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Strategic Earnings Announcements on Stockholm OMX Exchange

A study of the tendency to and market reaction towards disclosure of earnings announcements during periods of lower market attention(?)

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Abstract
In this study, we investigate the phenomenon of *Strategic Earnings Announcements* on the Stockholm OMX Exchange. Using basic t-tests, we report that earnings announcements made on Fridays are not related to negative earnings surprises when compared to other weekdays, rather there are indications that Friday announcements are related to a positive surprise in the market. However, we show that the analysts and markets expectations for Friday announcements is indeed lower than expectations for earnings announcements on other days, even when comparing with paired samples of companies, but the actual reported earnings are not lower for Friday announcements. Together, these facts are the cause of the more positive surprise of Friday earnings announcements. Conducting an event study, we further discover that Friday announcements do not suffer from reduced market attention, as the abnormal and cumulative abnormal return, for different levels of earnings surprise, does not significantly differ for announcements on Fridays and other days. Our findings are in contrast to previous studies performed on U.S data, but we are unable to explain why with any certainty.

Tutor: Stina Skogsvik
Keywords: *Earnings Announcements*, *Efficient Market Hypothesis, Investor inattention, Event Study*

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1. Introduction

Financial reports are highly anticipated by investors to evaluate the company and make investment decisions, as the reports are one of the major methods for firms to communicate with the market (Hjelström et. al., 2014). One of the most anticipated figure is the company's earnings, since it is a way for the market to measure the company's profitability and the possible return on investment. When a company surprises a market with unexpected earnings, which can be both negative and positive, it is not unusual that the information makes headlines in leading Swedish newspapers, showing the importance of earnings news.

Due to the importance of the disclosed information in quarterly reports and the potential market abuse, strict rules govern in what manner the information is disclosed (see 2.4). The rules are designed to guarantee that everyone participating within the market are able to take part of the information at the same time. This leaves little room for companies to manipulate how the information is received within the market. However, as explained in 1.1 and further in 2.3, previous research has found that there are indications of strategical aspects to *when* firms choose to disclose their information.

Focusing on the topic of quarterly earnings announcements, studies have shown that a relation exists between earnings announcements that fall below markets expectations and firms choosing to disclose such information on times when the market seems to be inattentive (Penman, 1987; Damodaran, 1989; DellaVigna & Pollet, 2009, Michaely et. al., 2016). The consensus from previous research is that Friday announcements and announcements made after market closing correlated with a negative earnings surprise.

Since the discovery of the anomaly of the reporting pattern in the 1980s, technology improvements, globalization and "around the clock" media coverage have made investor information more available, especially in recent years. As such, it can be questioned whether manager's strategic timing to disclose of earnings announcements is a viable strategy in the modern market. Further, there are no previous studies on this subject with a Swedish data sample, raising the question whether the observed phenomenon exists in a Swedish setting.

1.1 Purpose

The aim of this thesis is to examine whether Swedish firms tend to disclose quarterly earnings announcements that falls short of the markets expectation during times of assumed lower market attention, *so-called strategic earnings announcements*, and to measure the market

response to establish whether the assumed lowered market attention can be measured and confirmed. We are inspired by Michaely et al. (2016) and similar studies conducted on U.S. data, which have found a relation between earnings announcements that fall below investor's expectations and firms choosing to disclose such information on Fridays and other time periods characterized by investor inattention. Numerous studies indicate that quarterly earnings announcements are carriers of information to financial markets on future prospect of the firm, as positive (negative) earnings surprises induce positive (negative) market reactions (Watts, 1978; Aharony and Swary, 1980; Joy et al., 1977). Therefore, by studying the phenomenon of strategic timing of earnings announcements on the Stockholm OMX Exchange, we hope to shed light on whether Swedish companies strategically time their earnings announcements to try to discriminate or mislead their investors.

The study will start off by examining the existence of strategic earnings announcements during Fridays on the Stockholm OMX Exchange, followed by an event study that examines the market's reaction to Friday announcements compared to announcements made on other days of the week.

1.2 Contribution

Our study contributes to the existing literature in three ways. First, as to our understanding, no previous research has been conducted on Swedish companies in the field of interest. Thus, it's of importance to highlight the difference between Swedish and non-Swedish firms in terms of their strategies to disclose of financial information. Therefore, by studying the phenomenon in a Swedish setting, we hope to inspire further studies in the field of strategic earnings announcements amongst Swedish listed companies. Secondly, the possible existence of strategies to delay market reaction by announcing during times where information dissemination is limited is of importance not only to investors, but also standard setters and regulators as it could discriminate among investors and create a dysfunctional market. Finally, to our knowledge there is no available data which study the report releasing behaviour in terms of timing in a Swedish context. Our descriptive statistics will illustrate observable pattern of report timings on the Stockholm OMX Exchange.

1.3 Delimitation

The study is limited to Swedish listed firms on the Stockholm OMX Exchange during the period of 2005-2016. We chose to only study firms listed on the Stockholm OMX as they fall under the same regulations and rules set out by for example NASDAQ Exchange. In addition, we find

that using bigger listed companies that to a greater degree adhere to international accounting standards strengthen our comparability with American firms and thereby previous studies.

The primary purpose of this study is not to examine the reason behind the decision to disclose of earnings announcement on Fridays, but instead its aim is to verify the phenomenon's existence on the Swedish market. Therefore, the study will not be able to give any proven explanations to the phenomenon itself. However, theoretical reasons are used as a framework in the development of our hypothesis and in the analysis of our results. Furthermore, the study does not take into consideration any other form of announcements made by the announcing firm during the sample period, including, but not limited to, mergers, dividend changes or SEOs. Finally, the study does not provide any advice on how to create trading strategies on the phenomenon, as such studies fall outside the scope of the hypothesis.

2. Theory and previous research

In this section, we will provide an overview of the theoretical background of the efficient market hypothesis and relating literature concerning earnings announcements. Continuing on the topic of market efficiency, we describe the contradicting phenomena of post-earnings-announcement drift, investor's inattention as well as the strategic disclosure hypothesis. Finally, this section also provides a brief description of background information essential when analyzing the results. We therefore describe the rules on Nasdaq Exchange, relevant Swedish laws, earnings announcements and earnings estimates.

2.1 Efficient market hypothesis

The efficient market hypothesis, as developed by E.F. Fama (1965,1970), is today one of the cornerstones of financial economics. The hypothesis states that the asset price fully reflects all information currently available. That is, the market is considered to be efficient if it fully and in a correct way incorporates and reflects all relevant information available in to the asset price. As such, the asset price will always trade at its fair value, thus making it impossible to find an arbitrage opportunity or to outperform the overall market.

The efficient market hypothesis focuses on the information flow, efficiency and transparency and states that these are the only factors that can affect the asset price. Assuming that the information available is disseminated efficiently and without discrimination, all actors are assumed to be given the same market information simultaneously, thereby hindering information advantage. The result is that the efficiency is closely linked to the information at hand and trading on such information will not yield any abnormal return, instead the investor

is only rewarded for the excess risk. The reason, as stated by Fama (1965, 1970), is that the asset price will instantly reflect all available information, thereby hindering participants from making abnormal returns trading on new information. As such, the development of the asset price resembles that of a "Random walk". The hypothesis makes two additional assumptions, namely no transaction costs and that all participants have homogeneous expectations.

The hypothesis recognizes three different forms of efficient markets; *weak, semi-strong* and *strong form*. The *weak form* assumes that the currently available information is already reflected in the asset price and contends that past price and volume data have no relationship with the future direction of the asset price. The *semi-strong form* assumes that the current asset price adjusts instantly to the release of new public information and contends that the price has factored in all available market and non-market public information. The *strong form* assumes that the current asset price reflects both public and private information and thus contends that market, non-market and inside information are all incorporated into the current asset price. As such, no one has monopolistic access to relevant information (Fama, 1965; 1970).

2.2. Anomalies

In this section we explain some theories of anomalies to the theory of the efficient market.

2.2.1 Post-earnings-announcement drifts

Contradicting the efficient market hypothesis is the post-earnings-announcement drift (PEAD) as first discovered by Ball and Brown (1968), which explains a tendency for a stock's cumulative abnormal return to drift in the direction of the earnings surprise for several weeks, sometimes even months, following an earnings announcement. This finding is in contrast to the efficient market hypothesis as investors should quickly digest the information provided by the corporate announcement and incorporate it into the asset price.

Ball and Brown's findings were later confirmed by Jones and Litzenberg (1970) as they found results supporting the hypothesis of imperfect stock markets. They further concluded that the earnings announcements are not fully incorporated by the market at the time of its disclosure.

Bernard and Thomas (1989) found further evidence stating that price reaction is delayed due to investors falling short of assimilating available information or because costs exceed the gains from immediate information exploitation. They concluded that their findings were consistent with a market that falls short in recognizing the implication of current earnings for future earnings. In their following study, Bernard and Thomas (1990) maintained their belief that a large part of the PEAD occurs at subsequent earnings announcement dates and argue that the

reason for this is due investors failing to understand the quarterly earnings generation process. They continue by hypothesizing that investors assume that earnings follow a seasonal random walk, thus failing to understand the implication of current earnings for future earnings. Therefore, their findings are in line with what most researchers conclude to be the explanation for the PEAD, namely that investors underreact to earnings announcements.

2.2.2. Limited investor attention

Trying to explain the post-earnings-announcement drift (PEAD), some researchers point at the cognitive constraints and limited attention of investors (Kahneman, 1973), while other focus on the event day itself; namely Fridays (DellaVigna and Pollet, 2009; Louis and Sun, 2010). The intuitive explanation given is that investors are preoccupied with the upcoming weekend during Fridays, thus reacting slower to corporate announcements. Studying different types of announcements, both studies found evidence of reduced response on Fridays in connection to corporate news announcements; DellaVigna and Pollet (2009) studied earnings announcements, while Louis and Sun (2010) focused on merger announcements.

Damodaran (1990) concluded that the weekend effect; *a studied phenomenon of reduced market returns on Mondays*, at least in part could be attributed to the underperforming firms which choose to disclose information during Fridays or weekends, meaning that the reaction to Friday announcement is delayed over the weekend. Delving deeper into the Friday phenomenon, DellaVigna and Pollet (2009) found that Friday announcements result in a 15% lower immediate response (same day) and a 70% higher delayed response (next market trading day) compared to other days. The findings indicate that investors initially underreact to earnings announced on Fridays, thereby insinuating that there may be market inefficiencies regarding earnings announcements on Fridays.

Hirschleifer et al. (2009) found further evidence of limited investor attention as they studied the information overload faced by investors. They found that when numerous earnings announcements are made during a single day, price and volume reactions are much weaker and PEAD much stronger compared to less crowded days. Strikingly, similar investor inattention was found by Ehrman and Jansen (2012) as they studied the effect the FIFA World Cup in South Africa had on the stock market. They found that trades were highly influenced by match events, leading to lower investor attention and lagging investor reaction to corporate news during game time.

Barber and Odean (2008) focused on the different types of investors and argue that individual investors are more attention-driven and prone to buy stocks that are frequently mentioned in newswires. Individual investors differ from professional investors as the later have more time and resources, thereby enabling them to monitor a wider range of stocks. Inattention is therefore not only due to cognitive constraints and the event day itself, but also due to differing resources amongst investors.

However, in a more robust study, Michaely et al. (2016) examines a wide set of corporate disclosures and propose that previous findings might be the result of selection bias. By adding unobservable firm characteristics using a Friday announcer dummy variable, they conclude that the differential reaction is caused by the difference in the characteristics of the firms that make Friday announcements and firms that do not make Friday announcements. That is, Friday announcements have lower market reaction as a result of the characteristics of the announcing firms themselves and not due to the fact that they announce on a Friday.

2.3. Strategic disclosure hypothesis

Although in many ways similar to limited investor attention, as the strategic disclosure hypothesis also examines the market reaction to corporate disclosures, the difference is that the hypothesis focuses on the tendency of firms to disclose of bad corporate news during periods of market inattention in order to gain a reduced market reaction (Patell and Wolfson, 1982; Penman 1987; Damodaran, 1989; DellaVigna and Pollet, 2009).

Over the years, various explanations for strategic disclosure of earnings announcements have surfaced. Trueman (1990) theorizes that the imposed strategy is a way of giving the investors a longer period of time to audit the earnings report reflecting bad news to decrease volatility following the announcement. Another reason, also proposed by Trueman (1990), is due to insider trading; *to give the firm's management time to sell off securities before the bad news are reflected by the market*. Penman (1987) however, has a different view, he sees Friday announcements as a way for managers to take advantage of less media coverage and investor inattention as a strategy to "hide" bad news to mitigate the negative market reaction.

