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# THE USE AND EFFECTS OF NON-GAAP EARNINGS IN THE SWEDISH SETTING

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**ABSTRACT**

Non-GAAP earnings are commonly reported figures that do not follow the guidelines for earnings defined by accounting standards but are constructed instead by the company managers without restraint. Lately, there has been an increased focus and discussion on the integrity of the non-GAAP earnings as they might give a misleading indication about the financial performance. Thus, European Securities and Markets Authority (ESMA) introduced a guideline on the use of non-GAAP earnings that came into effect in July 2016. The previous studies about the industry differences in non-GAAP reporting and the valuation impact of non-GAAP earnings have mainly focused on the American market. As a contrast to this, we manually gather data from interim reports of the companies listed on the Stockholm Stock Exchange on three different periods. We look at how commonly companies report non-GAAP earnings and conduct an event study to investigate the effect on stock price. We find out that the industry differences in non-GAAP reporting have decreased. In addition, the non-GAAP earnings have an impact on company valuation, especially when reported together with their GAAP counterparts. The introduction of the ESMA guidelines did not have any immediate effect. However, as the guideline was only recently introduced, the effect might not have been visible yet and should be re-estimated in the future.

**KEY WORDS:** Non-GAAP earnings, Swedish data, Industry classification, Event study, Value relevancy.

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# 1. INTRODUCTION

The importance of trustworthy and legitimate accounting has always been high as it is vital knowledge for example when determining whether a company or business venture is profitable or not. In the same sense the implications of subpar or wrongfully conducted accounting can potentially be very costly for society, private investors and stock markets alike. In worst cases, it can lead to fraudulent accounting as in the well-known case of Enron (Akhigbe et al., 2005).

Another type of accounting concern that has gotten increased attention recently is the use of non-GAAP earnings. While some view non-GAAP earnings as more informative and useful for investors (Curtis et al., 2013) others have the opposite opinion. Several high profiled individuals and organizations have raised their concerns with the widespread use of said earnings, and the dangers that are associated with them. United States Securities and Exchange Commission (SEC) chairman Mary Jo White has expressed her fears of the increased presence of non-GAAP earnings (Coleman and Usvyatsky, 2015). This is not only an issue in the United States, but rather a global phenomenon. Supporting the SEC chairman is International Accounting Standards Board (IASB) chairman Hans Hoogervorst (IASB, 2016). In a speech earlier this year, he stated: *"there is a growing evidence showing increasing use of non-GAAP measures, and of these measures becoming increasingly misleading"*. He stressed that companies present a large number of non-GAAP earnings, which makes it difficult for investors to assess the actual performance of the company. As there are many different measures and no standardization for the adjustments made when producing the numbers, investors run the risk of misinterpreting the performance of a company. An indication of the lack of continuity is that there are different names for non-GAAP earnings. Commonly used ones are Street earnings, Pro-Forma earnings and what EY calls Alternative Performance Measures (EY, 2016). As an initiative to increase the clarity of non-GAAP earnings presentation, European Securities and Markets Authority (ESMA) introduced *'ESMA Guidelines on Alternative Performance Measures'* (hence 'ESMA guidelines') that came into force in the beginning of July 2016 (European Securities and Markets Authority, 2016).

With the free hands given to the preparers when constructing non-GAAP earnings, there are certain risks associated with non-GAAP reporting. If companies do not report the same earnings figures, it is difficult for analysts and other important stakeholders to compare performance against peers (KPMG, 2016). There might as well be a preparer bias where preparers report the

earnings measure that show the most favourable result. In that sense, non-GAAPs could be used as marketing tools rather than a way of being more informative.

Hoogervorst (IASB, 2016) exemplified this by mentioning a case where non-GAAP adjustments managed to turn six-billion-dollar loss to a profit of six billion dollars. The question left unanswered was: Does the profit of six billion show the actual performance, or has the result been dressed up?

## 1.1 Purpose of the study

Because of this increase in the use and concern for non-GAAP earnings, research has been conducted on different topics relating to non-GAAP earnings. One of those fields is how the non-GAAP earnings are used in earnings management, and how managers use these earnings figures to sustain overvaluation, as regular GAAP regulation does not allow that (Badertscher, 2011). Another area that has been relatively extensively explored is the relationship of non-GAAP earnings to valuation. As stated above by Hoogervorst (IASB, 2016), there is a concern that non-GAAP earnings are becoming increasingly misleading, which suggests that it is important to study their effect on valuation. This has been done by for instance looking at specific line items (Gu and Chen, 2004) as well as by directly questioning the value relevance of non-GAAP earnings (Lougee and Marquardt, 2004).

However, there are some theoretical gaps to fill. Most of the studies presented before have been conducted in the United States using US GAAP and American companies. As there exist general and specific regulatory differences between US GAAP and IFRS concerning non-GAAP earnings, the results of the studies cannot be directly applied to companies adhering to IFRS. Therefore, studies alike the ones conducted in the United States using data from IFRS companies could be of interest. Although the non-GAAP earnings have been studied quite extensively, some areas like the industry differences in non-GAAP reporting have not been conducted recently and their results might be outdated. Furthermore, there is also a lack of literature describing how the reporting on non-GAAP earnings has evolved over time.

The purpose of this study is to investigate the use of non-GAAP earnings in Sweden. First, we look how the non-GAAP earnings are presented in each specific industry in the Swedish Stock Market, and if there are any variations in the reporting between the industries. Secondly, we explore the value relevance of GAAP and non-GAAP earnings and how they correlate to the company value at the announcement date of each respective interim report. Lastly, we look at

the link between specific non-GAAP reporting and company valuation by conducting abnormal return regressions to see if the adjustments in the non-GAAP earnings had an additional explanatory power to the stock price reaction in the earnings announcement period.

## 1.2 Research method

This is a quantitative research study where data is gathered mainly manually with additional information from databases. The methodology of the study is similar to previous studies except that a strong emphasis is placed on the manual data gathering. The reason behind this is the different scope of our study, which requires all non-GAAP earnings to be collected. The tests are designed in accordance with previous literature, altered to fit our data which differs from similar studies. Three different statistical tests are devised to explore the purpose of the study.

## 1.3 Significance of the study

This study will give rise to an increased awareness of the extent which different industries report non-GAAP earnings and what kind of impact they have on the stock price. It will help investors in their investment decisions, not in the sense that it will provide a more accurate valuation of a company but rather that it will increase the understanding of non-GAAP earnings and the informative value they carry. In the company perspective, preparers should get an idea of which earnings could enhance the value relevance of the financial reports and whether they should present such earnings or not. It will also highlight which differences there are for non-GAAP usage between US GAAP, which most previous studies are based on, and IFRS in the Swedish setting.

## 1.4 Definition of key terms

**Earnings vs. Measures:** There is a distinction between measures and earnings, where measures refer to numbers that can be found anywhere in the financial statements. Earnings however, are related to the statement of profit and loss (income statement). In this study the focus is only on earnings.

**GAAP earnings:** The only two earnings lines required to be presented in IAS 1 are the profit and loss and other comprehensive income (IFRS, 2015: IAS 1.7). However, there are other line items that are regularly stated as subtotals in the income statement and could therefore be

considered as GAAP items. These are Gross Profit, Operating Profit and Earnings Before Taxes. In this thesis, we do consider them to be GAAP items.

**Non-GAAP earnings:** Earnings numbers that are not considered to be GAAP earnings, are non-GAAPs. Examples of such measures are Operating Profit before non-recurring items and EBITDA. Other names for non-GAAP earnings are Street earnings, Pro-Forma earnings and Alternative Performance Measures. The relationship between the non-GAAP measures and non-GAAP earnings is illustrated in the Figure 1.

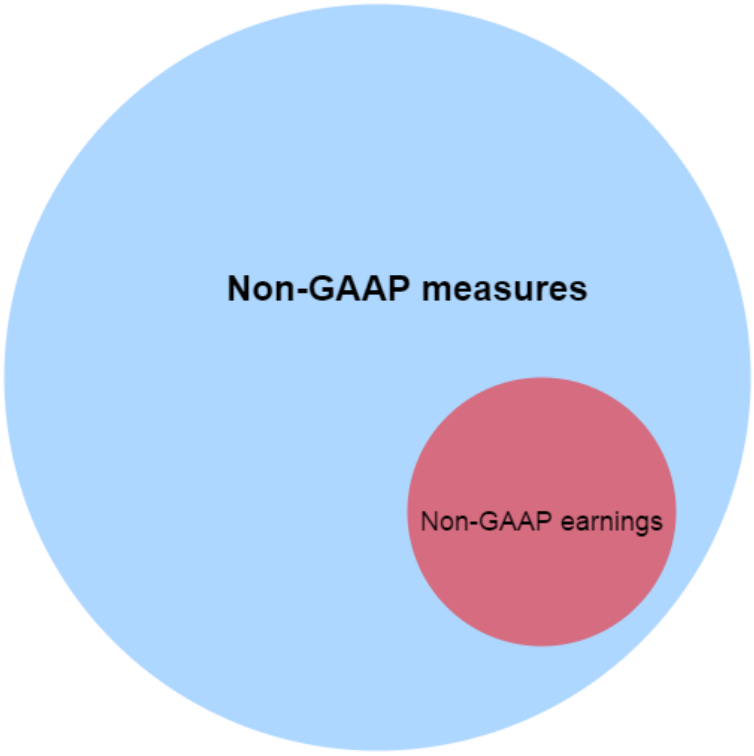


*Figure 1: Relation of non-GAAP earnings to non-GAAP measures*

## 1.5 Limitations of the study

There are some limitations to the study, which are important to be upfront about. The focus is on Large and Mid Cap companies listed on the Stockholm Stock Exchange. Although this study discusses the difference between previous studies focusing on US GAAP and the focus on IFRS, the results are only legitimate for Swedish companies and not for IFRS companies as a whole. Another limitation is that the data is not available in any database. This resulted in a manual data gathering process and therefore relatively few data points compared to previous research. This further means that the study is restricted to simpler tests, and time series analyses

are not covered. Also, the possibility to check industry specific correlations between non-GAAPs and stock prices is eliminated.

## 1.6 Summary

The number of non-GAAP earnings and general concern about them are increasing, which is suggested by the statements from high officials, for example SEC chairman Mary Jo White. As reporting on non-GAAP earnings gives the preparer a lot of freedom as to how they are supposed to be constructed, there is a risk with these numbers misleading the investor. Although there have been many studies on the topic of non-GAAP earnings, there are still theoretical gaps remaining. These gaps are mostly linked to a lack of focus on non-American data. Also, some aspects of the research on non-GAAP earnings have not been researched in a while and might not be up to date. To contribute to the existing literature this study looks at Swedish data on recent years. This includes investigating which industries report non-GAAP earnings and what the linkage of the non-GAAP earnings is to valuation in the Swedish market.

# 2. THEORY

In this chapter, we will discuss the background of our topic by presenting a literature review of the past studies from the subject and the key areas related to it. We also frame our study by identifying possible contribution areas and fitting our study into the broader context. The chapter ends with a look at the methods the previous studies have used to analyse the topics in our area of research.

## 2.1 Literature review

The previous literature on the topic of non-GAAP has been divided into six areas. These are relevant pieces of research; whose topics and ideas are important to understand for fully appreciating the implications of the non-GAAP earnings. The starting point is to study IAS 1 to define non-GAAP earnings and move on to look at the some of the foundation studies of modern valuation. The literature review finishes with a look at how non-GAAP earnings are used in valuation and in attempts to also affect the company value, sometimes by questionable means.

### 2.1.1 Definition of non-GAAP

The division between GAAP and non-GAAP is stated in the IAS 1, which sets out the grand scale on how the financial statements are constructed. The guidelines given in IAS 1 are general in nature on how the statements themselves should be constructed and what kind of items should be included. This gives preparers of the financial statements a large amount of possibilities in how the statements are going to look like.

The non-GAAP earnings have many names including Alternative Performance Measures (APM) and Pro Forma earnings. The previous research seems often to use name ‘Pro Forma’ when referring to adjusted EPS figures. Also, the name ‘Street Earnings’ is often used when discussing Pro Forma earnings (Gu and Chen, 2004) although we have defined street earnings to refer to earnings number constructed by analysts. In this thesis, we are using the name ‘Non-GAAP earnings’ when referring to earnings numbers presented in financial statements that are not GAAP earnings.

IAS 1 defines the parts of the financial statements being *statement of financial position*, *statement of profit or loss and other comprehensive income*, *statement of changes in equity*, *statement of cash flows*, *comparative information* and *notes* explaining the financial statement

and the company's own interpretation of the accounting standard and how they utilize them (IFRS, 2015: IAS 1.10). All the parts mentioned above may hold non-GAAP measures in them.

As our focus in this thesis will be on non-GAAP earnings, the statement of profit or loss and other comprehensive income is a matter of particular interest to us, as all these non-GAAP earnings can be related to that statement. Together the profit or loss (net income) and other comprehensive income form "total comprehensive income", which composes of *"the change in equity during a period resulting from transactions and other events, other than those changes resulting from transactions with owners in their capacity as owners"* (IFRS, 2015: IAS 1.7).

(IFRS, 2015: IAS 1.82-82A) states that at least the line items described in the Figure 2 need to be presented in the statement of profit and loss. In addition, IAS 1 requires that companies present additional line items, for example subtotals, if presenting them would mean a better representation of the business operations and the success of the reporting entity. (IFRS, 2015: IAS 1.85) These subtotals should be constructed based on the line items. However, as there is no explicit guidance on how to construct the subtotals, it means that even common subtotals such as Operating Profit can be considered as non-GAAP items but in this thesis, we have chosen to view them as GAAP items as they are presented on a regular basis by the preparers.

| | |
|---|---|
| a) | revenue |
| b) | gains and losses from the derecognition of financial assets measured at amortised cost |
| c) | finance costs |
| d) | share of the profit or loss of associates and joint ventures accounted for using the equity method |
| e) | certain gains or losses associated with the reclassification of financial assets |
| f) | tax expense |
| g) | a single amount for the total of discontinued items |

*Figure 2: IAS 1 GAAP requirements*

While one of the key ideas of the standardized GAAP is that it should give a fair picture of the financial performance of the company (IFRS, 2015: IAS 1.9). However, Lougee and Marquardt, (2004) noted that the company managers do not always agree with this viewpoint and claim

that the GAAP results downplay or distort the true performance. The non-GAAP earnings are often hailed as being superior in presenting a true picture of the company's earnings according to the managers (Lougee and Marquardt, 2004). Nevertheless, it is difficult to say whether the difference between GAAP and non-GAAP is only due to the superiority of non-GAAP in representing financial performance or managers trying to paint more successful picture of the success by constructing non-GAAP earnings that give high results. This question is particularly raised by the fact that the average gap between the two figures did increase from 80's to 1997, being around 20% in the latter year (Bradshaw and Sloan, 2002).

