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Regulated Booked Values or Macroeconomics?

A study on factors affecting the stock market value of companies listed on the OMX Stockholm 30 Index during the period of 2005-2020

Authors:
Nikolaos Karabelas
Tim Vindehall
Simon Wallin

Supervisor:
Karin Jonnergård

Sammanfattning

Titel:	Regulated Booked Values or Macroeconomics?
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Kurs:	FEKH69, Examensarbete i redovisning på kandidatnivå, 15 högskolepoäng
Författare:	Nikolaos Karabelas, Tim Vindehall, Simon Wallin
Handledare:	Karin Jonnergård
Nyckelord:	Värderelevans, IFRS, OMXS30, Bokförda värden, Ohlson-modellen
Frågeställning:	Vilka faktorer har haft en effekt på marknadsvärdet of av företag noterade på OMX Stockholm 30 Indexet under perioden 2005-2020?
Syfte:	Syftet med studien är att undersöka potentiella effekter IFRS implementeringar har haft på värderelevans av bokförda värden över tid, samt vidare studera om makroekonomiska faktorer är bättre än bokförda värden på att förutspå aktiernas marknadsvärde på OMXS30.
Metod:	Kvantitativ forskningsmetod baserad på 432 årsredovisningar samt finansiell och makroekonomisk data.
Teori:	Teorin är baserad på tidigare forskning inom området värderelevans. Kompletterande teorier om den effektiva marknadshypotesen och informationsasymmetri, vilka kapitalmarkandsforskning bygger på.
Empiri:	27 svenska företag noterade på OMXS30 studerades under perioden 2005-2020. Data samlades in från Business Retriever, Nasdaq Nordic och Riksbanken.
Slutsats:	Baserat på resultaten i denna uppsats, ingen signifikant ökning i värderelevans efter introduktionen av IFRS 9, 13 & 16 i företags finansiella rapporter kan bevisas. Dessutom så visar det sig att makroekonomiska faktorer har större påverkan på företagens aktievärde (OMXS30), jämfört med deras bokförda värden.

Abstract

Title:	Regulated Booked Values or Macroeconomics?
Seminar date:	02/06/2021
Course:	FEKH69, Degree Project Undergraduate Level Business Administration, 15 University Credits Points (UPC)
Authors:	Nikolaos Karabelas, Tim Vindehall, Simon Wallin
Supervisor:	Karin Jonnergård
Key words:	Value Relevance, IFRS, OMXS30, Booked Values, Ohlson model
Research question:	Which factors had an effect on the market value of companies listed on the OMX Stockholm 30 Index during the period of 2005-2020?
Purpose:	The purpose of this study is to investigate the potential effects of IFRS implementations on the value relevance of booked values over time, and furthermore study if macroeconomic factors are better than booked values in predicting stock market values, on the OMXS30.
Methodology:	Quantitative Research based on 432 annual reports as well as financial and macroeconomic data.
Theoretical approach:	The theoretical approach is based on previous research within the value relevance field. Complementing theories regarding the Efficient Market Hypothesis (EMH) and information asymmetry which capital market research relies on.
Empirical approach:	27 Swedish companies listed on the OMXS30 were studied during the period 2005-2020. Data was collected from Business Retriever, Nasdaq Nordic and Riksbanken.
Conclusions:	Based on the results in this thesis, no significant increase in value relevance post-introduction of IFRS 9, 13 & 16 in companies' financial reports can be evidenced. Moreover, macroeconomic factors have a greater impact on stock market prices (OMXS30) of companies, compared to their booked values.

Word List

Market Value: The total market value of a company, also referred to as ‘stock market value/price’.

Book Value Per Share (BVPS): ratio of equity available to common shareholders divided by the number of outstanding shares.

Earnings Per Share (EPS): monetary value of earnings per outstanding share of common stock for a company.

Booked Value: the value of the company according to its balance sheet account balance.

IFRS: International Financial Reporting Standards.

IASB: International Accounting Standards Board.

Preface

We would like to thank our supervisor Karin Jonnergård for her constant support and guidance throughout the writing of this thesis. Further thanks are due to Antonio Marañon for his invaluable statistical knowledge.

We would also like to thank our families for all their love and support.

Nikolaos Karabelas Tim Vindehall Simon Wallin

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§1 Introduction

This opening section will focus on briefly giving a background on the role of financial and accounting data on the capital market, presenting the scope of this thesis paper and leading up to the research question. Finally, this study's contribution in relation to past research is presented.

1.1 Background

On Monday the 19th of October 1987 (also known as 'Black Monday') the largest US single day stock market decline in history took place. The American index Dow Jones fell more than 22% (de Maria, 1987), sending seismic waves all over the global financial markets, including the Swedish stock exchange OMX Stockholm 30 (OMXS30), which also fell over 20% the same day. While investors panicked, insiders saw no change or decline in company operations and performances, and so instead saw an opportunity to acquire more securities[1] during the days following Black Monday. These insiders made a lot of money doing so, as there was no actual financial reason for the market fall, and consequently the share prices later recovered (Morck et al., 1990). Events like these present an interesting context when studying which factors have an effect on stock market prices and what value relevance the financial reports have to investors.

Value relevance is defined as the "ability of information disclosed by financial statements to capture and summarize firm value." (Karğın, 2013). The value relevance research field studies the relationship between a collection of independent accounting variables and stock prices. This particular theory has been researched since the 1960s and the concept of value relevance's most famous operationalization was made by Ohlson (1995). Several studies (Devalle et al., 2009; Karğın, 2013; Nijam and Jahfer, 2018; Eko, 2020) have looked deeper into the change of value relevance in different markets before and after the introduction of International Financial Accounting Standards (hereafter IFRS). In contrast to previous studies, it would be of interest to study the effects that specific updates to the IFRS standards have on value relevance in countries where IFRS is already in use. Companies on the Swedish stock exchange have used IFRS standards since the 1st of January 2005 due to an EU regulation.

[1] Securities are any tradable financial instruments

A company's stock market value is determined by several factors that may differ from the booked value estimations made from their financial statements. Examples of factors that an investor might need to consider are macroeconomic factors, psychological factors, and general future expectations. Investors often study these factors in order to predict future share prices and when successful in doing so are able to enjoy capital gain. In all essence it is obvious that a stock value is driven by supply and demand, however the more interesting question is which forces drive those two factors, and here there are split opinions. There has been previous research on the subject of predicting future stock prices using accounting numbers and value relevance (Williams, 1938; Gordon and Shapiro, 1956; Ohlson, 1995). Williams, Gordon and Shapiro are accredited for introducing the discount dividend model (DDM), a model used to predict share prices using specific accounting information from financial statements.