Patell and Wolfson's (1982) were early in discovering the phenomenon of earnings announcements made after market closes, on Fridays and on a combination of both tend to contain worse news than any other times of day and days of the week. The topic was further researched by Penman (1987), who studied the so-called weekend effect; *market returns are lower on Mondays compared to any other day of the week*, and found an evident intraweek

reporting pattern; *bad news are more likely to reach the market on Mondays*. Penman further found that firms tend to release earnings early when the news are good and late when bad, indicating some form of strategic decision in their disclosure of earnings announcements.

Begley and Fischer (1998), later confirmed by Bagnoli et. al (2002), found that when earnings reports were delayed or postponed by managers it correlated with lower earnings reported and a reaction from the market in the same direction, something Bagnoli et. al called "A day late, a penny short". This second strategy is further explained by Graham's et. al (2005) survey evidence; managers delay the release of bad news so that investors anticipate it, thereby mitigating the decrease in share price at the announcement date itself. This qualitative result was later found in a quantitative study by DeHaan et. al (2015), as they found that firms tend to release bad news on Fridays, but market attention is on point as investors seems to predict bad news when a Friday announcement is decided upon.

Somewhat contradicting, Doyle and Magilke (2009) found that, by analyzing firms that switch to a Friday, there was no evidence that firms switched to a Friday announcement date due to having bad news. However, their study provides a third explanation for the strategic disclosure hypothesis; complex firms tend to announce earnings after market closes, as they want to give the market extra time to assimilate the announced earnings. Michaely et. al. (2014) proposes another possible explanation, that the reason to choose periods of market inattention is that "[...] *investors that have low trading costs and trade right when earnings are announced may capitalize[...], such as hedge funds or professional investors that actively follow the market. In contrast, good governance firms avoid giving advantage to one group of investors and aim at achieving efficient processing of information*".[1] Further, they found that earnings releases during trading hours face a reduced market response as opposed to outside trading hours.

Interestingly, in their study from 2006 Bagnoli et al. found that only 27 % of all earnings announcements are made during trading hours as opposed to 67% in research a couple of decades earlier. Table 2.1 below further describes previous studies' findings, methods and data set.

[1] Michaely, R. Rubin, A. and Vedrashko, A. 2014, "Corporate Governance and the Timing of Earnings Announcements" *Review of Finance,* vol. 18, no. 6, pp. 2002-2044 (2041)

TABLE 2.1 - Previous research

Author/year	Data	Focus of study	Type of announcement(s)	Estimated market expectation	Control Variables	Statistical test	Frequency of Fridays (%)	Results
Patell & Wolfson (1982)	U.S. 1976-1979	Intraday timing of Corporate Disclosure	- Earnings releases - Dividend announcements	*none*	*none*	t-test	~8	Earning announcements released after market are "bad news"
Penman (1987)	U.S. 1971-1982	Distribution of earnings news	- Quarterly earnings reports - Yearly earnings announcements	*none*	*none*	F-test	17,5	"Bad news" on Mondays and Fridays.
Damodaran (1989)	U.S. 1982-1985	Friday announcements as explanation of the "weekend effect"	- Earnings announcements - Dividend announcement	$\Delta EPS_t = \frac{(EPS_t - EPS_{t-4})}{ABS(EPS_{t-4})}$	*none*	t-test	14	"Bad news" on Fridays doesn´t account for the "weekend effect" alone.
DellaVigna & Pollet (2009)	U.S. 1995-2006	Investor inattention to Friday announcements	- Earnings announcements	$s_{t,k} = \frac{e_{t,k} - \hat{e}_{t,k}}{P_{t,k}}$	Company size, disclosure regulation, year, month, market capitalization, earnings surprise volatility	regression	5,7	Evidence support inattention hypothesis. Reduced immediate and delayed reaction to Friday earnings announcements.
Doyle & Magilke (2009)	U.S. 2000-2005	The timing of earnings news as the explanation to Friday's "bad news"	- Earnings announcements	$Surprise = EPS - Estimated\ EPS$	Complexity, Time Zone, Market Cap, Institutional ownership, Industry Indicator, No. Analysts	t-test	4,3	Controlling variables reduced the explanation value of earnings surprise as the driving factor for choosing to announce on Friday or after-market
deHaan et al. (2015)	U.S. 2000-2011	Managers attempt to hide "bad news" by reporting after-market and on Fridays?	- Earnings announcements	$s_{t,k} = \frac{e_{t,k} - \hat{e}_{t,k}}{P_{t,k}}$	Company Size, Book-to-Market, Leverage, No. Estimates, Q4 indicator, Days since quarter end, Institutional Ownership, Announcement Delay,	regression	7,6	Worse news during periods of inattention, better news during periods of attention. Market reacts negatively when a Friday announcement date is declared.
Michaely et al. (2016)	U.S. 1995-2010	Investor inattention to Friday announcements and market response	- Repurchases - SEOs - Mergers - Dividend changes - Earnings	*none*	Company Size, No. Analysts, Institutional Ownership, Book-to-Market, Leverage	t-test, z-test & regression	6,3	The reduced market attention to Friday earnings announcement is explained by unobservable characteristics of the firms that choose to announce on Fridays.

2.4 Background information

Nasdaq Stockholm

Nasdaq Stockholm is a security exchange dealing with mainly Swedish financial instruments. Being a security exchange, Nasdaq follows regulations set forth by legislators and are as such subject to the rules in the Swedish Securities Market Act 2007:528 (*"Lagen om värdepappersmarknaden"*). According to this law issuers must publish information swiftly and in a non-discriminatory way be made available for everyone within the European Union. The criteria of non-discriminatory information disclosures are to ensure that everyone has the ability to receive the information at the same time.

In addition, Nasdaq has issued guidelines of their own. Amongst them, is the "Guidance for preparing interim management statements" (2016), which states how the listed companies must disclose of interim financial reports. Interim financial reports must be disclosed of within two months after the end of the reporting period and must contain comments on the performance of the company. The company needs to publish a financial statement, in one form or another, for the first and third quarter per the Nasdaq regulation. A large part of the firms listed on the Stockholm Exchange, however, are following the rules of IAS 34 and are thus required to release a statement for every quarter. The quarterly reports should be disclosed of in such a manner which enables fast access and complete, correct and timely assessment of the information made public. Apart from publishing the information on the listed company´s website, the information needs to be dissimilated to other news sources that enables fast access, of which one is the Nasdaq Stockholm Exchange's website.

However, apart from stating the latest reporting date, the Nasdaq's "Guidance for preparing interim management statements" (2016) does not state the latest hour at which the reporting must take place. Instead, at what time during the day the company chooses to report is a decision freely made by the company. However, looking at the Swedish market, the majority of the Nasdaq´s listed companies chooses to disclose their financial reports during the morning (see table 4.1.)

Insider information, as defined by the Market Abuse Regulation (EU Regulation No 596/2014) article 7, is information of precise nature, which has not yet been made public, but if made public would have a significant impact on the price of those financial instruments. As follows, Nasdaq listed companies must report individuals having access to insider information as a way of limiting the possibility of insider trading*; trading on information not yet made public.*

Quarterly reports

Hjelström et al. (2014), by the initiative of Swedish Enterprise (*"Svenskt Näringsliv"*), studied the Swedish capital market actors´ use of financial reports. They found that the interim report was the one report most actively awaited by the market actors, as it was used to update the analysts´ own models and forecast, especially in regards to the presented earnings. In contrast, annual reports were more used as a source for updating information not available in the interim reports and for a more general update of the company.

Previous research has found that most capital market actors rank both the information in annual and interim reports highly. However, Hjelström et al.´s (2014) findings indicate that annual and interim reports are used differently for capital market actors, but the interim reports are more used as a timely update on the company´s recent performance. What further speaks for interim reports influence was that analysts felt that the better quality of the interim report, the less important the annual report.

Earnings estimates

Earnings estimates are compiled of the average or median of analysts´ forecasts of a company's different key metrics, e.g. revenue, Earnings before interest, tax, depreciation and amortization (EBITDA), Earnings per Share (EPS) or Capital Expenditure (CAPEX). Earnings estimates are frequently used by analysts and investors when evaluating a company´s share price and considered to be close to the real market consensus. For example, in the weeks leading up to an earnings announcement, companies like Bloomberg Professional and Thomson Reuters I/B/E/S collect and calculate the announcing firm´s estimated EPS from different analysts and publish an aggregated estimate. In this study, Bloomberg's mean estimates are used, which is later used to calculate the company´s *earnings surprise*, the difference between the reported actual EPS and the estimated EPS.

Bloomberg Professional is the international market leading financial data vendor, they provide the stock market with a range of financial information, including their own Bloomberg Estimates (BEst) consensus figure of EPS. The BEst consensus is calculated using an arithmetic average of a selected analyst estimates for a specific company (Bloomberg, 2009). In addition, by only using figures included by the majority of brokers, the figure tries to incorporate the overall market expectation regarding the specific company. Likewise, the figure only includes the latest updated analyst estimates, as it excludes estimates not reiterated or revised during the latest reporting period. In the collection of analyst estimates to use in BEst, Bloomberg excludes

some of the analysts' estimates. As these methods of exclusion are not publicly available, an employee of Bloomberg provided us with the information that an estimate may be excluded if it is considered an outlier, if it is including extraordinary items or if it based on an accounting standard which is incompatible with the other estimates.

3. Method

In the following section, we describe our hypotheses, our empirical predictions, and methods we intend to use to study our topic, basing them on theories and previous research. We start off by presenting our hypotheses, followed by a description of our t-test model and ending with a description of the method used in our event study.

3.1 Hypotheses

The aim of our first hypothesis is to investigate whether firms tend to disclose earnings reports on Fridays that underperform relative to the markets expectations. Studies have found that American firms tend to disclose negative information during periods of lower market attention. More specifically, they tend to at a larger extent disclose of earnings reports that fall below market expectations during Fridays, which in literature is referred to as the *Strategic Disclosure Hypothesis*, see section 2.3. Since the incentives to disclose of information during periods of lower market attention are strong and previous research has shown that the tendency exists, we propose the following:

$H1_1$: *There is a significant relation between earnings announcements released on Fridays and earnings announcement which underperform the markets expectations.*

Our second hypothesis aims to investigate the market's reaction to Friday announcements and whether the market reacts less compared to announcements made on any other day of the week. This hypothesis builds on the foundations of the *Efficient Market Hypothesis*, see section 2.1. Contradicting is the *Post-Announcement Drift*, as described in section 2.2.1, that indicates that no matter the day, the market reacts slower than the Efficient Market Hypothesis predicts. However, as previous studies have pointed out, market attention during Fridays has been shown to be less, thereby indicating inefficiencies during this period. The phenomenon is referred to as *Limited Investor Attention*, see section 2.2.2. Such inattention might be the explanation to the post-announcement drift, but, as the aim is to compare the difference between Fridays and non-Fridays announcement, we propose the following:

$H2_1$: *Earnings announcements released on Fridays are subjected to a reduced immediate market reaction compared to non-Friday announcements, leading to an increased delayed reaction or an increased Post-announcement drift.*

3.2 Measuring unexpected earnings

Earnings surprise is given by subtracting the estimated EPS from the actual EPS. However, this figure relates poorly to the expected market reaction as earnings surprise is unrelated to the underlying investment. By comparing the unexpected earning to the share price five days prior to the earnings announcement, we are able to capture the surprise as a relative figure to the underlying investment to better reflect the investors perspective. The measure is called Standardized Unexpected Earnings (SUE) and have been used in previous studies (DellaVigna and Pollet, 2009; Michaely et. al., 2016). In below equation, A represents the actual reported EPS, E represents the estimated EPS and P represents the share price of the company five days prior to the event date.

$$SUE = \frac{A-E}{P_{t-5}} \tag{1}$$

3.3 Testing Hypothesis 1 – Pooled results

To study the relation between earnings announcement released on a Friday and earnings announcement with a negative surprise, we compare our sample from two groups. The first group consists of all earnings announcement released on a Friday and is the sample that we will be investigating for a relation with a bad surprise. The other group consists of all earnings announcements, excluding Fridays, and is our control-group which we will be testing the relation against.

The assumption is made that earnings surprises on the Stockholm OMX Exchange follow a normal distribution. The assumption is justified with reference to the central limit theorem, which states that independent random variables tend to summarize to a normal distribution.

A two-tailed t-test is performed to analyze if the eventual difference in mean earnings surprise between Fridays and non-Fridays is statistically significant. The t-value is calculated as

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}} \tag{2}$$

where $\bar{x}_1$ equals the mean value of Fridays and $\bar{x}_2$ the mean value of non-Fridays. The tests are performed with the assumption of unequal variance. The t statistic is compared to the critical t-

value based on the degrees of freedom, and if the t-statistic exceeds the critical t-value we can conclude that the relation between Friday announcements and negative surprises is significant.

By also performing above tests on a homogeneous sample we may control for eventual selection bias with firms that chooses to announce on Fridays (Michaely et al., 2016). This is performed through including all earnings announcements released by firms which has performed at least one earnings announcement on a Friday and one on a non-Friday during the period. Then we perform the same two-tailed t-test calculated against the new sample.