As the non-GAAP earnings have been unregulated, preparers have had a lot of freedom in deciding which items to add or omit when constructing the financial statements (Zhang and Zheng, 2011). This has caused several cases where investors have been misled, which has forced the SEC to act. As from March 2003 Regulation G was introduced with the purpose to bridge the gap between non-GAAP and GAAP in the United States and must be applied in all the financial reports that are filed (U.S. Securities and Exchange Commission, 2002). In practice this means that all companies are required to reconcile non-GAAP earnings with GAAP earnings, clearly stating the most comparable GAAP measure and what had been omitted or added when constructing the non-GAAP measure. Zhang and Zheng (2011) provide findings that show that the mispricing of non-GAAP earnings has decreased after the introduction of the regulation.

Until 2016 there were only recommendations on how the companies adhering to IFRS should apply non-GAAP earnings and how to present them. The recommendation was issued in 2005 when the Committee of European Securities Regulators (CESR), predecessor to European Securities and Markets Authority (ESMA), encouraged listed European companies to provide the financial markets with non-GAAP earnings in a way that is appropriate and useful for an investor's decision making (The Committee of European Securities Regulators, 2005). To give further guidance on non-GAAP reporting, ESMA released guidelines on Alternative Performance Measures (APM), which came into force in July 2016, being the equivalent of Regulation G in the IFRS setting. In the same sense as Regulation G it describes procedures and principles on *disclosure*, *presentation*, *reconciliation* and *explanation* in the use of non-GAAP earnings.

However, the ESMA Guidelines do not apply to financial statements, including interim financial statements. Instead it affects other financial reporting like management reports

(European Securities and Markets Authority, 2016). This is a significant difference compared to Regulation G.

### 2.1.2 Industry specific use of non-GAAP

Prior research by Marques (2010) found out that in 2001-2003 amongst S&P 500 companies the industry groups that most frequently showed non-GAAP earnings were Technology Hardware & Equipment, Capital Goods and Software & Services. Earlier research on years 1998-2000 and 1997-1999 focusing on the reported bottom line non-GAAP earnings (Net Income Adjusted or EPS Adjusted) made by Bhattacharya et al. (2003) and Lougee and Marquardt (2004) found out similar results that non-GAAP earnings are most commonly reported in service and high-tech industries. These are similar results regardless of limiting the data only on the bottom line non-GAAP earnings or all reported non-GAAP earnings. This supports the theory that there exist definitive differences between the industries in frequency of non-GAAP reporting.

However, it is notable that as to our knowledge all the previous research discussed above only looked at the absolute numbers of firms that report non-GAAP numbers. These three industries were also heavily represented in the samples. They did not compare the means of the frequency of non-GAAP reporting between the industries and thus their research might have missed some small industry that reports non-GAAP earnings extremely frequently.

As the non-GAAP reporting seems to be more common in some industries it means that there are also reasons that make the certain industries more likely to produce non-GAAP earnings. Lougee and Marquardt (2004) discovered that if the regular GAAP earnings did not manage to fully reflect the underlying economic results of the company it was more likely that the company would produce non-GAAP earnings to compensate for this. They also found out that strong factors that high sales growth and earnings volatility correlate with the probability of reporting non-GAAP earnings. Also, if company's GAAP earnings did not meet expectations, it meant that the likelihood of reporting non-GAAP earnings was greater. In addition to these factors, Marques (2010) found out that large firms report non-GAAP figures more often.

### 2.1.3 Valuation

Non-GAAP earnings are often items that are based on the earnings reported by the entity, altering the 'official' earnings figures calculated by using the GAAP. To define the value relevance, we use the IAS 1 view of one key purpose of the financial statements. This is the

objective of giving enough information about the performance of the company so it allows users making meaningful estimations of the future cash flows (IFRS, 2015: IAS 1.9).

The classic study between the link of earnings and valuation is the study by Ball and Brown (1968), where they found out that the earnings are value relevant and thus affect the stock price. They compared the expected earnings and the actual earnings of the companies and whether there was a stock price reaction following the earnings announcement. This means that if the earnings have a value relevance, then it makes sense for the investor to look at the earnings figure when trying to decide how much to pay for a certain stock.

As Ball and Brown (1968) published their study almost 50 years ago, the value relevance of earnings has been questioned and re-examined after Ball and Brown conducted their study. In their study, Ball and Brown looked at bottom-line earnings and concluded their value relevance. However, Collins et al. (1997) noticed that the value relevance of the bottom-line earnings has diminished. This has been caused by the frequency and the size of one-time items, negative earnings, the development of technology that has led to increased number of intangible items in accounting and the changed average size of the companies. They also discovered that while the value relevance of the bottom-line earnings has decreased, at the same time the value relevance has shifted to the book values. This reverse effect in value relevance of the book values has done more than offsetting the negative effect in the value relevance of the earnings and in total the accounting has become more value relevant (Collins et al., 1997). The value relevance of the cash flows has not diminished, giving support to cash flow based valuation approach (Francis and Shipper, 1999). This decreased value relevance of the earnings may have been one reason for the increasing prevalence of non-GAAP measurements in financial reporting.

Bradshaw and Sloan (2002) discussed how the investors have stated to prefer the non-GAAP earnings instead of the standard GAAP earnings. They noted how the tracking services used by the analysts had also started to exclude more items from the GAAP earnings calling them 'non-recurring' and thus not relevant for the valuation. They also noticed that the market had started to react more closely to the reported earnings in non-GAAP than the GAAP earnings going so far that they called the non-GAAP earnings as *"a primary determinant of the stock price"*. Supporting evidence for the value relevance of the non-GAAP earnings is presented by Curtis et al. (2013) when they look at how companies report in periods when they make transitory gains. Their test concluded that the majority of the companies they look at are also willing

present a non-GAAP earnings that excluded the transitory gain. Thus, it leads to a non-GAAP earning that was lower than the comparing GAAP earning. This supports the view that non-GAAP earnings are value relevant if they are closer to the actual earnings that would reflect the underlying financial performance of the company.

However, Lougee and Marquardt (2004) questioned the argument for value relevance of the non-GAAP earnings by stating that the non-GAAP earnings would not have superior explanatory power over the stock price. Their results led to a conclusion that the market was not able to predict future earnings based on the non-GAAP earnings. (Lougee and Marquardt, 2004) This is an interesting finding, since it conflicts with the claim that the non-GAAP measurements would be give a fairer representation of the performance. However, the sample size in this research was smaller and the findings are hard to generalize. If non-GAAP earnings are more value relevant than GAAP earnings, it would mean that either non-GAAP earnings include special items that boost their value relevance or that they exclude some items that regularly lower the value relevance of the earnings.

### 2.1.4 Market efficiency

The previously discussed concept of value relevance and relation of the earnings to company valuation rests strongly on the concept of market efficiency and the efficient market hypothesis. The concept in its current form was introduced in the famous study by Fama (1970). He discussed that the stock market prices follow the information that is available to the investors. He further divided market efficiency into three forms of efficiency, strong, semi-strong and weak based on the levels of available information the stock prices reflect. In the weak form, the prices reflect only previous stock returns, while in the semi-strong form, the markets also reflect information that is publicly and easily available to all investors. In the strong form, the markets would also reflect all other information that is available, including non-public information. This last statement would then essentially mean that it would be impossible to make consistent abnormal returns, even though one would have insider information.

Efficient market hypothesis is commonly accepted and usually held as a cornerstone in financial studies (Jensen, 1978). However, it is still commonly critiqued and there are numerous tries to prove it wrong. Malkiel (2003) discusses that the critique on the market efficiency theory has increased during the last decades due to the numerous strong moves in the stock market like the 1987 crash. He states that the ones criticizing the efficient market hypothesis often claim that these strong movements are inconsistent with the efficient market hypothesis and prove that

stock market is not efficient. This idea of market overreaction was introduced by De Bondt and Thaler (1985) in an article where they discussed the how stock price earnings could be explained by human behaviour and tendency to overreact to news. They found out that stocks that had increased in value tended to lose value in the future and vice versa indicating that the initial stock movements had been too strong. If the efficient market hypothesis would be true, this should not happen as there should not be overreaction, instead the prices should always be at the correct level. However, Malkiel (2003) discusses that the efficient market hypothesis does not require the market prices to be correct on a short period but instead discusses that on the long term, market price should be correct. This means that on a short term, prices might indeed be incorrect but are then fixed on the long term by correctional movements. This would mean that the correctional movements identified by De Bondt & Thaler (1985) would not violate the efficient market hypothesis.

Fama (1998) himself defended the efficient market hypothesis by discussing that the efficient market hypothesis is often misunderstood. It is not supposed to mean that the stock market anomalies like market overreaction should not happen. As an example, he stated that the market overreaction is consistent with efficient market hypothesis because it occurs as often as underreaction. He also stated that often the long-term anomalies that the criticizers of the efficient market hypothesis have identified can only be identified by using specific methods and are not consistently identified by using full amount of measures available for financial market research.

### 2.1.5 How are the non-GAAP measurements built?

If one of the key factors affecting the likelihood non-GAAP reporting by the company is that its GAAP earnings do not reflect the underlying economic performance as Lougee and Marquardt (2004) found out, then one of the key aims of non-GAAP earnings construction is to identify what causes the failure of GAAP earnings to reflect the economic performance and fix it by adding or omitting some information.

Bhattacharya et al. (2003) discussed that three most common adjustments in non-GAAP EPS earnings (what they call “Pro Forma earnings”) were connected to depreciation & amortization, stock compensation and merger & acquisition costs. However, these adjustments were not the adjustments that were the most informative. Most informative adjustments were when they were related to R&D, asset sale gains or losses and lines below net income like discontinued operations (Bhattacharya et al., 2003). However, the difference between informative

adjustments and the adjustments that are done raises a question whether the non-GAAP earnings are just adjusted to show better results and not inform about the financial performance.

Gu and Chen (2004) looked at the specific items which had the greatest value relevance in non-GAAP EPS. They stated that when analysing company value, the analysts constructed so-called 'Street earnings' by excluding items that they regarded as non-recurring due to the mispricing they would have caused. However, the analysts did not exclude all non-recurring items. Gu and Chen (2004) looked at which items were excluded by the analysts and how common the exclusion of the items was. Findings were similar than those that Bhattacharya et al. (2003) had. The most common items analysts excluded were restructuring charges, acquisition expenses and asset sale gains. As exclusion of these items would have improved the reliability and accuracy of the valuation, it would also have made sense that the company managers should have also excluded these items if they wanted to make their financial statements more value relevant.

### 2.1.6 Non-GAAP earnings in earnings management

As there are no definitive rules on how to construct non-GAAP figures, it leaves a lot of room for the preparer of the financial statements to impose his/her will on what items are going to be included and what excluded. This means that the non-GAAP reporting is also susceptible to earnings management.

Although the research on whether non-GAAP earnings are value relevant - i.e. worthwhile in predicting future earnings - has differing results, it has largely been based on looking at the reaction of the stock price reaction. Previous research has altogether omitted the possibility that the non-GAAP would be misleading and thus lead to the stock price that is far different than the fundamentals would give. Given that there is a fundamental price that is correct, earnings management is used to push the stock price over the fundamental price resulting in overvaluation. (Penman, 2013: 590–621) If this is done by using non-GAAP earnings management, it also questions the value relevance of the non-GAAP earnings.

Degeorge et al. (1999) state that the earnings management done by the managers typically appears in three different target situations which the managers desire to break: the difference between positive and negative result, comparison to the benchmark companies and comparison to the forecasts performed by analysts. These targets are so important for managers to break, that they tend to manage earnings upwards when they are slightly behind the target. (Penman,

2013: 590–621) If the results are far from targets, then this kind of earnings management does not appear. Instead the managers hope that failing to reach the margins by a large amount would lead to lower expectations in the future periods, making the targets easier to break.

Degeorge et al. (1999) mainly looked at the measures allowed by the GAAP to manage earnings, for example capitalization of different expenses. But Doyle et al. (2013) found out that when the possibilities allowed by the GAAP are not enough or not possible, the companies still have the possibility of using non-GAAP measurements to break targets, a powerful tool in its own right. Statistically the firms that use non-GAAP earnings exceed the analysts' expectations more often than the firms that only use GAAP figures (Doyle et al., 2013).

Earnings management and breaking the expectations is especially important for companies that are overvalued (Jensen, 2005). It is difficult to say what causes shares to be overvalued and it is not the subject of this thesis. But Jensen (2005) noted that this is a self-reinforcing pattern as overvalued companies are more inclined to use earnings management to sustain a high valuation. However, this cannot be done forever and sooner or later the true performance will be reflected. Badertscher (2011) found that in addition to 'traditional' earnings management allowed by the GAAP, the overvalued companies often also start using non-GAAP earnings to manage earnings when the possibilities allowed by the GAAP are not possible. Just as previously was mentioned, this shows that there is a connection between the non-GAAP earnings management and the decreased value relevance of the non-GAAP earnings as this shows that presentation of non-GAAP earnings may be just a way to desperately to hide the overvaluation from the market.

All the studies discussed earlier have solely focused on looking at the usage of non-GAAP reporting on a country level basis. However, the use of non-GAAP earnings seems to be depended on institutional factors as well. Isidro and Marques (2015) found out that companies based in *"countries with efficient laws and law enforcement, strong investor protection, developed financial markets, and good communication and dissemination of information"* are more likely to resort to non-GAAP earnings. In countries with these institutional factors present the managers are not able to manipulate the earnings without constructing non-GAAP earnings to meet the earnings expectations. Managers also have more pressure as their performance is followed closely and therefore resort to using non-GAAP numbers.

Doyle et al. (2003) showed that the companies that have more non-GAAP earnings tend to have a lower cash flows in the future. This is a sign that the items classified as non-recurring are in fact recurring items that cause expenses even in the future periods. They further noted that if the stock market would be efficient, this kind of predictive reaction would negatively be reflected in the stock price. Indeed, they found out that there is a drop around the announcement date when company reports a large number of non-GAAP earnings. However, it is not significant enough as there is a long negative post announcement drift continuing for as long as three years after the initial announcement. (Doyle et al., 2003). This would mean that not only the managers use the non-GAAP earnings to give more positive picture of the earnings but that they would also be successful in fooling the market. The effect on the market price is not full amount of the earnings surprise as the market is seen to value positive earnings surprises achieved by non-GAAP exclusions with 10-15% smaller effect than earnings surprise achieved only by official GAAP. (Doyle et al., 2013) This might have been caused by the market becoming more efficient in valuing non-GAAP earnings.

