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Sponsored research's impact on abnormal returns

Does sponsored research lead to a significant change in abnormal returns at quarterly earnings releases?

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SAMMANFATTNING

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| Syfte | Denna uppsats syftar till att undersöka huruvida betalanalyser påverkar den abnormal avkastningen av en aktie, med avsikten att bidra till en bättre förståelse kring betalanalysens påverkan på kvartalsrapporter |
| Metod | Uppsatsen har en deduktiv ansats och är baserad på en eventstudie enligt MacKinlays metod från 1997 |
| Empiri | Datasetet består av 24 bolag från Nasdaq OMX Stockholm Small Cap, som är täckta av betalanalys sedan minst ett år i sträck utan att samtidigt vara täckta av traditionell sell-side analys |
| Resultat | Den genomförda studien visade på att det inte går att förkasta nollhypotesen, vilket innebär att författarna inte kan bevisa att det finns någon skillnad i kumulativ onormal avkastning innan och efter upptagande av betalanalys |

ABSTRACT

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| Title | Sponsored research's impact on abnormal returns |
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| Course | FEKH89, Degree Project Undergraduate level, Business Administration, 15 ECTS credits |
| Authors | Ahl, Hannes; Elmlund, Adrian; Ceplitis, Olivia & Malmgren, Simon |
| Key-words | Sponsored research, abnormal returns, information asymmetry, agent-principal theory, and efficient market hypothesis |
| Purpose | The aim of this study is to examine whether sponsored research affects the abnormal returns of a stock, and hope that this study will create a better understanding of the market impact sponsored research has |
| Methodology | The paper is of deductive form using an event study as described by MacKinlay (1997) |
| Theoretical perspectives | The main theories used in this paper includes the efficient market hypothesis, information asymmetry, and the principal agent problem. Furthermore, earlier research regarding biases and analyst recommendation precision are of great importance for this written paper |
| Empirical foundation | The empirical foundation of this paper consists of 24 companies selected from the Nasdaq OMX Stockholm Small Cap, which are, or have been covered by a sponsored research firm, while not having traditional sell-side coverage |
| Conclusion | The conducted study failed to reject the null-hypothesis, which means that the authors cannot prove that there is no difference in cumulative abnormal returns prior to and after sponsored research |

KEYWORDS & CONCEPTS

| <i>Keyword</i> | <i>Description</i> |
|--|---|
| Sponsored research | Research on single equities paid for by the company and openly distributed to all types of investors |
| Traditional (sell-side) equity research | Traditional research is a financial service that provides research of a listed company, in order to provide a paying client with a buy, sell, or hold recommendation about investing in the share |
| Retail investor | Non-professional investor that trades securities such as stocks and mutual funds for their personal account |
| Institutional investor | Professional investor that trades securities such as stocks and mutual funds in large quantities on behalf of clients |
| Abnormal returns | The return from a stock or portfolio that is, over a certain period of time, higher than the return generated by its benchmark or the expected rate of return |
| CAR | Cumulative abnormal returns; an increase or decrease in returns by successive additions |
| MiFID II | Markets in Financial Instruments Directive II; a regulation to improve market transparency and investor protection |

PREFACE

This paper has been a great challenge, with a lot of time and effort going into this project. We are grateful that we chose the particular subject, and have enjoyed the process of digging deeper into the field of equity research in Sweden. The authors of this paper hope that it provides the reader with a more in depth understanding and insight to the subject, and that it intrigues to further research in the future.

We are thankful for the support and inspiration that Maria Gårdängen has provided throughout the writing of this paper, and we would also like to thank Anamaria Cociorva for guidance regarding the chosen methodology and statistical research. Furthermore, we would like to thank LINC, Lund University Finance Society, for providing a platform for us to develop our interest in financial markets throughout our years at Lund University.

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1.0 Introduction

The introduction discusses what sponsored equity research is, its purpose, and why there has been a significant increase in sponsored research prevalence in the last decade. The section ends with the purpose of the study, its limitations, and the research question the paper intends to answer.

Sponsored equity research is a paid subscription by publicly listed companies to have an equity analyst cover their stock. Contrary to traditional equity research, which is paid for by a bank's institutional clients, sponsored equity research is paid for by the listed company itself. Sponsored research usually covers less established companies of smaller size or of less interest to institutional clients for them to consider paying to access research on these. Before regulatory changes, traditional equity research brought in revenues for the banks through the brokerage department in the form of commissions and trading fees by increasing their client's trade volume through intriguing equity research (Ahmadi, 2020). In other words, the investment banks practically conducted equity research for free but had incentives to provide it to their clients due to the accumulation of trading fees. With new regulations and market conditions comes new problems and questions. Although sponsored research existed before the new regulations of MiFID II, the authors find that it is not as widely researched as traditional equity research. In a comparison between the two forms, Buslepp (2009) concluded that sponsored research is more biased due to the intrinsic conflict of interest in companies paying for equity research, but is it biased enough to have an impact on abnormal returns?

1.1 MiFID II

On January 3rd 2018, MiFID II (Markets in Financial Instruments Directive 2) was applied to all member countries of the European Union (European Securities and Markets Authority, n.d). With experience from the financial crisis of 2008 and the rapid expansion and development of financial products and services, the original MiFID I rules were updated. In comparison to MiFID I, MiFID II encompasses more types of financial products, hence addition of new rules. The purpose of the change is to improve investor protection while

making the financial markets more transparent and efficient. One rule implemented to improve transparency was to force financial institutes and banks to present detailed revenue splits between services offered (Amzallag et al., 2021). In practice, this means that financial institutes must state exactly what amount of their received revenue that was generated from the equity research department, which in extension, means that fund managers and investors must pay directly for equity research as a service instead of indirectly through commissions and trading fees.

After MiFID II, banks have continuously decreased how many companies they cover, instead focusing on companies with higher investor interest. In particular, this affected the coverage of small- and medium-sized stocks which saw a meaningful drop in equity research coverage. This regulatory change created a vacuum in equity research. To combat this, smaller public companies started paying banks and research firms directly to be covered by analysts through sponsored equity research. As a result of this industry switch, many large Swedish banks that still produce traditional equity research entered the sponsored research market, receiving annual revenue of approximately SEK 300,000 to SEK 600,000 per company they cover (Ahmadi, 2020).

1.2 General content of equity research reports

An equity research report is provided by one or more equity research analysts and gives information about a listed company and its future outlook. Normally this includes, in various detail, information about the business model, market position, a financial analysis, a forecast, and an intrinsic or relative valuation to motivate a target price or a valuation range reflecting a fair value of the company. In comparison to the current stock price, this results in a recommendation to buy, hold or sell the security. Data such as ticker, current price and market capitalization, various current and estimated valuation multiples, free float and ownership is also presented in the report (CFA Institute, 2020). Sponsored research contains similar content, although the Swedish sponsored research does not include explicit recommendation to buy, sell or hold the stock (Ahmadi, 2020).

1.3 Background of sponsored equity research and fee structures

The idea of sponsored equity research and a pay-for-research fee structure is not a completely new phenomenon. Several Swedish firms, such as Redeye and Introduce, were established already in 1999 and 2008 respectively (Redeye, n.d., Aronsson, 2015), and have existed alongside investment banks' traditional research coverage. In the traditional sell-side fee structure used by the banks, equity research was not a department that generated revenues by itself but was still offered to clients who paid for trade execution, investment banking and market-making services (Kelly & Ljungqvist, 2012). By covering and providing research on different equities, the research department could increase trading activity, generate business, and in turn, produce more fees for the brokerage department. This incentivized the banks to increase the number of stocks covered rather than adopting a pay-for-research fee structure and competing with the sponsored research firms. Because the equity research department did not generate any revenues, clients could easily consume the research created by one bank but place their trade with another bank. As a result, a lot of pressure was put on the equity research analysts to maintain a high standard of quality and truthfulness to their analysis, in order for their clients to not place their trades with competitors. In turn, there were still plenty of smaller companies that didn't receive any coverage or attention from the banks, and this was the segment to which sponsored equity research firms provided their services to (Amzallag et al., 2021).

1.4 Problematization and purpose

The rise of sponsored equity research has not been without critique. Questions regarding objectivity, biases, and conflict of interest have been voiced and discussed in media, news, and financial forums (Furubacke, 2022; Almgren, 2019). Given the aforementioned problems with sponsored research, several topics surrounding the service merit their own studies. Unlike traditional equity research, scientific studies within the field of sponsored research are limited, particularly in markets outside of the United States.

Finding financial theories solely related to sponsored research is a difficult task, yet well-established theories about the efficient market hypothesis, information asymmetry and the agent-principal theory are all relevant as broader frameworks to both traditional and

commissioned equity research. This is due to equity research providing information for the market to react to, and company sponsored research having a conflict of interest much like the principal-agency theory discusses.