To conclude which variable contributes to the result form our hypothesis test, we perform additional tests for the estimated EPS and actual EPS. These variables are calculated in a similar manner to SUE and are labelled Standardized Actual Return Per Share (SARPS) and Standardized Estimated Return Per Share (SERPS). By separately dividing the actual EPS (A) and the estimated EPS (E) with the share price 5 days prior to the announcement (P), the estimated and actual EPS are relativized to the underlying investment.

$$SERPS = \frac{E}{P_{t-5}} \quad (3)$$

$$SARPS = \frac{A}{P_{t-5}} \quad (4)$$

SERPS and SARPS are tested with a two-tailed t-test for means (equation 1) between Fridays and non-Fridays, by performing it on both the full sample and as a paired samples test.

While the test for SUE will be our primary test for hypothesis 1, the tests for SERPS and SARPS will provide us with more information and increase the detail of the analysis of SUE.

3.4 Testing Hypothesis 2 – Event study

To study how the stock price reacts differently to earnings announcements made on Fridays compared to non-Fridays, we choose to conduct an event study as described by Brown and Warner (1980, 1985) and MacKinlay (1997). An event study is to examine how a specific event affects a stock's price. In our study, the event examined is the disclosure of quarterly earnings announcements. To study the abnormal return surrounding the earnings announcement, an *event window* is defined; an amount of days (*t)* surrounding the *event day* (*t = 0)*. Thereby, at *t = 0* the abnormal returns surrounding the event is certain to be caught.

The period before the event is used to analyze any "pre-event" return; *how the market incorporates the information before it's even made public*, which for example could indicate insider trading. The *event day* captures the "immediate reaction", while the following day, *t=1*,

captures the "delayed reaction". The days following *t=1* incorporates the "post-announcement" drift, which shows how abnormal return develops following the event.

By analyzing pre-event reaction, the immediate reaction, the delayed reaction and the post-announcement drift, we can draw conclusions regarding how efficient the market is in absorbing the released earnings news. Where this study is researching any possible differences between Fridays and non-Fridays for these time periods.

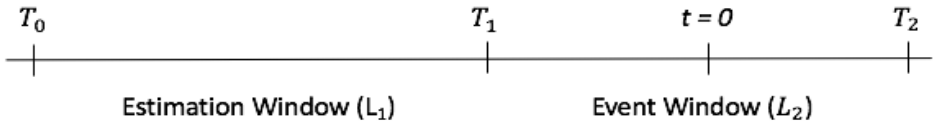
3.4.1 Abnormal return using the market model

To measure any abnormal deviations from the normal stock price movement, we choose to apply the *market model* to estimate the stock's normal movements. The abnormal return for a stock (AR_i) is the residual between the actual return (R_i) and the market models expected return ($\alpha_i + \beta_i R_{mt}$), where α_i and β_i are values reflecting how the individual stock correlate with the market. α_i equals the market movement for stock *i* given that the market remains constant, while β_i is the market movement for stock *i* when the market moves 1 percentage point. The market return is indicated by R_m and calculated using the market index. Thereby, for a given stock (*i*) and for each day (*t*), AR_{it} is given by the market model as

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \qquad (5)$$

The event window represents the days surrounding the event itself; t = 0, which are defined as 20 days before and 20 days after the event. Furthermore, as proposed by MacKinlay (1997), we define the *estimation window*; *the period before the event window*, as 120 days, giving us a large enough period to capture the stock's normal movements.

FIGURE 3.1 - Estimation and event window



Estimation window: $L_1 = T_1 - T_0 = -20 — (-140) = 120\ days$

Event window: $L_2 = T_2 - T_1 = 20 — (-20) = 40\ days$

More specifically, the purpose of the estimation window is to estimate the "normal return" of the stock in relation to the market, that is, to determine α_i and β_i in the market model.

To find α_i and β_i, we employ the regression method of *ordinary least squares* (OLS) as described by McDonald (1987). For each stock (*i),* the market model's parameters are

$$\beta_i = \frac{\sum_{t=T_0+1}^{T_1}(R_{it}-\hat{\mu}_i)(R_{mt}-\hat{\mu}_m)}{\sum_{t=T_0+1}^{T_1}(R_{mt}-\hat{\mu}_m)^2} \quad (6)$$

$$\alpha_i = \hat{\mu}_i - \beta_i\hat{\mu}_m \quad (7)$$

where

$$\hat{\mu}_i = \frac{1}{L_1}\sum_{t=T_0+1}^{T_1} R_{it} \quad (8)$$

$$\hat{\mu}_m = \frac{1}{L_1}\sum_{t=T_0+1}^{T_1} R_{mt} \quad (9)$$

When conducting the study, it's important to ensure that the event window and the estimation window does not overlap, as that would result in the abnormal return during the event period skewing the estimation of the normal return in the market model and the calculation of α_i and β_i. These parameters are used to calculate the abnormal return (AR_{it}) for each individual stock (i) in the event window (L_2) as in $t = -20$ to $t = 20$.

Calculating the mean AR_{it} for all observations (N) within a category for day t is performed according to the formula

$$\overline{AR_t} = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \quad (10)$$

The statistical significance of $\overline{AR_t}$ is tested under the hypothesis that the difference between Fridays' and non-Fridays' $\overline{AR_t}$ is zero. Furthermore, as MacKinlay (1997), we assume that each $\overline{AR_t}$ is mutually independent and that they each follow a normal distribution, independency follows by the fact that the market model controls for the dependent variable of market return and that our sample of stocks are independent of each other (1 stock per company), while the normal distribution follows from the Central Limit Theorem. This yields that

$$\overline{AR}_{it} \sim N\left[0, \sigma^2\left(\overline{AR}_{it}\right)\right] \quad (11)$$

3.4.2 Standardized abnormal return

Following the process defined by Brown and Warner (1985), we use a basic standardization of an individual stock's standard deviation for AR_{it}, estimated using the estimation windows values. Such an approach yields a more precise test variable then an estimation of a common

standard deviation for all stocks in the sample as it adjusts for the stock volatility. This is achieved by calculating the standard deviation with a smaller sub-sample containing observations from the estimation window (n=120), for each stock using AR_{it}

$$\hat{\sigma}(AR_{it}) = \sqrt{\left(\sum_{t=-140}^{-20}\left(AR_{it} - \widehat{AR}_i\right)^2\right)/n} \qquad (12)$$

where $\widehat{AR}_i$ is the average for the abnormal return within the estimation window. AR_{it} is then standardized and defined as the Standardized Abnormal Return (SAR). SAR_{it} is then, for each day (t) and each stock (i) in the event window, calculated as

$$SAR_{it} = \frac{AR_{it}}{\hat{\sigma}(AR_{it})} \qquad t = -20, \dots, 20 \qquad (14)$$

For each day within the event window, the mean *SAR* is calculated as

$$\overline{SAR}_t = \frac{1}{N}\sum_{i=1}^{N} SAR_{it} \qquad t = -20, \dots, 20 \qquad (15)$$

where N is the total number of observations, which in our example would be the number of earnings announcements within the category being examined.

3.4.3 Standardized cumulative abnormal return

As we now have defined $\overline{AR_t}$ and $\overline{SAR_t}$ for each day during the event window, the focus now turns to the mean Standardized Cumulative Abnormal Return that's calculated for all observations in the sample. Such calculation requires the assumption that the announcement event for each stock doesn't affect other stocks in the sample, an assumption already established in 3.3.1.

For each day t the following calculation is made using the formula

$$\overline{SCAR}_{t_1,t_2} = \sum_{t=t_1}^{t_2} \overline{AR_t} \qquad T_1 < t_1 \leq t_2 \leq T_2 \qquad (16)$$

Going forward $\overline{SCAR}_{t_1,t_2}$ will stand for the mean standardized cumulative abnormal return for the chosen sample. $\overline{SCAR}_{t_1,t_2}$ indicates how the pre-event reaction and the post-announcement drift of the stock movement develops. The mean difference between Fridays' and non-Fridays' $\overline{SCAR}_{t_1,t_2}$ is assumed to be zero and, as in the case of $\overline{AR_{it}}$ and $\overline{SAR_{it}}$, follows a normal distribution as in the formulas

$$\overline{SCAR}_{it} \sim N\left[0, \sigma^2\left(\overline{SCAR}_{t_1,t_2}\right)\right] \qquad (17)$$

3.5 The results' statistical significance

To test the results statistical significance, we will employ, as advocated by Brown and Warner (1980, 1985), a *two-tailed t-test*. We will test the previous mentioned null hypothesis that the difference between Fridays' and non-Friday's $\overline{SAR}_{it}$ is zero, also assuming an unequal variance. In addition, we also test for $\overline{SCAR}_{it}$, whose differences between Fridays and non-Fridays are assumed to equal zero, also assuming an unequal variance.

$\overline{SAR}_{it}$ is used for testing the immediate market reaction and the delayed market reaction, since these periods consists of only one day, while $\overline{SCAR}_{it}$ is used for testing the pre-event reaction and the post-announcement drift, since the periods consists of multiple days.

As we're assuming that both $\overline{SAR}_{it}$ and $\overline{SCAR}_{it}$ follows a normal distribution and that the observations are cross-sectional independent from each other, the null hypothesis can be tested using a two-tailed t-test. As the test is identical to the test performed for hypothesis 1, see 3.2 for further details.

Initially we will test the mean difference between Fridays and non-Fridays of our full sample divided in to our seven SUE groups. In addition, we perform the same tests on a homogeneous sample, consisting of only Friday announcing firms, thereby controlling for eventual selection bias with firms that choose to announce on Fridays, as previously described in section 3.3.

Furthermore, we perform the statistical significance test for difference in means between Fridays and non-Fridays split in to time-slots (*Before market, Early Market, Late market* and *After Market*) as well as modified SUE group of only three categories. One *Negative Category*, consisting of SUE group 1 and 2, one *Neutral Category* consisting of SUE group 3 to 5 and one *Positive Category* consisting of SUE group 6 to 7. This was necessary to ensure the statistical validity of the results due to the shrinking sample size of combining the SUE category with the time slot category. However, due to no announcements occurring after market on Fridays, this time slot has been omitted form the test.

4. Empirical data

In this section, we describe our process for selecting the sample used in the forthcoming empirical tests. We then motivate our time period and process for data collection. Finally, we provide a descriptive overview of our chosen statistics.

4.1 Sample selection and time period

We have chosen to study the phenomena using Swedish firms listed on the Nasdaq Stockholm Exchange during the period 2005-2016. Nasdaq's Stockholm OMX Exchange provides a large enough sample for statistical analysis as it is the most active exchange in Sweden, thereby enabling us to create a generalized sample of Swedish firms' earnings- announcement-behavior and the associated market reaction. Furthermore, including companies from Small-, Mid- and Large Cap enables us to analyze the behavior amongst companies of different size, analyst coverage and ownership structure. A period of eleven years, 2005-2016, has been chosen since it creates a sufficiently large sample for our intended tests. In addition, using a larger period of time enables us to catch firm behavior during different business cycles. Firms that have been delisted or listed during our sample period are included in the initial sample. These criteria gave us 287 number of firms and a total of 11,554 earnings announcements, which makes up the foundation of our sample. In the following sections, we describe the process of eliminating companies and observations that fail to meet certain criteria, see table 4.1.

First, we require the companies to be primarily listed on the Stockholm OMX Exchange. We therefore exclude all firms with a primary listing outside of Sweden, as such firms are listed on Stockholm OMX through Swedish Depository Receipts (SDR). As SDRs includes a larger foreign reaction than non-SDRs, they fall outside of the purpose of this study.

Second, we are only interested in looking at quarterly earnings announcements, thereby excluding all other forms of earnings announcements, such as yearly and SEC-filings. Excluding such announcements is due to them including more information which may affect the market reaction, for example the dividend announcement.

Third, we require that observations have analysts providing consensus estimates for each announcement for the simple reason that the EPS estimate is essential information to evaluate the earnings surprise. In our case, the chosen estimate figure is collected from Bloomberg Professional's BEst service. As the Stockholm OMX Exchange is a smaller exchange in comparison to its U.S equivalents, fewer analysts provide their estimates for our sample

compared to previous study of U.S samples. Thereby a relative big proportion of observations are lost in this step, unfortunately affecting the diversity of our sample (See table 4.2).

Fourth and fifth, we require that the observations have other essential data for the study, namely the time stamp at the announcement was made and the necessary stock prices. During this part of the elimination we require the firms to have a stock price 5 days prior to the announcement.

Lastly, we require firms to have made at least four quarterly earnings announcements with available time stamps during our chosen period. Four announcements are considered enough to perform paired sample tests between Fridays and non-Fridays to provide a brief overview of the firm's announcement pattern and enables the use of the *Friday announcer* variable which indicates which firms have reported on a Fridays and which firms have not.