The amount of earnings management conducted with non-GAAP reporting led to SEC intervention and further regulation. The companies must link the non-GAAP earnings to the GAAP earnings they resemble the most and present which items have been added or omitted in constructing the non-GAAP earnings (Black and Christensen, 2009). Kolev et al. (2008) found out that this intervention appears to have been successful in combating the earnings management using non-GAAP earnings. Following the intervention, they noticed that the items excluded in the non-GAAP earnings were more commonly truly one-time in nature. Also, some firms completely stopped releasing non-GAAP earnings meaning that perhaps the managers who previously used non-GAAP earnings as a way to manage earnings decided to give up on the practice as they realized that they would be caught due to the increasing disclosure requirements. (Kolev et al., 2008) The success of Regulation G in combating the earnings management conducted by using non-GAAP earnings should have had a positive effect on the value relevance of the non-GAAP earnings.

The similar regulation for IFRS companies was introduced in July 2016, however it does not apply to financial statements (European Securities and Markets Authority, 2016). This means that if the Regulation G had a positive effect on the value relevance of the non-GAAP earnings, we might not see similar effect in the financial statements prepared in accordance with IFRS as the non-GAAP earnings can still be presented without disclosure in the financial statements.

## 2.2 Theoretical framework

Most of the studies presented before have been conducted in the United States using US GAAP and American companies. As there exists general and specific regulatory differences between US GAAP and IFRS concerning non-GAAP earnings, the results of the studies cannot be directly transferred. Replicatory studies of the studies conducted in the American market using data based on companies from Europe and using IFRS could be of interest.

### Dependant variable: *Use of non-GAAP earnings in Sweden*

We aim to look at whether the usage of non-GAAP earnings in Sweden corresponds to the usage reported in the previous studies that have been conducted mainly in the United States.

### Independent variable one (IV1): *Industry*

Use of non-GAAP earnings has been identified to focus on a specific industry segments in the previous studies (Marques, 2010; Bhattacharya et al., 2003; Lougee and Marquardt, 2004). When inspecting country specific patterns, it is important to check whether the general pattern discovered before is also a norm in the country under study. Important area on the industry classification is to choose the classification system that can represent and correctly categorize the economic conditions and differences between the industrial groups (Bhojraj et al., 2003).

### Independent variable two (IV2): *Value relevance of the non-GAAP earnings*

As discussed in the literature review, the previous results concerning the value relevance of the non-GAAP earnings is mixed. There is evidence that discusses that non-GAAP earnings are used to better represent the true economic performance of the company (Lougee and Marquardt, 2004). However, other studies have found out that non-GAAP earnings are also used as an earnings management tool (Badertscher, 2011). The value relevance in our study is defined whether the non-GAAP earnings have reflection to the stock price.

### Moderating variables

We are using *time, size* and *company value* as moderating variables in our study. These moderating variables are used as we presume they will add additional information about the results of the study. Variable *time* is expressed in years and is the year of the release of the interim report. As *size,* we are looking at the asset size of the company balance sheet. As the final independent variable, company value is also considered. We use two definitions for the company value, the market cap and market cap plus debt. This last measure somewhat

resembles enterprise value, as it also acknowledges the debt holders' wealth and share in the company (Koller et al., 2015: 138-139).

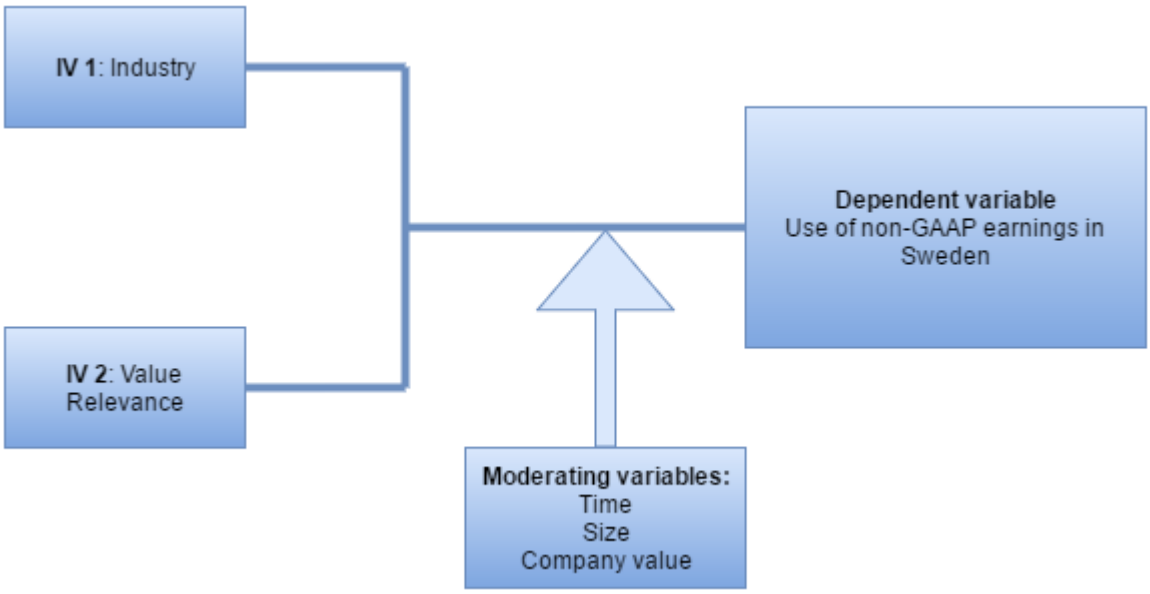


*Figure 3: Theoretical framework*

## 2.3 Review of related research

Previous research has heavily relied on different databases and the non-GAAP earnings recorded in them. The database approach has been probably preferred due to the possibility of getting a large amount of data from different time periods. However, the numbers in the databases are usually made by the analysts and use the exclusions they have made which may not be the same that the managers have originally done. This does not give the viewpoint of the managers and might miss non-GAAP earnings presented by the managers in the financial reports. Bhattacharya et al. (2003) found out that there is a difference between the size of non-GAAP earnings of managers' report and the corresponding non-GAAP earning number that can be found from the database. Also, when the data from the previous research has been manually collected, it has tended to focus only on a specific figure like the non-GAAP EPS. So far to our knowledge there has not been a systematic collection of all non-GAAP earnings.

### 2.3.1 Differences between the industry

The previous research has mainly looked at the differences between the industry use of non-GAAP earnings in descriptive manner. For example, Marques (2010), Bhattacharya et al. (2003) and Lougee and Marquardt (2004) only descriptively compared the number of non-GAAPs reported in relation to the industry size without using a statistical test. This approach

does not fully uncover all the differences between the industries as for example if companies in a small industry constantly report a lot of non-GAAP earnings for its size, it is still not going to be heavily represented in the percentage of total sample of non-GAAP earnings. Also, the previous research has not considered whether there have been any changes in the industry patterns of non-GAAP reporting by comparing the same sample of companies in different years. Although the previous research in the area stretches at least from year 2003 (Bhattacharya et al., 2003) to 2010 (Marques, 2010), the data they have used in their studies are always from couple of years prior to the release year of the study. This means that at least to our knowledge there has not been any study that investigates the industry differences in non-GAAP reporting in recent years.

There are numerous different industry classification standards which have a different number of divisions where companies can be categorized. For example, Bhattacharya et al. (2003) used I/B/E/S SIG classification, while Lougee and Marquardt (2004) used SIC codes. Marques (2010) instead used GICS system, basing her choice upon the results the previous research by Bhorjar et al. (2003), which indicated that GICS is better compared to several other classification standards in many areas of financial studies.

### 2.3.2 Value relevance of the non-GAAP earnings

Previous literature has compared the different earnings figures and their explanatory power on the company's stock price by comparing the $R^2$'s of the regression formulas. Biddle et al. (1997) used this method to compare economic value added (EVA) to similar earnings metrics.

The earnings metrics can also be inserted into a valuation formula and compare the $R^2$'s of the whole formula to determine which of the earnings metrics has a higher explanatory power. This approach is used by Brown and Sivakumar (2003) when they compare different Operating Profit figures.

However, in addition to looking at the regression formula and linear correlation between the earnings and the stock price, the value relevance can also be inspected by looking at how the stock price reacts on the earnings announcement date. In line with the efficient market hypothesis, if new information that affects the future cash flows is released, stock price should reflect this (Fama, 1970). This approach to inspect value relevance is discussed next.

### 2.3.3 Stock price reaction on earnings announcement

To test the effect of earnings announcement on the stock price the previous research has relied on similar measurements of performing event studies. One of the key problems in this field as described by MacKinlay (1997) is the need to separate the effect that earnings announcement had to the stock price from other effects that may have affected the stock value on given time periods, like macro effects that affect the whole market. This separation of the market effects on the stock price is called calculating the abnormal return (AR).

As earnings influence the valuation as first described by Ball and Brown (1968), there should be an effect on the stock price on the date that the earnings are reported. The effect should be a rise in the price if the news is good and drop if the news are bad. It can also be possible that the earnings are what market expected them to be and lead to no effect on the value. MacKinlay (1997) describes the typical process for the event study where first the companies are divided into portfolios based on the results of the news. The abnormal return is then calculated for every company by comparing the daily return of a single share to what the expected return for the day was. This expected return typically represents the market effects. The abnormal returns for the single company are then cumulated for each day to form the cumulative abnormal return (CAR). The calculation of the cumulative abnormal return for the portfolio is then a trivial process, it is just the average of the cumulative abnormal return of the companies in the portfolio. However, we note that due to the popularity of using abnormal return in event window studies, there are wide differences in how to define the markets expectations and thus the message that the earnings announcement give. Also, different studies use different ways to calculate the abnormal returns.

Ball and Brown (1968) defined whether the news was positive, negative or neutral by looking at the change in EPS. The markets expectation was calculated by comparing all companies in the market and calculating average changes in the earnings per company. The positive earnings surprise was then defined by whether the earnings change exceeded this average benchmark and vice versa for the negative earnings surprise. Abnormal return was calculated as the difference of the share return and the stock-market correlation adjusted market return. This calculation of correlation factor between the stock and the market closely resembles the process of how the beta is calculated. Instead of calculating cumulative abnormal return, Ball and Brown (1968) calculated abnormal performance index (API) instead, which different from CAR by only multiplying the abnormal earnings instead of adding them together.

Bernard and Thomas (1989) used a slightly different event study compared to Ball and Brown (1968). Bernard and Thomas (1989) used time series analysis designed before by Foster (1977) and improved later by Foster et al. (1984) to calculate the markets expectations to which they then compared the actual returns. In study of Bernard and Thomas (1989) the abnormal return is calculated by comparing the returns of the share to the returns of a portfolio comprised by same size of companies. The positive aspect of this is that it captures the market effect that affects only certain size of companies. However, this method may lead to wrong results if the market risk is different for companies of different size. Instead of calculating API, Bernard and Thomas (1989) calculate CAR.

## 2.4 Summary

A lot of studies have been made about non-GAAP earnings ranging from linkages to the valuation to its use in earnings management. One of the key difficulties concerning non-GAAP is that the definition of the term itself is vague. Therefore, this vague precondition effects studies in other associated areas. Value relevance of the earnings has been a subject of research since 60's and it has been looked closely ever since. Nowadays with non-GAAP reporting even more commonplace, the relation of non-GAAP earnings to valuation has also been researched and evidence has been found both for and against the value relevance of non-GAAP earnings. However, this has not been tested in a Swedish setting, which our study will point out as our biggest possible contribution area.

# 3. METHOD

In this chapter, we present the research questions. We also explain our data gathering process in detail. Lastly, the statistical tests are designed to find answers to the research questions.

## 3.1 Research questions

Based on the previous literature and the theoretical gaps, we want to find out how the non-GAAP earnings are used in the Swedish market and how the use of the non-GAAP earnings has changed over the recent years. We also want to know which specific non-GAAP earnings are used. Since the previous literature had found out that certain industries are keener on using non-GAAP earnings (Bhattacharya et al., 2003; Lougee and Marquardt, 2004; Marques, 2010), we want to explore if a similar pattern can be observed in the Swedish market. However, since previous literature did not statistically test the differences between reporting patterns of non-GAAP earnings, that is also a part of the scope.

In the previous literature, a lot of emphasis has been placed on researching the linkage between non-GAAP earnings and value relevance. As there has been conflicting opinions on the appropriateness of using non-GAAP earnings in valuation (Curtis et al., 2013; Doyle et al., 2003) we also want to contribute to the existing discussion by looking at a new market.

With this background at hand we formulate the following research questions and hypotheses:

*Research question 1 (RQ1): Is there a variation in the usage of non-GAAP earnings between the industries in the Swedish setting?*

*Null hypothesis one ($H_0$1): There is no difference in the usage of non-GAAP earnings between industries.*

*Alternate hypothesis one ($H_1$): The difference in the usage of non-GAAP earnings is significantly affected by the industry.*

*Research question 2 (RQ2): What is the value relevance of the presentation of non-GAAP earnings to the stock price of the listed companies in the Swedish setting?*

*Null hypothesis two ($H_0$2): The presentation of non-GAAP earnings does not have any value relevance.*

*Alternate hypothesis two ($H_2$): The presentation of non-GAAP earnings has a value relevance.*

## 3.2 Setting

To answer the research questions, there is a need to look at the non-GAAP reporting by the Swedish companies. Due to ready availability of financial reports, we are looking at the companies listed in Stockholm Stock Exchange to find a sample that would resemble the Swedish setting. We define the Swedish setting as the companies listed on the Stockholm Stock Exchange that adhere to the IFRS. We chose to look at interim reports instead of annual reports or press releases because interim reports are usually the base for decision for analysts, which is of importance for us to answer the second research question. To test the change over time we decided to look at three separate quarters per company, constituting of the most recent quarter when the data was collected, and the related quarter in year 2014 and 2010. 2016 was chosen due to it being the most recent year at the time of the study, 2014 was selected to still have a proximity in time to the year 2016. Finally, we chose year 2010 to have a period that was more in the past but still close enough to allow the availability of the interim reports. We chose to focus only on the Large and Mid Cap companies for data availability reasons as it is more likely that they have reports available for all the different years we are looking at.