Papers on equity research often handle the topics of forecast accuracy and the impact of recommendations, studying the release of an equity research report in event studies. Lidén (2006) concluded that buy recommendations from traditional research were misleading the Swedish stock market, while Loh and Stulz (2011) found that only 12% of recommendations from equity analysts actually affect U.S stock prices. Yet, Kelly and Ljungqvist (2012) concluded that equity research has a heavy impact on information asymmetry, where discontinuation of research coverage led to increased information asymmetry, resulting in asset prices dropping. On the other hand, different empirical findings do not have to imply that only one finding is correct. These studies do, however, open up for further research. Buslepp (2009) helped shed some light on the sponsored research field by discussing the conflict of interest for traditional and sponsored service and discovered that company-sponsored research firms are more likely to be overly optimistic in their recommendations compared to traditional service providers.

Considering the short history and recent popularization of sponsored research in Sweden, and the shortage of research on the topic outside of the U.S, the purpose of this paper is to provide empirical data on how sponsored research has impacted abnormal returns on the Swedish market. Given that earlier research conducted in the U.S and Sweden have yielded conflicting conclusions, it is important to note that there is a slight difference in how sponsored research is conducted in the two countries. Sponsored research in Sweden does not provide an official buy or sell recommendation but the American counterpart does (Ahmadi, 2020), meaning that scientific papers on sponsored research in the U.S might not perfectly cohere with the Swedish market and vice versa.

As the authors find that studies are often conducted on either traditional research solely or as a comparison of the two forms of service (although more can be done), the authors intend to only focus on sponsored research and how this form of service affects abnormal returns.

Kelly and Ljungqvist (2012) investigate abnormal returns after discontinuation of research, but unlike Kelly and Ljungqvist, our paper will research abnormal returns to see if there is a difference prior to and after the initiation of sponsored research, hence the focus is on initiation of coverage (positive news) rather than discontinuation (negative news) of one. With the assumption that equity research coverage becomes an additional source of information, coverage should hypothetically lead to decreased information asymmetry in line with the findings of Kelly and Ljungqvist (2012). Furthermore, the financial forecasts by equity analysts gives the market an estimation of what the following quarterly report will present, and in an efficient market, this should be reflected in the asset pricing and thus leading to lower abnormal returns when the quarterly report is released. Ultimately, it is the ambition of the authors that this study will help clarify the market impact of sponsored research and further discuss the problem with the service model of sponsored research, enabling continued research on the topic.

1.5 Research question

Does sponsored research lead to a significant change in abnormal returns at quarterly earnings releases?

1.6 Limitations

This paper is limited to the companies listed on the Swedish stock exchange Nasdaq OMX Stockholm Small Cap with sponsored research. Furthermore, the data is limited to the four latest quarterly earnings releases prior to sponsored coverage and the first four quarterly earnings releases after sponsored coverage for each stock. The dates of the event range between 2008 and 2021 and any stock with traditional coverage in our given selection is removed to isolate the effect of sponsored equity research only. In total, the report is investigating eight events for each stock.

2.0 Theoretical framework

This segment aims to give the reader a better understanding and a broader perspective on the subject by explaining different applicable theoretical frameworks. The authors seek to present the literature and relevant theories on the topic of sponsored research as well as earlier research within the field.

2.1 Efficient market hypothesis

The idea behind an efficient market has been widely discussed, and much research has been conducted on the subject. One of the most generally accepted theories on the matter is the efficient market hypothesis (EMH) that has been developed in multiple papers. Fama (1970) is one of the more prominent papers that defined the market as informationally efficient, stating that all stocks are priced based on all the information available to the market and its investors. With the logic of a random walk, the market will react quickly and efficiently to new information regarding a stock and the stock should therefore be traded until the information from the signal is fully reflected in the price. In a later paper, Fama (1998) claims that an efficient market is equally likely to overreact to information as it is to underreact to information and that long-term return anomalies are often dependent on methodology, suggesting that the efficient market hypothesis should not be disregarded. Furthermore, Malkiel (2003) discusses the potential problems and the critics of the general acceptance of markets as extremely efficient. A flaw in the efficient market hypothesis is the claim that investors are rational, and according to Malkiel this is not true and investors will at some point make a mistake, causing irregularities and patterns that can persist over shorter periods of time. If the market was fully efficient, there would be no incentives for institutional investors to actively manage funds, however, he found that only a quarter of actively managed large cap mutual funds were able to outperform S&P 500 and Wilshire indexes in a decade and that only 37% were able to outperform the same indexes in a year, suggesting that the efficient market hypothesis holds over time.

Ball and Brown (1968) propose that if the effective market hypothesis holds, the market will adjust security prices quickly when new information in an earnings release becomes available, hence drawing the conclusion that accounting numbers are useful and that the absence of information would result in returns equal to the market for any given firm. In the paper, they compare the annual earnings forecasts from accountants with actual earnings, defining lower actual earnings as negative news and higher actual earnings as positive news. Although the authors of this report aim to investigate quarterly reports with a lower level of aggregated information than annual reports and equity research analysts as a source of information instead of accountants, the findings of Ball and Brown (1968) is of relevance to this paper's topic due to market reaction on earnings forecasts and financial reports, highlighting the effect of information availability in an efficient market. This was further confirmed by Ball and Brown (2014), when they revisited their original findings to conclude that financial statements are still as important to investors, analysts and other market participants.

2.2 Information asymmetry

Akerlof (1970) captures the general essence of information asymmetry where not all market participants share the same set of information. He states that given the amount of time that a seller has access to a product, and therefore a good knowledge of its condition, the seller will have more information about the quality of the product. Therefore, the seller will have an advantage towards the buyer who has not had the same insight given the lack of access to the product prior to purchase and information asymmetry between the market participants are created. When information is limited and buyers can't see and understand the difference between high-quality and low-quality products in a certain market, the buyer tends to assume that all products offered will be of worse quality and offer a price on the lower end of the spectrum even for a product of high quality. Information asymmetry is a central subject in all kinds of economic and financial discussions, with capital markets not being an exception.

Dierkens (1991) presents clear evidence that aligns with Akerlof's (1970) take on information asymmetry. Dierkens came to the conclusion that this theoretical framework also exists in capital markets and that for example, a higher degree of information asymmetry between the

market and the managers of the firm considerably increases the drop in price observed at a certain stock at the time of an equity issue announcement. Dierkens (1991) also investigated to what extent information asymmetry affects earnings announcements by management and measured how much the market reacts to certain earnings announcements of a given firm. Dierkens uses this information to determine to what extent the management sits on private information and how strong the information asymmetry is at that given firm, concluding that the information asymmetry is lower directly after an information releasing event, such as an earnings report, and that strong market reactions on an earnings release is a sign that management holds substantial private information. This is due to management knowing the content of the financial reports before it is presented to the market through an earnings release, which for capital markets is one of the primary sources of new information regarding an individual company. Furthermore, managers and the market are concluded to have equal knowledge and exposure towards market-wide uncertainties.

2.3 Agent-Principal Theory

According to Jensen and Meckling (1976), the agent-principal, also called the agency theory, aims to settle the relationship between an agent and a principal. Whether it's an organization or a person, they define the agency theory as a contract between the two parties, where a principal engages an agent to perform an action or a service. An important part to the contract is that the principal delegates some type of decision-making to the agent, which can result in a conflict of interest if the two parties are utility maximisers.

Eisenhardt (1989) further describes the essence of the theory as when cooperating parties have different goals and divisions of labor. She mentions that the agency problem derives from the ubiquitous agency relationship, where one party (the principal) delegates work to another party (agent) that carries out whatever task the principal handed over. Eisenhardt continues to add that the issues with the agent-principal theory occur when, firstly, the two parties have different goals or desires, and secondly, when it is difficult for the principal to monitor the work that the agent carries out.

2.4 Earlier research

Kelly & Ljungqvist (2012) investigated the effect of traditional sell-side equity research coverage on stock prices by researching asset pricing and abnormal returns after discontinuation of equity research coverage due to exogenous factors. They argue that information asymmetry is highly impacted by sell-side equity research as retail investors tend to rely on publicly available signals, while institutional investors have access to in-house research and can therefore rely on private signals. The discontinuation of equity research coverage was a publicly available signal since all announcements of firms ending coverage and which stocks these firms covered were presented in common media available for both institutional and retail investors. Kelly and Ljungqvist (2012) concluded that the discontinuation of equity research coverage led to increased information asymmetry, a drop in asset prices due to higher exposure towards liquidity risk and therefore a higher expected return and lower demand from uninformed investors, i.e., retail investors, highlighting the influence that equity analysts have on the market. A key factor in this study was that the announcement of discontinued coverage did not include any assumptions on the future outlook of the stock, implying results stemming from the bare existence of equity research coverage.

Lidén (2006) explored how changes in stock recommendations in Swedish printed media affected stock prices by using a BHARs (buy-and-hold abnormal returns methodology) approach for the period 1996-2000. The paper is structured like a regular event study but with a key difference in that it also observes price changes up to 24 months after the event date. Findings from Lidén (2006) indicate that buy recommendations were misleading for investors while sell recommendations were leading them (when short-selling), and yielded returns in-line with the overall market. The reason for this, according to Lidén (2006), is that negative corporate news has a greater impact on the market than positive news. Additional research by Loh and Stulz (2011) discusses the effect of changes to analysts' recommendations on stocks between 1993 and 2006 in the United States. However, the authors found that only ~12% of analyst recommendations do affect stock prices and that the changes are more likely to occur if an influential equity analyst issues the recommendation,

if the recommendation is issued contrarian to consensus or if it's issued on smaller growth firms with high institutional ownership.