TABLE 4.1 – Sample selection steps

Criteria	**Adjustments firms**	**Adjustments observations**	**# of firms**	**# of observations**
Within delimitation*			287	11,554
Not a Swedish group company	23	843	264	10,711
Yearly reports	0	3,099	264	7,612
Missing consensus estimates	39	3,552	225	4,060
Missing time-data for announcement	3	47	222	4,013
Missing stock price prior to announcement	32	113	190	3,900
Listed on Stockholm OMX for 4 quarters	15	31	175	3,869
Total	**112**	**7,685**	**175**	**3,869**

** Companies listed on the Nasdaq Stockholm sometime during the period 2005-2016*

In table 4.2 some descriptive variables are presented which describe in what way our data selection process has skewed our sample. These statistics are only indications, as the figures presented are missing for many observations (See 4.2). As expected, smaller firms suffer from reduced analyst coverage and has reduced available information that is necessary for our research. Thereby, our sample has been rather heavily skewed towards the bigger companies on Stockholm OMX Exchange. These companies also seem to have a higher degree of institutional ownership and a lower Market-to-book ratio. Also, we can note that the excluded observations generally are older than the included ones, which is to expect as it is reasonable to assume that Bloomberg is constantly improving in its coverage of the smaller stock markets.

TABLE 4.2 - Sample skewedness

	Average Market-to-book ratio	Average Market Cap (MSEK)	Average percentage Institutional Holders	Average Date
Excluded	3.13	10,897.56	38%	10/11/2010
Included	1.19	30,307.91	52%	19/10/2011
Total	**2.45**	**17,595.71**	**43%**	**06/03/2011**

For the event study, further eliminations were made, since this study requires a stock price history of at least 100 days prior to the earnings announcement. 30 observations failed to meet this criterion, hence the event study is performed on a total of 3,839 observations.

4.2 Data collection

The data is collected using Bloomberg Professional Service, Nasdaq Nordic OMX Company News, Retriever Business and Thomson Reuters Datastream. Bloomberg Professional Service was used to obtain the actual Earnings per Share (EPS), analyst consensus EPS (BEst) and announcement time stamp. Further, some control variables are collected such as Market Capitalization, Market-to-book ratio and percentage of Institutional Ownership. However, for 1,310 observations in our sample one or more control variables are missing, why we have limited our use of these variables for the descriptive statistics presented in table 4.2.

While our data from Bloomberg did contain data points with time stamps for the announcements, 2 000 time stamps have been manually collected from the Nasdaq Nordic OMX Company News website. Finally, Retriever Business was used in the rare situation when neither Bloomberg nor Nasdaq Nordic OMX could provide the time stamp, by searching for the first published news article after the event or a mentioned time stamp in any Swedish news article around the date of the announcement.

Thomson Reuters Datastream was used to obtain the daily share price later used to calculate the daily stock return for each earnings announcement 140 days before the announcement date as well as 20 days after. Datastream was also used to collect Stockholm OMX All Share Index (OMXSPI), the market index (R_m) used in the event study to calculate the daily market return. OMXSPI is a weighted index of all listed shares on the Stockholm OMX Exchange, displaying the overall development for the Swedish stock market.

For informational purposes, we want to notify the reader that in the remainder of this study we will refer to our observations as earnings announcements. However, as these earnings

announcements have been released in the quarterly reports, all the meta statistics, such as time of day and day of the week for the earnings announcement, is also descriptive statistics that describe the quarterly report behavior of the Stockholm OMX Exchange.

4.3 Earnings announcements descriptive statistics

Descriptive statistics for earnings announcements are presented in the following section.

Table 4.3 - SUE Groups

SUE Group	No. Observations	Mean SUE
1	553	-3,5900%
2	552	-0,3224%
3	553	-0,0984%
4	553	0,0023%
5	553	0,1001%
6	553	0,2962%
7	552	1,9753%
Total	**3869**	**-0,2344%**

To achieve a more homogeneous comparison, the observations have been divided into seven categories of Standardized Unexpected Earnings (SUE), as promoted by previous studies (DellaVigna and Pollet, 2009; Michaely et al., 2016). The earnings announcements are simply divided in to groups of equal size, where the observations with the smallest SUE are put in group 1, the remaining smallest in group 2 and so on. However, where our peers chose to divide their data in to eleven categories, we have chosen to divide it in to seven. This is due to the fact that our sample size, looking at a smaller market, is smaller. To ensure statistical validity when testing SUE groups divided in to groups of Friday announcers and non-Friday announcer, our initial size of the SUE groups needs to be sufficiently large.

Compared to previous research the allocation of announcements over weekdays are strikingly different, where the most significant difference is the percent of Friday announcements, see table 4.4 compared to table 2.1. Our sample has the highest proportion of Friday announcements compared with seven studies performed on U.S data. In the sample, we find 33 companies who never announced on a Friday and 142 companies who have at least one announcement on a Friday. Table 4.4 show the number of announcements in each time/day category, with the percent of the total number of announcement reported within parenthesis.

TABLE 4.4 - Distribution of Earnings Announcements Over Weekdays and Time

	Before Market	Early Market	Late Market	After Market	Total
Monday	114 (2,9%)	63 (1,6%)	91 (2,4%)	1 (0,0%)	269 (7,0%)
Tuesday	478 (12,4%)	166 (4,3%)	125 (3,2%)	3 (0,1%)	772 (20,0%)
Wednesday	677 (17,5%)	182 (4,7%)	155 (4,0%)	7 (0,2%)	1021 (26,4%)
Thursday	698 (18,0%	191 (4,9%)	143 (3,7%)	1 (0,0%)	1033 (26,7%)
Friday	618 (16,0%)	106 (2,7%)	50 (1,3%)	0 (0,0%)	774 (20,0%)
Total	2585 (66,8%)	708 (18,3%)	564 (14,6%)	12 (0,3%)	3869 (100%)

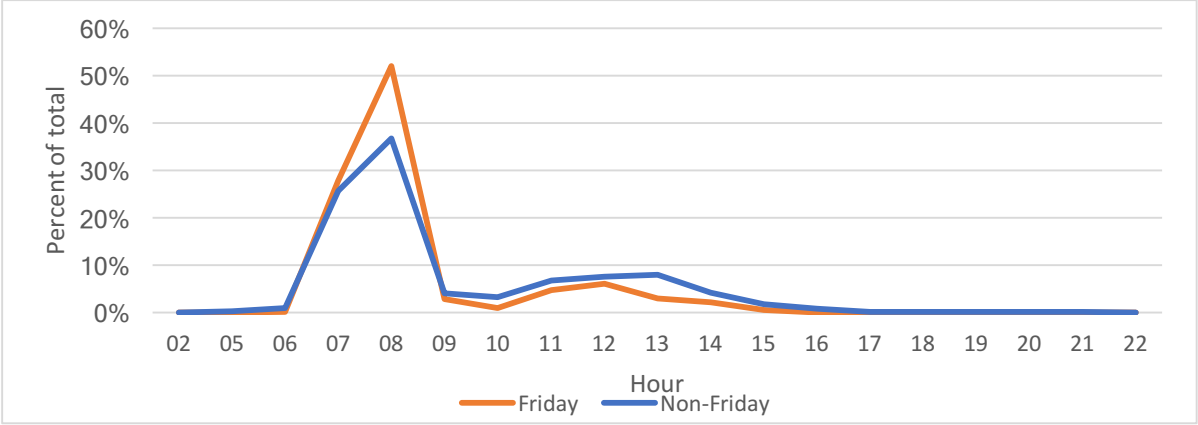
***Before Market**, defined as 00:00-09:00. **Early Market**, defined as 09:01-12:30. **Late Market**, defined as 12:31-17:30. **After Market**, defined as 17:31-23:59*

Looking at the distribution of announcement over time of day in table 4.4, it can be noted that companies gravitate towards announcing their earnings before the market opens, with 66,8% of total announcement during this time-period. Almost every remaining announcement is reported during market hours, slightly favoring the earlier half of the opening hours, leaving only 12 announcements which have been reported after the market closes. Once again, our figure is in contrast to U.S data, where for example Michaely et al. (2014) found that over 40% of announcements are made after trading hours.

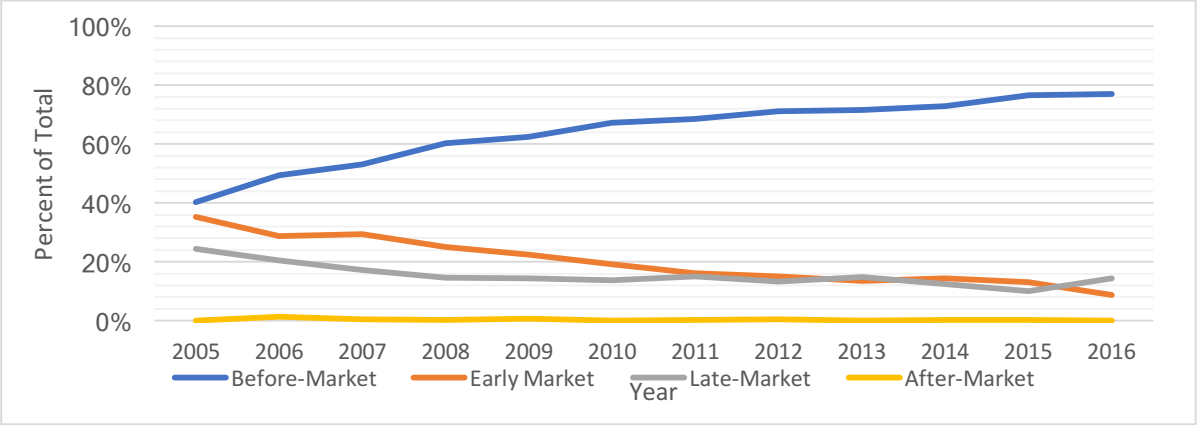
The distribution of announcements over weekdays is interesting, as Mondays by far are the least popular day to announce earnings news on. Of the remaining days, earnings announcements tend to gravitate to the two days in the middle, however Tuesdays and Fridays both have their fair share of earnings announcements (20%).

Graph 4.1 is a graphic representation of how announcement timings differ between Fridays and non-Fridays. Companies tend to disclose information earlier on Fridays then during the rest of the week.

GRAPH 4.1 – Time Distribution, Fridays and non-Fridays



GRAPH 4.2: Trend of Timing of Earnings Announcements 2005-2016



Graph 4.2 indicates an ongoing trend in the Swedish market. Before-market announcement have been steadily pushing other time-slots out of the announcing schedule from 2005 to 2016, almost accounting for 80% of total announcements made in 2015 and 2016.

5. Empirical Results

In this chapter, we present the results from the tests of our main hypotheses.

5.1 The occurrence of strategic disclosure on Friday

The following section presents the findings resulting from hypothesis one and thereby aim explain whether strategic disclosure of "bad news" occur on the Stockholm OMX Exchange.

5.1.1 Characteristics of earnings surprises over weekdays

The descriptive statistics presented in table 5.1 are the average, median and standard deviation for SUE (Standardized Unexpected Earnings) over weekdays for the complete sample data. The numbers presented give no indication that Fridays are inherently worse than other weekdays in respects to negative surprises to the market, even though Fridays indeed on average deliver a negative surprise, the figure is the second best of all weekdays.

The weekday which delivers the worst SUE is Thursday by a wide margin. The figure can partially be explained by the unproportionate number of outliers which originate from Thursday announcements, where 15 out of the 30 worst announcements all were performed on a Thursday, which is also reflected by the standard deviation. The outliers appear to be so called Big Baths; *a strategy performed to manipulate current poor results to look even worse in order to make future results better,* and their allocation to Thursdays is interesting as it contradicts our hypothesis that firms would choose to allocate this type of announcement to Fridays. However, Thursdays are outside the scope of this study.

TABLE 5.1 - Descriptive statistics: Standardized Unexpected Earnings			
	Average	**Standard Deviation**	**Median**
Monday	-0,20%	3,88%	-0,04%
Tuesday	-0,07%	1,42%	-0,03%
Wednesday	0,01%	2,25%	0,01%
Thursday	-0,77%	15,03%	-0,28%
Friday	-0,02%	3,12%	0,00%
Total	***-0,23%***	***8,07%***	***-0,07%***

The hypothesis is tested by performing a two-tailed t-test of means between Standardized Unexpected Earnings (SUE) for Friday announcements and non-Friday announcements. The results from this test are presented below in table 5.2. We can see no relationship between having Friday as announcement day and the market being negatively surprised to the announcement. Rather, the figures indicate, without any noteworthy statistical significance, that Fridays are more positive compared to non-Fridays.