In contrast to the research made in the value relevance field of financial statements, academics such as Oxelheim and Wihlborg (1991) are of the opinion that the investor receives little to no information about the future stock value in the financial reports. They argue that increased international trade has made national economies more vulnerable to macroeconomic fluctuations, such as changes in interest rates, exchange rates and general economic conditions. These factors are not being accounted for in financial report figures, and hence Oxelheim and Wihlborg conclude that there is a lack of relevance in these figures, as they therefore fail to fully reflect the possible future earnings of a company. In conclusion, it can be stated that there are disagreements within the research field concerning the relevance of accounting numbers in financial reports, and whether these are value relevant.

In summary, there are several contrasting opinions on the value relevance of companies' booked values, as well as ideas presented by some academics that regulatory standards have increased the booked values. Therefore, it would be of interest to further study:

> *(i) the relationship between booked values and stock market values over time, while accounting for IFRS introductions and their relation to the concept value relevance.*
>
> *(ii) whether the OMXS30 index has a more significant association to macroeconomic factors, rather than the booked values of companies.*

1.2 Research Question

Against the aforementioned background, we aim to test the impact of value relevant financial information on the market value of some of the largest companies in Sweden, located on the OMXS30. In addition, macroeconomic factors that could explain the market price will be analyzed to test the explanatory factor of different variables that possibly could be used to predict the future performance of a company and thereby their stock price. This study will contribute to previous research by investigating the factors impacting share prices (market value) on the OMXS30, by analyzing the explanatory power of various factors. This leads us to the research question of this study:

Which factors had an effect on the market value of companies listed on the OMX Stockholm 30 Index during the period of 2005-2020?

This study will focus specifically on trying to find out the effects of certain regulatory implementations on the value relevance, as well as looking at value relevance from an index perspective, which will be broadened to certain macroeconomic factors to see their potential role in indirectly affecting value relevance.

1.3 Purpose

The purpose of this study is to investigate the potential effects of IFRS implementations on the value relevance of booked values over time, and furthermore study if macroeconomic factors are better than booked values in predicting stock market values, on the OMXS30.

1.4 Thesis Scope

The specific focus of this thesis is to investigate if the value relevance of OMXS30 companies' financial statements have increased or changed over time, and what factors may be able to explain these changes. If the value relevance is high, the figures found in the companies' financial reports matter to a high extent, and should explain the share price. We believe that value relevance of companies on the OMXS30 should have increased during the period of 2005-2020, as new IFRS standards have been introduced over the period.

As previously mentioned, IFRS is partly aimed at trying to increase the value relevance of companies' financial reports through regulatory introductions affecting the methods in which companies use accounting. Since the implementation of IFRS on the OMXS30 (2005), various standards have been introduced, some of which should positively impact value relevance. Therefore, we believe standards such as IFRS 9 (Financial Instruments), IFRS 13 (Fair Value Measurements) and IFRS 16 (Leases) should have a noticeable impact on the value relevance of our sample companies.

If these IFRS introductions prove not to increase the value relevance, it is interesting to broaden the perspective to see which other factors could have an effect on value relevance. In this study the OMXS30 Index will be used as an indicator of the general Swedish business cycle, in order to test whether index fluctuations themselves can affect the value relevance of companies' financial statements. We have a suspicion that the index and value relevance of financial reports are negatively correlated, as market values tend to exceed reported values in financial reports, due to various other factors affecting market share prices. Hence, market values and accounting values should get closer to each other as share prices, and thereby the index, declines.

The previously mentioned scholar Oxelheim (1991) further points out that regulatory bodies, such as IFRS, often fail to make accounting include company vulnerability to macroeconomic forces, i.e. currency exchange rates, interest rates, inflation and relative prices. In order to take the macroeconomic factors into account in the study, the currency exchange rates and interest rates will be compared to the OMXS30 Index to see if these macroeconomic factors can explain the index fluctuations.

The Swedish economy is heavily dependent on exports, which makes the currency exchange rates an important factor. The basics of macroeconomic theory tells us that when the value of the Swedish currency (SEK) is low, it is relatively cheap for other economies to import from Sweden, which improves the results of export dependent companies. The interest rate is another macroeconomic factor that should have an impact on the stock market values. A low interest rate creates a higher liquidity on the market which makes the stock market one out of few options for investors to receive a potential return on capital. The current low interest rate

(Riksbanken, 2021) gives an indication that the value relevance might have decreased during the period of 2005-2020.

Including all these variables in the study will hopefully provide a comprehensive overview of which factors affect the stock market prices, thereby answering our research question presented in the following section.

1.5 Previous Literature

The paper adds to the existing body of knowledge in the fields of accounting information regarding value relevance, firm valuation, and accounting principles (IFRS standards). In developed markets, several studies have been carried out to examine the value significance of financial statements over time. Collins et al. (1997), for example, looked at shifts in the value relevance of earnings and book values in American companies over the course of 41 years. They yielded three primary outcomes, of which two are of interest to this paper. First of all, rather than declining over time, the combined value relevance of earnings and book value tends to marginally increase. Secondly, while earnings have a lower value relevance, book value has a higher value relevance. Further research by Francis and Schipper (1999) investigated the value relevance of earnings and book values in US companies between the years of 1952 to 1994. They also found that the explanatory capacity of earnings, and changes in earnings, seemed to have diminished dramatically over time. Their test of book value's explanatory capacity, on the other hand, finds no evidence of a decrease.

In a study of European countries, King and Langli (1998) found that in Germany, Norway and the United Kingdom, book values and earnings are substantially correlated with share prices. They also pointed out that the variables' explanatory power varies between the three countries' accounting systems. Moreover, they were able to conclude that earnings are more important in the UK than in Germany and Norway, but less important overall compared to book value.

Devalle et al. (2009) documented that since the adoption of IFRS based on companies sampled from five European stock markets (Paris, Milan, London, Frankfurt and Madrid) and found differentiating evidence for growth in value relevance.

In addition, Devalle et al. (2009) reported that the impact of earnings on share price increased after the implementation of IFRS in Germany, France, and the United Kingdom, while the influence of book values on equity decreased in Germany and France. Contrary to the results in Europe, an Indonesian study (Eko, 2020) found a decrease in the value relevance after implementing the IFRS standards. However, the author argues that Indonesia's low actual implementation of the standards is an explanation to the results, which shows that for the standards to be effective they have to be used correctly.

A 2018 paper studied 125 companies in India using several different Ohlson models. The conclusion was that there was a high presence of value relevance. Other conclusions were that the accounting information had an impact on the share prices and that therefore a certain level of quality in financial reports existed. The study also provides evidence that the Efficient Market Hypothesis has a semi strong efficiency and that the financial reports have quality and relevance (Shreyes and Gowda, 2018).

Oxelheim and Wihlborg (1987) are advocates for incorporating macroeconomics in the financial reports. They argue that the impact of macroeconomic factors can not be seen in the reports and that the actual impact will be a risk for an unknowing investor. Oxelheim (1990) gives an example of a theoretical increase in the three month prime interest rate that negatively impacts the stock exchange index. Furthermore, in a later study Oxelheim and Wihlborg (1991) explain that the financial statement is not relevant if the macroeconomic figures (eg. an undervalued domestic currency), that might affect the results, are not presented.