Lin and McNichols (1998) found that traditional sell-side analysts who conduct equity research reports on companies they are affiliated with through an underwriting relationship forecast higher growth and more favorable recommendations than unaffiliated analysts. The relationship caused a conflict of interest between the agent and the principal and in cases where a sell recommendation was clearly warranted, affiliated analysts instead often issued a hold recommendation while unaffiliated analysts tended to be more accurate in their recommendations. The way investors interpreted the relationship between the affiliated analyst and the company was also reflected on the market as hold recommendations from affiliated analysts were seen as more negative than the same type of recommendation from an unaffiliated analyst. Near-term forecasts were not significantly different between the two groups of analysts studied, although there was clear evidence that maintaining the relationship with the company that provides the bank with underwriting revenue was important when issuing stock recommendations and influenced the content of equity research reports.

Furthermore, Buslepp (2009) provided insight into company-sponsored research as he discussed the conflict of interest within sponsored research contrary to traditional sell-side research. He discovered that company-sponsored research firms are more likely to be overly optimistic and more biased as opposed to the traditional brokerage firms. Moreover, Buslepp interpreted that this optimism is a consequence of the frequency that the analyst updated his or her company estimates at. The author found that analysts at company-sponsored research firms often are very keen on updating estimates when they are upgraded, and update the estimates a lot slower when downgraded. Additionally, Buslepp (2009) delved into the incentives of the brokerage parties (sponsored vs traditional), at which he found that analysts at company-sponsored research firms revise their estimates less frequently than analysts at traditional research firms. He also recognises that the relationship between the broker that provides the research and the company that sponsors it affects the recommendation, yet not the actual earnings per share (EPS) forecast.

Buslepp (2009) continues to further discuss the interesting aspect of incentives as to why management would want a buy-recommendation and not higher EPS estimates, reaching the conclusion that the market often punishes a company if EPS estimates (or other similar metrics) are not achieved.

2.5 Hypothesis

Given the theories and findings in earlier research, our hypothesis is that sponsored research will reduce abnormal returns in proximity, and during the day of a quarterly report, of equities listed on Nasdaq OMX Stockholm Small Cap.

2.6 Summary

The efficient market hypothesis, the agent-principal theory, and information asymmetry theory within financial markets is widely researched, with Fama (1970), Akerlof (1970) and Jensen and Meckling (1976) being pioneers within the respective subjects. Earlier research by Kelly and Ljungqvist (2012) found that the discontinuation of equity research coverage led to increased information asymmetry and Lidén (2006) found that buy recommendations were misleading for investors while sell recommendations were leading, however Loh and Stulz (2011) found that only about 12% of analyst recommendations affect stock prices. Lin and McNichols (1998) found that analysts who are affiliated with the companies they report on through an underwriting relationship tend to forecast higher growth and issue more favorable recommendations, and Buslepp (2009) confirmed that the same bias exists for sponsored research and that it is even more present than in traditional research. This goes hand in hand with Jensen & Meckling's (1976) take on the agent-principal theory and the conflict of interest. By interpreting that markets are not as efficient as Fama previously stated, a discussion arises and fuels the hypothesis of this paper - that sponsored research will reduce the stock price reaction when a quarterly report is released.

3.0 Data and methodology

In this section, the methodology of the report is discussed, including the study's approach, execution, and how the empirical evidence will be collected and processed.

This paper aims to study the impact sponsored equity research has on the share prices, and subsequently economic value given a deductive approach, of stocks listed on the Nasdaq OMX Stockholm Small Cap index. This is done by measuring the abnormal returns and subsequently, the cumulative abnormal returns during an event window, which is defined as the day of, and the days around a quarterly earnings release, by utilizing an event study methodology with a market model to estimate normal returns. The dataset is created by selecting the stocks on Nasdaq OMX Stockholm Small Cap, which are, or have been covered by a sponsored research firm, while not having traditional sell-side coverage.

3.1 Event studies

An event study is a statistical method used to determine the effect of a specific event. It is often used to evaluate the impact of corporate events such as mergers and acquisitions, spin-offs, Hedge Fund activist campaigns or earnings announcements. An event study measures the impact of an event on a firm's economic value by utilizing data from financial markets, often focusing on common equity and using closing prices when measuring returns (MacKinlay, 1997).

3.1.1 Event definition

In this paper, the events are defined as the release of a quarterly earnings report which is set to $t=0$. This is the main date of interest, but three other windows are also set up, these are the estimation window, the pre-event window, and the post-event window. The estimation window is defined as $t=-50$ to $t=-6$ trading days before the release of a quarterly earnings report. The main purpose of the estimation window is to observe the actual returns for any security in the selected days and with that, to create an approximation for normal returns in order to calculate the abnormal and cumulative abnormal returns (MacKinlay, 1997). The

pre-event window is defined as $t-5$ to $t-1$ and the post-event window as $t+1$ to $t+5$. Data for the following was collected:

| | |
|-----------------|---|
| $t-50$ to $t-6$ | The days prior to the pre-event window (Estimation window) |
| $t-5$ to $t-1$ | The days prior to a quarterly earnings release (Pre-event window) |
| $t=0$ | The day of a quarterly earnings release (Event window) |
| $t+1$ to $t+5$ | The days after a quarterly earnings release (Post-event window) |

Table. 1: Table of the estimation and event windows.

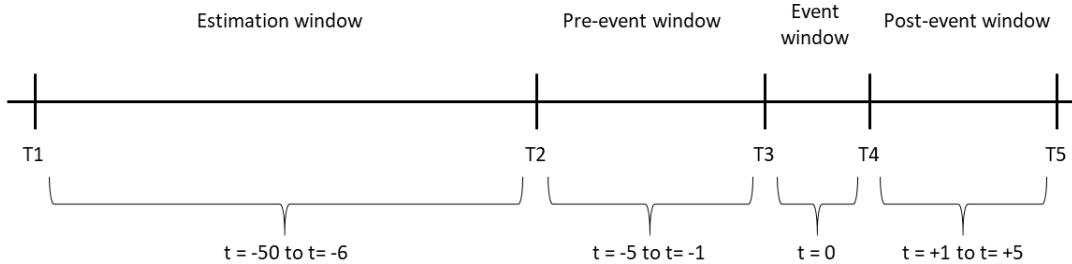


Figure 1: Illustration of the estimation- and event window.

The primary date of interest, $t=0$, is when the actual earnings report is released, but to capture any effects of price changes that occur the days after the event, the authors are also examining day $t+1$ to $t+5$. In case the market acquires information about the contents of the earnings announcement before its release date this may be reflected in the stock price, and in order to capture such movements, the days prior to the announcement, $t-5$ to $t-1$, are also included. The choice to examine a relatively short event window is due to our primary point of interest, which is the change in abnormal returns observed close to, or on, the day of the quarterly earnings release. According to Oler et. al (2008), five days or less is the most common post-event window and 67.7% of event studies published in management journals between 1994-2006 used this time frame for topics such as earnings announcements and mergers. As the authors interpret this as praxis for event studies within finance, five days are used as a window both pre- and post-event. The estimation window is however limited in length in order to ensure that the window does not include effects of any previous earnings releases. Given that this study investigates companies over different time periods and with different

event dates that do not have the exact same amount of calendar days and weekdays between them, the chosen length of the estimation windows ensures a margin to eliminate overlap.

In this event study a total of eight quarterly earnings releases per company were observed, in turn creating eight unique events per company. Of the total eight events, the first four are the latest consecutive quarterly earnings releases before equity research coverage was initiated by a sponsored research firm. Subsequently, the last four events were the coming four quarters just after coverage was initiated, thus creating eight events per company. This was done in order to have a larger sample-size of data, provide more points of examination for the study and to avoid the effect of potential non-recurring earnings surprises. Given that this study requires at least four quarters with and four quarters without coverage to eliminate seasonality, and that the growth of sponsored research has led to more coverage initiations in the last few years, investigating more than eight quarters would have led to fewer companies in the data selection.

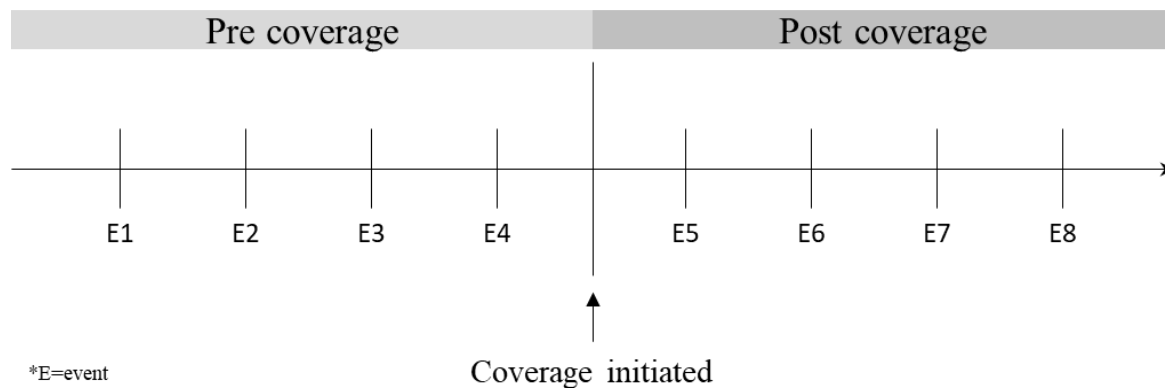


Figure 2: A visualization of the eight analyzed quarters per company. “E” = event.