TABLE 5.2 - t-Test: Mean SUE for Fridays and non-Fridays		
	Fridays	**Non-Fridays**
Mean	-0,0159%	-0,2890%
Variance	0,0974%	0,7890%
Observations	774	3095
Hypothesized Mean Difference	0	
Degrees of Freedom	3495	
t Stat	-1,40	
P(T≤ t) two-tail	0.1617	
t Critical two-tail	1.9606	

****, **, * indicates significance at 1%, 5% and 10% levels respectively.*

To control for eventual differences in characteristics between firms that choose to announce on Fridays and those that choose not to, an additional paired t-test is performed with a homogenous sample. Only firms that have chosen to both announce on a Friday and another day are included, the average SUE for each firm is compared between its Friday and non-Friday announcements. As presented in the table 5.3, we can conclude that for firms that do not discriminate between Fridays and non-Fridays, Fridays on average deliver a better surprise on a significance level close to 1%.

We can conclude that Friday announcements are no correlated with "bad news" in the Swedish stock market, on the contrary the results show that announcements on Friday are good news to a wider extent than announcements released on other days. These findings are in stark contrast to the findings of similar research of the US stock market, as described in section 2. Therefore, we accept the null hypothesis proposition that there is no relation between unexpected negative

earnings and Fridays as an announcement date. Instead our findings show a relation between unexpected positive news and Friday earnings announcements.

TABLE 5.3 – Paired t-Test: Mean SUE

	Fridays	**Non-Friday**
Mean	0.0068%	-0.3636%
Variance	0.0147%	0.0485%
Observations	142	142
Hypothesized Mean Difference	0	
Degrees of Freedom	141	
t Stat	2.57	
P(T≤ t) two-tail	0.0113**	
t Critical two-tail	1.9769	

****, **, * indicates significance at 1%, 5% and 10% levels respectively.*

Comparing the mean SERPS through a two-tailed t-test for all observations yield the results in table 5.4. With a statistical significance of 5% it can be concluded that analysts generally have lesser expectations for earnings announcements presented on a Friday than they have for earnings announcement presented on other weekdays.

TABLE 5.4 – t-Test: Mean Standardized Estimated Earnings per Share (SERPS)

	Friday	**Non-Friday**
Mean	1,2422%	1,4925%
Variance	0,0010%	0,0006%
Observations	774	3095
Hypothesized Mean Difference	0	
Degrees of Freedom	1007	
t Stat	2,035	
P(T≤ t) two-tail	0,0421**	
t Critical two-tail	1,962	

****, **, * indicates significance at 1%, 5% and 10% levels respectively.*

When performing the same test on paired samples, the results are strengthened to a significance of 1%, presented in table 5.5. Through this test, we can conclude that the difference in analyst estimation is not due to a difference in company characteristics between Friday announcers and non-Friday announcers. Rather, the same company will have lower analyst expectations dependent on if they report on a Friday or non-Friday.

TABLE 5.5 – Paired t-Test: Mean Standardized Estimated Earnings per Share, Paired Samples

	Friday	**Non-Friday**
Mean	1,1229%	1,4537%
Variance	0,0244%	0,0175%
Observations	142	142
Hypothesized Mean Difference	0	
Degrees of Freedom	141	
t Stat	2,896	
P(T≤ t) two-tail	0,0044***	
t Critical two-tail	1,977	

****, **, * indicates significance at 1%, 5% and 10% levels respectively.*

The mean SARPS, however, show no statistical significance difference between Fridays and non-Fridays. Neither when testing the full population nor when testing the paired samples, presented in table A1 and A2 in the appendix respectively.

5.2 Event study

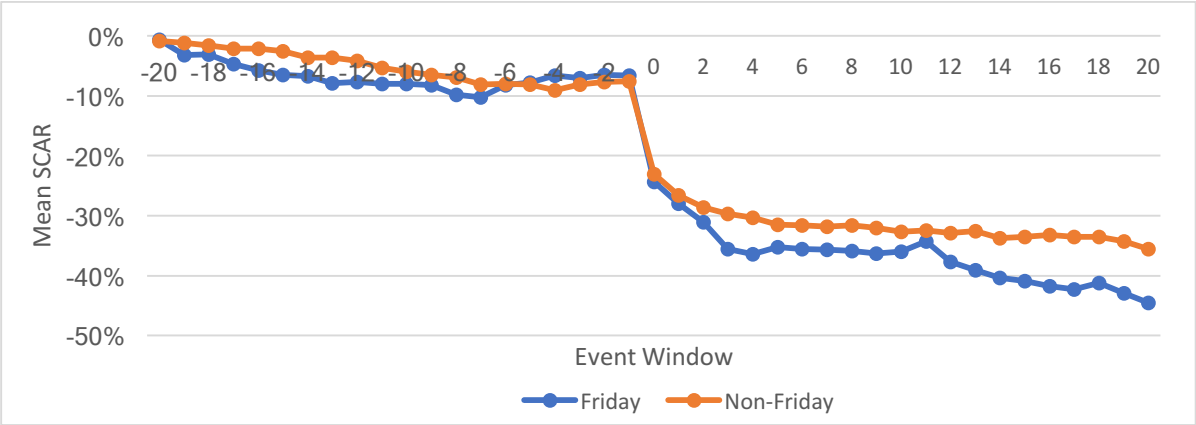
The following section aim to present the findings resulting from the event study and testing of hypothesis two.

5.2.1 The market reaction to earnings announcements

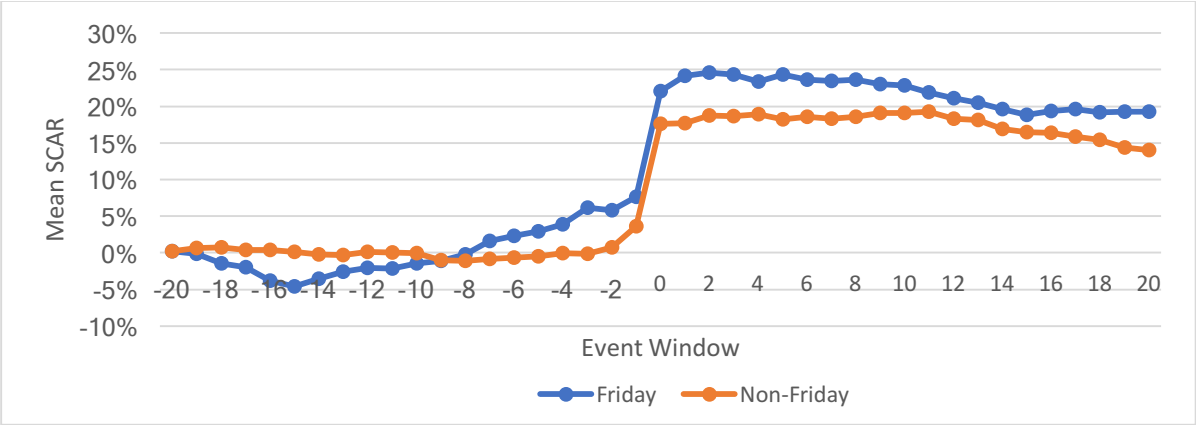
Initially, we see a clear reaction following the earnings announcement, which is in line with the direction of the announcement itself, as seen in graph 5.1 and 5.2. A negative (positive) earnings announcement surprise results in a negative (positive) mean CAR following the earnings announcement. The announcements indicate that the earnings announcements include information previously unknown to the market, results that are in line with our assumption of a semi-strong market efficiency (see section 2.1)

As seen in the graph 5.1, the immediate reaction, delayed reaction and post-announcement drift are stronger for Fridays than non-Fridays. In graph 5.2, the pre-event reaction is stronger for Fridays, while the immediate reaction, delayed reaction and post announcement drift are similar.

GRAPH 5.1 – Mean Standardized Cumulative Abnormal Return (SCAR), Negative Earnings Surprises

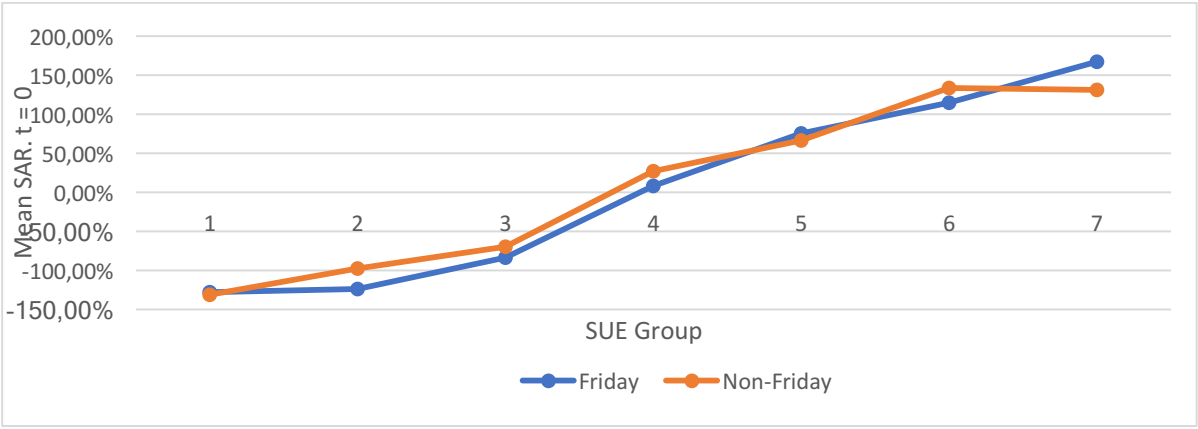


GRAPH 5.2 – Mean Standardized Cumulative Abnormal Return (SCAR), Positive Earnings Surprises

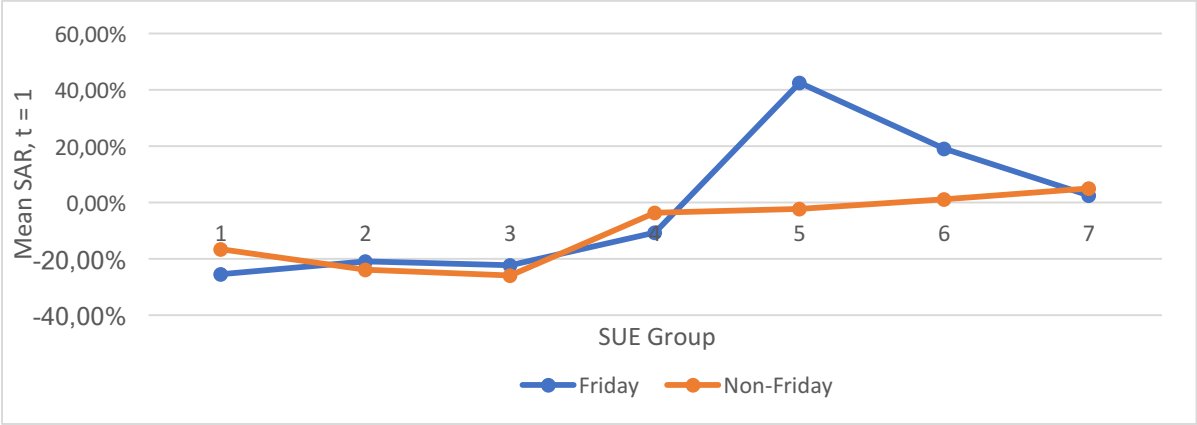


Graph 5.3 and 5.4 below displays the mean SAR per SUE group for Friday and non-Friday announcements for t = 0 and t = 1 respectively, measuring the immediate and delayed reaction to the earnings announcement. Graphically it indicates that the immediate reaction (t=0) is as strong, if not stronger, for Fridays for the majority of the SUE groups. The results are in line with what is observed from graph 5.1 and 5.2. For the delayed reaction (t=1) the observed reaction from SUE group 5 and 6 are increased for Friday announcements compared with non-Friday announcements. However, other SUE groups do not indicate an increase in delayed reaction for Fridays.

GRAPH 5.3 – Mean Standardized Abnormal Return (SAR) per SUE Group, t=0



GRAPH 5.4 – Mean Standardized Abnormal Return (SAR) per SUE Group, t=1



Two-tailed t-tests are performed by comparing the mean SAR and SCAR for Friday against the mean SAR and SCAR for non-Fridays for each SUE group. The results are presented in Table A4 in the appendix.

As expected, the pre-event reaction, mean SCAR at t = -1, displays no statistically significant difference between earnings announcements disclosed on Fridays compared to non-Fridays. This indicates that there is no difference in eventual leakage of information before the announcement, further supporting our assumption of a semi-strong market efficiency.

On the event day, t = 0, the results display no statistically significant difference between the mean SAR on Fridays compared to non-Fridays. In addition, the results are somewhat inconsistent, as they do not display any comprehensible pattern. One would expect Friday announcements to generate lower market reaction to all bad and good news on t = 0. However, that is not the case as we see a decreased reaction towards Fridays in the first SUE group, while

an increased reaction towards Fridays in the second SUE group. A similar pattern can be seen for SUE group 6 and 7.