As an industry classification, we use Industry Classification Benchmark (ICB), which is also used by the Stockholm Stock Exchange (Nasdaq, 2016a). Industry Classification Benchmark divides the industries into ten different categories based on nature of their business (Industry Classification Benchmark, 2016).

## 3.3 Data sources

We have used the official Stockholm Stock Exchange list of companies which are listed in Large and Mid Cap and specified by industry (Nasdaq, 2016a). The list can be found in the appendices. Based on this list, we retrieved interim reports from the webpages of each respective company. This process was conducted during September of 2016. At future points in time there will be deviations in the large and mid-cap companies so our data is tied into the time specified above. From the interim reports, we are looking at specific sections and the figures stated in these sections. As this data is not available to retrieve from any database this becomes a manual process. In addition, we used Compustat Global to gather some accounting

and share information and Stockholm Stock Exchange webpage to gather information about price index (Nasdaq, 2016b).

## 3.4 Research design

From the intended dataset, we had to do some exclusions before starting the gathering. Some companies were excluded as they had not produced interim reports in the periods we are looking at or then the reports were not available to be retrieved from the companies' webpages. Some interim reports we excluded because their reports were based on the company's own financial reporting standards, meaning that all reported figures would have been non-GAAP figures. In detail the following exclusions were made:

1. Reports not available for the quarter we were looking at
2. We only looked at the interim reports. If company used only press release or PowerPoint report, we did not gather data from that. Reason for this was to keep consistency between the different companies.
3. Companies that adhere to other GAAPs than IFRS

As a quarterly report consists of up to 70 pages with numerous amounts of measures, we decided to limit the data gathering to certain sections of the report. We limited the data gathering to only contain the front page, and certain key sections highlighted by the company (often referred to as key data or key figures). This was done both to limit the amount of data to be gathered but also focus on measurements that the companies themselves regard as important and therefore have decided to highlight in their reports. However, we did not gather all the presented figures in these sections at this stage but performed some exclusion. These were:

1. Share related numbers and ratios.
2. Growth numbers and margins.
3. Forecasts/estimations.
4. Segment-based numbers.

After these adjustments, we ended up with the *raw data*. With the *raw data*, we started to filter down the data to what is suitable for our analysis. We wanted to extract figures that are earnings numbers.

### 3.4.1 Definition of earnings numbers

Earnings are measured as the net figure of the income and expenses. We have therefore excluded all income and expense figures.

For income, we have relied on IASB's definition of income, which encompasses both revenue and gains. Revenue is defined by the IASB as arisen *"in the course of the ordinary activities of an entity and is referred to by a variety of different names including sales, fees, interest, dividends, royalties and rent."* Gains is then defined as encompassing both unrealized and realized value changes. Gains might also be recorded as net figures in the statements of profit and loss, but are still considered income (IFRS, 2015: Conceptual Framework 4.29-4.31). This means that for our study, all the numbers which are considered to be income by the IASB cannot be earnings and are thus excluded in our study. The statement that gains might also be recorded in net figures led to us excluding all the net financial items in addition to exclusions made previously.

The definition of expenses is similar to the definition of income as it also is divided into two categories, losses and *"expenses that arise in the course of the ordinary activities of the entity"*. Both losses and expenses are decreases in the economic benefits. (IFRS, 2015: Conceptual Framework 4.33-4.34) Same as with income, expenses cannot be considered earnings and are excluded in our study.

We have also excluded earnings that are not based on accounting information, for example earnings that are calculated based on required return. While these measures are non-GAAP by nature, we are only looking at accounting based numbers in our study.

### 3.4.2 Combining the data

On the next step, we combined the absolute earnings numbers for two reasons. First was that the companies use different names for the same earnings making it logical to combine the earnings with the same function. The second reason was linked into our study. To statistically test the data, it required that we reduced the number of figures into one that could be grasped. Therefore, we combined all the earnings linked into one subtotal with different adjustments into one measure called adjusted line item. For example, *Operating Profit excluding items affecting*

*comparability* and *Operating Profit before research & development* were combined into figure *Operating Profit Adjusted*.

### 3.4.3 Additional data gathered

In addition, we used Compustat Global to gather additional data for our study. We used Fundamentals Quarterly to gather information about total assets (ATQ), debt (DLCQ+DLTTQ) and net income (IBQ+XIQ). We also used Securities Daily to gather information about number of shares outstanding (CSHOC), and closing stock prices (PRCCD).

We also gathered the OMXSPI index information from the Stockholm Stock Exchange webpage (Nasdaq, 2016b).

Additionally, we gathered report publication dates and reporting currency. To look at the change of Operating Profit, we also gathered it for the years 2015, 2013 and 2009.

### 3.4.4 Samples for the research questions

At this point we also produced two versions of our dataset. First one consisted of earnings numbers and is hence known as *Dataset 1 (DS1)*. We divided the earnings into two categories based on the previous discussion on the definition on of non-GAAP in the previous chapters. These two categories are GAAP and non-GAAP.

To answer the second research question, we create *Dataset 2 (DS2)*, which is based on *DS1*. From *DS1* we have only included the companies that presented Operating Profit in their key measures section. For those companies, we included only Operating Profit, Operating Profit Adjusted and Net Income Adjusted. Matching GAAP Net Income we downloaded from Compustat. If there was no adjusted line item presented, we assumed it to be the same as the corresponding GAAP counterpart. This was done to have a consistent and full data set with no missing values or empty cells.

## 3.5 Analysis strategy and measurement

### 3.5.1 Test 1

Based on the data collected and its structure, we performed statistical tests to find answers to our first research question. Since we wanted to find differences between industries we first looked at descriptive statistics for the non-GAAP earnings for information about the distribution of usage between industries. To find out if there existed significant differences

between industries we compared the means of non-GAAP earnings reported by companies in various industries on each respective year. Newbold et al. (2013: 645-647) write that since the amount of industries under comparison was more than two, a good way of finding out information about this kind of data is to compare the means of different levels. This led us to perform a one-way analysis of variance test.

The exact kind of one-way analysis of variance test we could use depended on if our data was normally distributed or not. Therefore, we first conducted the test of normality assumption for our data. Kolmogorov-Smirnov and Shapiro-Wilk tests are used to test the normality of the data. In addition to Kolmogorov-Smirnov test we also use the Shapiro-Wilk test as it gives more reliable results when the sample size is under 50 like in our study. (Razali and Wah, 2011.) Therefore, if the two tests of normality would have given different results on the distribution of our data, we would have assigned the results of Shapiro-Wilk test more value. In both tests of normality, the hypotheses and the significance level we used are stated below.

$H_0$: *Data follows predetermined distribution*

$H_1$: *Data does not follow predetermined distribution*

Significance level: $\alpha = 0.05$

Having determined whether our data passes assumption of normality or not, we turned to do the statistical test to find out the differences between the industry usage of non-GAAP earnings.

The Kruskal-Wallis test is a nonparametric test for one-way analysis of variance in a dataset that does not follow normal distribution. It orders the sample observations into ranks, thus eliminating the large differences in the data permitting the analysis of variance test to be performed regardless of the fulfilment of the assumption of normality. In the statistical framework, it is closely linked to the t-test, which is used to test for differences between two populations. The critical region of the Kruskal-Wallis test is determined by using the chi-square distribution table (Newbold et al., 2013: 658).

$H_0$: *means of the population are the same*

$H_a$: *means of the population are different*

$$W = \frac{12}{n(n+1)} \sum_{i=1}^{k} \frac{R_i^2}{n_i} - 3(n+1)$$

*Equation 1*

Significance level: $\alpha = 0.05$

Critical region: Reject $H_0$ if $W > \chi^2_{k-1,\,\alpha}$

The formula for the Kruskal-Wallis test is shown in Equation 1 in addition to the significance levels and the critical region of the results (Newbold et al., 2013: 659).

### 3.5.2 Test 2

For the second test, we looked at the value relevance of GAAP and non-GAAP earnings numbers. As a starting point, we looked at the correlation between the company value and four different earnings numbers: Net Income, Net Income Adjusted, Operating Profit and Operating Profit Adjusted. The construction of the correlation variables is displayed below.

$$MKTCAP_{i,t} = \frac{Market\ Cap_{i,t}}{Assets_{i,t}}$$

$$MKTCAPDEBT_{i,t} = \frac{Market\ Cap_{i,t} + Debt_{i,t}}{Assets_{i,t}}$$

$$NI_{i,t} = \frac{Net\ Income_{i,t}}{Assets_{i,t}}$$

$$OP_{i,t} = \frac{Operating\ Profit_{i,t}}{Assets_{i,t}}$$

$$NIA_{i,t} = \frac{Net\ Income\ Adjusted_{i,t}}{Assets_{i,t}}$$

$$OPA_{i,t} = \frac{Operating\ Profit\ Adjusted_{i,t}}{Assets_{i,t}}$$

Due to the nature of our data it had a lot of outliers. The outliers were either industry specific or due to large one-time effects. The industry specific outliers usually occurred in the Health Care industry as the earnings number/assets can be very low relative to the market cap, where

the assets are typically low in comparison to the earnings and market value (Koller et al., 2015: 70-71). Example of outliers related to large one-time effects is Q2 interim report from Unibet 2014 where a significant non-recurring sales gain spiked their earnings numbers (Unibet, 2014).

We use Spearman rank correlation test since it is a non-parametric test and thus is able to give correct results even when the data does not follow the assumption of normality and has a lot of outliers (Newbold et al., 2013: 634-635). This means that we cannot use the Pearson correlation that is commonly used. The hypotheses and the significance level we used for the Spearman rank correlation tests are stated below.

*$H_0$: There is no association between the company value and the earnings figure*

*$H_1$: There is an association between the company value and the earnings figure*

$$r_s = 1 - \frac{6\sum_{i=1}^{n} d_i^2}{n(n^2-1)}$$

*Equation 2*

Significance level: $\alpha = 0.05$

Critical region: Reject $H_0$ if $r_s < -r_{s,\alpha/2}$ or $r_s > r_{s,\alpha/2}$

Having done this, we continued by investigating how the GAAP and non-GAAP earnings correlated to the stock price at the announcement date of each interim report and if the size of the non-GAAP earning adjustment gave an additional relevance. This was done separately for each year in our data, namely 2010, 2014 and 2016.

To do this, we ran regressions with two explanatory variables in each. The explanatory values were the Net Income and the difference between Net Income Adjusted and Net Income for the period. In the second equation, these were replaced by the respective figures for Operating Profit. If the company did not report an adjusted number in the interim report, the difference between adjusted number and GAAP number was expected to be zero. Because of the large differences between the different companies in terms of size, the variables of each regression were deflated. As a deflator, total assets was chosen.

The earnings figures were tested against the company price information corresponding the earning figure in each model. This meant that for Net Income and therefore for the Equation 2,

the corresponding company price variable was the market cap of the company on the announcement day. For the Operating Profit, this was the market cap at the announcement day plus the size of debt on the company's balance sheet in the corresponding interim report. This was done so because the Operating Profit is not affected by the company's choice of finance and thus belongs to both the equity investors and debtors. The market cap was calculated as the closing stock price multiplied with the number of shares outstanding at announcement date. This meant that for the companies that are traded with multiple share classes on the stock market, the market cap that was calculated only represented the total value of one of these share classes. The regression models are displayed below.

$$MKTCAP_{i,t} = \beta_{01} + \beta_{i1} NI_{i,t} + \beta_{i2} ADJNI_{i,t} + \varepsilon$$

*Equation 3*

$$MKTCAPDEBT_{i,t} = \beta_{02} + \beta_{i3} OP_{i,t} + \beta_{i4} ADJOP_{i,t} + \varepsilon$$

*Equation 4*

Where

$$MKTCAP_{i,t} = \frac{Market\ Cap_{i,t}}{Assets_{i,t}}$$

$$MKTCAPDEBT_{i,t} = \frac{Market\ Cap_{i,t} + Debt_{i,t}}{Assets_{i,t}}$$

$$NI_{i,t} = \frac{Net\ Income_{i,t}}{Assets_{i,t}}$$

$$ADJNI_{i,t} = \frac{(Adjusted\ Net\ Income_{i,t} - Net\ Income_{i,t})}{Assets_{i,t}}$$

$$OP_{i,t} = \frac{Operating\ Profit_{i,t}}{Assets_{i,t}}$$

$$ADJOP_{i,t} = \frac{(Adjusted\ Operating\ Profit_{i,t} - Operating\ Profit_{i,t})}{Assets_{i,t}}$$

For the regression models presented in Equations 3 and 4, the hypotheses are stated below. In linear regression analysis, the aim of the test is to check whether there exists linear correlation between the dependent variable and independent variables. Therefore, the aim of the test is to

check whether the coefficients for independent variables will be different from zero on a chosen significance level. The critical region in the significance test is tested by t-statistic. (Newbold et al., 2013: 440-445).

$$H_0: \beta_{i1} = \beta_{i2} = 0$$

$$H_1: \beta_{ij} \neq 0 \; for \; at \; least \; one \; j$$

$$H_0: \beta_{i4} = \beta_{i3} = 0$$

$$H_1: \beta_{ij} \neq 0 \; for \; at \; least \; one \; j$$

Significance level: $\alpha = 0.05$

Critical region: Reject $H_0$ if $\frac{b_{ij}-\beta^*}{s_{b_{ij}}} > t_{n-K-1,\alpha/2}$ or $\frac{b_{ij}-\beta^*}{s_{b_{ij}}} < -t_{n-K-1,\alpha/2}$

Due to the number of outliers our data did not fulfil all the assumptions that standard linear regression requires thus disallowing us to use that model. The problem with outliers when using standard least squares regression is that the outliers can significantly affect the regression line and in the worst case distort the results of the study (Newbold et al., 2013 p. 464) Instead of the least squares regression, we rely on Robust Regression algorithm developed by Verardi and Croux (2008). Their algorithm relies on MM-estimator developed by Yohai (1987), which resembles weighted least squares method in the sense that the values with large residuals are given a smaller weight when calculating the slope. The MM-estimator Yohai (1987) developed is built on the S-estimators and combines it with M-estimators to form a regression model that is very robust to outliers and heteroscedasticity.

### 3.5.3 Test 3

For the third test, we wanted to conduct abnormal return regressions to see if the adjustments in the non-GAAP earnings had an additional explanatory power to the company's stock price reaction in the earnings announcement period. The test was constructed by running regressions of cumulative abnormal return (CAR) against the earnings surprise and differences between GAAP and non-GAAP earnings for different earnings lines. The test was conducted on separately for each period we have gathered data for. The data used was same as in test two, meaning that the issues regarding the number of outliers also affected this test.