3.1.2 Selection of stocks

This paper will examine stocks listed on Nasdaq OMX Stockholm Small Cap. The stocks are restricted to the Swedish market only, as regulations, establishment and content of sponsored research may differ on other geographic markets. Large and mid cap stocks are excluded as those are, to a large extent, covered by traditional equity research and as such, not covered by sponsored equity research firms. Stocks that are listed on the Nasdaq First North Growth

Market and Spotlight Stock Market are also excluded as they have less strict listing criteria than the OMX Stockholm Small Cap in regards to accounting policies, market capitalization and ownership (Advokatfirman Lindahl, 2020). No restrictions on industries have been made, but all companies that are covered by traditional sell-side research, and those which have been covered by sponsored research during a period that is shorter than four quarterly earnings releases, were excluded. Of the 82 listed companies on Nasdaq OMX Stockholm Small Cap, 56 of them have or have had sponsored research at some point, of these, 24 were selected which formed the final sample-size. These companies had no traditional sell-side coverage, did not have sponsored research coverage immediately after its IPO (meaning there is no period as a listed company without sponsored research, hence no comparison period), and have not had sponsored coverage for less than a year.

3.2 Normal and abnormal returns

In an event study, abnormal returns are measured. According to MacKinlay (1997), abnormal returns are defined as the actual return of the stock during the event window less the normal return of the stock during the event window. The normal return is a proxy for what the return would have been if the specific event did not happen.

$$ARit = Rit - E(Rit|Xt) \quad (1)$$

Figure 3: Abnormal returns as described by MacKinlay (1997)

In MacKinlay's (1997) description of the abnormal returns, $ARit$ is the abnormal return, Rit is the actual observed return and $E(Rit|Xt)$ is the normal return for period t . There are two common models to determine Xt , the normal return. These are the constant mean return model described in 3.2.1 and the market model described in 3.2.2. Other statistical models with one or multiple factors can be used, but the added benefits are limited since the largest reduction in variance usually comes from firms with simple characteristics, such as industry or market capitalization. Economic models can be used in event studies, but sensitivity and deviations make the Capital Asset Pricing Model (CAPM) less appropriate and using models

backed by the Arbitrage Pricing Theory would not give notable benefits compared to the market model (MacKinlay, 1997).

3.2.1 Constant mean return model

The constant mean return model assumes that the normal return for a specific security is constant over time, and that deviations from the mean are thereby due to the event being studied (MacKinlay, 1997). The model is described as the most basic and simple model for estimating the abnormal returns which allows for easy implementation in the case that other models are not applicable.

$$\begin{aligned} R_{it} &= \mu_i + \epsilon_{it} & (2) \\ E(\epsilon_{it}) &= 0 \quad \text{var}(\epsilon_{it}) = \sigma_{\epsilon_i}^2 \end{aligned}$$

Figure 3: The constant mean return model as described by MacKinlay (1997)

In the constant mean return model the μ is the mean return for any asset i , μ is estimated in the estimation window to act as a proxy for normal returns in the entire event window. ϵ_{it} is the period t disturbance term for asset i expecting zero and variance $\sigma_{\epsilon_i}^2$, this is the actual observed returns for any period t . R_{it} is the period- t return on asset i , simply put, the result of the summation of the estimated normal returns and the actual observed returns in ϵ_{it} .

While the simplicity of the constant mean return model proves to be useful and allows for easy computation of the abnormal returns, its simplicity is also its weakness, showcasing some of its limitations. The model assumes that the mean return is the same over time, regardless of external forces that might in periods affect market volatility, such as macroeconomic factors. This may not always be the case, which opens up for critique against the underlying assumption that the model is based on. On the other hand, Brown and Warner (1980, 1985) concludes that variance and thus the sensitivity of the constant mean return model are often very similar to more complex statistical models and therefore generates similar results as them.

3.2.2 Market model

The market model is a statistical one-factor model which assumes that there is a stable, linear relation between the return of the chosen market index and the normal return of any individual security. It estimates abnormal returns by regressing the returns on the asset against the returns on a market index. This implies that in the long term, prices of an individual security will revert towards its market index, regardless of temporary abnormal returns (MacKinlay, 1997). The market model is more complex than the constant mean return model because it requires more data to implement and a suitable market index to compare the returns of the asset with. It may however be more accurate as it accounts for market movements that might affect the returns on any given security.

$$\begin{aligned} R_{it} &= \alpha_i + \beta_i R_{mt} + \varepsilon_{it} & (3) \\ E(\varepsilon_{it}) &= 0 & \text{var}(\varepsilon_{it}) = \sigma^2_{\varepsilon_i} \end{aligned}$$

Figure 4: The market model as described by MacKinlay (1997)

Where the asset is i , R_{it} is the period- return for the asset and R_{mt} is the period- t return for the market. The zero mean disturbance term is ε_{it} and α_i , β_i and $\sigma^2_{\varepsilon_i}$ are parameters for the market model. Usually a broader stock index is used as a market portfolio.

The previously mentioned models are used to calculate the normal returns for the estimation and event window which are then subtracted from the actual returns of each individual stock. The abnormal returns are then used to calculate the cumulative abnormal return, $CAR_i(\tau_1, \tau_2)$. Which is defined as:

$$CAR_i(\tau_1, \tau_2) = \sum AR_{it}$$

Figure 5: The calculation of cumulative abnormal returns

For this paper, the authors have chosen the market model to determine abnormal returns since it is considered to be the most accurate due to a removal of return related to market return variation, hence reduced variance in abnormal returns and higher isolation of event effects

(MacKinlay, 1997). As MacKinlay highlights market capitalization as a common characteristic that reduces variance and a primary criterion in this study is that the stock is listed on Nasdaq OMX Stockholm Small Cap which implies market capitalization below EUR 150 million, the authors are confident that the market model is appropriate for this study.

The entire Nasdaq OMX Stockholm Small Cap consisting of 82 companies is used as market portfolio. MacKinlay (1997) states the significantly larger S&P 500 as an example for the U.S market, although the authors argue that a smaller index is motivated in this study since the abnormal returns comparison may be skewed if looking at the entire Nasdaq OMX Stockholm and including Mid Cap and Large Cap. Studies by Banz (1981) and Reinganum (1981) show that shares of companies with large market capitalizations display lower average returns compared to similar firms with smaller market capitalizations. Banz and Reinganum implicitly assume that these anomalous size-related excess returns are obtained continuously, month-by-month, year-by-year. The evidence for the so-called “size-effect” suggests that one can earn abnormal returns that endure for at least two years by creating portfolios based on a certain firm's market capitalization. The year after, Richard Roll (1981) published a conjecture against Reinganums findings, interpreting that the abnormal returns attributed to small firms are the statistical artifacts of improperly estimated betas. In spite of that, Reinganum (1982) published another paper the next coming year, aimed to tackle Rolls conjecture. Reinganum found that the small firm size effect still was - and still is - a valid and significant anomaly and as such the small-cap index was chosen to be used in the market model.

3.2.3 Null-hypothesis

With the background of earlier research and our research question, the following null-hypothesis has been created:

| | |
|----------------|---|
| H ₀ | There is no difference in CAR for pre- and post-coverage, ($\mu = \mu_0$) |
| H ₁ | There is a difference in CAR for pre- and post-coverage, ($\mu \neq \mu_0$) |

3.2.4 T-test to test for significance

The t-test is a popular statistical hypothesis test which is used to compare and test the statistical significance between two groups of data. The t-test is a simple probability distribution that is similar to the normal distribution and as such it assumes that the collected data is normally distributed.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(n_1-1)\sigma_1^2 + (n_2-1)\sigma_2^2}{n_1+n_2-2}} \times \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Figure 6: Calculation of the t-test.

In the calculation of the t-test, \bar{x}_1 and \bar{x}_2 represent the respective mean of the two samples, thus creating the difference in mean. σ_1 and σ_2 represent the standard deviation of the two samples and lastly, n_1 and n_2 are the numbers of observations of the two samples. One problem with applying a t-test is the fundamental assumption of the test, simply put, the assumption that the data is normally distributed. There is almost never a guarantee that this is the case, and as such, the authors have implemented an additional test for significance, the Wilcoxon signed-rank test.

3.2.5 Wilcoxon signed-rank test for robustness

The Wilcoxon signed rank test is, unlike the t-test, a non-parametric test. This means that the Wilcoxon test is suitable for datasets that are not normally distributed and can be used when the t-test is not appropriate. While the t-test looks for significant differences between the means of the selected datasets, the Wilcoxon signed rank test looks for significant differences between the medians, providing a useful tool to assess the robustness of a parametric model when it is applied to a dataset (Wilcoxon, 1945). This is due to the fact that if a dataset is perfectly normally distributed, the mean will be equal to the median. The authors used the Wilcoxon signed rank test in order to evaluate whether the collected data satisfied the requirements of the t-test and whether it was normally distributed.