At t = 1, SUE group 5 displays a significant difference between the mean SAR at a level of 1% and shows that the mean AR is less on non-Friday announcements (-2,19%) compared to Fridays (42,63%). Additional SUE groups' t-test give no significant results. The pattern is not in line with what we have expect the market to react at t = 1, that is, reduced reaction towards Friday announcements compared to non-Friday. For example, Fridays at t = 1 in SUE group six display an unexpected increased mean SAR, while Fridays in SUE group 7 indicates a reduce reaction.

Neither the post-announcement drift, as represented by mean SCAR t = 20 less t = 1, displays any statistically significant results. Just as in the cases of t = 0 and t = 1, the pattern displays no comprehensible results.

In conclusion, as neither of the results indicate any statistical significance, we thereby accept the null hypothesis that the earnings announcements released on Fridays are not subjected to reduced market reaction compared to non-Friday announcements.

5.2.2 The market reaction to earnings announcements – Homogeneous sample

As proposed by Michaely et al. (2016), the market reaction is best analyzed by looking at a sample that is as homogeneous as possible. The results from our tests are presented in table A5 in the appendix.

Similar to the first test, these findings indicate no immediate statistically significant difference between Fridays and non-Fridays. The delayed response, displayed as t = 1, indicates that Friday announcements that fall in the SUE groups 5 gain a more positive market reaction then non-Fridays. Group 5 shows a statistically significant difference between Fridays' mean SAR of 42,63% compared to non-Fridays' mean SAR of -1,85% at a 1% level. The findings are still not sufficient to reject the null hypothesis.

5.2.3 The market reaction to earnings announcements – Time stamps

Previous studies have found that the time stamp of the earnings announcements give a better perspective in displaying the difference between Friday announcements and non-Friday announcements (Michaely et al., 2015; deHaan et al., 2015). The results from our study are presented in table A6 in the appendix.

At t = -1, the pre-event reaction, we make two statistically significant findings. First, before market announcements that fall in SUE Category Neutral generates a positive mean SCAR for Friday announcements, while a negative for non-Friday announcements at a 2% level of significance. Secondly, early market announcements that fall in SUE Category Negative generates negative mean SCAR for Fridays, while a positive mean SCAR for non-Fridays at 4% level of significance.

At t = 1, the delayed reaction, late market announcements in SUE Category Neutral and Positive generates a positive mean SAR for Fridays while a negative mean SAR for non-Fridays at a 10% level of significance respectively.

The results indicate that late non-Fridays has a reaction not consistent with the direction of the surprise as positive surprise is expected to yield positive reactions.

In conclusion, none of the three different ways of displaying the data indicates any significant reason to reject the null hypothesis; *the market does not react any different to earnings announcements disclosed during Fridays compared to non-Fridays*.

6. Discussion

The following section contains a discussion regarding the empirical findings and its similarity to previous research. Following is a sensitivity test where we increase the minimum number of analyst estimates, followed by a discussion regarding the chosen methods and ending with a discussion of the findings comparability and practical relevance.

6.1 Analysis of empirical tests

Hypothesis 1.

Our test for the hypothesis that earnings announcements made on Fridays are associated with negative surprise for the investors gave no statistical results in favour of the hypothesis. Instead the results insinuate, without any statistical significance, that Friday more often over perform the market expectation in relation to other weekdays. This finding contrasts with previous findings which proposed that companies tend to allocate their underperforming announcements to Fridays to gain from the associated investor inattention.

Hypothesis 2.

Our second hypothesis that earnings announcements made on Fridays are subjected to reduced immediate market reaction and an increased delayed market reaction compared to non-Fridays

have no support from our empirical research. Instead the results are inconclusive as it gives no clear indication of a pattern of reaction to Friday announcements that differ from the reaction to announcement on other weekdays.

6.2 Empirical results in comparison to previous research

Hypothesis 1.

In contrast to previous findings (Penman, 1987; Damodaran, 1990; DellaVigna & Pollet 2009, Michaely et al., 2016) earnings announcements released on Friday does not underperform market expectations in our study. These previous studies propose that companies choose periods of inattention, especially Fridays and after trading hours, to disclose negative reports as a measure to dampen investors reactions. Our contrasting findings can at least partly be explained by the fact that the Standardized Estimated Earnings Per Share (SERPS) on Fridays, which is significantly lower than SERPS for other weekdays.

However, particularly interesting are the results from analysing SERPS with paired samples. Comparing the means between Fridays and non-Fridays for each company, we can eliminate eventual selection bias. This bias would be attributed to the company distribution between Fridays and other days, meaning that unobservable characteristics of firms that tend to announce on Fridays would be an important explanatory variable in any observable differences in market reaction to the announcement (Michaely et al., 2016).

Our results show that both generally and for the same company, expectations on earnings are lower if the company have chosen to report on a Friday. This is partly consistent with previous findings in research (deHaan et al., 2015), which showed that the disclosure of reporting date where the weekday was a Friday, lead to a negative market response. These results mean that the market associates Fridays as an announcement day with bad news. However, we are not aware of any previous research where the effects of Friday as an announcement day have shown to impact analyst forecasts to result in an exaggerated reaction compared to the actual EPS. The proposed characteristics of Friday-reports as bearer of "bad news" seems to be information that has been incorporated by the efficient market through the analysts, marginalizing the strategical prospects of disclosing poor results on this day in Sweden. However, this seems not to have affected companies' tendencies to continue reporting on Fridays, as the 20% of all announcements are made on Fridays.

Surprisingly, in contrast to expected returns the actual returns show no statistical difference in either of the test, meaning that companies do not tend to have worse relative earnings on Fridays

compared to other days. In fact, announcement on Fridays can be observed to have a slightly better return than non-Fridays and tends to be less volatile, even though this difference is of no statistical significance. When comparing these figures to the expected EPS tested above, two observations are made:

1. Market expectations in Sweden are possibly affected by the established Friday phenomena of "bad news" as described in previous research of US data, why the analysts lower expected EPS for Friday announcements. However, actual EPS are not lower for Fridays, why there seems to be a lack of efficient information in the market.
2. The result of hypothesis 1, presented in 5.2, where Friday's had greater figures for unexpected earnings compared to non-Fridays, is explained. Our expectations going in to this study of companies reporting worse news on Fridays were the same expectations that were held by the market. These expectations, however, seem unfounded. Thus, Fridays are beating the market estimates more often than non-Fridays.

One could oppose above analysis in regards to that the analyst estimates are more negative than what the market expectations are, i.e. the market may be efficient while analysts are not. However, there are indications to that this is simply not true. Analysing Graph 5.3 we can see that the market reaction to Friday announcements is not differing from other days to any relevant extent. Furthermore, we can see that the market reaction to the neutral SUE group (4), is virtually no reaction, meaning that the market doesn't react abnormally when the delivered earnings news match the analysts' expectations. This indicates that the market agrees with the analysts in its estimates of Friday earnings announcements.

Lastly, it is surprising to find virtually no reports in our sample that are released after market closing times. There is no empirical data which may suggest why companies evade these reporting times, but it seems that Swedish companies prefer to evade releasing their reports later in the day. When comparing the hourly timing of announcements on Fridays with other weekdays, it also becomes apparent that companies avoid reporting in the later hours for this day to an even greater extent. This is surprising as the time of after-market on Fridays is proposed to be the period where companies tend to report the worst news when looking at US data (Michaely et al., 2015), to the extent where that time period is argued as the sole contributor to Fridays overall relation with negative earnings surprises. The lack of after-market announcements may therefore be an explanation to why the mean SUE for Fridays in our data is surprisingly positive. However, a more likely interpretation is that it is an indication of an

underlying difference in corporate reporting behaviour between Swedish companies and U.S companies.

Hypothesis 2.

Contrary to results from previous studies (Patell and Wolfson, 1982; Penman 1987; Damodaran, 1989; DellaVigna and Pollet, 2009), earnings announcements made on Fridays does not gain any reduced market reaction. Instead, the results indicate few statistical findings and the few results that are statistically significant displays both stronger and weaker reaction towards Friday announcements. Further, dividing the announcements in to categories based on announcement time didn't result in any significant differences, opposed to what is suggested by Michaely et al. (2015). Our results lead us to accept the null hypothesis.

We see numerous possible explanations to these findings in our data. One possible explanation may be the observed larger share of earlier announcements in the time of day on Fridays. With the earlier announcements come an increased time for investors to react to the earnings announcement, which could at least in part compensate for the proposed inattention on Fridays. The difference compared to previous studies on US data might suggest that there is a difference between the Swedish and American corporate disclosure culture. The findings could be explained by Swedish companies on the Stockholm OMX Exchange being more predisposed to be at ease with investors. For example, we find no after-market announcements on Fridays, while our American peers have included numerous. As Michaely et al. (2014) propose, firms with good corporate governance avoids giving advantage to one group of investors over another and therefore announce earlier on Fridays to achieve more efficient information dissemination. In this case, the widespread adoption of the Swedish Code of Corporate Governance amongst Swedish listed firms could provide a possible explanation.

A second possible explanation to our lack of findings are the limitations in constructing our sample. Due to the difference in analyst coverage between the US stock exchanges and the Swedish OMX Exchange, our sample is excluding a greater proportion of smaller firms than studies performed in the US. This leads to a higher proportion of institutional ownership in our data. Our exclusion of stock that have lower percentage of institutional ownership may result in skewed result in our empirical test of market inattention on Fridays and may in part explain why we see no difference in reaction between Friday announcements and announcement of other weekdays. It is proposed in Barber and Odean's (2008) findings that individual investors are more driven by highly market attentive stock compared institutional owners and would hence be the primary subjects prone to market inattention. Professional investors are less likely

to indulge in attention driven trading and have better resources to acquire stock information. The exclusion of stocks with low levels of institutional ownership from our sample may hence partially explain why our findings indicate no statistically reduced response, as we would expect such reaction to be particularly prominent for the smaller stocks with more private ownership.

A third explanation for the lack of results could be due to an increased media coverage, as discussed by Bagnoli et al. (2006). Since the phenomenon was discovered in the 1980's the media coverage has significantly increased and today it's virtually close to an around the clock news reporting. Such high media attention and quick and efficient news dissemination could dampen the effects of investor inattention previously observed during Fridays.

6.3 Sensitivity analysis and additional tests

In this section we will conduct two additional test, one for each hypothesis. As we are using analyst estimates gathered and calculated by Bloomberg Professional, the tests aim to verify the validity of these estimates. Thus, both hypothesis will be tested by only using earnings announcements that have equal to, or more than, ten analyst estimates.

Hypothesis 1.

As shown by table A3 in the appendix, the sensitivity test is having a similar result to the empirical tests in so far that announcements on Fridays have a slightly greater mean for SUE, but not enough to give any statistical significance. The sensitivity test confirms our findings and strengthens the reliability of the discussion in regards to hypothesis 1 as presented in 6.2.

In both groups, there can be observed an increase in mean SUE, which could be explained by the selection bias which a selection of observations with 10 or more analysts leads to. Companies with more analysts tend to be bigger and of greater interest to the market, decreasing the likelihood of extremely negative SUEs and thereby raising the mean.

Hypothesis 2.

The results are presented in table A7 in the appendix. We find that the pre-event response, represented by mean SCAR at t= -1, yields no statistical difference between the two groups. The same result is present in the case of the initial response, as represented by mean SAR at t = 0. Mean SAR at t = 1, the delayed response, is only significant amongst firms in the first SUE group, as Fridays react more negatively compared to non-Fridays. However, as Fridays only compose of 10 observations, the findings are hard to generalize upon. The long-term reaction, represented by SCAR at t = 20 less t = 1, only reveals a statistical significance for SUE group

2, but the results indicate that the reaction towards Friday announcements are more positive compared to non-Fridays.

Overall, the findings are not significant to enable us to reject the null hypothesis, thus still favouring the findings that there is no difference in the market's reaction towards earnings announcements made on Fridays compared to non-Fridays. Therefore, the sensitivity test confirms our previous findings, further strengthening the paper´s reliability regarding the discussion of hypothesis 2, see section 6.2.

6.4 Research method discussion

Data.

Our primary source of data for this study has been the Bloomberg Professional's BEst service, which had more data for estimated EPS and actual EPS for Swedish companies compared to the alternative source of data, Thomson Reuter's I/B/E/S. One major flaw with Bloomberg estimates (BEst) is that the formula behind it is not publicly available. During inquiry with Bloomberg we were told that they exclude contributions to their estimates based on both the content (due to including extra ordinary items or having applied unusual accounting standards for example) and if the estimate is an outlier. As such, we must rely on the figures accuracy at face value and can't rule out the possibility, even if it is deemed small, that the data may be modified in an inappropriate way in regards to the goals of this study.