We looked at the effect that the release of new information had on the stock price by conducting an event study, where we calculated the daily abnormal returns (AR) on the stock. Our formula for calculating abnormal returns is presented below in Equation 5.

$$AR_{i,d} = r_{i,d} - r_{p,d}$$

*Equation 5*

In the equation $r_{i,d}$ is the percentage change in the stock price on day $d$ and $r_{p,d}$ is the percentage change in the OMX Stockholm_PI (OMXSPI) general index. We chose to use a general index to represent the systematic effect on the stock price instead of size adjusted portfolio like Bernard and Thomas (1989) did or market model as MacKinlay (1997) did. The cumulative abnormal return (CAR) was then counted as stated below in Equation 6.

$$CAR_i = \sum_{d=-3}^{3} AR_{i,d}$$

*Equation 6*

We used an event window from *d=-3* to *d=+3*. An event window this wide means that we were able to catch most significant effects of the earnings announcements, whether the abnormal return was caused by market correctly forecasting the earnings announcement before the actual announcement or market reaction after the announcement.

For the earnings surprises, we assumed that the market's expectation for the earnings was that there would be no change from the same quarter in the previous year. This is a conservative approach in analysing earnings. In addition to the earnings surprise, we also looked at the differences between GAAP and non-GAAP earnings. This is done to see, if the size of the adjustment gives any additional explanatory power to the amount of abnormal earnings of the stock in the time period around the earnings release. Furthermore, we divided the independent variables by total assets. As in the previous test this is a done to stabilize the results and eliminate size effects.

We used two regression models. Just as in the previous test, we looked at the Net Income line and Operating Profit line and the adjusted non-GAAP versions of these two. However, here both regression models consisted of two independent variables each. The regression models are shown below in Equations 7 and 8.

$$CAR_{i,d} = \beta_{01} + \beta_{i1} DIFFNI_{i,t} + \beta_{i2} ADJNI_{i,t} + \varepsilon_{i,d}$$

*Equation 7*

$$CAR_{i,d} = \beta_{02} + \beta_{i3} DIFFOP_{i,t} + \beta_{i4} ADJOP_{i,t} + \varepsilon_{i,d}$$

*Equation 8*

The variables in the models are explained below.

$$DIFFNI_{i,t} = \frac{(Net\ Income_{i,t} - Net\ Income_{i,t-1})}{Assets_{i,t}}$$

$$ADJNI_{i,t} = \frac{(Adjusted\ Net\ Income_{i,t} - Net\ Income_{i,t})}{Assets_{i,t}}$$

$$DIFFOP_{i,t} = \frac{(Operating\ Profit_{i,t} - Operating\ Profit_{i,t-1})}{Assets_{i,t}}$$

$$ADJOP_{i,t} = \frac{(Adjusted\ Operating\ Profit_{i,t} - Operating\ Profit_{i,t})}{Assets_{i,t}}$$

As the underlying reason to use regression test is to check if linear relationships exist between the variables, for the Test 3 the hypotheses are:

$$H_0: \beta_{i1} = \beta_{i2} = 0$$

$$H_1: \beta_{ij} \neq 0\ for\ at\ least\ one\ j$$

$$H_0: \beta_{i4} = \beta_{i3} = 0$$

$$H_1: \beta_{ij} \neq 0\ for\ at\ least\ one\ j$$

Significance level: $\alpha = 0.05$

Critical region: Reject $H_0$ if $\frac{b_{ij}-\beta^*}{s_{b_{ij}}} > t_{n-K-1,\alpha/2}$ or $\frac{b_{ij}-\beta^*}{s_{b_{ij}}} < -t_{n-K-1,\alpha/2}$

Here we faced similar issues with outliers as in Test 2, therefore we used the same MM-regression in the Test 3. This way we could prevent the problems with the outliers.

## 3.6 Summary

After covering the formulation of the research questions, data gathering process and formulating the tests, we now turn our focus to presenting the results.

# 4. RESULTS

In this chapter, we first explore the data by using the descriptive statistics. Then we conduct the tests that were designed in the previous chapter and present the results.

## 4.1 Descriptive statistics

### 4.1.1 Test 1

The amount of companies in the Large and Mid Cap on the Stockholm Stock Exchange amounted to 185 companies during the period of data collection. These were divided into nine industries based on the industry classification benchmark (Industry Classification Benchmark, 2016).

| **Availability of the data** | **2010** | | **2014** | | **2016** | | **Total** | |
|---|---|---|---|---|---|---|---|---|
| **Industry** | **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** |
| Basic Materials | 8 | 67 % | 12 | 100 % | 12 | 100 % | 32 | 89 % |
| Consumer Goods | 14 | 70 % | 18 | 90 % | 20 | 100 % | 52 | 87 % |
| Consumer Services | 14 | 78 % | 15 | 83 % | 17 | 94 % | 46 | 85 % |
| Financials | 33 | 67 % | 42 | 86 % | 49 | 100 % | 124 | 84 % |
| Health Care | 11 | 58 % | 13 | 68 % | 18 | 95 % | 42 | 74 % |
| Industrials | 32 | 67 % | 40 | 83 % | 46 | 96 % | 118 | 82 % |
| Oil&Gas | 2 | 40 % | 4 | 80 % | 4 | 80 % | 10 | 67 % |
| Technology | 8 | 80 % | 8 | 80 % | 10 | 100 % | 26 | 87 % |
| Telecommunications | 3 | 75 % | 4 | 100 % | 4 | 100 % | 11 | 92 % |
| **Total** | **125** | **68 %** | **156** | **84 %** | **180** | **97 %** | **461** | **83 %** |

*Figure 4: Availability of the data*

Figure 4 shows the amount of reports that were inspected in each specific industry. As can be seen, the amount of reports that were not available was much higher in the year 2010 compared to the 2016. Nevertheless, in year 2010 68% was available which we concluded as sufficiently high number of data to conduct our research. However, it is important to notice that in quite many of our industries the sample size is low. In the ranks-based Kruskal-Wallis test this is important to notice as in the small industries all the samples have equal weight and therefore will have a large impact on the results.

| Amount of non-GAAP earnings numbers | 2010 | | 2014 | | 2016 | |
|---|---|---|---|---|---|---|
| **Industry** | N | Average | N | Average | N | Average |
| Basic Materials | 8 | 0,75 | 12 | 0,92 | 12 | 1,58 |
| Consumer Goods | 14 | 1,79 | 18 | 2,00 | 20 | 1,55 |
| Consumer Services | 14 | 0,64 | 15 | 1,07 | 17 | 1,24 |
| Financials | 33 | 0,88 | 42 | 1,10 | 49 | 1,20 |
| Health Care | 11 | 0,64 | 13 | 1,15 | 18 | 1,06 |
| Industrials | 32 | 0,53 | 40 | 0,93 | 46 | 1,41 |
| Oil&Gas | 2 | 0,50 | 4 | 0,50 | 4 | 0,50 |
| Technology | 8 | 0,38 | 8 | 0,75 | 10 | 1,20 |
| Telecommunications | 3 | 1,67 | 4 | 1,50 | 4 | 2,25 |
| **Total** | **125** | **0,82** | **156** | **1,12** | **180** | **1,32** |

*Figure 5: Amount of non-GAAP earnings numbers*

*N represents the number of companies in the group, Average represents the average number of non-GAAP earnings reported by the companies in certain industry.*

Looking at the commonality of non-GAAP earnings numbers (*DS1*) in Figure 5, we can see that overall non-GAAP earnings have become more popular on the period we are looking at. While in 2010 companies on average only displayed 0,82 non-GAAP earnings figures, in 2016 the average had risen to 1,32. The two industries most keen on displaying non-GAAP earnings have systematically been Consumer Services and Telecommunications.

| Industry | Year | Most common figure | % | Second most common figure | % | Third most common figure | % |
|---|---|---|---|---|---|---|---|
| **Basic Materials** | 2016 | Operating Profit Adjusted | 32 % | EBITDA | 26 % | EBITDA Adjusted | 21 % |
| | 2014 | Operating Profit Adjusted | 45 % | EBITDA | 27 % | EBITDA Adjusted | 18 % |
| | 2010 | Operating Profit Adjusted | 33 % | Net Income Adjusted | 17 % | EBT Adjusted | 17 % |
| **Consumer Goods** | 2016 | Operating Profit Adjusted | 42 % | EBITDA | 23 % | EBITDA Adjusted | 13 % |
| | 2014 | Operating Profit Adjusted | 31 % | EBITDA | 22 % | Net Income Adjusted | 14 % |
| | 2010 | Operating Profit Adjusted | 36 % | EBITDA | 20 % | EBT Adjusted | 16 % |
| **Consumer Services** | 2016 | EBITDA | 24 % | Operating Profit Adjusted | 19 % | EBITDA Adjusted | 19 % |
| | 2014 | Operating Profit Adjusted | 37 % | EBT Adjusted | 19 % | EBITDA | 19 % |
| | 2010 | Operating Profit Adjusted | 33 % | EBT Adjusted | 22 % | EBITDA | 22 % |
| **Financials** | 2016 | Profit of property mgmt. | 29 % | Operating Surplus | 14 % | Operating Profit Adjusted | 14 % |
| | 2014 | Profit of property mgmt. | 35 % | Operating Surplus | 15 % | Operating Profit Adjusted | 9 % |
| | 2010 | Profit of property mgmt. | 33 % | Net Income Adjusted | 20 % | Operating Surplus | 10 % |
| **Health Care** | 2016 | EBITDA | 32 % | EBITA | 26 % | Net Income Adjusted | 16 % |
| | 2014 | EBITDA | 33 % | EBITA Adjusted | 20 % | Operating Profit Adjusted | 13 % |
| | 2010 | Operating Profit cont. op. | 14 % | Operating Profit Adjusted | 14 % | Net Income Adjusted | 14 % |
| **Industrals** | 2016 | Operating Profit Adjusted | 25 % | EBITDA | 24 % | EBITA | 17 % |
| | 2014 | Operating Profit Adjusted | 30 % | EBITDA | 24 % | EBITA | 22 % |
| | 2010 | EBITA | 35 % | EBITDA | 23 % | Operating Profit Adjusted | 18 % |
| **Oil&Gas** | 2016 | EBITDA | 98 % | Profit from holdings | 0 % | Net Income Adjusted | 0 % |
| | 2014 | EBITDA | 98 % | Profit from holdings | 0 % | Net Income Adjusted | 0 % |
| | 2010 | EBITDA | 96 % | Profit from holdings | 0 % | Net Income Adjusted | 0 % |
| **Technology** | 2016 | EBITDA | 42 % | Operating Profit Adjusted | 17 % | EBITDA Adjusted | 17 % |
| | 2014 | EBITDA | 33 % | Operating Profit Adjusted | 17 % | Net Income Adjusted | 17 % |
| | 2010 | Operating Profit Adjusted | 66 % | EBT Adjusted | 33 % | Profit from holdings | 0 % |
| **Telecommunications** | 2016 | EBITDA Adjusted | 44 % | Operating Profit Adjusted | 22 % | EBITDA | 22 % |
| | 2014 | EBITDA Adjusted | 50 % | EBITDA | 33 % | Operating Profit Adjusted | 17 % |
| | 2010 | Operating Profit Adjusted | 40 % | EBITDA | 40 % | EBITDA Adjusted | 20 % |

*Figure 6: The most common non-GAAP earnings reported per industry*

The most popular non-GAAP earning figure in each industry has been relatively stable as can be inferred from Figure 6. The popular figures are surprisingly same in each industry with Financials being a notable exception due prevalence of common industry specific figures that are consistently reported by the real estate companies that in turn constitute a large amount of financial companies. Overall, EBITDA and Operating Profit Adjusted seem to be most popular of the figures in most industries.

### 4.1.2 Test 2 & 3

For the second research question, we performed comparison on the explanatory powers of the non-GAAP earnings on the company's stock market performance. The two most common adjusted earnings presented by the companies were Net Income Adjusted and Operating Profit Adjusted which we selected as independent variables. For the comparison, we gathered also the comparative GAAP earnings from the same quarter and from the same quarter one year back.

| Descriptive statistics of variables<br>Variable | N | 25th<br>percentile | Mean | Median | 75th<br>percentile |
|---|---|---|---|---|---|
| MKTCAP | 264 | 0,7375 | 2,2264 | 1,1771 | 2,0461 |
| MKTCAPDEBT | 264 | 0,9449 | 2,4329 | 1,3961 | 2,1754 |
| CAR | 264 | -0,0220 | 0,0232 | 0,0221 | 0,0700 |
| NI | 264 | 0,0074 | 0,0188 | 0,0172 | 0,0276 |
| OP | 264 | 0,0136 | 0,0262 | 0,0247 | 0,0380 |
| NIA | 264 | 0,0078 | 0,0183 | 0,0170 | 0,0270 |
| OPA | 264 | 0,0137 | 0,0260 | 0,0257 | 0,0381 |
| DIFFNI | 264 | -0,0006 | 0,0068 | 0,0030 | 0,0101 |
| DIFFOP | 264 | -0,0007 | 0,0085 | 0,0035 | 0,0121 |
| ADJNI | 264 | 0,0000 | -0,0005 | 0,0000 | 0,0000 |
| ADJOP | 264 | 0,0000 | -0,0002 | 0,0000 | 0,0000 |

*Figure 7: Descriptive statistics of variables in Test 2 and 3*

Looking at Figure 7, it can be identified that there existed large disparities in our data. For example, on quite a few lines the mean is larger or close to the 75th percentile. On the most lines this is because the stock market has some companies that are extremely large when compared against the whole population of companies in the stock market. These companies also produce large earnings number and the adjustments – if they appear – are large.

Figure 8 presents pie graph that illustrates whether the adjustments have been positive or negative.