Just like the t-test, the Wilcoxon signed rank test is assigned the same null-hypothesis and alternative hypothesis:

| | |
|----------------|---|
| H ₀ | There is no difference in CAR for pre- and post-coverage, ($\mu = \mu_0$) |
| H ₁ | There is a difference in CAR for pre- and post-coverage, ($\mu \neq \mu_0$) |

3.3 Data

The data includes all companies listed on the Nasdaq OMX Stockholm Small Cap index with sponsored research for at least four quarterly earnings and without sponsored research coverage for at least quarterly earnings, and without traditional sell-side coverage; company name, ticker, date of initiation by equity analyst, dates of the last four quarterly report releases prior to the initiation, the first four quarterly report releases after the initiation, share price on weekdays t-50 to t+5 of each earnings report. By gathering data from eight quarterly reports, a total of eight events per company were examined. Given our estimation window and event window, a total of 56 closing price observations were made per event and company, resulting in a total of 448 observations per company given the eight events. With a total of 24 companies included in the study, the authors have included 11,200 closing price observations in our dataset.

3.3.1 Data collection

The initial data collection was made from our chosen stock index Nasdaq OMX Stockholm Small Cap. The authors then investigated if the companies had sponsored coverage and at what date coverage was initiated through the investor relations page of each company and webpages of the banks and sponsored equity research firms Analyst Group, Analysguiden, Danske Bank, DNB Markets, Introduce (ABG Sundal Collier), Nordea, Redeye, Erik Penser Bank, and Carlsquare. Webpages of other firms were investigated but the authors came to the conclusion that the companies who had sponsored coverage from these firms did not fit our selection criteria. The next step in the collection of data was to gather the tickers for each company, the date of their last four quarterly earnings releases prior to sponsored research coverage and the first four quarterly earnings releases after sponsored research coverage initiation, which was collected through the Bloomberg terminal. For stocks with sponsored

coverage from multiple analysts, the authors used the first research report to identify the quarters of interest. Finally, collection of closing price data for all companies at specific dates determined by the event and estimation window were done using the Bloomberg terminal plug-in in Excel.

3.3.2 Data structuring

The collected data was compiled in Microsoft Excel, with data pulled through Bloomberg. The file was structured as follows; each company was given a standardized sheet, where the manual input was the ticker of the equity, and the date of publishing for the company's first and initial sponsored research report. After the price data for every company from Bloomberg was in place, returns from each day were calculated. After all 24 companies were compiled in their own Excel sheet, a master sheet was created to structure the data in order for it to be imported into Stata.

3.3.3 Data processing

With the data structured in Excel, the abnormal returns and the CAR calculated according to the market model, the data could be imported into the statistical software Stata. Using Stata, t-tests and Wilcoxon signed rank tests were performed and used to determine if sponsored equity research has a statistically significant effect on the cumulative abnormal returns of the selected securities during the event windows. The collected data will be presented in graphs and tables with the intention of facilitating the data to the reader and clarifying potential trends in results.

3.3.4 Data set boundaries

This paper aims to study the impact sponsored research has on abnormal returns of specific securities in conjunction with quarterly reports. The dataset is limited to Swedish equities and research firms during a period of two years. Using a larger or smaller set of data, other exchanges and other time periods may have given a different result of this study. Furthermore, using closing prices could generate momentum bias since the spread between bid and ask is not captured and closing prices may occur at different times during the day. This type of non-trading effect is naturally integrated into the bias of the market model beta

(MacKinlay, 1997). As closing prices are most commonly used as daily prices in event studies according to (MacKinlay, 1997), the authors chose to use praxis for this study.

3.3.5 Statistical losses

A few companies that were eligible for this study, in accordance with our criteria, could not be included due to the periods of interest (the events) taking place before the Nasdaq OMX small-cap index was created, and as such, there was no index to calculate the normal returns with, leading to their exclusion. Another company could not be included as they had sponsored research since their IPO, meaning that no pre-coverage period could be made.

3.4 Summary of methodology

The purpose of this study is to measure the cumulative abnormal returns of stocks listed on the Nasdaq OMX Stockholm Small Cap using an event study approach. The authors use an event study method to measure abnormal returns around the time of quarterly earnings releases for stocks that were covered by sponsored research before and after coverage was initiated. Our data selection is limited to stocks with sponsored research, and the data is collected using company websites, Bloomberg, Excel, and thereafter analyzed using Stata. It is important to note that this study is limited to a finite number of stocks as well as a limited estimation and event window.

4.0 Empirical results

The collected data is presented in this section to support the analysis, discussion and possible conclusions.

The empirical results are compiled and analyzed using the statistical programme Stata. Firstly, the results of the t-tests and Wilcoxon signed rank tests are shown in tables. Secondly, the average abnormal returns and average cumulative abnormal returns (CAR) are shown in graphs (fig. 7-10), highlighting the differences in these during select time periods and difference in pre- and post-coverage by the sponsored research firms.

4.1 Testing for significance

As previously stated, the authors have applied both a t-test and the Wilcoxon signed-rank test to the gathered datasets. This is done to assure that the dataset is normally distributed.

4.1.1 T-tests

| Window | Obs # | t-statistic | p-value |
|----------|-------|-------------|---------|
| -5 to -1 | 500 | -0.95 | 0.17 |
| t=0 | 100 | -0.47 | 0.31 |
| +1 to +5 | 500 | -1.26 | 0.1 |

* = P<0.05. **= P<0.01, ***= P<0.001

Table 2: Summarized results of t-tests

4.1.2 Wilcoxon signed-rank tests

| Window | Positive Obs # | Negative Obs # | Obs # = 0 | z-statistic | p-value |
|----------|----------------|----------------|-----------|-------------|---------|
| -5 to -1 | 223 | 257 | 20 | -0.81 | 0.41 |
| t=0 | 40 | 56 | 4 | -0.66 | 0.50 |
| +1 to +5 | 217 | 263 | 20 | -1.61 | 0.10 |

* = P<0.05. **= P<0.01, ***= P<0.001

Table 3: Summarized results of Wilcoxon signed-rank tests

A Wilcoxon signed-rank test was performed over the defined event windows in order to compare the results with the previously performed t-test. This was done as a robustness test to assess whether the dataset is normally distributed or not. As can be seen in the results, the p-values indicate that there is a difference in the results of the two tests, and a quite large one at that, which shows that the mean and the median in the dataset differ i.e. the data is not normally distributed. Because the data is not normally distributed, the results of the t-test are ignored and instead the results of the Wilcoxon signed-rank test are used to draw conclusions from the data. Yet, significance was not achieved in any of the event windows which means that the null-hypothesis cannot be rejected, indicating that there is no statistically significant difference in cumulative abnormal returns before and after a company is covered by a sponsored research firm.