Analysts estimates can be criticized for being poor in reflecting the actually reported EPS, giving reason to consider eventual other methods of estimation. However, reaching a more precise estimation of the actual EPS is outside the scope of our research, since the primary use of estimated EPS in our method is to reflect what expectations the market has – not to reflect the actual EPS as closely as possible. The results from our event study show that the market's reaction generally seem to match the expected reaction from the analysts estimated EPS, see graph 5.1 – 5.3, thereby strengthening our assumption that the Bloomberg estimates match the market's expectations.

Collecting the time stamp of each earnings announcement has been conducted using Nasdaq Nordic OMX Company News. Initially, we compared the Nasdaq function's time stamps to Retriever Business and found that in all in cases Nasdaq reported an earlier time stamp of the earnings announcement, insinuating that Nasdaq is a more reliable source for time stamps. Previous studies have primarily used Thomson Reuters I/B/E/S (DellaVigna and Pollet, 2015; Michaely et al., 2016) or newswires (Damodaran, 1989; Michaely et al., 2015) which were

cross checked amongst different sources of information. We believe that our chosen method for time stamp collection yields a more precise time stamp as Nasdaq Nordic OMX Company News is one of primary sources for disclosure of earnings announcements to the public (except for the company's own website), further strengthening the validity of our study.

T-test

Due to the lack of previous research about Friday earnings announcement on the Swedish market, the study is primarily focused on exploring the rudimentary facts. As such, the primary method is the t-test. The t-test is a robust but blunt tool, where the eventual relationship is easily proven but proving causation is tougher.

An alternative to the t-test is a multi-variable regression test, which was not performed in this study. With multiple regression, it is possible to add controlling variables to eliminate possible factors which may affect the difference between the samples but which are not being studied for correlation and causation. Thereby being a more precise tool in describing correlation and causation. An example of control variables that would be of interest in this study would be the size of the company releasing the earnings announcement and other company specific attributes, as it may affect earnings estimates and market reaction. The reason to not control for these variables in a regression model is the lack of available data for Swedish companies, which would increase our elimination in the sample. This would lead to an even smaller sample size and increase the skewedness of the sample towards bigger companies with more analytical coverage. These consequences are deemed inappropriate due to the ambition of this study to analyse the Stockholm OMX as thoroughly as possible.

As an alternative approach for these company specific variables, paired t-tests are performed in this study. Through this method each company is compared with itself, thereby reducing the need to control for company specific variables (though properties such as company size do vary over time). Even though this approach might not be as precise as a multiple regression, it is deemed sufficient for the purpose of establishing the relationships researched in this study.

Event Study

The chosen method to capture the abnormal return surrounding the earnings announcement has for this study been the market model, where an alternative would have been the CAPM model. However, the CAPM model's reliability has been widely discussed. For example, White, Sondhi and Freied's (1994) question the relationship between the company specific risk (beta) and the return. On the other hand, supporting the choice of the market model as a tool to estimate

the abnormal return, are the authors describing our chosen method, Brown and Warner (1980, 1985) and MacKinlay (1997).

The estimation window of 120 days prior to the event window is as proposed by MacKinlay (1997). Increasing the length of the estimation window would achieve a more accurate estimation of the stock's market correlation. Still, increasing the estimation window would only have yielded a minor increase in the precision of estimated market correlation. Questioning the validity is therefore reasonable, but we believe the chosen length still provides an accurate enough estimation and yields a high validity.

The abnormal return has been standardized as described in section 3.4. Using the stock's standard deviation to adjust for stock volatility is proposed by MacKinlay (1997), but its validity can still be questioned. Other methods applicable could have resulted in a different result. The chosen method produces a set of transformed variables with similar variances, but with different means and ranges, which are more in line with this study's aim. By standardizing we acknowledge that different stocks react differently and by standardizing we increase the comparability between the stocks.

6.5 Comparability and practical relevance

The results of this study are surprising in relation to the results from previous studies, which have been performed in other countries. The study is also differing from others in the respects that it is performed on recent data, which decreases the comparability to previous studies. It is not possible to determine whether it is the period of time or the location of the study, or both, that are the important factor(s) in explaining the different results. It is possible that comparability would be rather high for countries with a similar culture to that of Sweden, where the other Scandinavian countries would be a prime example, during roughly the same period of time. However, before any studies can confirm this the assumption has to be made that the general comparability levels of these results are low.

Within the same time period and location, comparability is assumed to be higher. However, the same study on a different stock exchange within Sweden would change what is deemed important variables. Firstly, having looked at the stock exchange for the largest companies with a sample skewed towards the larger side of the spectrum within this exchange, market attention towards companies on other exchanges would be lower. This increases the possibilities for companies to hide bad news and affects the markets' reaction to news. Add to that the more lenient corporate governance rules which are applied to, the increased risk of investing in, and

the reduced analyst coverage of, smaller companies. There seems to be multiple significant factors which could affect the outcome.

With the results of the study implying an inefficiency in the market, the practical relevancy is deemed to be moderate to high. From the perspective of investors an arbitrage opportunity might have arisen due to the fact that analyst estimates and market expectations of Friday announcement are significantly lower than for other days, leading to unexpected returns. From an analyst perspective, there is now proof that Swedish companies do not strategically time their bad news to Fridays, enabling future estimate for Friday earnings announcement to reach higher precision. For companies, it is now possible to expect analyst and market reaction to their eventual choice of announcing earnings news on a Friday, enabling the company to make an informed choice on this issue.

7. Suggestion for future research

The subject of strategic timing of earnings news has been thoroughly researched with U.S. data, but for Swedish data studies are lacking. With this paper, we have merely scratched the surface of the phenomena in a Swedish context and there is potential to go in depth on the subject with the already established methods tested in other countries. Primarily we would like to direct attention towards the methods applied by DellaVigna & Pollet (2009), deHaan et al. (2015) and Michaely et al. (2014; 2015; 2016), who with their detailed research has been an inspiration for this paper.

Furthermore, we see potential for explorative studies on other data samples, to contrast with the findings of our study. A study on another Scandinavian country would be of interest in that it may validate the cultural difference which we propose as a possible explanatory factor to our contrasting findings in comparison to the findings on U.S data. It would also be of interest to study smaller companies in Sweden, to see if our proposition of firm size as an explanatory variable to our findings may be of substance. However, if it is realistic to attain such data for smaller companies or not is questionable.

From a qualitative perspective, we found potential to research the decision process involved when companies arrange an announcement date, as we found no relevant existing research in this field on Swedish data. What is driving the trend discovered, that earnings announcements have been delivered earlier in the day from 2005 to 2015? As we have not found any indication that companies choose to announce on Fridays to hide bad news, there is also potential to

qualitatively research motives behind the companies' choices of weekday and time of the announcement.

8. Summary and conclusion

Strategical timing of earnings news is a way for companies to manipulate the market reaction to their announcement. By allocating the bad announcements to a period of market inattention such as Fridays or after market closing, the company can dampen the reaction to the bad news. From previous research, we know that earnings announcement allocated in such a way tend to underperform the market expectations. However, we have shown that this is not the case for the Stockholm OMX Exchange during the period of 2005 to 2016.

The reason to that Fridays do no underperform the markets expectations, we find, is that the market expectations for Friday announcement are already lowered in relation to the markets expectations of announcement on other weekdays, even when comparing a paired sample. These lowered expectations, however, seem to be unfounded as earnings announcements on Fridays give the same relative return in relation to stock price as announcements made on other days.

To measure whether Fridays are a period of market inattention, we perform an event study of market reaction to earnings announcement. From this study, we find no difference between Fridays and other days, showing that the market is indeed efficient and that proposed inattention on Fridays can't be proven. The reason for this, we speculate, may be due to that companies tend to announce their earnings earlier on Fridays than on other days, giving the less efficient market more time to digest the information as a compensating measure. It might also be explained by cultural differences between Sweden and the U.S. Another possible explanation is the increased availability of information due to the technical advancement of the 21st century.

Together, our results show that the market is as efficient on Fridays as on other days, which reduces the possibility for managers to strategically time their earnings announcements on this day. We also find that the managers don't tend to strategically time earnings announcements to Fridays. However, the market expects this behaviour and is pessimistic towards Friday earnings announcements. Since the market has failed to correctly incorporate the relevant information, we can conclude that the market is inefficient in its estimations of Friday earnings announcements.

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10. Appendix

TABLE A1 - t-Test: Mean Standardized Actual Earnings per Share (SARPS)

	Friday	Non-Friday
Mean	1,2263%	1,2035%
Variance	0,0974%	0,7937%
Observations	774	3095
Hypothesized Mean Difference	0	
Degrees of Freedom	3501	
t Stat	-0,1165	
P(T≤ t) two-tail	0,9073	
t Critical two-tail	1,9606	

****, **, * indicates significance at 1%, 5% and 10% levels respectively.*

TABLE A2 - t-Test: Mean Standardized Actual Earnings per Share (SARPS), Paired Samples

	Friday	Non-Friday
Mean	1,1297%	1,0901%
Variance	0,0308%	0,0603%
Observations	142	142
Hypothesized Mean Difference	0	
Degrees of Freedom	141	
t Stat	-0,250	
P(T≤ t) two-tail	0,8028	
t Critical two-tail	1,9769	

****, **, * indicates significance at 1%, 5% and 10% levels respectively.*

TABLE A3 - t-Test: Sensitivity analysis of Mean SUE for Observations with 10 or More Analyst Estimates

	Friday	Non-Friday
Mean	0,1014%	0,0388%
Variance	0,0037%	0,0424%
Observations	215	1021
Hypothesized Mean Difference	0	
Degrees of Freedom	1118	
t Stat	0,8157	
P(T≤ t) two-tail	0,4148	
t Critical two-tail	1,9621	

****, **, * indicates significance at 1%, 5% and 10% levels respectively.*

TABLE A4 – Event Study: t-Test of Difference of Mean per SUE Group

	Friday	Non-Friday	Friday	Non-Friday	Friday	Non-Friday	Friday	Non-Friday	Friday	Non-Friday	Friday	Non-Friday	Friday	Non-Friday
SUE Group		**1**		**2**		**3**		**4**		**5**		**6**		**7**
Observations	127	423	114	435	104	443	92	459	112	437	97	450	123	423
$\overline{SCAR}$, (t=-20; t=-1)	-0,0888	-0,0843	-0,0773	-0,0726	-0,0331	-0,0693	0,0216	-0,0612	0,0677	0,0495	0,1428	0,0950	0,0732	0,0628
Variance	0,5872	0,7190	0,5152	0,4233	0,4158	0,4291	0,4286	0,4850	0,4433	0,3947	0,5690	0,4825	0,5592	0,4780
Degrees of Freedom	227		165		157		136		165		133		187	
t Stat	-0,0566		-0,0643		0,5139		1,0943		0,2611		0,5746		0,1386	
P(T ≤ t) two-tail	0,9058		0,3522		0,6619		0,6026		0,7728		0,5235		0,2135	
t Critical two-tail	1,9684		1,9725		1,9756		1,9798		1,9745		1,9758		1,9732	
$\overline{SAR}$, t=0	-1,2834	-1,3130	-1,2402	-0,9776	-0,8327	-0,6946	0,0829	0,2695	0,7520	0,6670	1,1508	1,3374	1,6695	1,3104
Variance	5,0844	9,5804	6,8917	8,1994	8,4144	8,1565	10,1550	8,0073	7,9205	6,8390	6,5454	7,9338	8,3124	6,4212
Degrees of Freedom	282		190		153		121		164		151		180	
t Stat	0,1184		-0,9326		-0,4381		-0,5221		0,2893		-0,6395		1,2483	
P(T ≤ t) two-tail	0,5665		0,8680		0,8660		0,7341		0,0121		0,2216		0,8288	
t Critical two-tail	1,9718		1,9732		1,9777		1,9790		1,9751		1,9732		1,9665	
$\overline{SAR}$, t=1	-0,2555	-0,1653	-0,2096	-0,2380	-0,2224	-0,2604	-0,1059	-0,0366	0,4263	-0,0219	0,1913	0,0117	0,0255	0,0510
Variance	2,4576	2,2643	2,6003	2,7547	4,5829	2,8883	3,2251	2,9000	2,9159	2,2462	1,4926	2,7217	0,8884	2,8223
Degrees of Freedom	201		181		135		126		158		180		362	
t Stat	-0,5742		0,1665		0,1691		-0,3405		2,5383		1,2266		-0,2164	
P(T ≤ t) two-tail	0,2428		0,6400		0,7812		0,6008		0,0121***		0,5779		0,5004	
t Critical two-tail	1,9778		1,9732		1,9753		1,9793		1,9733		1,9772		1,9718	
$\overline{SCAR}$, (t=1; t=20)	-0,2679	-0,0276	-0,0849	-0,1176	-0,1433	-0,1243	-0,0451	-0,0850	-0,0677	-0,0631	-0,0448	-0,0044	-0,0386	0,0054
Variance	5,1756	0,5122	0,4348	0,4559	0,3911	0,4003	0,4538	0,3873	0,3587	0,3940	0,4220	0,4054	0,4024	0,4146
Degrees of Freedom	134		180		156		124		179		139		201	
t Stat	-0,566		0,4686		-0,2782		0,5246		-0,0722		-0,5578		-0,6751	
P(T ≤ t) two-tail	0,9549		0,9488		0,6081		0,2757		0,7943		0,5665		0,8899	
t Critical two-tail	1,9705		1,9744		1,9752		1,9776		1,9744		1,9780		1,9727	