In summary, while the overall results for value relevance studies indicate that both book values (balance sheet information) and earnings (income statements) are of value relevance in developed markets, their significance has increased – at least on the US market. Hence, this paper will be focusing on finding the value relevance, if present, of financial and accounting data in the Swedish market as well as considering the possible effects of the implementation of widely adopted IFRS standards, while also considering specific macroeconomic factors.

§2 Theory

The following section will introduce the main theories used in this paper, as well as some concepts that the Ohlson model and hypotheses are based upon.

2.1 The Efficient Market Hypothesis

The efficient market hypothesis (hereafter EMH) states that the market is reacting to new information and that the price of a stock changes with the new information. This was a conclusion in the article *The Adjustment of Stock Prices to New Information* written by Fama, et al. in 1969. The idea behind the efficiency in the stock market is the concept of arbitrage and that the stock market realizes[2] changes in the value of a stock when new information is released. The market is therefore efficient in correcting the value of a stock depending on the new information. The information may be in the form of new accounting data but it may as well be news from a newspaper or macroeconomic figures.

Fama (1970) states three conditions that will help the market to be more or less efficient. For a totally efficient market there has to be zero transaction costs associated with obtaining or selling an asset and the information has to be available for free to all participants on the market. Lastly all participants have to agree on the involvement that the up-to-date information has on the current and future price on the asset. Fama continues by arguing that no market has all these attributes but the EMH still stands as the conditions are “sufficient for market efficiency, but not necessary” (Fama, 1970, p. 387).

There are different forms of efficiency in the market. Deegan and Unerman (2016) clarifies Fama, et al. 's findings explaining that the most relevant efficiency in relation to accounting research is the semi-strong-form efficiency. This type of efficiency assumes that the information available to the public is reflected in the price of the stock. The other two levels of efficiency are strong and weak form. The weak form presumes that the current prices are a direct consequence of historic prices and trading volumes. The strong form takes stance that all information that exists is included in the current price. The authors refer to Brown (1994) when saying that the most relevant efficiency within the EMH is the semi strong and that few

[2] Refers to the reaction of the market in response to information

or none serious investors would say that a strong efficiency exists on the market today. Hence this paper takes a stance on semi strong efficiency.

2.2 Information Asymmetry

When a company is publicly traded most owners have no insight in the daily activities that take place in the company. The agents (the people involved in running the company) have much more information about the health and success of the company than the principals (the owners) and other external stakeholders have. The result of this situation is that an information asymmetry has been created. A solution to this is the yearly and quarterly reports that the company delivers to its owners and other stakeholders. The reports give information that only the agents have, and in effect removes some of the asymmetry between the agents and principals (Deegan & Unerman, 2016). The same information asymmetry can be found when investors are looking for a company to invest in, as they as well as the owners have a limited insight in the company.

2.3 Value Relevance

The term “value relevance” refers to the field of study that is aimed at estimating the quality and usefulness of a company's financial statements and related accounting data (Paolone, 2020). Here it is assumed that value relevance illustrates the statistical relationship between a company’s financial statements and its stock market values (Gulhan, 2012), thus it can be used as a tool in investment decisions.

As far as we know, the inception of the term “value relevance” is accredited to the earlier studies carried out by Ball and Brown (1968) and Beaver (1968), in which both published research concerning how companies’ respective financial statements affected the share price of each company and consequently influenced investor decisions (Paolone, 2020). Following the contributions by Ball & Brown (1968) and Beaver (1968), a further contribution by Ohlson (1995) directly linked financial reporting with the concept of value, and managed to provide evidence of relationships between company market values and major accounting variables such as equity and operating income, leading to the construction of the Ohlson-model. Years after Ohlson’s contribution to value relevance, Francis and Schipper (1999) attempted to define value relevance as a concept through four interpretations:

1. Financial statement information affects the share price of a listed company in a way that should reflect all existing information.
2. Information from financial statements is value relevant if its variables can be used in a valuation model to predict other variables that are of interest to investors (for example dividends, future income and cash flows).
3. Value relevance is based on whether the statistical correlation between financial information can be used by investors to set prices, implying that financial information can affect share prices by influencing investor expectations, thus being value relevant.
4. The ability of value relevant information found in company financial statements to capture the data and information that can affect share performance.

Francis and Schipper (1999) draw the conclusion that all information that does not correlate financial statement information with market value is not value relevant.

There have been questions if the accounting data remains value relevant during and after economic crises (Laux & Leuz, 2010). However a 2017 study from Yasean and Mohammad finds that the value relevance of BV and EPS still stands. Their conclusion is that the value relevance stands before, after and during an economic crisis. This conclusion corresponds to previous research and its contribution to the existing literature makes the theory of value relevance stronger. The same paper found that combining both BV and EPS in the same model was more value relevant than by using the BV and EPS separately.

A study by Nijam and Jahfer (2018) examines value relevance pre and post the implementation of IFRS in Sri Lanka. They come to the conclusion that the value relevance of accounting data has increased after the implementation of the IFRS standards. Another finding was that prior to the implementation of the IFRS standards the only value relevant factor was the BV and not the EPS. The findings of the post implementation data showed that both BV and EPS were now value relevant.

Value relevance does not only have to be of interest for potential investors, as Barth et. al concluded in 2001, it can in fact be of potential interest to the regulatory field of standard related to financial statement information – the IASB – as well as other policy makers and regulators. The study from Barth et. al (2001) considers whether value relevance can give insight as to why financial information presented in accordance with regulatory requirements motivates shifts in share prices beyond book values. These findings can be of help as they can update standard setters' beliefs surrounding what is deemed of relevance and the nature of fair value estimates in financial reports.

§3 Institutionalis

This section presents the regulatory frameworks and definitions that are relevant to this thesis. Lastly, the hypotheses are presented.

As presented by previous studies (Nijam and Jahfer, 2018; Shreyes and Gowda, 2018; Eko, 2020; Devalle et al. 2009) the IFRS standards have an impact on the value relevance of the annual reports. This is logical since the standards have an impact on the construction of the financial statements found in the annual reports. Further down in this segment are the three standards that we assume have had the greatest impact on the evolution of value relevance in Sweden. A short introduction of the IFRS and some criticism against the development and use of the standards.

3.1 International Financial Reporting Standards - IFRS

The IFRS Foundation is a non-profit organization directed towards developing high-quality globally accepted accounting standards (IFRS standards), in addition to encouraging the implementation of the standards (IFRS, 2021a). The IFRS standards are set by the International Accounting Standards Board (IASB) - an independent board of experts - supervised by trustees from all over the world (IFRS, 2021b).

Since more than a third of financial transactions are conducted across international borders and many companies today have foreign operations and branches in several countries, the free movement of foreign capital is essential to modern economies. From an investor perspective, cross-border financial transactions have also become increasingly important as investors pursue diversification in their portfolios through investment opportunities around the world (IFRS, 2021c).