4.1.3 Pre-coverage

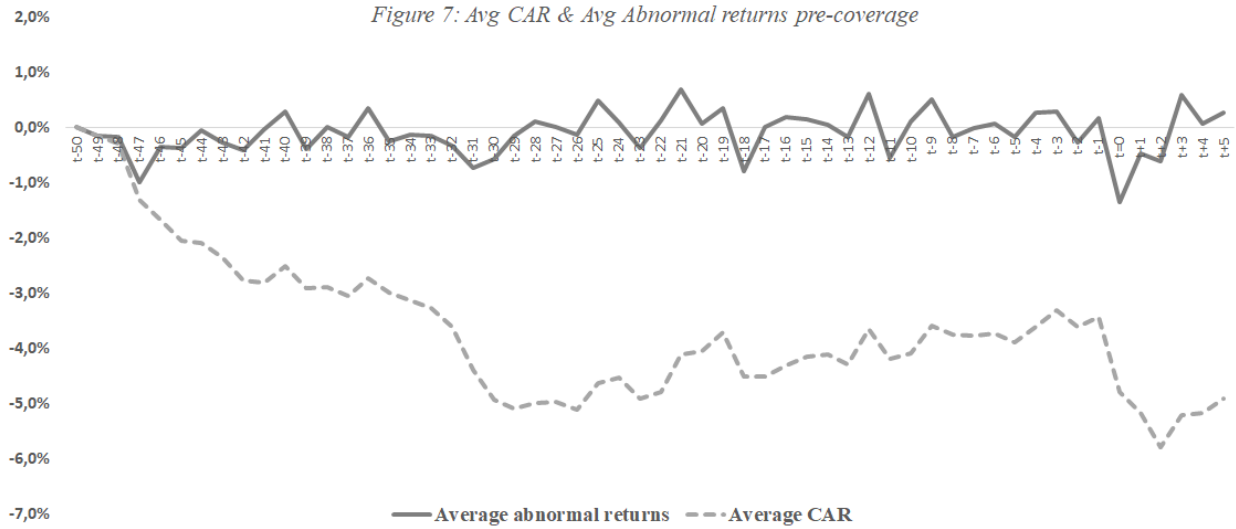


Figure 7

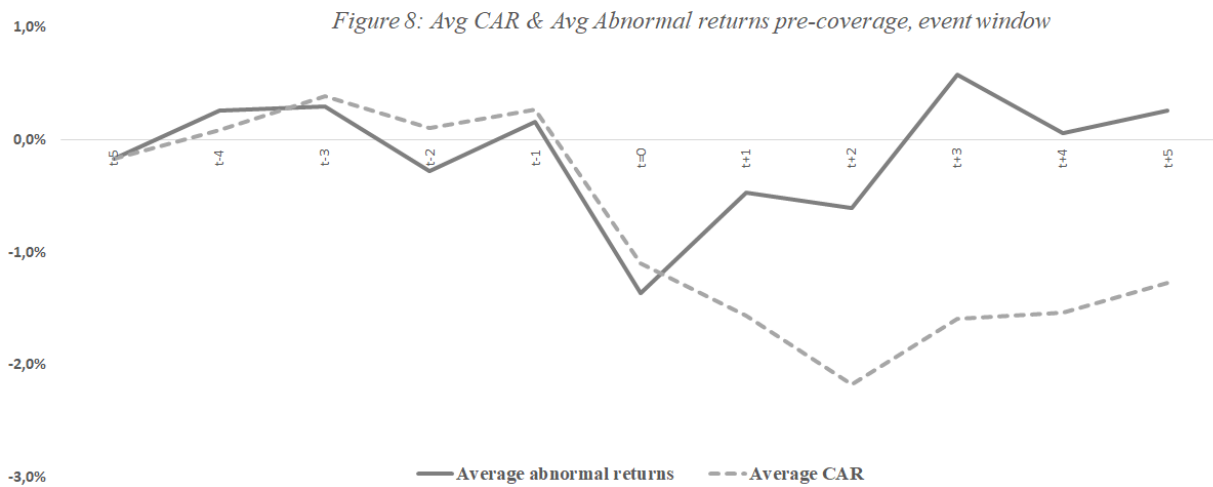


Figure 8

In the events before a sponsored equity research firm initiated coverage, there is a clear decrease in CAR, given the mainly negative abnormal returns from t-50 to t-27. From t-27 and onwards, there is a trend shift in average CAR, continuing until the event window t=0,

resulting in a left drop. The post-event window is more positive, with an aggregated positive stock price reaction.

4.1.4 Post-coverage

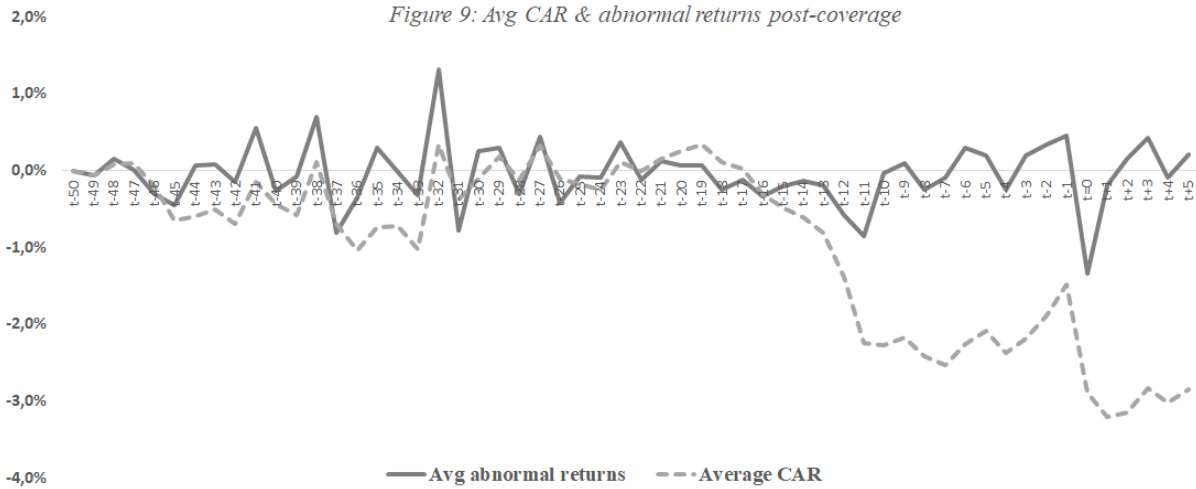


Figure 9

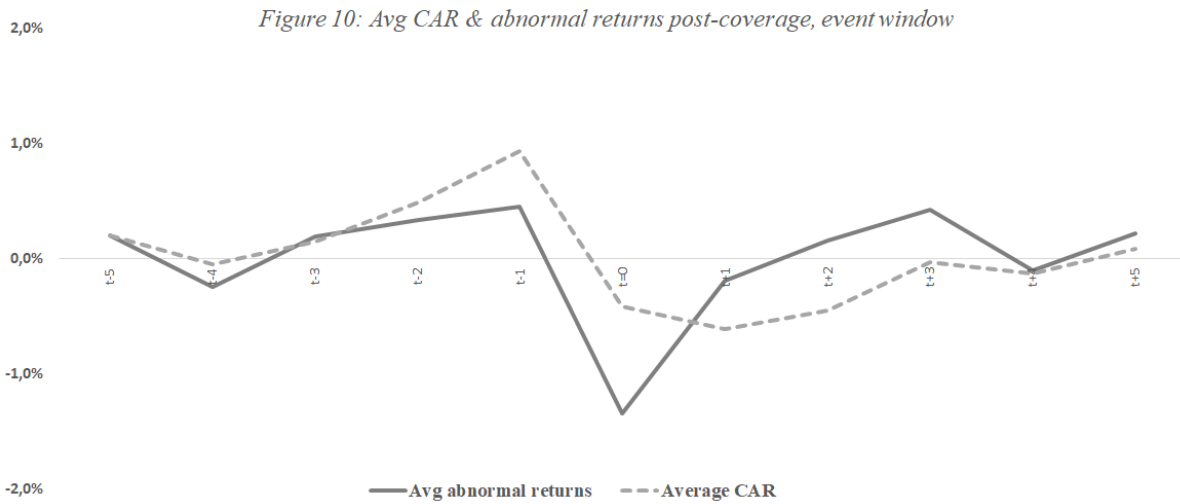


Figure 10

In the events before a sponsored equity research firm initiated coverage, a rather stochastic pattern can be observed with no notable trend for CAR until t-19. At t-19 the CAR starts to drop drastically until it reaches the pre-event window, gaining CAR. The event window, t=0

has a relatively major drop in asset price meaning that CAR for the period declines, only for it to have a slight rebound in the post-event window.

4.2 Compilation of results

The conducted study failed to reject the null-hypothesis, which means that the authors cannot prove a difference in cumulative abnormal returns prior to, and after the initiation of sponsored research. The visualization of the average CAR in the pre- and post-coverage does indicate that there is a difference in price reaction prior to the publication of an earnings release. On the other hand, both indicate a relatively strong negative price reaction during the day of the earnings announcement. The pre-event window seems to have an opposite effect when comparing the two, but the result from the Wilcoxon test tells us that there is no statistically significant difference between them. The opposite reaction is thus either the result of random noise, or an existent, but statistically unproven difference.

5.0 Analysis and discussion

In this segment, the authors will analyze the results of the event study in relation to the theoretical background and earlier research conducted. In addition, the authors will discuss the results of the study, their contribution to research within the field, limitations within the study and recommendations for further research within the topic of sponsored equity research.

The authors' hypothesis was that sponsored research becomes an additional source of information to the market that would reduce the information asymmetry and abnormal returns at the event of a quarterly earnings release. This with the background of the belief that equity analyst's financial estimates and future outlooks serves as an indication of what the quarterly report will contain and whether the content of the equity research report would be considered good or bad news. In accordance with the efficient market hypothesis, this would be reflected in the price ahead of when the earnings report gets released since it is new information available to the market. The authors expected higher abnormal returns for the events when there was no sponsored equity research coverage due to a potentially higher element of

surprise at the earnings release with less information available. However, the authors could not statistically prove that there is a difference in abnormal returns before and after having sponsored equity research coverage at the event of an earnings release. Thus, the null-hypothesis cannot be rejected.

Although there is no statistical difference between the events, there are unproven indications of certain patterns explained in the results. According to Fama (1970), markets will immediately incorporate new information into a company's share price if there's a strong market efficiency. As equity research does have an impact on the market, as supported by Kelly and Ljungqvist (2012), this leads us with two possible explanations of why the results cannot find significance. There could be issues affecting the data, be it external factors or insufficient data points, otherwise, it could be the case that sponsored research, as opposed to traditional research, is not impactful enough to affect abnormal returns. However, there are contradicting findings in earlier research that can be discussed as potential factors to the results. This study does not look at the effect that the sponsored research has when it's released, instead, it aims its focus on the earnings releases to compare differences in abnormal returns before and after sponsored coverage. Ball and Brown (1968, 2014) highlighted the importance of financial reports for capital markets, hence the authors use quarterly earnings announcements as an appropriate source of information to be used in this event study. The authors did not find earlier research with other sets of data comparing abnormal returns before and after sponsored coverage in particular, but multiple related studies where parallels can be drawn.

