
45	3,75	1,38	0,14	-3,09	-2,11	3,23
60	4,78	0,62	0,44	-2,75	-2,01	3,71

T-values, MB1 and MB5

	MB1			MB5		
Trading days following earnings announcement	SUE5	SUE1	SUE spread	SUE5	SUE1	SUE spread
1	-0,74	-0,83	-0,04	0,37	-1,41	0,80
5	0,34	2,35	-1,09	1,56	-4,32	3,03
10	0,55	-0,03	0,15	-1,80	-2,34	0,84
20	1,85	-0,08	0,70	1,79	-0,69	1,29
30	3,04	0,58	0,63	2,14	0,30	1,11
45	0,29	0,32	-0,12	3,81	-1,93	3,22
60	1,71	1,92	-0,34	4,03	-0,14	1,98

T-values, MV1 and MV5

	MV1			MV5		
Trading days following earnings announcement	SUE5	SUE1	SUE spread	SUE5	SUE1	SUE spread
1	1,58	-0,88	0,24	-1,47	-4,51	1,90
5	-0,65	0,10	-0,42	-0,22	-3,16	1,28
10	0,43	0,06	-0,31	-3,84	-3,43	-0,19
20	-0,38	-0,74	-0,38	-1,32	-0,11	-0,78
30	-0,78	-0,75	-0,80	0,51	-2,03	1,17
45	0,68	-0,40	-0,14	2,76	-2,88	3,45
60	0,96	1,05	-1,17	3,49	-3,06	3,89

Appendix 2: Observations for each Quarter

	Observations
2001Q1	30
2001Q2	32
2001Q3	33
2001Q4	33
2002Q1	33
2002Q2	39
2002Q3	42
2002Q4	37
2003Q1	43
2003Q2	45
2003Q3	48
2003Q4	52
2004Q1	51
2004Q2	52
2004Q3	55
2004Q4	55
2005Q1	57
2005Q2	57
2005Q3	55
2005Q4	58
2006Q1	56

Appendix 3: SUE Limits for each Quarter

SUE limits for each quarter											
2001Q1	n/a	**<SUE1**	n/a	**≤SUE2<**	n/a	**≤SUE3<**	n/a	**≤SUE4<**	n/a	**SUE5≥**	n/a
2001Q2	-0,90	**<SUE1**	-0,90	**≤SUE2<**	0,16	**≤SUE3<**	1,47	**≤SUE4<**	2,59	**SUE5≥**	2,59
2001Q3	-1,10	**<SUE1**	-1,10	**≤SUE2<**	-0,09	**≤SUE3<**	0,57	**≤SUE4<**	2,04	**SUE5≥**	2,04
2001Q4	-1,09	**<SUE1**	-1,09	**≤SUE2<**	-0,42	**≤SUE3<**	0,45	**≤SUE4<**	1,94	**SUE5≥**	1,94
2002Q1	-1,10	**<SUE1**	-1,10	**≤SUE2<**	-0,29	**≤SUE3<**	0,66	**≤SUE4<**	1,87	**SUE5≥**	1,87
2002Q2	-1,10	**<SUE1**	-1,10	**≤SUE2<**	-0,11	**≤SUE3<**	0,74	**≤SUE4<**	1,97	**SUE5≥**	1,97
2002Q3	-1,15	**<SUE1**	-1,15	**≤SUE2<**	-0,14	**≤SUE3<**	0,71	**≤SUE4<**	1,94	**SUE5≥**	1,94
2002Q4	-1,25	**<SUE1**	-1,25	**≤SUE2<**	-0,21	**≤SUE3<**	0,77	**≤SUE4<**	1,97	**SUE5≥**	1,97
2003Q1	-1,21	**<SUE1**	-1,21	**≤SUE2<**	-0,21	**≤SUE3<**	0,77	**≤SUE4<**	1,88	**SUE5≥**	1,88
2003Q2	-1,21	**<SUE1**	-1,21	**≤SUE2<**	-0,22	**≤SUE3<**	0,71	**≤SUE4<**	1,86	**SUE5≥**	1,86
2003Q3	-1,25	**<SUE1**	-1,25	**≤SUE2<**	-0,22	**≤SUE3<**	0,74	**≤SUE4<**	1,87	**SUE5≥**	1,87
2003Q4	-1,25	**<SUE1**	-1,25	**≤SUE2<**	-0,17	**≤SUE3<**	0,71	**≤SUE4<**	1,86	**SUE5≥**	1,86
2004Q1	-1,21	**<SUE1**	-1,21	**≤SUE2<**	-0,21	**≤SUE3<**	0,71	**≤SUE4<**	1,85	**SUE5≥**	1,85
2004Q2	-1,21	**<SUE1**	-1,21	**≤SUE2<**	-0,21	**≤SUE3<**	0,72	**≤SUE4<**	1,86	**SUE5≥**	1,86
2004Q3	-1,19	**<SUE1**	-1,19	**≤SUE2<**	-0,20	**≤SUE3<**	0,71	**≤SUE4<**	1,85	**SUE5≥**	1,85
2004Q4	-1,19	**<SUE1**	-1,19	**≤SUE2<**	-0,16	**≤SUE3<**	0,72	**≤SUE4<**	1,86	**SUE5≥**	1,86
2005Q1	-1,19	**<SUE1**	-1,19	**≤SUE2<**	-0,16	**≤SUE3<**	0,71	**≤SUE4<**	1,86	**SUE5≥**	1,86
2005Q2	-1,21	**<SUE1**	-1,21	**≤SUE2<**	-0,20	**≤SUE3<**	0,71	**≤SUE4<**	1,85	**SUE5≥**	1,85
2005Q3	-1,19	**<SUE1**	-1,19	**≤SUE2<**	-0,14	**≤SUE3<**	0,73	**≤SUE4<**	1,87	**SUE5≥**	1,87
2005Q4	-1,19	**<SUE1**	-1,19	**≤SUE2<**	-0,09	**≤SUE3<**	0,79	**≤SUE4<**	1,88	**SUE5≥**	1,88
2006Q1	-1,21	**<SUE1**	-1,21	**≤SUE2<**	-0,12	**≤SUE3<**	0,77	**≤SUE4<**	1,87	**SUE5≥**	1,87