Previously, these cross-border operations were complicated due to each country having its own set of national accounting standards which added to the difficulty, expense and risk to companies preparing financial reports and to investors using the financial reports in investment decisions. Furthermore, with countries having their own national accounting standards, small variations in these could potentially have a major impact on a company's reported financial performance and financial position (IFRS, 2021c).

The IFRS addresses this issue by increasing transparency through its standards, facilitating international comparability and accuracy of financial data, allowing investors and other market participants to make more informed decisions. Additionally, the IFRS Standards aid in closing the knowledge gap between the capital providers and those to whom they have entrusted their funds, effectively increasing the accountability of companies. The IFRS standards also contribute to economic efficiency by providing a trusted global accounting language that decreases capital costs and lowers foreign reporting costs for companies (IFRS, 2021c).

The IFRS standards are of importance when discussing value relevance since they dictate how the companies are to present their assets and the financial performance of each year. The standards are crucial for the companies as financial statements are a big part of the process of attracting capital from the market. If the standards are not used as intended by the readers, the purpose of the IFRS might be overlooked.

3.1.1 IFRS 13 Fair Value Measurement

The IASB's definition of fair value is the price received and paid for selling an asset and transferring a liability respectively, in an orderly transaction on the market at a certain measurement date. In other words, fair value can be seen as an 'exit price' (IFRS, 2021d). By implementing the Fair Value Measurement (hereafter IFRS 13) standard as of January 1st, 2013, the IASB wanted to improve the way in which fair value was reported in the financial reports so that the 'users' (defined in section 3.2 below) could easier assess the way in which valuation techniques and inputs have been used to arrive at a fair value, as well as providing assistance in determination of fair value based on certain valuation concepts (IFRS, 2021d).

In December of 2018, the IASB were able to present a statement, following the review of the post-implementation of IFRS 13, expressing that the requirements on companies to implement IFRS 13 have shown to be overall useful to the users of financial statements (IFRS, 2021e).

3.1.2 IFRS 9 Financial Instrument

The IFRS 9 standard was introduced on 1st of January 2018, and sets out to define how an organization can identify and quantify financial assets, liabilities, and certain contracts to buy or sell non-financial products (IFRS, 2021f).

According to a report published by PwC the possible consequences following the introduction of IFRS 9 include; “more income statement volatility, earlier recognition of impairment losses on receivables and loans, including trade receivables and significant new disclosure requirements” (PwC, 2017, p. 3).

3.1.3 IFRS 16 Leases

IFRS 16 was implemented in January of 2019, but it was permitted to use the standard in earlier years if the reporting entity chose to do so, if IFRS 15 was used during the same accrual period (Lööw, 2015). The purpose of the standard is to:

> ...report information that (a) faithfully represents lease transactions and (b) provides a basis for users of financial statements to assess the amount, timing and uncertainty of cash flows arising from leases. To meet that objective, a lessee should recognise assets and liabilities arising from a lease. (IFRS, 2021g)

There hasn't been a big change in the reporting of the lease giver but the lease taker has some changes in their reports. Some of the bigger changes in the lease takers' financial reports is that their debt increases and the book value becomes bigger (Lööw, 2015). Some posts in the income statement have been changed as well. The result of these changes in the income statement are that rent costs are being transmitted to depreciation and the layout of the income statement is changed.

3.2 The Users of Financial Reports

The International Accounting Standards Board (IASB, 2018) has defined the primary purpose of the financial statement in their conceptual framework as:

> The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions relating to providing resources to the entity.
>
> Those decisions involve decisions about: (a) **buying, selling or holding** equity and debt instruments; (b) providing or settling loans and other forms of credit; or (c) exercising rights to vote on, or otherwise influence, management's actions that affect the use of the entity's economic resources. (IASB, 2018, paragraph 1.2).

The different decisions made by users highlighted in the preceding quote is dependent on the users differentiating expectations on matters such as dividends, market price increases and interest payments. Even if various groups of users may have different uses of the information presented, the IASB argues that the most efficient way of reporting is giving all users the same report and not constructing a hierarchy amongst the intended users.

The investor type is a primary user of financial reports according to the IASB. The IASB further defines the characteristics of the investor as always being rational in his or her financial investment decisions. However, this user definition can be regarded as an unrealistic representation of the real investor, as the IASB's investor, by definition, lacks the unpredictable nature that humans have (Stenka & Jaworska, 2019). Stenka & Jaworska continue by saying that IASB's "perfect" investor is the one being targeted through new regulation, and that the real investors can be seen as irrelevant. Georgiou (2017) has provided evidence that the real users don't use the statements as the standard setters intend them to. Stenka & Jaworska (2019) refer to (Durocher & Georgiou, 2019; Georgiou, 2017) and state that the real users don't actually use or find the information given via financial statements trustworthy, but instead use various other sources for their collection of information. Furthermore, a study conducted by Andersson & Hellman (2020) shows that the median analyst that has experience analyzing acquisitions has a worse understanding of the standards than the expectation of the IASB.

The authors (Andersson & Hellman, 2020) continue by saying that IASB's logic is that the user has to understand the content of the report for it to be useful, and if the user does not understand the logic behind the design of the report, then the user cannot fully understand and make use of its contents.

3.3 Hypotheses

The conceptual framework presented by the IASB (2018) has been revised since its implementation in the EU and therefore Sweden in 2005, and the current purpose of the IASB and IFRS (see section 3.2 above) is found in their conceptual framework from 2018.

Each implementation of a new and/or revised IFRS standard should make the regulatory framework better, in accordance with the objectives of IFRS (IFRS, 2021c; IASB, 2018). With the introduction of Fair Value Measurement (IFRS 13) as of the 1st of January 2013 in the balance sheet, companies' presented financial information should be of higher relevance for investors and the value relevance should have increased. The implementation of IFRS 9 and 16 should also have an impact on the variables that we are testing for value relevance and are hence also included in our research. Consequently, the three IFRS implementations that the thesis will focus on will be IFRS 9, 13 & 16.

Hypothesis 1: *There has been an increase in value relevance of financial statements post-introduction of IFRS 9 (Financial Instruments), IFRS 13 (Fair Value Measurement) and IFRS 16 (Leases).*

Although the introduction of the IFRS standards should improve the value relevance, macroeconomics factors such as interest rate and currency exchange rate should also have a significant impact on the stock market values. When interest rates are low the liquidity should be high, and then the stock market is one of few options for investors to potentially earn a substantial return on their available capital. Therefore, the current low Swedish interest rate (Riksbanken, 2021) should trigger investments into companies on the OMXS30 and consequently raise the share prices.

Hypothesis 2: *Macroeconomic factors, such as interest rate and currency exchange rate, have a more significant impact than booked values on the OMXS30 Index.*

§4 Methodology

In this section the research design will be presented first, followed by review of the literature used, leading into the operationalization of the Ohlson model and the macroeconomic factors.