Had the authors chosen to look at only the last quarter before coverage and the first quarter after coverage, results may have differed and captured an immediate effect of sponsored research on abnormal returns. However, to avoid seasonality and random, non-recurring effects of bad or good news, the authors decided that capturing a full calendar year before and after coverage was more appropriate for this method. The content of the research reports could have had an impact on this study, although Kelly and Ljungqvist (2012) presented a data set which did not include any information about the future outlook of the stocks, still proving that the mere prevalence of traditional research had an impact on abnormal returns

regardless of the content and outlook of actual forecasts. This is further proof that the Akerlof (1970) argument that lack of information lowers stock prices is true, in this case in capital markets, and the authors believed that this should have led to stocks not being undervalued and more stable returns after coverage. However, since the authors cannot statistically prove that with this study, findings from Loh and Stulz (2011) that only a small number of U.S analyst recommendations did in fact have an impact on the share price might also be true for sponsored research on the Swedish market. Even if there are no explicit recommendations within Swedish sponsored research, the authors believe that a recommendation to act on the report can be read between the lines of financial forecasts, the price range in relation to the current share price, and how the analyst describes the outlook.

The relationship between the bank or research firm and the company has a clear conflict of interest since the company pays for research production that is a source of information for the market. Lin and McNichols (1998) shows that there is bias in traditional sell-side research where the company also pays for underwriting services, and in the case of this study, the conflict of interest exists in a similar way due to the research being a service paid for by the company in question. Furthermore, Buslepp (2009) concluded that a conflict of interest exists in sponsored equity research, which was more likely to issue positive recommendations than traditional research even if financial forecasts were quite similar. In this study, the authors cannot confirm or deny if the sponsored research on the Nasdaq OMX Stockholm Small Cap included in this dataset was indeed biased to the point that overly optimistic reports presented positive information to the market that impacted abnormal returns.

Although not included in the statistical analysis as it is outside of the event window, i.e. the focus of this paper, an interesting pattern can be distinguished from the estimation window of the pre- and post-coverage periods. The pre-coverage window shows a clear negative trend, resulting in a steep decline in CAR, although it recovers somewhat before the pre-event window. This is likely because of random noise in the data set, but it could also indicate that coverage leads to a calmer period leading up to an earnings release. Nevertheless, the estimation window is of little interest to the working hypothesis, and of more importance is

the fact that neither of the event windows t-5 to t-1, t, and t+1 to t+5 achieved significance at any level.

5.1 Limitations

A limitation with the dataset lies within the selection of stocks. Although sponsored research is not prevalent for stocks with higher market capitalization in Sweden, excluding the large cap, and to some extent, the mid cap main lists of Nasdaq OMX Stockholm, this limits the number of stocks to include in the data set. Furthermore, the authors could have included Nasdaq First North and Spotlight Stock Market, where sponsored research is common, to get a larger sample size and possibly a different outcome. However, these were not included due to other listing requirements. As the dataset required a significant amount of manual data gathering, there is, in turn, a non-negligible risk of human error. However, the authors have not conducted any errors to the best of their knowledge.

The stocks selected had either one, two, or three different banks or research firms covering them. The possible impacts of having several analysts have not been taken into consideration in this report, but the authors think that it is reasonable that having more analysts could possibly increase market transparency and confidence around the stock if a consensus is available. Furthermore, there are other types of research that are published in various newspapers and social media, usually with varying forms of quality. In fact, Lidén (2006) proved that journalists were also misleading in their buy recommendations and leading in their sell recommendations. However, this is not taken into account in this paper.

5.2 Variables affecting the result

The study shows no significance for the working hypothesis. Although there are visible differences when showcased in graphs, it is not enough in order for the authors to reject the null-hypothesis. This could be due to a variety of different reasons, but a few that are notable is the variance and sample size of the datasets. As noted by Dorfman (2019), the greater the variance or smaller the sample size, the bigger the difference in the mean is required to achieve significance. It can be interpreted as a ratio of signal (difference between the means/median) to noise (the variation within the population). It is possible that a significant

result would have been achieved if a larger sample of data with a lower variance was applied when testing for significance.

5.3 Summary of discussion

With a background of theories about the effective market hypothesis as described by Fama (1970), information asymmetry as described by Akerlof (1970), and the relationship between an agent and a principal as described by Jensen and Meckling (1976), the authors find it interesting to compare and contrast earlier research. The difference in abnormal returns pre- and post-coverage could possibly be due to the mere prevalence of equity research in line with Kelly and Ljungqvist (2012), or a market reaction to the content of the research reports in line with Lin and McNichols (1998), Lidén (2006) and Buslepp (2009), or a combination of both. A different selection of stocks and time periods and a larger dataset with lower variance could have yielded different results. Furthermore, less professional sources of information such as social media posts and news articles could have impacted the results in this study; however, these are not accounted for, and any impacts can therefore not be proven in this paper.

6.0 Conclusion and recommendations for future research

In this segment, the authors will draw a conclusion from the study and reflect on recommendations for future research on the topic of sponsored equity research.

The conducted study failed to reject the null-hypothesis, which means that the authors cannot claim or prove a statistical difference in abnormal returns prior to, and after the initiation of sponsored research. Although not reaching a statistically proven conclusion, the authors have noted different visual trends in abnormal returns both during the estimation window and the event windows. The results that were found open up to further discussion and add more color to the topic of market implications of sponsored research, the problems within the relationship between the company and research firm, and the conflict of interest of the revenue model. The authors still believe that the topic of sponsored research needs to be thoroughly investigated, and they look forward to following future research within the field.

Although this paper has researched the impact of sponsored research coverage on abnormal returns in conjunction with quarterly earnings releases, it has only looked at the prevalence of sponsored research and not the content of it. The authors have not investigated how accurate analyst estimates were in relation to actual financials presented in the quarterly earnings report, nor the valuation and target price span and its optimism or pessimism in relation to the current share price. Therefore, the authors recommend further research on the accuracy of sponsored research estimates in Sweden and also make a comparison to the accuracy of traditional sell-side equity research. This is to see if there are any differences in the level of bias and if incentives for presenting a positive outlook differ depending on who the agent and principal of equity research are, i.e., who pays for the research.

7.0 References

- Advokatfirman Lindahl. (2020). Vägen Till Börsen. Available online: <https://www.lindahl.se/media/2868/vagen-till-borsen.pdf> (Accessed January 4, 2023)
- Ahmadi, J. (2020). Boom För Uppdragsanalyser – "Kommer Fördubbla Vår Kundbas". Available online: <https://www.di.se/nyheter/boom-for-uppdagsanalyser-kommer-fordubbla-var-kundbas/> (Accessed: December 16, 2022)
- Akerlof A., G. (1970). The Market for "Lemons": Quality Uncertainty and the Market Mechanism. *The Quarterly Journal of Economics*, Vol. 84, No. 3, pp. 488-500. Available online: <https://www.jstor.org/stable/1879431> (Accessed December 10, 2022)
- Almgren, J. (2019). Börstrenden: Köpa Analyser – "Oberoendet är Borta". Available online: <https://www.svd.se/a/6nOwyz/borstrenden-kopa-analyser-oberoendet-ar-borta> (Accessed December 20, 2022)
- Amzallag, A., Guagliano, C., & Passo, V.L. (2021). MiFID II Research Unbundling: Assessing the Impact on SMEs. *ESMA Working Paper*, No 3. Available online: https://www.esma.europa.eu/sites/default/files/library/esma_50-165-1269_research_unbundling.pdf (Accessed December 10, 2022)
- Aronsson, O. (2015). Serieentreprenörer satsar på att bli digital verktygslåda för börsen. Available online: <https://www.breakit.se/artikel/1226/serieentreprenorer-satsar-pa-att-bli-digital-verktygslada-for-borsen> (Accessed December 21, 2022)
- Ball, R., & Brown, P. (1968). An Empirical Evaluation of Accounting Income Numbers. *Journal of Accounting Research*, Vol. 6, No. 2, pp. 159-178. Available online: https://www.jstor.org/stable/pdf/2490232.pdf?refreqid=excelsior%3Aaf8592a5bde3b4e6a7da63bf50843bfc&ab_segments=&origin= (Accessed January 3, 2023)
- Ball, R., & Brown, P. (2014). Ball and Brown (1968): A retrospective. *The Accounting Review*, Vol. 89, No. 1, pp. 1-26. Available online: <https://www.jstor.org/stable/24468510>
- Banz, R.W. (1981). The Relationship Between Return and Market Value of Common Stocks. *Journal of Financial Economics*, Vol. 9, No. 1, pp. 3–18. Available online: https://search.dailystocks.com/Banz_sizeeffect_1980.pdf (Accessed December 15, 2022)
- Brown, S.J. & Warner, J.B. (1980). Measuring Security Price Performance. *Journal of Financial Economics*, Vol. 3, No. 3, pp. 205-258. Available online:

<https://www.sciencedirect.com/science/article/pii/0304405X80900021> (Accessed January 3, 2023)

Brown, S.J. & Warner, J.B. (1985). Using Daily Stock Returns: The Case of Event Studies. *Journal of Financial Economics*, Vol. 14, No. 1, pp. 3-31. Available online: <https://www.sciencedirect.com/science/article/pii/0304405X8590042X?via%3Dihub> (Accessed January 3, 2023)