Appendix 4: Company List

Nr	*Company*	*Industry*
1	ABB	Industrials
2	Alfa Laval	Industrials
3	Assa Abloy	Industrials
4	AstraZeneca	Health Care
5	Atlas Copco	Industrials
6	Autoliv	Consumer Discretionary
7	Axfood	Consumer Staple
8	Billerud	Materials
9	Boliden	Materials
10	Capio	Health Care
11	Clas Ohlson	Consumer Discretionary
12	Carnegie	Financials
13	Electrolux	Consumer Discretionary
14	Elekta	Health Care
15	Eniro	Consumer Discretionary
16	Ericsson	Information Technology
17	Fabege	Financials
18	Getinge	Health Care
19	Gunnebo	Industrials
20	Haldex	Industrials
21	H&M	Consumer Discretionary
22	HiQ	Information Technology
23	Höganäs	Materials
24	Holmen	Materials
25	IBS	Information Technology
26	IFS	Information Technology
27	Intrum Justitia	Industrials
28	JM	Financials
29	Lindex	Consumer Discretionary
30	Lundin Petroleum	Energy
31	Metro	Consumer Discretionary
32	Millicom	Telecommunications
33	MTG	Consumer Discretionary
34	Munters	Industrials
35	NCC	Industrials
36	Nobel Biocare	Health Care
37	Nobia	Consumer Discretionary
38	Nokia	Information Technology

39	Nordea Bank	Financials
40	Observer	Industrials
41	OMX	Financials
42	Orc Software	Information Technology
43	Oriflame	Consumer Staple
44	Proffice	Industrials
45	Rottneros	Materials
46	Saab	Industrials
47	Sandvik	Industrials
48	SAS	Industrials
49	SCA	Materials
50	Scania	Industrials
51	SEB	Financials
52	Securitas	Industrials
53	Skanska	Industrials
54	SKF	Industrials
55	SSAB	Materials
56	Stora Enso	Materials
57	SHB	Financials
58	Swedish Match	Consumer Staple
59	Tele2	Telecommunications
60	Teleca	Information Technology
61	Telelogic	Information Technology
62	TeliaSonera	Telecommunications
63	Tietoenator	Information Technology
64	Trelleborg	Consumer Discretionary
65	Unibet	Consumer Discretionary
66	Volvo	Industrials
67	WM-data	Information Technology

Appendix 5: Availability of Stocks to Short

This appendix refers to the number of lent shares on the 1 December 2006 and contains information on the number of lent shares per stock series.