4.1 Research Design

The research approach in this paper is deductive (Bryman & Bell, 2015) in order to research the historical differences between accounting values and the market values of companies listed on the OMXS30. The choice of quantitative method is closely related to the purpose of this paper and was made to be able to perform a statistical analysis on the data that has been collected. The quantitative data will be used to answer the research question in an unbiased way as there is no room for opinions in the selected historical data. The different variables used in our tests are collected from the annual financial reports from entire concerns and not only the parent company, as it is the concern that is traded on the stock market.

The data will be used to test our hypotheses that accounting data from financial reports will better explain the market value today than it did historically. Thus, mainly quantitative data was used in order to find patterns between the accounting values and the market values. In order to measure how well the accounting values correspond to the market values over time, the Ohlson model was applied. The Ohlson model is designed to show how companies' book values affect their market values and consequently illustrate the value relevance (Palone, 2020). Furthermore, all components included in the model are available in companies' financial reports, which enables the application of the model to the companies in our study. Another reason why the Ohlson model is preferred in this study is because it is used in similar previous research, making them in some ways benchmarks for our results.

During the period included in this study, multiple updates and additions in the IFRS standards were implemented. In line with the purpose of this study and to answer the second hypothesis, three major changes in the IFRS standards have been tested in this study. The additions of IFRS 9, IFRS 13 and IFRS 16 have been chosen, as it is the authors opinion that they had a more considerable impact on the companies' book values, as they changed the balance sheet and income statement as a consequence of their implementation. IFRS 13

concerning Fair Value Measurement, should have a particularly large impact on the book values and have a positive effect on the value relevance. Therefore IFRS 13 was highlighted in this study. As the data gathered from IFRS are considered qualitative, dummy variables were used to quantify the data.

4.2 Literature Review

The sources used in this paper have been collected mainly by using the search engine LUBsearch provided by the Lund University Library. Articles have been found using specific key words and the snowball effect (Bryman & Bell, 2015) was used when other useful articles were found. When possible, the original article has been used even if the result of that article can be found in another article, as to avoid any bias from other researchers. When searching for articles, the decision of only using peer reviewed articles was made to increase the validity of the sources. All sources have been inspected by the authors of this paper to try to avoid using articles that don't live up to the standard when writing an academic paper.

Some of the literature used as previous research might be somewhat problematic, since it is studying developing economies. There is a risk that the results can not be interpreted with the same validity as studies made in developed economies, as the two types of economies differ in complexity. Furthermore, these studies mainly revolve around the implementation of the IFRS and the subsequent reaction on the value relevance of financial statements. A similar potential risk is the usage of studies from the USA, the US GAAP is used instead of IFRS standards. The difference in regulations might make the results from the USA less relevant than if they were made in Europe with an IFRS perspective.

Lastly, the age of the literature might affect its relevance. There is a risk that an older published paper may now have been overthrown or that its premises are built on regulations that are no longer applicable. Some of the literature used in this thesis' theory (section 2) is originally from the 1960s, however these theories are widely evaluated and their premise still stands today.

4.3 Choice of Population

The population in this study is taken from OMXS30, the 30 most traded companies by volume in Sweden. This study focuses on these companies as they are big, stable and have

been operating for a long time. The sample is therefore less likely to have a loss of annual reports to analyse due to the entity not being traded on the stock market at the time. With the statistical exclusion of Evolution Gaming Group and Essity B, that have not been publicly listed during the full period of 2005-2020, and the exclusion of Atlas Copco A (preferred stock Atlas Copco B was used), the final sample consisted of 27 companies (see Appendix A for full list of companies used). As the OMXS30 is a weighted index which changes over time, the companies in this study are taken from the index last updated on the 31st of March 2021. As such all companies have not been on the OMXS30 during the whole period, but all have been publicly listed at least since 2005. The study will not go further back in history than 2005, hence that is the year EU required listed companies to use the IFRS standards. Data from companies listed on OMXS30 are used to facilitate the Swedish aspect of the study.

The accounting data will be gathered from the annual financial reports of the 27 listed companies in the study. The study will be based on both the net assets of a company and the net income from each year. The annual reports (N=432) are gathered from the database Retriever Business. The annual reports in the database are collected from the Swedish Companies Registration Office (Bolagsverket). As a public authority the information can be trusted, and even if there are some critics to official statistics (Bryman and Bell, 2015, p. 335), there is no evidence that data collected by researchers have less error than data from official sources. And as the annual reports are scanned from the original reports the reliability of the data only increases. This data is collected by unobtrusive measures (Bryman & Bell, 2015) as the annual reports are historical records from the Swedish Companies Registration Office.

The historical market value of each company will be collected from the NASDAQ OMX Stockholm index from the 15th of April of each year. The historical stock prices are available at the website of NASDAQ OMX (Nasdaq, 2021). The historical currency exchange rates are gathered from the Riksbank (Riksbanken, 2021).

There is an inevitable risk of human errors when collecting all the accounting data from the annual reports. The authors have been as thorough as possible when collecting the data. In addition to that there has been an extra check on random annual reports that is included to maximise the validity of the study.

4.4 Operationalization of Value Relevance

4.4.1 The Ohlson Model

The Ohlson model is presented in *Earnings, Book Values, and Dividends in Equity Valuation* (1995) by Ohlson. The paper received attention and has been described as a landmark in the financial accounting field. The paper is heavily cited and the Ohlson model is widely used in the research field. The model is based on Residual Income Valuation (RIV). RIV is the hypothesis that the price of an asset reflects the value of the future dividends from the asset. Ohlson's own contribution was to implement accounting numbers that were accrual and to focus on the creation of value instead of the distribution (Lo & Lys, 2000). Dividends are not directly included in the function as the Ohlson model assumes that the Modigliani and Miller (1958) theorem holds. Therefore the dividends are indirectly included in the book value of the company as the dividends are taken from the book value when distributed (Ohlson, 1995).

The Ohlson model assumes that the financial information presented in accounting is a part of the company's value. The model also states that a function can be created using the earnings for the current period and the book value in the company. According to Belesis et al. (2020) the model has been tested several times in different forms but with the original Ohlson model as a base. The review on the model by Lo and Lys (2000) states that it extends the existing literature on the valuation of companies.

By applying the previously explained regression model, Ohlson (1995) explained the value relevance of accounting and financial data through the following applied regression model:

$$SP_{it+1} = b_0 + b_1 BV_{it} + b_2 EPS_{it}$$

where:

(i) SP_{it+1} is the share price of company i at time t+1
(ii) BV_{it} is the book values of company i at time t
(iii) EPS_{it} is the earnings per share of company i at time t
(iv) b_0, b_1 and b_2 are estimators for the fixed effects of the constant variable found through the least squares method.

The Ohlson model hence uses accounting data in order to value a company based on its financial performance (Belesis et al. 2020). As such, the Ohlson model will be able to illustrate the relevance of book values and their effect on market values of listed companies (Paolone, 2020).