Buslepp, W.L. (2009). Paying for Coverage: Conflict of Interest Among Company-Sponsored Research Firms. Available online: https://diginole.lib.fsu.edu/islandora/object/fsu:180623/datastream/PDF/download?fbclid=IwAR39MAyVALTB_K0sQA69ubqWBOpAqEuNlivzhg2GKnmAC2mUGBBiXATzdbk (Accessed January 5, 2023)

CFA Institute. (2020). Equity Research Report Essentials. Available online: <https://www.cfainstitute.org/-/media/documents/support/research-challenge/challenge/rc-equity-research-report-essentials.pdf>. (Accessed January 3, 2023)

Dierkens, N. (1991). Information Asymmetry and Equity Issues. *The Journal of Financial and Quantitative Analysis*, Vol. 6, No.2, pp. 181-199. Available online: https://www.jstor.org/stable/pdf/2331264.pdf?refreqid=excelsior%3A2476c46d4207e1a8d6e7169c3732e925&ab_segments=&origin= (Accessed January 4, 2023)

Dorfman, K. (2019). Comparing Means: the t-Test. Available online: <https://wahoo.nsm.umass.edu/sites/default/files/2019-06/Comparing%20Means.pdf> (Accessed January 8, 2023)

Eisenhardt, K.M. (1989). Agency Theory: An Assessment and Review. *The Academy of Management Review*, Vol. 14, No. 1, pp. 57-74. Available online: <https://www.jstor.org/stable/258191> (Accessed January 2, 2023)

European Securities and Markets Authority. (n.d.). MIFID II. Available online: <https://www.esma.europa.eu/policy-rules/mifid-ii-and-mifir> (Accessed December 15, 2023)

Fama, E. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance*, Vol. 25, No. 2, pp. 383-417. Available online: <http://efinance.org.cn/cn/fm/Efficient%20Capital%20Markets%20A%20Review%20of%20Theory%20and%20Empirical%20Work.pdf> (Accessed December 10, 2022)

- Fama, E. (1998). Market Efficiency, Long-Term Returns, and Behavioural Finance. *Journal of Financial Economics*, Vol. 49, No. 3, pp. 283-306. Available online: <https://www.sciencedirect.com/science/article/pii/S0304405X98000269?via%3Dihub> (Accessed January 7, 2023)
- Furubacke, H. (2022). Stora Uppsidor i Köpta Analyser – Men Många Aktier Kraschar. Available online: <https://www.di.se/nyheter/stora-uppsidor-i-kopta-analyser-men-manga-aktier-kraschar/?fbclid=IwAR0lBsfxH8yPtMFV0nNSnUHYjhz76GIq3xmkyIK3JsCz0A-pKVtNZNwzBU> (Accessed December 15, 2022)
- Kelly, B & Ljungqvist, A. (2012). Testing Asymmetric-Information Asset Pricing Models. *Review of Financial Studies*, Vol. 25, No. 5, pp. 1366-1413. Available online: <https://academic.oup.com/rfs/article/25/5/1366/1567944> (Accessed December 20, 2022)
- Lidén, E.R (2006). Stock Recommendations in Swedish Printed Media: Leading or Misleading? *The European Journal of Finance*, Vol. 12, No. 8, pp. 731-748. Available online: <https://www.tandfonline-com.ludwig.lub.lu.se/doi/pdf/10.1080/13518470500531093> (Accessed December 15, 2022)
- Lin, H.-W & McNichols, M.F. (1998). Underwriting Relationships, Analysts' Earnings Forecasts and Investment Recommendations. *Journal of Accounting and Economics*, Vol. 25, No. 1, pp. 101-127. Available online: <https://www.sciencedirect.com/science/article/pii/S0165410198000160?via%3Dihub> (Accessed Jan 2, 2023)
- Loh, R.K, & Stulz, R.M. (2011). When are Analyst Recommendations Influential? *The Review of Financial Studies*, Vol. 24, No. 2, pp. 593-627. Available online: <https://academic.oup.com/rfs/article-abstract/24/2/593/1581150> (Accessed December 15, 2022)
- MacKinlay, A.G. (1997). Event Studies in Economics and Finance. *Journal of Economic Literature*, Vol 35, No.1, pp. 13-39. Available online: <https://www.jstor.org/stable/2729691> (Accessed December 10, 2022)
- Malkiel, B.G. (2003). The Efficient Market Hypothesis and Its Critics. *The Journal of Economic Perspectives*, Vol. 17, No.1, pp 59-82. Available online: <https://www.jstor.org/stable/3216840> (Accessed December 10, 2022)

Meckling, M.C, & Jensen, W.H. (1976). Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure. *Journal of Financial Economics*, Vol. 3, No. 4, pp. 305-360. Available online:

<https://www.sciencedirect.com/science/article/pii/0304405X7690026X> (Accessed January 2, 2023)

Oler, D.K, Harrison, J.S, & Allen, M.R. (2008). The Danger of Misinterpreting Short-Window Events Study Findings in Strategic Management Research: An Empirical Illustration Using Horizontal Acquisitions. *Strategic Organization*, Vol 6., No. 2., pp. 151-184. Available online: <https://www.jstor.org/stable/23728643> (Accessed January 7, 2023)

Redeye. (n.d.). Career. Available online: <https://career.redeye.se/> (Accessed December 15, 2022)

Reinganum, M.R. (1981). Misspecification of Capital Asset Pricing. *Journal of Financial Economics*, Vol. 9, No. 1, pp. 19–46. Available online:

<https://www.sciencedirect.com/science/article/abs/pii/0304405X81900192?via%3Dihub> (Accessed December 22, 2022)

Reinganum, M.R. (1982). A Direct Test of Roll's Conjecture on the Firm Size Effect. *The Journal of Finance*, Vol. 37, No. 1, pp. 27–35. Available online:

https://www.jstor.org/stable/2327115#metadata_info_tab_contents (Accessed January 4, 2023)

Roll, R. (1981). A Possible Explanation of the Small Firm Effect. *The Journal of Finance*, Vol. 36, No. 4, pp. 879–888. Available online:

https://www.jstor.org/stable/2327553#metadata_info_tab_contents (Accessed January 4, 2023)

Wilcoxon, F. (1945). Individual Comparisons by Ranking Methods. *Biometrics Bulletin*, Vol. 1, No. 6 (Dec., 1945), pp. 80-83. Available online:

https://www-jstor-org.ludwig.lub.lu.se/stable/3001968?origin%3Dcrossref=&seq=4#metadata_info_tab_contents

(Accessed January 18, 2023)

8.0 Appendix

Appendix 1: The 24 stocks used in this study

| Name | Ticker | Research firm | Coverage since |
|---------------------------|------------------|--------------------------------------|-----------------------|
| Active Biotech AB | ACTI SS Equity | Redeye & Analysguiden | 2020-12-14 |
| Arise AB | ARISE SS Equity | Introduce, Erik Penser Bank & Redeye | 2011-07-06 |
| BE Group AB | BEGR SS Equity | Erik Penser Bank | 2014-02-06 |
| Bergs Timber AB | BRGB SS Equity | Introduce & Erik Penser Bank | 2017-07-03 |
| Bjorn Borg AB | BORG SS Equity | Erik Penser Bank | 2019-11-26 |
| Bong AB | BONG SS Equity | Redeye | 2016-06-22 |
| Concejo AB | CNCJOB SS Equity | Erik Penser Bank | 2014-02-25 |
| Episurf Medical AB | EPISB SS Equity | Redeye & DNB Markets | 2018-04-17 |
| Ework Group AB | EWRK SS Equity | Introduce & Analyst Group | 2012-07-05 |
| FormPipe Software AB | FPIP SS Equity | Introduce, Analyst Group & Redeye | 2008-04-10 |
| Hanza AB | HANZA SS Equity | Redeye, Carlsquare & Analysguiden | 2020-03-10 |
| Image Systems AB | IS SS Equity | Redeye | 2018-04-13 |
| Karolinska Development AB | KDEV SS Equity | Erik Penser Bank | 2021-10-22 |
| Nanologica AB | NICA SS Equity | Erik Penser Bank | 2020-12-18 |

| Name | Ticker | Research firm | Coverage since |
|-------------------------|-----------------|--|-----------------------|
| Nilörngruppen AB | NILB SS Equity | Introduce | 2018-02-01 |
| Railcare Group AB | RAIL SS Equity | Redeye | 2018-12-17 |
| Sensys Gatso Group AB | SENS SS Equity | Erik Penser Bank & Redeye | 2009-04-07 |
| Senzime AB | SEZI SS Equity | Erik Penser Bank, Redeye & Danske Bank | 2018-03-14 |
| SinterCast AB | SINT SS Equity | Introduce | 2011-11-08 |
| Starbreeze AB | STARA SS Equity | Redeye | 2018-02-06 |
| Strax AB | STRAX SS Equity | Erik Penser Bank & Redeye | 2019-12-12 |
| Studsvik AB | SVIK SS Equity | Introduce | 2011-04-07 |
| Svedbergs i Dalstorp AB | SVEDB SS Equity | Introduce & Analysguiden | 2020-07-10 |
| Transtema Group AB | TRANS SS Equity | Erik Penser Bank, Redeye & Nordea | 2020-09-28 |