Weekly report for stock lending (w. 48)

Stock	No of shares	Value (SEK)
ABB Ltd	3 340 220	365 754 090
Alfa Laval	1 422 776	373 478 700
Anoto Group	2 950 696	33 933 004
Aspiro	341 000	1 050 280
ASSA ABLOY B	5 439 131	735 642 468
AstraZeneca	1 919 280	740 842 080
Atlas Copco A	2 946 433	589 286 600
Atlas Copco B	1 534 291	301 488 182
Axfood	98 420	25 195 520
Axis	168 903	14 779 013
Billerud	1 538 162	176 888 630
Boliden	1 095 247	180 168 132
Boss Media	147 300	1 590 840
Broström B	1 683 050	233 523 188
Castellum	409 572	35 837 550
D. Carnegie & Co	623 800	83 745 150
Electrolux B	4 018 979	520 457 781
Elekta B	624 979	93 121 871
Eniro	2 750 767	236 565 962
Ericsson A	41 453	1 081 923
Ericsson B	35 315 178	919 960 387
Fabege	3 054 823	536 121 437
Getinge B	599 498	76 585 870
Gunnebo Industrier	49 267	8 055 155
Hennes & Mauritz B	1 242 254	395 036 772
HiQ International	83 600	3 176 800
Holmen B	559 731	163 161 587
IBS B	9 000	184 500
Industrial & Financial Systems	616 476	5 579 108
Industrivärden A	201 527	47 358 845
Industrivärden C	140 016	31 083 552
Intrum Justitia	23 800	1 898 050
Investor A	29 471	4 376 444
Investor B	3 400 876	508 430 962

JM	1 387 379	193 886 215
Karo Bio	21 179	261 561
Kinnevik A	15 590	1 559 000
Kinnevik B	2 342 885	235 459 943
Kungsleden	4 468 803	425 653 486
LBI International	760	32 680
Lundin Mining Corporation	835 785	195 573 690
Lundin Petroleum	1 951 691	140 521 752
Meda A	682 100	149 038 850
Millicom Int. Cellular SDB	166 154	63 803 136
Modern Times Group B	660 749	276 523 457
NCC A	4 315	724 920
NCC B	1 590 687	263 258 699
Nobia	432 228	105 031 404
Nokia SDB	1 196 069	161 110 494
Nordea Bank	7 085 740	677 396 744
Observer	180 037	5 779 188
OMX	1 757 081	219 195 855
Orc Software	41 600	4 191 200
Oriflame, SDB	524 134	135 488 639
Protect Data	110 600	20 405 700
RaySearch Laboratories B	2 007	292 520
ReadSoft B	29	684
Rottneros	136 177	912 386
Sandvik	8 517 963	743 192 272
SCA A	31 769	10 769 691
SCA B	866 228	284 122 784
SCANIA A	133 739	65 532 110
SCANIA B	1 272 709	601 991 357
SEB A	4 619 566	923 913 200
SEB C	47 000	9 212 000
SECTRA B	158 054	11 379 888
Securitas B	3 053 342	283 197 471
Sensys Traffic	70 000	353 500
Skanska B	3 774 611	455 784 278
SKF A	41 513	4 670 213
SKF B	1 729 606	193 283 471
SSAB A	2 071 295	293 606 066
SSAB B	133 810	17 963 993
Stora Enso A	201 958	21 357 059
Stora Enso R	1 814 893	189 656 319

Swedbank A	2 585 383	625 662 686
Swedish Match	2 602 989	307 152 702
Sv. Handelsbanken A	3 151 089	575 073 743
Sv. Handelsbanken B	170 150	31 392 675
SAAB B	6 537	1 291 058
Tele2 A	50	4 488
Tele2 B	4 509 212	399 065 262
Teleca B	652 295	18 199 031
Telelogic	1 912 862	24 388 991
TeliaSonera	9 619 553	505 026 533
Teligent	22 000	204 600
Trelleborg B	1 471 378	217 028 255
Swedish Match A	2 167 135	988 213 560
Swedish Match B	1 773 561	785 687 523
Vostok Nafta SDB	163 668	73 896 102
Zodiak Television B	20 088	411 804
Total Value SEK		**19 384 227 308**