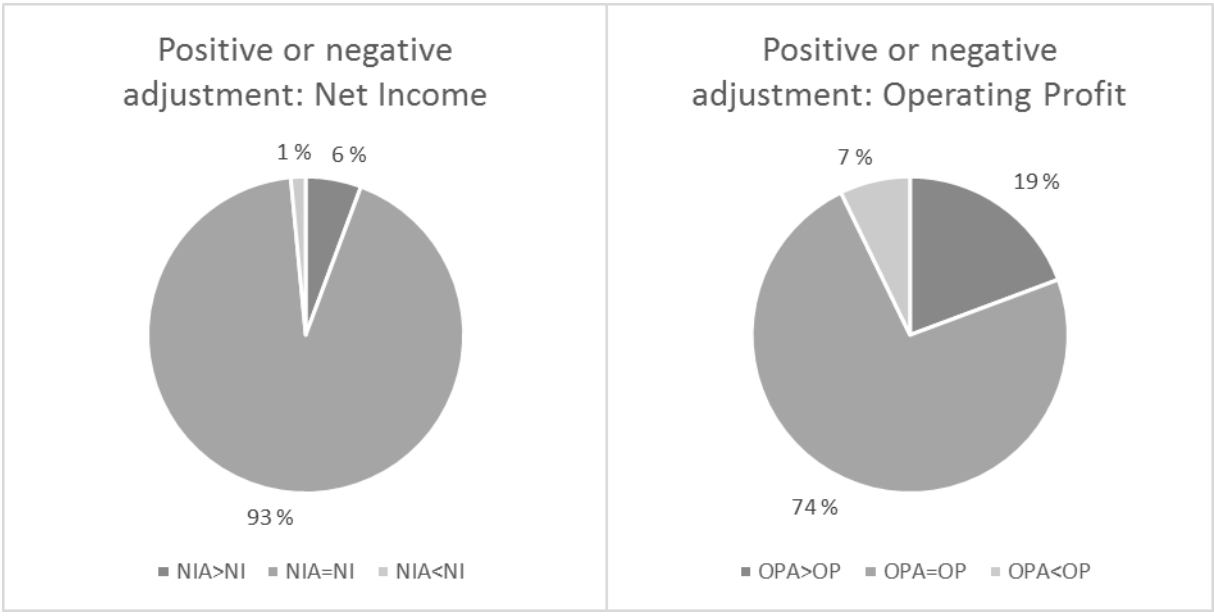


*Figure 8: Pie charts of the direction of the adjustments made*

Net Income Adjusted is larger than the Net Income on 6% of the cases. Net Income is higher in only 1% of the cases, while in 93% of the cases the adjusted earning is same as the unadjusted earning. However, in Operating Profit it is notable that almost in 19% of the cases the adjusted number is same as the unadjusted one. Quite often the reason for this was that the company had done a large adjustment in the prior periods and wanted to still present the adjusted measure for comparability also for this period, even though the adjusted earning was the same as the unadjusted for the period.

## 4.2. Data analysis and coding

### 4.2.1 Research Question 1 (RQ1)

Based on the data collected we wanted to find out if there existed any difference between the frequency that different industries report non-GAAP earnings numbers *(DS1)*. To know which statistical test to use, we defined whether our data follows the assumption of normality. We used Kolmogorov-Smirnov and Shapiro-Wilks tests to test our data groups (each year and industry) for assumption of normality. The normality tests clearly indicated that our data does not follow normality. These results led us to reject the null hypotheses and conclude that the data does not follow normal distribution. Thus, we decided to run the Kruskal-Wallis test, which does not require data to follow normal distribution. Boxplots of the results of all Kruskal-Wallis tests we run can be found from the appendices.

| Kruskal-Wallis test results | 2010 | | 2014 | | 2016 | |
|---|---|---|---|---|---|---|
| | p-value | Decision | p-value | Decision | p-value | Decision |
| Non-GAAP earnings numbers | 0,048 | **Reject** | 0,046 | **Reject** | 0,462 | **Retain** |

*Figure 9: Kruskal-Wallis test results*

The test results from the Kruskal-Wallis tests show that the null hypothesis was rejected in 2010 and 2014. This means that on these periods there was a significant difference in the frequency of reporting non-GAAP figures between industries. However, the values were close to the critical region of 0,05 meaning that the industry differences were not strong either in 2010 or 2014. Overall, the results gave us indication that the differences between the industries was not so significant in 2016.

### 4.2.2 Research Question 2 (RQ1)

From the data collected we wanted to examine whether the non-GAAP earnings have correlation to the stock price. This is tested in two tests, in Test 2 the difference between the non-GAAP earnings and the GAAP earnings are regressed against the company value corresponding to the earnings line. In Test 3, the earnings surprise and the size of the adjustment are regressed against the cumulative abnormal earnings (CAR) of the stock price around the earnings announcement data.

#### *4.2.2.1 Test 2*

The results of the Spearman rank correlation tests on the relation between the company value and the different earnings lines are displayed below in Figures 10 and 11.

| MKTCAP | | NI | NIA |
|---|---|---|---|
| 2010 | Spearman correlation | 0,547 | 0,545 |
| | p-value | 0,000 | 0,000 |
| 2014 | Spearman correlation | 0,468 | 0,489 |
| | p-value | 0,000 | 0,000 |
| 2016 | Spearman correlation | 0,564 | 0,560 |
| | p-value | 0,000 | 0,000 |

*Figure 10: Spearman rank correlation on Net Income and Net Income Adjusted*

| MKTCAPDEBT | | OP | OPA |
|---|---|---|---|
| 2010 | Spearman correlation | 0,454 | 0,451 |
| | p-value | 0,000 | 0,000 |
| 2014 | Spearman correlation | 0,480 | 0,473 |
| | p-value | 0,000 | 0,000 |
| 2016 | Spearman correlation | 0,570 | 0,568 |
| | p-value | 0,000 | 0,000 |

*Figure 11: Spearman rank correlation on Operating Profit and Operating Profit Adjusted*

The null hypothesis is rejected on the 95% level in all cases. These results indicate that there exists a relationship between the company value and the earnings figures. This applies for both GAAP and non-GAAP.

The GAAP earning had a larger correlation to the company value in each case except one. However, the strength of the correlation was almost the same in period. This means that on its own, the adjusted earnings do not carry more informative value than the GAAP earnings. In fact, based on the results of the Spearman rank correlation test, the non-GAAP earnings seem less relevant to the company value than GAAP earnings.

However, there were differences when testing if the adjustments to non-GAAP earnings carry additional informative value when evaluated together with the GAAP earnings. Two regressions were run on each specific period in our data. The results of the regression are presented below in Figure 12.

| Test 2 Results | 2010 | | 2014 | | 2016 | |
|---|---|---|---|---|---|---|
| | Coefficient | p-value | Coefficient | p-value | Coefficient | p-value |
| Constant | 0,259 | 0,000 | 0,187 | 0,036 | 0,243 | 0,000 |
| NI | 37,843 | 0,056 | 56,994 | 0,000 | 55,893 | 0,000 |
| ADJNI | -189,972 | 0,081 | 52,122 | 0,000 | -6,460 | 0,848 |
| | | | | | | |
| Constant | 0,314 | 0,003 | 0,139 | 0,129 | 0,358 | 0,000 |
| OP | 30,548 | 0,000 | 51,817 | 0,000 | 43,718 | 0,000 |
| ADJOP | 21,108 | 0,071 | 45,607 | 0,000 | 7,592 | 0,629 |

*Figure 12: Test 2 results*

Null hypothesis was rejected at 95% level in all cases except the Net Income study for the year 2010. Also, in all periods except the one mentioned before, the null hypothesis was also rejected on 99% level.

NI was significant on a 95% level during 2/3 of the periods under the study. OP was significant on all periods of the study. This gives an indication that the Operating Profit is more linked to large market cap and debt of the company than net income is linked to large market cap.

However, the direction of the relation can be questioned. It might be that companies with large market cap and debt tend to also have large earnings due to the size of the company. Generally, NI has larger coefficient than OP. This might be caused by high amount the expectations for the future profits affect the market cap of the company. This effect is moderated when looking at Operating Profit and its regression against the market cap plus debt as debt levels are not affected by the expectations for the future.

Looking at the adjustments, ADJNI is significant in 1/3 of the periods, while ADJOP is also significant on 1/3 of the periods. However, the p-values for ADJOP are lower than for ADJNI. This higher significance indicates that adjustments to Operating Profit correlate better with the company value. This is possibly caused by the nature of adjustments made to Operating Profit compared to the adjustments in Net Income; adjustments to Operating Profit seem to be much more systematical compared to the adjustments to Net Income which are often different in nature and size.

#### *4.2.2.2 Test 3*

In the last test, we analysed whether the non-GAAP earnings have any additional explanatory power to the stock price movements on the period around the earnings announcement date. This was done by regressing the earnings surprise and the size of the adjustment against cumulative abnormal return (CAR) from -3 to +3 days around the earnings announcement. The results of the test are presented in Figure 13.

| **Test 3 Results** | **2010** | | **2014** | | **2016** | |
|---|---|---|---|---|---|---|
| | **Coefficient** | **p-value** | **Coefficient** | **p-value** | **Coefficient** | **p-value** |
| Constant | 0,005 | 0,548 | 0,001 | 0,930 | 0,043 | 0,000 |
| DIFFNI | 0,146 | 0,601 | 0,912 | 0,000 | -0,095 | 0,802 |
| ADJNI | -17,961 | 0,691 | 0,899 | 0,000 | 16,539 | 0,000 |
| | | | | | | |
| Constant | 0,005 | 0,578 | 0,000 | 0,967 | 0,048 | 0,000 |
| DIFFOP | 0,072 | 0,758 | 0,807 | 0,001 | -0,031 | 0,941 |
| ADJOP | -0,583 | 0,601 | 0,694 | 0,008 | -17,085 | 0,000 |

*Figure 13: Test 3 results*

In the first model, the null hypothesis was rejected for the years 2014 and 2016. Variable DIFFNI was significant on a 95% level only on 1/3 of the periods, while ADJNI was significant on 2/3 of the periods. The same results applied for the second model as well, where DIFFOP was significant on 1/3 and ADJOP on 2/3 of the periods.

Earnings surprise, measured by variables DIFFNI and DIFFOP and calculated by the difference between earnings from the most recent quarter and earnings from the corresponding quarter last year, did not have a large explanatory power on the abnormal return.

It is also interesting to notice, that in most of the tests the p-value of the constant is reasonably high. This means that the coefficient of the constant is not significantly different from zero. This is what would be expected, due to the nature of abnormal returns. If on average the CAR for the announcement period would be zero, it would mean that there has been approximately equally strong positive and negative news. Then it would be natural that the regression slope would also move through the origin. In this light, it is interesting that in 2016 the average stock return has been positive, indicated by the positive constants and their low p-values.

Based on the results it seems that the adjustments and their size has some additional explanatory power on the abnormal returns on the later periods of the study. However, while large adjustment in Net Income seems to predict an increased abnormal return, the large adjustment in Operating Profit predicts negative returns.

## 4.3 Summary

The results from the Test 1 indicated that the differences between the industries in their tendency to produce non-GAAP earnings results has become smaller. The Kruskal-Wallis test results indicate that there were small differences between the industries in both 2010 and 2014 in their tendency to report non-GAAP earnings numbers. However, in 2016 the difference had vanished.

Overall, the results from Test 2 and Test 3 differed. Test 2 produced results that gave us indication that there exists a correlation between the earnings and company value. This was true for both the GAAP and non-GAAP earnings. The adjustments to the non-GAAP earnings did have a small but relevant relationship to the company value when evaluated together with the GAAP earnings. However, when looking at the abnormal returns in Test 3, the earnings surprise calculated by the GAAP earnings did not have a strong explanatory power on the abnormal return. On the other hand, in Test 3 the size of the adjustment had a much higher explanatory power on the abnormal returns than the earnings surprise.

After conducting the test and presenting the results, we turn to discuss the implications of the results in the view of their meaning and through the lens of the previous literature.

# 5. DISCUSSION

The aim of this chapter is to answer the research questions set in Chapter 3 and discuss and analyse the results in relation to the previous literature. We also conclude and critically reflect on the results of our study and discuss what implications and questions our study presents for the further studies in non-GAAP earnings.

## 5.1 Research Question 1 (RQ1)

As stated in the Chapter 3, we wanted to find out whether there existed any difference between the industries in their tendencies on reporting non-GAAP earnings and has this difference changed during the last years. Our first research question was formulated as:

*Research question 1 (RQ1): Is there a variation in the usage of non-GAAP earnings between the industries in the Swedish setting?*

The results from the Kruskal-Wallis test indicated that there have existed statistically significant differences between the industries in their non-GAAP earnings reporting. Test results showed this for years 2010 and 2014. However, the results were close to the critical region of 0,05 and meaning that the differences between industries were not strong. The limitation of the Kruskal-Wallis test is that it only shows whether the difference between the groups exists or not, but does not tell between which groups the difference is. However, reflecting to the descriptive statistics table presented in the Figure 5, it seemed that companies operating in Consumer Goods or Telecommunications industries report non-GAAP earnings more often than companies on average. This is consistent in the views of the previous literature by Bhattacharya et al. (2003), Lougee and Marquardt (2004) and Marques (2010). All these studies discussed that companies in high technology industries reported non-GAAP earnings more often than companies on average. This means that for the Research Question 1, we are rejecting the null hypothesis and instead accept the alternate hypothesis.

*Alternate hypothesis one ($H_1$): The difference in the usage of non-GAAP earnings is significantly affected by the industry.*

When looking at the differences between industries in 2016 it seems that the differences have diminished. Looking at descriptive statistics in Figure 5, in 2016 the average number of non-GAAP earnings reported in the interim report for all industries except for the

Telecommunications and Oil & Gas was close to 1,32 which was the average for the whole sample.

Based on the descriptive statistics presented in Figure 5, it seems that the usage of non-GAAP earnings has become more common in all industries. While in 2010 only companies in few industries presented non-GAAP earnings in their interim report, in 2016 companies in almost all industries presented on average more than one non-GAAP earning number in their interim reports. This is probably the reason why the null hypothesis of Kruskal-Wallis test was rejected in 2016 when looking at non-GAAP earnings.

The results of the tests are interesting because they differ from the results of the previous research. The previous literature by Bhattacharya et al (2003), Lougee and Marquardt (2004) and Marques (2010) always concluded that there existed a significant difference between the industries in their frequency of reporting non-GAAP earnings. However, for our data in 2016 this did not hold. Based on the descriptive statistics companies in all industries had started to report non-GAAP earnings and thus we did not find as significant differences between the industries as the previous studies left us to expect. Based on our results it seems that the differences between the industries has diminished. Since previous research has used data from the previous decades, we do not know whether this has been a general trend across the countries or a phenomenon just limited to Swedish setting.