****, **, * indicates significance at 1%, 5% and 10% levels respectively.*

TABLE A5 – Event Study: t-Test of Difference of Mean amongst Friday Announcers per SUE Group

	Friday	**Non-Friday**	**Friday**	**Non-Friday**	**Friday**	**Non-Friday**	**Friday**	**Non-Friday**	**Friday**	**Non-Friday**	**Friday**	**Non-Friday**	**Friday**	**Non-Friday**
SUE Group		**1**		**2**		**3**		**4**		**5**		**6**		**7**
Observations	127	375	114	376	104	377	92	362	112	382	97	397	123	365
$\overline{SCAR}$, (t=-20; t=-1)	-0,0888	-0,0845	-0,0773	-0,0709	-0,0331	-0,0622	0,0216	-0,0921	0,0677	0,0450	0,1428	0,0903	0,0732	0,0792
Variance	0,5826	0,7539	0,5152	0,4242	0,4158	0,3976	0,4286	0,4605	0,4433	0,3955	0,5690	0,4819	0,5592	0,5014
Degrees of Freedom	248		173		161		145		173		138		201	
t Stat	-0,0537		-0,0860		0,4085		1,4756		0,3208		0,6238		-0,0779	
P(T ≤ t) two-tail	0,9572		0,9316		0,6834		0,1422		0,7488		0,5338		0,9380	
t Critical two-tail	1,9696		1,9738		1,9748		1,9765		1,9738		1,9773		1,9718	
$\overline{SAR}$, t=0	-1,2880	-1,3922	-1,2402	-1,0025	-0,8327	-0,7123	0,0829	0,2261	0,7520	0,7573	1,1508	1,3259	1,6695	1,3356
Variance	5,0471	10,1303	6,8917	8,3981	8,4144	8,8384	10,1550	7,5519	7,9205	7,2424	6,5454	8,4373	8,3124	6,6217
Degrees of Freedom	311		204		167		128		175		162		192	
t Stat	0,4041		-0,8262		-0,3726		-0,3953		-0,0178		-0,5877		1,1402	
P(T ≤ t) two-tail	0,6864		0,4097		0,7099		0,6933		0,9858		0,5576		0,2556	
t Critical two-tail	1,9676		1,9717		1,9743		1,9787		1,9736		1,9747		1,9724	
$\overline{SAR}$, t=1	-0,2469	-0,2012	-0,2096	-0,2520	-0,2224	-0,2764	-0,1059	-0,0490	0,4263	-0,0185	0,1913	-0,0029	0,0255	0,0215
Variance	2,4476	2,3516	2,6003	2,8189	4,5829	2,9770	3,2251	3,1293	2,9159	2,2916	1,4926	2,6590	0,8884	2,8176
Degrees of Freedom	216		193		142		139		165		189		378	
t Stat	-0,2872		0,2436		0,2368		-0,2720		2,4850		1,3070		0,0326	
P(T ≤ t) two-tail	0,7743		0,8078		0,8132		0,7860		0,0140***		0,1928		0,9740	
t Critical two-tail	1,9710		1,9723		1,9768		1,9772		1,9744		1,9726		1,9663	
$\overline{SCAR}$, (t=1; t=20)	-0,2718	0,0130	-0,0849	-0,1323	-0,1433	-0,1210	-0,0451	-0,0874	-0,0677	-0,0673	-0,0448	-0,0104	-0,0386	0,0178
Variance	5,1368	0,4761	0,4348	0,4345	0,3911	0,4158	0,4538	0,3879	0,3587	0,3728	0,4220	0,4008	0,4024	0,4368
Degrees of Freedom	135		187		168		133		184		144		218	
t Stat	-1,3997		0,6727		-0,3202		0,5456		-0,0065		-0,4697		-0,8443	
P(T ≤ t) two-tail	0,1639		0,5020		0,7492		0,5863		0,9948		0,6393		0,3994	
t Critical two-tail	1,9777		1,9727		1,9742		1,9780		1,9729		1,9766		1,9709	

****, **, * indicates significance at 1%, 5% and 10% levels respectively.*

TABLE A6 – Event Study: t-Test of Difference of Mean per Time Stamp and SUE Category

	Before						**Early Market**						**Late Market**					
	Fri-day	**Non-Friday**	**Fri-day**	**Non-Friday**	**Fri-day**	**Non-Friday**	**Fri-day**	**Non-Friday**	**Fri-day**	**Non-Friday**	**Fri-day**	**Non-Friday**	**Fri-day**	**Non-Friday**	**Fri-day**	**Non-Friday**	**Fri-day**	**Non-Friday**
Category	**Negative**		**Neutral**		**Positive**		**Negative**		**Neutral**		**Positive**		**Negative**		**Neutral**		**Positive**	
Observations	192	544	248	875	175	530	33	149	42	262	31	191	17	162	18	196	14	151
$\overline{\textbf{SCAR}}$, (t=-20; t=-1)	-0,07	-0,11	0,05	-0,06	0,11	0,09	-0,23	0,01	-0,17	0,03	0,10	0,03	-0,26	-0,03	-0,03	0,00	0,17	0,11
Variance	0,54	0,54	0,39	0,44	0,59	0,56	0,27	0,77	0,57	0,45	0,49	0,42	0,54	0,47	0,57	0,41	0,42	0,30
Degrees of Freedom	331		415		288		74		51		37		18		18		14	
t Stat	0,77		2,34		0,18		-2,05		-1,63		0,51		-1,18		-0,14		0,35	
P(T ≤ t) one-tail	0,44		0,02**		0,86		0,04**		0,11		0,61		0,25		0,89		0,73	
t Critical one-tail	1,97		1,97		1,97		1,99		2,01		2,03		2,10		2,10		2,14	
$\overline{\textbf{SAR}}$, t=0	-1,38	-1,31	0,04	0,21	1,60	1,35	-1,09	-0,73	-0,17	-0,23	1,02	1,25	-0,65	-0,96	0,21	-0,11	0,79	1,35
Variance	6,16	10,66	9,36	8,51	7,98	7,48	4,08	5,75	8,63	5,81	6,27	6,16	6,14	5,98	9,34	8,32	5,43	7,62
Degrees of Freedom	435		382		287		52		49		39		18		19		15	
t Stat	-0,31		-0,77		1,02		-0,87		0,11		-0,48		0,48		0,42		-0,81	
P(T ≤ t) two-tail	0,76		0,44		0,31		0,39		0,91		0,63		0,64		0,68		0,43	
t Critical one-tail	1,97		1,97		1,97		2,01		2,01		2,02		2,10		2,09		2,13	
$\overline{\textbf{SAR}}$, t=1	-0,19	-0,09	0,16	0,01	0,05	0,10	-0,40	-0,19	-0,35	-0,21	0,38	0,16	-0,25	-0,58	0,13	-0,47	0,19	-0,39
Variance	2,54	2,35	3,19	2,11	1,15	2,66	2,87	2,15	4,88	3,27	1,31	3,01	2,01	3,31	1,69	4,39	1,02	2,79
Degrees of Freedom	322		343		451		42		49		53		20		24		18	
t Stat	-0,74		1,25		-0,49		-0,64		-0,40		0,91		0,87		1,71		1,88	
P(T ≤ t) two-tail	0,46		0,21		0,63		0,52		0,69		0,37		0,39		0,10*		0,08*	
t Critical one-tail	1,97		1,97		1,97		2,02		2,01		2,01		2,09		2,06		2,10	
$\overline{\textbf{SCAR}}$, (t=1; t=20)	-0,19	-0,06	-0,05	-0,08	-0,03	-0,01	-0,25	-0,08	-0,20	-0,05	-0,05	0,00	-0,04	-0,15	-0,29	-0,18	-0,17	0,02
Variance	3,61	0,47	0,41	0,38	0,39	0,42	0,36	0,48	0,36	0,43	0,51	0,42	0,33	0,50	0,37	0,40	0,55	0,39
Degrees of Freedom	208		386		303		51		56		37		20		19		14	
t Stat	-0,93		0,60		-0,39		-1,36		-1,43		-0,34		0,69		-0,75		-0,92	
P(T ≤ t) two-tail	0,35		0,55		0,70		0,18		0,16		0,73		0,50		0,46		0,37	
t Critical one-tail	1,97		1,97		1,97		2,01		2,00		2,03		2,09		2,09		2,14	

****, **, * indicates significance at 1%, 5% and 10% levels respectively.* Before Market***, defined as 00:00-09:00.*** Early Market***, defined as 09:01-12:30.*** Late Market***, defined as 12:31-17:30.*** After Market***, defined as 17:31-23:59***

TABLE A7 – Event Study: t-Test of Difference of Mean per SUE Group, Sensitivity test of more or equal to 10 analyst estimates

	Friday	Non-Friday	Friday	Non-Friday	Friday	Non-Friday	Friday	Non-Friday	Friday	Non-Friday	Friday	Non-Friday	Friday	Non-Friday
Category	1		2		3		4		5		6		7	
Observations	10	78	32	137	39	182	43	224	40	192	50	154	32	97
$\overline{SCAR}$, (t=-20; t=-1)	0,0154	0,0703	-0,0330	-0,0001	-0,0018	0,0141	-0,0217	-0,0967	0,1680	0,0740	0,1265	0,1476	0,2743	0,2030
Variance	0,1157	0,7613	0,3231	0,4931	0,4281	0,4389	0,3158	0,5356	0,5848	0,3748	0,7755	0,6258	0,5385	0,4331
Degrees of Freedom	28		55		56		72		50		76		49	
t Stat	-0,3758		-0,2811		-0,1372		0,7607		0,7297		-0,1513		0,4884	
P(T ≤ t) two-tail	0,7099		0,7797		0,8914		0,4493		0,4690		0,8802		0,6275	
t Critical one-tail	2,0484		2,0040		2,0032		1,9935		2,0086		1,9917		2,0096	
$\overline{SAR}$, t=0	-1,8727	-1,5901	-1,8777	-1,3438	-0,8770	-0,9260	-0,2616	0,1121	0,4856	0,6897	1,7706	1,2962	2,0923	1,3687
Variance	4,5577	21,1505	8,4859	12,2113	13,4810	11,5971	12,7328	8,8328	9,2369	9,5749	7,8739	8,7867	10,2523	7,9371
Degrees of Freedom	22		54		53		54		57		87		48	
t Stat	-0,3315		-0,8970		0,0765		-0,6452		-0,3851		1,0242		1,1411	
P(T ≤ t) two-tail	0,7434		0,3737		0,9393		0,5215		0,7016		0,3086		0,2595	
t Critical one-tail	2,0739		2,0049		2,0057		2,0049		2,0025		1,9876		2,0106	
$\overline{SAR}$, t=1	-0,5516	0,1396	-0,5562	-0,1809	-0,1128	-0,2347	-0,5097	-0,0830	0,0219	0,1005	0,2856	0,0893	-0,0678	0,1816
Variance	0,5027	2,6089	4,4138	2,8047	3,5138	2,9425	4,9757	3,5451	1,5935	1,9054	1,4840	2,5261	1,1493	2,6810
Degrees of Freedom	24		41		53		54		60		108		81	
t Stat	-2,3889		-0,9428		0,3739		-1,1765		-0,3522		0,9143		-0,9893	
P(T ≤ t) two-tail	0,0251**		0,3513		0,7100		0,2446		0,7259		0,3626		0,3254	
t Critical one-tail	2,0639		2,0195		2,0057		2,0049		2,0003		1,9822		1,9897	
$\overline{SCAR}$, (t=1; t=20)	-0,0348	0,1231	0,2785	-0,0211	0,0253	-0,0564	0,0481	-0,0566	0,0325	-0,0256	-0,0692	-0,0048	-0,0460	-0,0271
Variance	0,3905	0,5277	0,4155	0,4449	0,4117	0,4333	0,6419	0,4361	0,2611	0,3720	0,3838	0,3838	0,3176	0,3391
Degrees of Freedom	12		49		56		53		64		83		55	
t Stat	-0,7376		2,3329		0,7178		0,8058		0,6318		-0,6395		-0,1632	
P(T ≤ t) two-tail	0,4749		0,0238**		0,4759		0,4239		0,5298		0,5243		0,8710	
t Critical one-tail	2,1788		2,0096		2,0032		2,0057		1,9977		1,9890		2,0040	

****, **, * indicates significance at 1%, 5% and 10% levels respectively.*