4.4.2 Surplus Value (SV)

The surplus value (hereafter SV) was created to better show the core values included in the Ohlson model formula, without consideration of the variable coefficients (beta values). SV is calculated using the following formula:

$$SV_{it} = SP_{it+1} - (BV_{it} + EPS_{it})$$

(i) SV_{it} is the calculated surplus value
(ii) SP_{it+1} is the share price of company i at time t+1
(iii) BV_{it} is the book values of company i at time t
(iv) EPS_{it} is the earnings per share of company i at time t

The SV value will be used to give an overview of how the differences between SP and BV+EPS variables change over time, and above all serve as a benchmark for comparison with the Ohlson model results. Using this SV value alongside the Ohlson formula will make

way for additional perspectives in the analysis of the results, as well as providing an additional layer of foundation to answer the hypotheses.

4.4.3 Ohlson Model Criticism

The Ohlson model has been getting a lot of recognition in the accounting field throughout the years. With that being said the valuation model has not completely been lacking criticism. A study suggests that the Ohlson model has been receiving too much praise historically, even implying that it often has been incorrectly used. Furthermore they highlight the risk that studies that use levels data might have biased coefficients, especially in the R^2 values (Lo & Lys, 2000). Further previous studies suggest that the Ohlson model works better to predict future stock prices rather than testing value relevance (Lee et al, 2014), which might prove to be problematic as it is this study's main purpose. Furthermore, it has previously been established by Belesis et. al (2020) that the Capital Asset Pricing Model (CAPM) evaluates company share prices more accurately than the accounting information processed by the Ohlson model. The Ohlson model is, as evident by its name, a model and thereby a simplification of the real world. The model will thus never be able to capture every possible influencing factor needed for a perfect prediction of the share price of a company.

4.4.4 Data Points in the Ohlson Model

The data for the components of the Ohlson model were collected from income and balance sheets of the companies included in this thesis. The process of collecting the data is described below. Data from a total of 432 annual reports has been collected.

4.4.4.1 Balance Sheet

The book value (BV) variable of the Ohlson model is the equity of the company divided by the outstanding shares. This data has been collected by the financial ratio equity per share found in the company's annual report. This has been done for each year separately, even if the data can be found for consecutive years in some reports. The reason that it has been collected annually is that the accounting numbers can, and are often, adjusted in next years' report. Although these adjustments are found in next year's report, they will be disregarded in this study as the accounting numbers found only in the current annual financial report is the data used in the model. However, when the annual report presents the financial ratio equity per share, that figure was used. If this financial ratio was not presented in a company's financial

report, it was calculated using the accounting numbers. The financial ratio was calculated by taking the total equity found in the balance sheet divided by the total outstanding shares at the end of the year.

As a result of that the study is centered around companies listed on the Stockholm Stock Exchange (OMXS30), the currency used in the study is SEK. In cases when other currencies are presented in the company's financial reports, the figures were converted into SEK to the exchange rate of the last trading day of each year, as practiced in the monetary and day course method used in accounting (Carlsson & Sandell, 2017, p. 153).

4.4.4.2 Income Statement

Earnings per share (EPS) is the annual earnings for a company divided by the shares of the company. This financial ratio is defined by the IASB and can be found in all financial reports. This paper uses the basic earnings per share as the financial ratio, thus the shares used are only the common stock. When other currencies other than SEK are presented in the income statement of the financial reports, the currency is converted into SEK to the average exchange rate of each year, as practiced in the monetary and day course method used in accounting. (Carlsson & Sandell, 2017, p. 153).

4.4.4.3 Share Prices

The question of which book value and earnings to select is not a complex one as it is presented in the annual financial report fixed to the 31st of December every year. The more complex issue at hand is to decide from which date the share prices (hereafter SP) of companies should be taken. Previous studies (Belesis et. al, 2020) used the 31st of March as a fixed point for their share price data. However, as some of the companies listed on the OMXS30 (e.g. Kinnevik) release their annual report in April, this study gathers the SP data from the 15th of April to make sure that no information affecting share price according to the EMH is left out due to the fact that reports may not have been released yet. The theory of information asymmetry makes it impossible to use SP data predating the month of April, as the market does not have access to financial reports (and therefore BV and EPS values) due to them not being released, which is in line with this study's assumption of a semi strong form of the EMH. Additionally, a later date would not be the most accurate since SP should be gathered in conjunction with the release of the annual financial reports, in correspondence

with the efficient market hypothesis. If the day of the 15th of April was not a trading day, the price was gathered from the following trading day.

As the SP is taken from the consecutive year following the BV and EPS, there is a displacement in time. For example, the value relevance of the year 20xx is built on the share price of 20xx+1 and so on. Hence, economic events that occured after the 15th of April each year that affect companies' stock market values will be accounted for on the 15th of April the consecutive year. An example of such an event is the stock market crash which took place in the autumn of 2008, and consequently in this thesis has an effect on the stock market values on the 15th of April 2009. On the other hand, the COVID-19 induced stock market crash of 2020 took place in the early spring and therefore affected the stock market prices of the 15th of April the same year. As such, the result of the COVID-19 crash on stock market prices is seen in 2019 data.

4.5 Ohlson Model Modification - IFRS Dummy Variable

According to Garavaglia & Sharma (1998), a dummy variable is a numerical stand-in value allowing for the quantification of qualitative observations. Each independent variable takes the value of either 0 or 1 depending on whether certain conditions are fulfilled or not (Garavaglia & Sharma, 1998). In this thesis, the IFRS introduction years were added to the regression model as independent variables, where each IFRS introduction year was manipulated to assume the value of 1 and a year that did not have one of the chosen IFRS introductions assumed a value of 0. Doing this enabled the analysis of the isolated effects that IFRS introductions had on the results of the Ohlson model and as such gave an indication to the potential increase or decrease in value relevance following these regulatory introductions.

4.6 Operationalization of Macroeconomic Factors

4.6.1 The OMX Stockholm 30 Index

The OMX Stockholm 30 (OMXS30) is a price index including the 30 most actively traded companies on the Stockholm stock exchange, consequently being the leading share index in Sweden. The index was instituted on the 29th of September 1986 starting on a value of 125 and is, as of the 19th of May 2021, valued over 2200. The index is market weighted, meaning that every company affects the index according to their market price. The larger companies

included in the index have a greater impact on the index itself compared to the smaller ones. The composition of the index is reviewed twice a year and new companies can be added to the index, at other companies' expense. The OMXS30 includes companies in several different industries, the largest one being the industrial sector with a weight of 37.65%. As such, OMXS30 can be used to give an indication on the current state of the Swedish economy and its fluctuations over time. The index has, according to Nasdaq, excellent liquidity due to the limited number of companies, which also makes the index suitable for derivatives products (Nasdaq, 2021).