ESMA guideline came into action on the July 3rd 2016. When the American counterpart Regulation G did the same in 2003, the number of non-GAAP decreased (Heflin and Hsu, 2008). The reasoning behind this could be that companies must present a comparable GAAP earning, as well as disclosing how they got that number. There can be the case that companies then do not want or cannot disclose that information, resulting in a decrease in the reported number of non-GAAP earnings. However, in our results there has not been any observable decrease in the number of non-GAAP earnings reported in 2016. Instead we have seen a steady increase in the amount of non-GAAP earnings reported from 2014. Especially keen adopters of non-GAAP earnings were the industries that had not previously reported non-GAAP earnings frequently. However, we do not know whether this development is due to the introduction of ESMA guideline or for some other reason. There is a clear difference between Regulation G and ESMA, which is that ESMA does not apply for financial reports, including interim reporting. Instead it only applies for the management reports. This might have been a possible reason why no decrease in the reported number of non-GAAP earnings was observed.

Overall, the results of RQ1 questions the results of the previous studies. If the trend identified by the previous studies would have continued, one would have expected significant differences between the industries on all years of our study. However, our statistical test results reveal that based on the Swedish data, we found significant differences between industries only in 2014. Also, our descriptive statistics revealed that during 2010-2016 non-GAAP earnings have become popular in all the industries.

## 5.2 Research Question 2 (RQ2)

In the second research question we wanted to investigate whether non-GAAP earnings have an impact on the company valuation. The second research question was thus formulated:

*Research question 2 (RQ2): What is the value relevance of the presentation of non-GAAP earnings to the stock price of the listed companies in the Swedish setting?*

The results from Test 2 implicated that there exists a correlation between the GAAP and non-GAAP earnings to the company value. When testing whether the non-GAAP earnings have additional explanatory power when tested together with the GAAP earnings, we find out that the adjustments made to calculate Net Income Adjusted were significant in explaining the company value in 1/3 of the periods. The adjustments made to calculate Operating Profit Adjusted were significant on 2/3 of the periods. Looking at the relation of non-GAAP earnings to the abnormal returns around the earnings announcement date, we found out that the adjustments to both Net Income and Operating Profit were significant in explaining the stock price changes on 2/3 of the tested periods.

The results, although not extremely consistent, still gave us reason to conclude that there have been changes in the value relevance of the non-GAAP earnings from 2010 to 2016. Due to the inconsistency of the results we must be careful in making bold answers to conclude the direction and the magnitude of the change in the value relevance. Nevertheless, the Test 2 results indicate that the adjustments have become less related to the value of the company. Test 3 results show that the explanatory power of the adjustments have become better in the later years of our study. These results give us proof that non-GAAP earnings have relevance on the company value and there have been changes to the strength of the relationship in the time period we are looking at. Though we cannot be sure on the whether the value relevance has increased or decreased and neither can make certain estimates of the magnitude of the change. This led us to accept the alternate hypothesis for RQ2.

*Alternate hypothesis two ($H_2$): The presentation of non-GAAP earnings has a value relevance.*

Our findings on the impact of non-GAAP earnings to company valuation is not in line with the previous studies made on this subject. For example, Bhattacharya et al. (2003) found results stating that the non-GAAP earnings, what they called 'pro-forma', were more value relevant than regular GAAP earnings. Based on our results, we find out that the non-GAAP earnings alone have less explanatory power on the company value. However, our results do not mean that the non-GAAP earnings would not have any use. On the contrary, we conclude that non-GAAP earnings add informative value to the GAAP earnings. The effect is particularly noticeable when non-GAAP earnings are presented together with the GAAP earnings. This effect has become stronger in the latter years of our study.

Furthermore, Gu and Chen (2004) observed that value relevance differs between specific non-GAAP items. We see that there was a difference between the observed non-GAAP earnings in our study as the two measures which we looked at differ in the amount of informational value they add to the GAAP earnings. This might be because the items that were added or excluded when constructing the non-GAAP earnings were not similar between the line items we were looking at. If the value relevance of the items added to the earnings differed as Gu and Chen (2004) claimed, then it would also have caused a difference between the value relevance of the earnings as well.

Given that the ESMA guidelines came in force on July 3rd 2016, we expected that there would have been an effect on the value relevance of non-GAAP earnings in the last period of our study. This was the effect that was noticed when the Regulation G came to force in the United States in 2003 (Kolev et al., 2008; Marques, 2006). However, we did not notice any significant effect in the value relevance of the non-GAAP earnings in 2016. We can identify at least two reasons for this. First, interim reports are not on the scope of ESMA guidelines (European Securities and Markets Authority, 2016), which means that the transparency required by the ESMA guidelines might not have directly translated into the interim reports. Second, the companies might have voluntarily adopted the more value relevant reporting practices before the ESMA guidelines came into force and thus the potential value relevance increase might have already been adopted before the year 2016.

## 5.3 Critical reflections

A limitation to this study is the time aspect. All though we stress our multiperiod scope, that scope stretches only over a time period of six years. Therefore, one must be careful when talking about change over time. Preferably we would have had samples all the way back to the change of millennia, as it would have made trends clearer.

Another closely related limitation to this study is the relatively few observations. Previous studies have up to 55 000 observations, and we have far less than that. This makes sense as we have gathered the non-GAAP earnings manually as it is not available in any database. However, this leads to difficulties in getting results that are more specific in nature. In this study, we had to lump together different kind of adjustments and focus on the specific earnings which we had the most data on. More observations would have enabled us to analyse additional non-GAAP earnings, as well as go in depth on the specific adjustments made.

Several limitations have been made in the data gathering to rule out judgement calls. One example of this was the focus on only non-GAAP earnings instead of non-GAAP measures in general of which many are not accounting related at all (EY, 2016). We also had to limit data gathering to measures presented in specified parts of the interim report, which often were presented as ‘key data’ or ‘key figures’. However, as they were not always clearly stated with a title, certain judgement calls had to be made on whether a section was to be considered as key or not.

For Test 3 we assume that the expected earnings will be the same as last year’s earnings from the same quarter. There exist alternative ways to measure the expected earnings and our choice might have influenced our results. Therefore, a suggestion for further research would be to design a similar test but with the actual analyst earnings expectations, or calculate the expected earnings by time series analysis as was done by Foster et al. (1984) and later by Bernard and Thomas (1989).

Another aspect that needs to be considered is the survivor bias. As we choose to look at the listed companies in 2016 as a starting point, we know that when looking back at 2010 they will survive (2010 up to 2016). As an example, assume that a company had terrible GAAP results in 2010, and reported high non-GAAP results as an attempt to show positive earnings. If companies like that have failed and gone bankrupt before 2016, they would not be part of our sample as we look at companies listed on the stock exchange in 2016.

Finally, the issue of market efficiency should be discussed. It is generally accepted in the modern financial studies that the stock market is efficient (Jensen, 1978). Our tests and thus the analysis of test results also rely on this fact. However, if the stock market is not efficient as claimed by De Bontd and Thaler (1985), the results we get would be largely affected by the behaviour of the investors like over or underreaction, which would not be possible to model with a statistical test like we have.

## 5.4 Further research

The limitations and the results of our studies give us many insights and ideas into further research in the area on non-GAAPs. To fully catch the effect of the ESMA guidelines, a more longitudinal study should be conducted. Since some companies might have started the transition to the regulation earlier than 2016, just looking at the effect in three different years does not fully manage to catch the full effect. Naturally, an optimal study would also continue into multiple time periods after 2016.

As the number of observations was a limiting factor in our study, a suggestion for further research would be to replicate this study, and try to cover more quarters to increase the number of observations. Touching upon this is to extend the time period 15-20 years back to capture the large increase in the presentation of non-GAAP measures from the 90's to present day. Besides having more accurate descriptive, the increased number of observations would enable value relevance analysis over time, between industries, between different sized companies. It would also enable analysis of more non-GAAP earnings as well as in depth focus on the adjustments.

A more extensive suggestion for further research would be to look at all non-GAAP measures, not only ones related to earnings. We funnelled down from 8 000 data points to only earnings since we wanted to get a more focused scope and to be able to relate it to previous research. This means that there is a large sample of non-GAAP measures that are not researched. By looking at the entire picture the true impact of non-GAAP measures could be analysed. However, this would require an enormous effort in terms of data gathering to get a sufficient amount of observations, as well as very complex statistical testing.

## 5.5 Summary

Last decades have seen an increase in the use of non-GAAP earnings. While some view them as informative and useful, other are concerned about them and the potential implications of an overuse. Both chairman of SEC and IASB respectively share the latter viewpoint and have voiced their concern about non-GAAP earnings by describing them as misleading. The danger they describe is associated with the weak regulation of non-GAAP reporting, risking investors to misinterpret company performance and opening new possibilities for managers to manage earnings. These aspects have also been the focus of previous studies relating to the non-GAAP earnings. However, the previous literature has conflicting views on the usefulness of non-GAAP earnings.

The previous studies have also been focusing on data from the United States, with less interest on smaller market areas like Sweden. This also means that the previous focus has been on the American accounting standards, US GAAP and less on the international accounting standards, IFRS. Therefore, this study discusses the use of non-GAAP earnings in Sweden, where listed companies are required to use IFRS. Further interest for the study is generated by the new ESMA guidelines, which targets the non-GAAP reporting of companies adhering to IFRS. The scope of this study is to look at how commonly non-GAAP earnings are reported in different industries and what effect they have on company valuation.

We find out that the difference between the industry patterns of non-GAAP presentation has decreased, both compared to previous studies as well as during the time period of our study. This is due to an increase in the reporting frequency of the non-GAAP earnings and that companies in all industries have started to report non-GAAP earnings.

We also find out that the non-GAAP earnings have an impact on the company valuation, but the effect is not consistent on every period. On their own, the non-GAAP earnings carry less informative value than their GAAP counterparts. However, when presented together with GAAP earnings, the adjustments in non-GAAP earnings add additional explanatory power to both company value and to the abnormal return. There is also evidence that the valuation impact is not the same for different non-GAAP earnings. These results indicate that preparers should present non-GAAP earnings together with their GAAP counterparts given that they want to increase the informative value of their reporting. Furthermore, we notice that the new ESMA

guidelines did not have a visible impact in the value relevance immediately after it came into force.

Our results open many new questions for further research to consider. The decreased difference in the industry reporting of non-GAAP earnings should be researched in other markets to generalize the results. It would also be important to look more closely to the reasons of the adaptation of the non-GAAP earnings in all industries. Furthermore, the study on the impact of non-GAAP earnings on company valuation could be redone in the future so that the effects of the ESMA guidelines could be seen.

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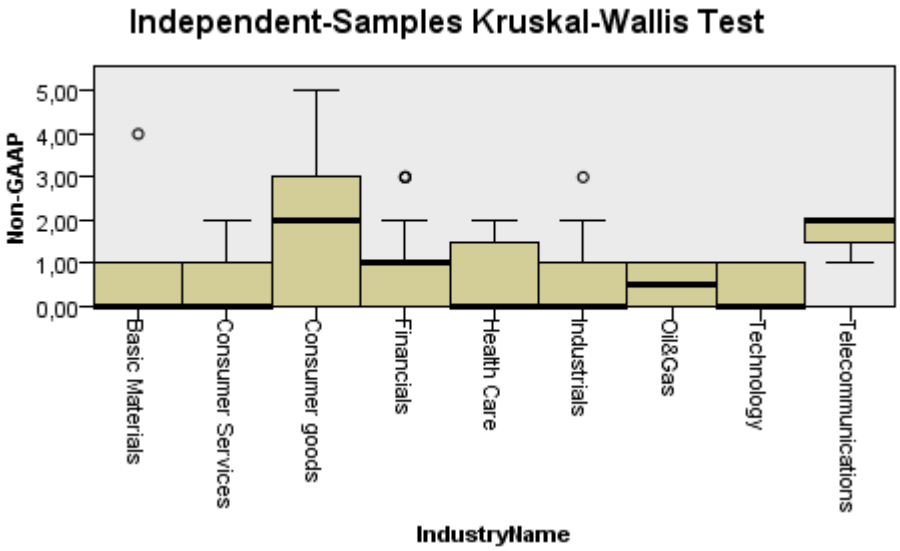
# APPENDICES

## Appendix A: List of the companies

| | | | |
|---|---|---|---|
| ABB Ltd | ÅF B | NP3 Fastigheter | Haldex |
| Alfa Laval | Atrium Ljungberg B | Victoria Park A | Mekonomen |
| ASSA ABLOY B | Bonava B | Öresund | New wave B |
| Atlas Copco B | Castellum | Lundin Petroleum | Oriflame Holding |
| Fingerprint Cards B | Fabege | Africa Oil | Scandi Standard |
| Indutrade | Fast. Balder B | BlackPearl Resources SDB | Thule Group |
| Lifco B | Hufvudstaden A | EnQuest PLC | VBG GROUP B |
| Loomis B | Industrivärden C | Tethys Oil | Axfood |
| NCC B | Intrum Justitia | Axis | Betsson B |
| NIBE Industrier B | Investor B | Ericsson B | Hennes & Mauritz B |
| Peab B | JM | Hexagon B | ICA gruppen |
| SAAB B | Kinnevik B | Tieto Oyj | Modern Times Group B |
| Sandvik | Klövern A | CLX Communications | NetEnt B |
| Securitas B | Latour B | HiQ International | Unibet Group |
| Skanska B | Lundbergföretagen B | HMS Networks | AcadeMedia |
| SKF B | Nordea Bank | Industrial & Financial Syst. B | Bilia A |
| SWECO B | Pandox B | Invisio Communications | Byggmax Group |
| Trelleborg B | Ratos B | Tobii | Clas Ohlson B |
| Volvo B | Resurs Holding | Com Hem Holding | Dustin Group |
| Addtech B | SEB A | Millicom Int. Cellular SDB | KappAhl |
| Alimak Group | Sv. Handelsbanken B | Tele2 B | Qliro Group |
| Arcam | Swedbank A | Telia Company | Rezidor Hotel Group |
| B&B TOOLS B | Wallenstam B | BillerudKorsnäs | SAS |
| Beijer Alma B | Wihlborgs Fastigheter | Boliden | Scandic hotels group |
| Bravida Holding | Avanza Bank Holding | Hexpol B | Skistar B |
| Bufab | Bure Equity | Holmen B | AstraZeneca |
| Cavotec | Catena | Lundin Mining Corporation SDB | Elekta B |
| Concentric | Collector | SSAB B | Getinge B |
| Coor Service Management Hold. | D. Carnegie & Co B | Stora Enso R | Swedish Orphan Biovitrum |
| Eltel | Diös Fastigheter | Lucara Diamond Corp | Active biotech |
| Fagerhult | East Capital Explorer | Lundin Gold | AddLife B |
| Gunnebo | Hemfosa Fastigheter | Munksjö Oyj | Attendo |
| Inwido | Hoist Finance | NGEx Resources | BioGaia B |
| ITAB Shop Concept B | Kungsleden | Semafo | Camurus |
| Lagercrantz Group B | Nordax Group | AAK | Capio |
| Lindab International | Nordnet B | Autoliv SDB | Humana |
| Mycronic | Platzer Fastigheter Holding B | Dometic Group | Medivir B |
| Nederman Holding | Sagax A | Electrolux B | Oasmia Pharmaceutical |
| Nobina | TF Bank | Husqvarna B | Orexo |
| Nolato B | Traction B | Nobia | RaySearch Laboratories B |
| Nordic Waterproofing Holding | Vostok New Ventures | SCA B | Recipharm |
| OEM International B | Melker Schörling | Swedish Match | SECTRA B |
| Opus Group | Besqab | Bulten | Vitrolife |
| Sensys Gatso Group | Corem property group | Cloetta B | Wilson Therapeutics |
| Systemair | Creades A | Duni | |
| Transcom WorldWide | Fast Partner | Fenix Outdoor International B | |
| Troax Group | HEBA B | Gränges | |