4.6.2 Currency Exchanges Rates & Interest Rates

The macroeconomic factors chosen to represent the macroeconomic effects in this thesis are currency exchange rates and interest rates. These were chosen as they are first and foremost mentioned as relevant to financial reports by Oxelheim (1991). The currency exchange rates are of relevance as they, like the interest rates, are often used as indicators of a country's economic state. The currency exchange rates and the interest rates, were then used in a regression testing for possible macroeconomic explanatory degree. To carry out the regression, currency exchange data from both the Euro (EUR) and US Dollar (USD) in relation to the Swedish krona (SEK) were used. The decision to use these currencies was made, as EUR is the largest global currency that is geographically the closest to Sweden. The USD-SEK exchange rate was used as the USA is the largest economy in the world, hence many other countries' economies tend to follow the trends of the US economy.

Oxelheim also mentions inflation as being another factor of relevance to financial reports, however inflation will not be included in the further macroeconomic regression analysis that was made in this thesis. The main reason for this is as the Swedish inflation rate has been at an acceptable rate over the years of the period that is being studied (2005-2020) (Riksbanken, 2021).

§5 Descriptive Statistics

The following section outlines the main data analysis methods used in this thesis, as well as discussing the chosen data validation tests.

5.1 IBM SPSS Statistics

All the statistical analysis carried out in this paper was done through the use of a statistical software platform called IBM SPSS Statistics (hereafter SPSS). SPSS was used as it has the ability to process large sets of data and ensures high accuracy of results when running various statistical tests (IBM.com, 2021). SPSS was provided by Lund University, which is considered a valid source for this statistical tool.

5.1.1 Regression Analysis

The Ohlson model is an applied regression model where the dependent variable values are taken from the market and the independent variables are taken from the company's financial statements. To find the estimators for the fixed effects of the constant variables, the ordinary least squares method was used, which achieves this by finding the line of best fit that explains the relationship between the dependent and independent variables (Körner & Wahlgren, 2015).

According to Körner & Wahlgren (2015) the general equation for a regression analysis is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots \beta_i X_i$$

where:

(i) Y is the dependent variable

(ii) β_0 is the intercept

(iii) β_i is slope for X_i

(iv) X is the independent variable(s)

This linear regression analysis will examine to what degree the predictor (independent) variable and the outcome (dependent) variable have an association with each other by providing an R^2 value (Körner & Wahlgren, 2015). The R^2 value shows how much the dependent variable can be explained by the independent variables. Therefore, the R^2 values

will be important for this study as they will be able to give indications on how companies' market values can be explained by the book values found in companies' financial reports, and in effect provide an indication as to the degree of value relevance present (James et al. 2017).

5.1.2 ANOVA, R-Squared & VIF

The outputs when performing a multiple regression analysis on a dataset, include Analysis of Variance (hereafter ANOVA), R-Squared (hereafter R^2) and Variance Inflation Factor (hereafter VIF). The first of the aforementioned measures, ANOVA, gives an indication of whether the independent variables have a significant effect on the dependent variable. The weakest accepted significance level in this thesis was 0.05 (5%).

The R^2 values show what proportion of the variance in the dependent variable can be explained by one or more independent variables. Here, a desirable result would be as close to 1 (100% explanatory power) as possible.

The VIF factor is used to determine the amount of multicollinearity present in a multiple regression analysis. Goldberger (1991) defines multicollinearity (or collinearity) as the presence of a near exact linear association between the dependent and independent variables. As a consequence, multicollinearity in a multiple regression analysis may yield unreliable results (Goldberger, 1991), hence the reason why VIF values were evaluated. A high VIF value of over 10 would indicate high levels of collinearity between two or more variables, therefore a desirable VIF value is usually below 10. However, there are split opinions on whether any VIF value under 10 is statistically viable or not. Some statisticians argue that a VIF value of under 5 is preferred to be as statistically accurate as possible (Hair, Ringle, & Sarstedt, 2011).

5.1.3 Stacking in Regression Analysis

Stacking data is a controversial statistical method sometimes used to generalize and reduce the individual errors of results (Wolpert, 1992). For instance, in this thesis where IFRS implementations are investigated, it would be of interest to stack the regression results for the period preceding a certain IFRS introduction and then stack the results for the period succeeding the implementation, to be able to get an indication of the overall effects of the

IFRS introduction. As stacking is not always widely accepted, no hard conclusions will be drawn from the stacking results discussed in this thesis.

5.1.4 Normality & Heteroscedasticity

For graphical illustrations of these see Appendix C.

To see whether the data is normally distributed or not (presence of normality), normal probability plots (P-P plots) of regression standardized residuals were produced and visually observed for each of the years in the period of 2005-2020. These cumulative probability plots were used to illustrate the normality of the data, as if the scatters fall on to or close to the normal distribution line, this means that the standardized residuals are normally distributed (Osborne & Waters, 2002).

Heteroscedasticity is present if there is a difference in variance in a sample (unequal scatter). If heteroscedasticity exists then this could in effect invalidate the regression analysis. To ensure that the sample data in this thesis did not have the presence of heteroscedasticity, scatterplots of the regression standardized residuals and standardized predicted values were examined for each of the years in the period 2005-2020 (Bucevska, 2011).

5.1.5 Pearson Correlation Coefficient

For further correlation results see Appendix B.

To test the strength of, and assure that two variables of interest have, direct linear associations between each other the Pearson correlation coefficient can be examined. In this study, the Pearson correlation coefficient was used to measure the direct correlation between the market SP (share price) of companies and the Ohlson Model predicted share price (BV+EPS), to allow for future analysis of this correlation (Kirch, 2008).

5.2 Coefficient of Variation (CV)

A measure of data spread that uses both standard deviation and the arithmetic mean value is the coefficient of variation (hereafter CV) (Dahmström, 2011). The CV is calculated using the following formula:

$$Coefficient\ of\ Variation\ (CV) = \frac{Standard\ Deviation}{Arithmetic\ Mean\ Values} \times 100$$

CV can then be used as a relative percentage of the measure of spread when the standard deviation varies with the size of the arithmetic mean values (Dahmström, 2011). This provides a more accurate measure than the variance when the two means that are measured are of different size. Furthermore it gives an additional perspective for analysis when the standard deviation differs.

§6 Results

In the following section the results of each statistical analysis is presented and the possible limitations of these results are discussed.

6.1 Value Relevance Regression Analysis

Table 1. Results from each year showing ANOVA Significance, R-Squared (R^2, %) & VIF values.