*Appendix figure I: List of companies in Large- and Midcap in the Stockholm Stock Exchange 5.9.2016*

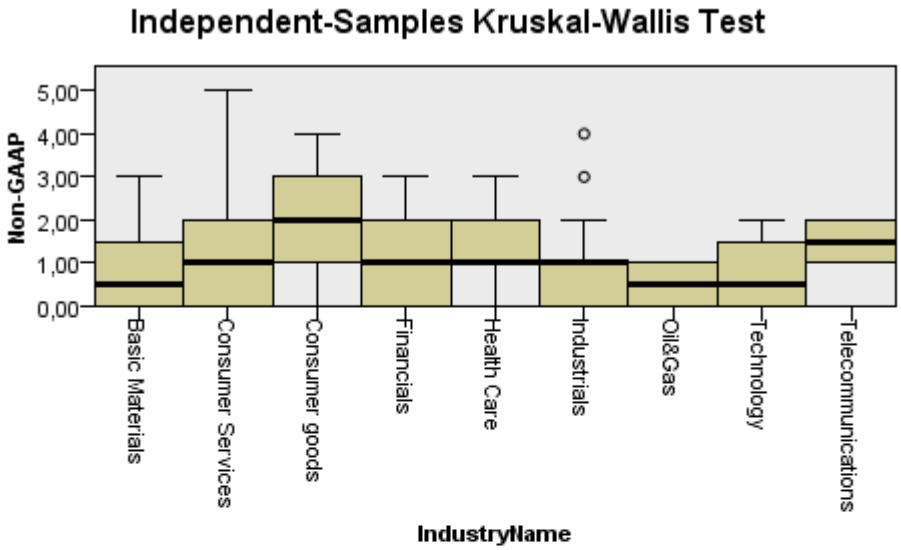
## Appendix B: The boxplot results of the Test 1




| | |
|---|---|
| **Total N** | 125 |
| **Test Statistic** | 15,660 |
| **Degrees of Freedom** | 8 |
| **Asymptotic Sig. (2-sided test)** | ,048 |

1. The test statistic is adjusted for ties.

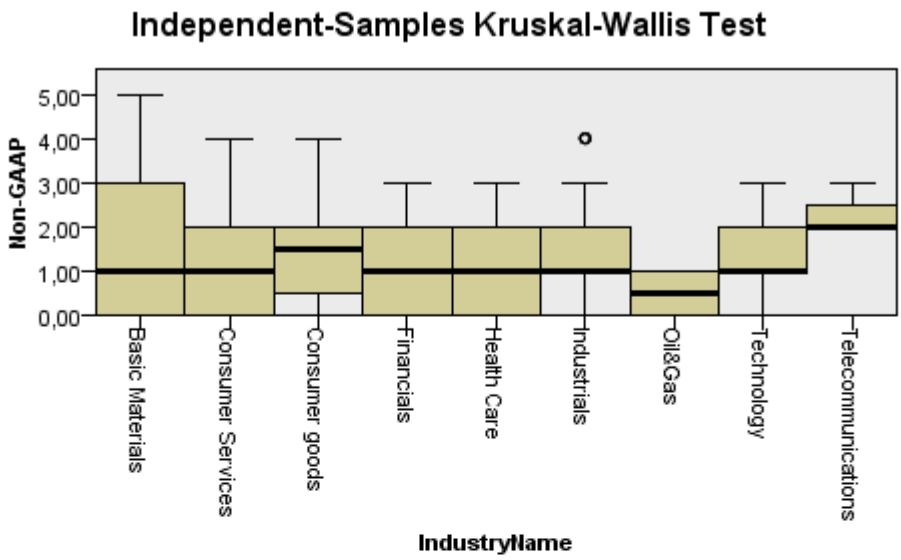
*Appendix figure II: Results for year 2010*




| | |
|---|---|
| **Total N** | 156 |
| **Test Statistic** | 15,733 |
| **Degrees of Freedom** | 8 |
| **Asymptotic Sig. (2-sided test)** | ,046 |

1. The test statistic is adjusted for ties.

*Appendix figure III: Results for year 2014*




| | |
|---|---|
| **Total N** | 180 |
| **Test Statistic** | 7,713 |
| **Degrees of Freedom** | 8 |
| **Asymptotic Sig. (2-sided test)** | ,462 |

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

*Appendix figure IV: Results for year 2016*

## Appendix C: The results of Test 2

```
48. spearman MKTCAP NI if Year==2010

   Number of obs =       67
 Spearman's rho =       0.5471

 Test of Ho: MKTCAP and NI are independent
     Prob > |t| =       0.0000

49. spearman MKTCAP NI if Year==2014

   Number of obs =       86
 Spearman's rho =       0.4683

 Test of Ho: MKTCAP and NI are independent
     Prob > |t| =       0.0000

50. spearman MKTCAP NI if Year==2016

   Number of obs =      111
 Spearman's rho =       0.5636

 Test of Ho: MKTCAP and NI are independent
     Prob > |t| =       0.0000
```

*Appendix figure V: Spearman rank correlation results for Net Income*

```
51. spearman MKTCAP NIA if Year==2010

   Number of obs =       67
 Spearman's rho =       0.5446

 Test of Ho: MKTCAP and NIA are independent
     Prob > |t| =       0.0000

52. spearman MKTCAP NIA if Year==2014

   Number of obs =       86
 Spearman's rho =       0.4889

 Test of Ho: MKTCAP and NIA are independent
     Prob > |t| =       0.0000

53. spearman MKTCAP NIA if Year==2016

   Number of obs =      111
 Spearman's rho =       0.5597

 Test of Ho: MKTCAP and NIA are independent
     Prob > |t| =       0.0000
```

*Appendix figure VI: Spearman rank correlation results for Net Income Adjusted*

```
10. spearman MKTCAPDEBT OP if Year==2010

   Number of obs =      67
 Spearman's rho =       0.4543

 Test of Ho: MKTCAPDEBT and OP are independent
     Prob > |t| =       0.0001

11. spearman MKTCAPDEBT OP if Year==2014

   Number of obs =      86
 Spearman's rho =       0.4799

 Test of Ho: MKTCAPDEBT and OP are independent
     Prob > |t| =       0.0000

12. spearman MKTCAPDEBT OP if Year==2016

   Number of obs =     111
 Spearman's rho =       0.5700

 Test of Ho: MKTCAPDEBT and OP are independent
     Prob > |t| =       0.0000
```

*Appendix figure VII: Spearman rank correlation results for Operating Profit*

```
13. spearman MKTCAPDEBT OPA if Year==2010

   Number of obs =      67
 Spearman's rho =       0.4514

 Test of Ho: MKTCAPDEBT and OPA are independent
     Prob > |t| =       0.0001

14. spearman MKTCAPDEBT OPA if Year==2014

   Number of obs =      86
 Spearman's rho =       0.4731

 Test of Ho: MKTCAPDEBT and OPA are independent
     Prob > |t| =       0.0000

15. spearman MKTCAPDEBT OPA if Year==2016

   Number of obs =     111
 Spearman's rho =       0.5683

 Test of Ho: MKTCAPDEBT and OPA are independent
     Prob > |t| =       0.0000
```

*Appendix figure VIII: Spearman rank correlation results for Operating Profit Adjusted*

25. mmregress MKTCAP NI ADJNI if Year==2010
The total number of p-subsets to check is 20

| MKTCAP | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| NI | 37.84346 | 10.03109 | 3.77 | 0.000 | 17.80405 | 57.88287 |
| ADJNI | -189.9715 | 97.41501 | -1.95 | 0.056 | -384.5803 | 4.637392 |
| _cons | .258736 | .1459498 | 1.77 | 0.081 | -.0328324 | .5503043 |

Scale parameter= .487912

26. mmregress MKTCAP NI ADJNI if Year==2014
The total number of p-subsets to check is 20

| MKTCAP | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| NI | 56.99419 | 6.042687 | 9.43 | 0.000 | 44.97553 | 69.01285 |
| ADJNI | 52.12164 | 7.337705 | 7.10 | 0.000 | 37.52724 | 66.71604 |
| _cons | .1873099 | .0879231 | 2.13 | 0.036 | .0124344 | .3621853 |

Scale parameter= .4749863

27. mmregress MKTCAP NI ADJNI if Year==2016
The total number of p-subsets to check is 20

| MKTCAP | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| NI | 55.89249 | 1.499414 | 37.28 | 0.000 | 52.92039 | 58.86459 |
| ADJNI | -6.459673 | 33.53395 | -0.19 | 0.848 | -72.92979 | 60.01044 |
| _cons | .2431211 | .0591498 | 4.11 | 0.000 | .125876 | .3603663 |

Scale parameter= .6090717

*Appendix figure IX: MM-regression results for Net Income and corresponding adjustment*

7 . mmregress MKTCAPDEBT OP ADJOP if Year==2010
The total number of p-subsets to check is 20

| MKTCAPDEBT | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| OP | 30.54787 | 3.832891 | 7.97 | 0.000 | 22.89079 | 38.20495 |
| ADJOP | 21.10758 | 11.51486 | 1.83 | 0.071 | -1.895988 | 44.11115 |
| _cons | .314142 | .100793 | 3.12 | 0.003 | .1127848 | .5154992 |

Scale parameter= .4922799

8 . mmregress MKTCAPDEBT OP ADJOP if Year==2014
The total number of p-subsets to check is 20

| MKTCAPDEBT | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| OP | 51.81712 | 4.554042 | 11.38 | 0.000 | 42.75931 | 60.87493 |
| ADJOP | 45.60684 | 5.536834 | 8.24 | 0.000 | 34.5943 | 56.61938 |
| _cons | .1393752 | .0907807 | 1.54 | 0.129 | -.0411839 | .3199343 |

Scale parameter= .4704989

9 . mmregress MKTCAPDEBT OP ADJOP if Year==2016
The total number of p-subsets to check is 20

| MKTCAPDEBT | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| OP | 43.71751 | .9461571 | 46.21 | 0.000 | 41.84206 | 45.59295 |
| ADJOP | 7.591757 | 15.659 | 0.48 | 0.629 | -23.4471 | 38.63061 |
| _cons | .3575669 | .0537546 | 6.65 | 0.000 | .251016 | .4641178 |

Scale parameter= .5689172

*Appendix figure X: MM-regression results for Operating Profit and corresponding adjustment*

# Appendix D: The results of Test 3

31. mmregress CAR3 DIFFNI ADJNI if Year==2010
The total number of p-subsets to check is 20

| CAR3 | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| DIFFNI | .1458204 | .2776454 | 0.53 | 0.601 | -.4088402 | .7004809 |
| ADJNI | -17.96458 | 44.98697 | -0.40 | 0.691 | -107.8364 | 71.90723 |
| _cons | .0053538 | .008872 | 0.60 | 0.548 | -.01237 | .0230776 |

Scale parameter= .0628154

32. mmregress CAR3 DIFFNI ADJNI if Year==2014
The total number of p-subsets to check is 20

| CAR3 | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| DIFFNI | .9121624 | .2125269 | 4.29 | 0.000 | .4894549 | 1.33487 |
| ADJNI | .8987089 | .2306388 | 3.90 | 0.000 | .4399776 | 1.35744 |
| _cons | .0008224 | .0093284 | 0.09 | 0.930 | -.0177314 | .0193761 |

Scale parameter= .0638964

33. mmregress CAR3 DIFFNI ADJNI if Year==2016
The total number of p-subsets to check is 20

| CAR3 | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| DIFFNI | -.0946546 | .3769772 | -0.25 | 0.802 | -.8418888 | .6525797 |
| ADJNI | 16.53929 | 2.481302 | 6.67 | 0.000 | 11.62092 | 21.45766 |
| _cons | .0427144 | .0084872 | 5.03 | 0.000 | .0258913 | .0595374 |

Scale parameter= .0662321

*Appendix figure XI: MM-regression results for earnings surprise in Net Income and corresponding adjustment*

34. mmregress CAR3 DIFFOP ADJOP if Year==2010
The total number of p-subsets to check is 20

| CAR3 | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| DIFFOP | .0721299 | .2331172 | 0.31 | 0.758 | -.3935752 | .537835 |
| ADJOP | -.5826999 | 1.107907 | -0.53 | 0.601 | -2.795998 | 1.630599 |
| _cons | .005209 | .0093093 | 0.56 | 0.578 | -.0133884 | .0238065 |

Scale parameter= .0621766

35. mmregress CAR3 DIFFOP ADJOP if Year==2014
The total number of p-subsets to check is 20

| CAR3 | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| DIFFOP | .8066924 | .2360711 | 3.42 | 0.001 | .3371565 | 1.276228 |
| ADJOP | .6936575 | .2549425 | 2.72 | 0.008 | .1865872 | 1.200728 |
| _cons | .0003972 | .0096552 | 0.04 | 0.967 | -.0188065 | .019601 |

Scale parameter= .0643856

36. mmregress CAR3 DIFFOP ADJOP if Year==2016
The total number of p-subsets to check is 20

| CAR3 | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| DIFFOP | -.0306485 | .4104679 | -0.07 | 0.941 | -.8442672 | .7829701 |
| ADJOP | -17.08504 | 3.74999 | -4.56 | 0.000 | -24.51817 | -9.65191 |
| _cons | .0478759 | .0079671 | 6.01 | 0.000 | .0320836 | .0636682 |

Scale parameter= .0645742

*Appendix figure XII: MM-regression results for earnings surprise in Operating Profit and corresponding adjustment*