Year	ANOVA Significance	R-Squared (R^2)	R-Squared (%)	VIF
2005	0.194	0.128	12.8	1.470
2006	0.097*	0.177	17.7	2.369
2007	0.196	0.127	12.7	1.470
2008	0.301	0.095	9.5	1.016
2009	0.048**	0.224	22.4	1.412
2010	<0.001***	0.528	52.8	4.022
2011	<0.001***	0.498	49.8	1.249
2012	<0.001***	0.486	48.6	1.351
2013	0.007***	0.338	33.8	2.854
2014	<0.001***	0.422	42.2	4.940
2015	<0.001***	0.830	83.0	1.740
2016	<0.001***	0.727	72.7	1.599
2017	0.002***	0.397	39.7	3.748
2018	0.010***	0.316	31.6	1.079
2019	0.200	0.126	12.6	5.840
2020	0.059*	0.210	21.0	2.136

*Notes: ***Significant at 1% level, **Significant at 5% level, *Significant at 10% level. Underlined years signify years of financial crises where data may be unreliable.*

The R^2 value shows how well the SP value (dependent variable) can be explained by the BV and EPS (independent variables). The table shows how the R^2 value has developed and changed over the past 15 years. From 2005-2009 the correlation between the market value and the book value were low, between 9.5%-22.4%. Out of these five years only 2006 was

significant, although only on a 10% level. Between 2010 and 2016 the R^2-values are significantly higher, peaking at 2015 with 83%. The significance increases over the years and is mainly on the 1% level. The R^2 value decreases between the years 2017-2020, with values ranging from 39.7%-12.6%. Looking at the results for 2013, which is the year in which IFRS 13 was introduced, there is a notable spike in the R^2 value the following years after its introduction. After 2016 the correlation decreases with an especially low value in 2019.

The variance inflation factor has been below 10 in all our tests, ranging from 1.016-5.840, which is well in range when 10 is the highest acceptable VIF. In a regression the VIF should be less than 10 according to Kutner et al (2004). There are however split opinions on whether a VIF value of less than 10 is significant enough, with some academics arguing for only accepting VIF values of under 5 (Hair, Ringle & Sarstedt, 2011).

6.2 IFRS Changes As Regression Variable

Table 2 . ANOVA Results of Regression with IFRS Variable

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3075577.17	3	1025192.39	54.167	<0.001b
Residual	8100609.26	428	18926.657		
Total	11176186.4	431			

a. Dependent Variable: SPit

b. Predictors: (Constant), IFRS, EPSit, BVit

Table 3. Coefficients of Regression with IFRS Variable

Model	B	Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	90.893	9.936	-	9.147	<0.001	-	-
BVit	0.760	0.100	0.386	7.625	<0.001	0.661	1.513
EPSit	1.740	0.470	0.187	3.703	<0.001	0.661	1.513
IFRS	24.445	16.983	0.059	1.439	0.151	0.997	1.003

To test if different IFRS standard implementations had a significant effect on the value relevance, we used the specific years of implementation (2013, 2018, 2019) of three different IFRS standards (IFRS 9, 13 & 16) as a dummy variable. When including the dummy variable

in the regression, the total result was significant (<0.001). However, when inspecting the coefficients separately we could see that the dummy variable (named 'IFRS') wasn't significant. The minimal level of significance used is on a 10% level (0.100) and the significance of the IFRS variable is over that threshold (0.151). As such, the results of this finding shows that the implementation years of these specific IFRS standards did not significantly increase the value relevance of this study's companies' reported book values. When the significance is insufficient the rest of the results do not matter and are regarded as irrelevant.

6.3 Stacking Results

Table 4. The results of the stacking method.

Year Interval Stacks	ANOVA Sig.	R-Squared (R^2)	R-Squared (%)	VIF
2005-2012	<0.001***	0.219	21.9	1.249
2013-2020	<0.001***	0.283	28.3	1.705

*Notes: ***Significant at 1% level.*

The introductions of IFRS 9 (2018) and IFRS 16 (2019) were both fairly recent occurrences, which made it difficult to test their impact on value relevance using stacking. However, IFRS 13 was introduced in 2013 and therefore gave a good span of years to compare the potential difference between the years before and after its introduction. When using stacking to compare the difference in the R^2 value between the years before and after 2013, the R^2 value is slightly higher post 2013. Comparing a 28.3% explanation for the years between 2013 and 2020 versus 21.9% from 2005 to 2012, might give an indication that the introduction of fair value measurement in IFRS increases the correlation between the book value and the market value. The significance of the stacking results is at a 1% level, which meets the requirement level of significance of at least 0.01 (10%). The VIF values for both stacks indicate low levels of correlation between the independent variables. While stacking does not give a definite answer to whether the value relevance between the book value and the market value has improved, it can be used as an indication for further analysis.

6.4 R-Squared (R^2): Mean, Variance (S^2) & Coefficient of Variation (CV)

Table 5. Mean of all R^2 values, their respective Variance (S^2) and each calculated CV.

Year Interval Stacks	Mean R^2	Variance (S^2)	CV
Stack 1: 2005-2020	0.352	0.049	62.829
Stack 2: 2005-2012	0.283	0.035	66.255
Stack 3: 2013-2020	0.421	0.059	57.587

Table 5 above shows the mean, variance and the coefficient of variation (CV) of our results during the different stacked time periods. There is a clear difference in the mean before and after (stack split year) the implementation of IFRS 13 (2013). From the stacked results it can be observed that the variance has increased during Stack 3 compared to Stack 2, therefore also showing that the irregularity (variance) of the R^2 has increased between the respective year interval stacks. Although, when comparing the variance in relation to the mean (using CV) the results change, as comparing the variance in relation to the mean gives a more relevant representation of the results. After calculating the coefficient variance, Stack 3 yields the lowest value. Now the results from the data show that R^2 is more stable in Stack 3 than both other stacks. When comparing the variance (S^2) and CV of all stacks, Stack 3 has relatively improved compared to Stack 2 results while S^2 and CV of Stack 1 has the same relative variation.

6.5 Mean Differences & Mean SV

Table 6. The mean difference between all companies' share prices (SP) and book values (BV+ EPS), as well as mean SV (see section 4.4.2) per year.

Year	Mean Difference Ohlson model ($SP-b_0+b_1BV+b_2EPS$) (MDO)	Mean Surplus Value (SP-BV+EPS) (SV)
2005	53.553	37.611
2006	54.105	54.984
2007	41.070	32.732
2008	35.444	13.416
2009	52.754	53.939
2010	38.074	56.596
2011	47.681	50.276
2012	49.282	61.473
2013	72.798	77.499
2014	112.053	134.923
2015	58.500	105.878
2016	61.483	123.400
2017	126.039	134.027
2018	105.671	135.389
2019	118.189	100.006
2020	159.932	190.432

Notes: Underlined years signify years of financial crises where data may be unreliable.

Table 3 above shows the mean difference between the variables in the Ohlson Model (MDO) (including beta coefficients) and the mean difference between the variables without the Ohlson Model coefficients (previously defined in 4.3.1) (SV).

This mean difference was calculated because it provides an overview of the raw values in the Ohlson model without using the variable coefficients in order to visualise the effect that those variables have on the result. The left hand side of the table shows the mean difference between SP and BV+EPS, including the Ohlson variable coefficients. The right hand side

(SV column) of the table shows the same values without the variable coefficients of the Ohlson model.

When comparing SV and the MDO, it can be said that the variable coefficients (beta values) provided by the Ohlson model slightly improves the general differences between SP and BV+EPS. Looking at the years 2008 and 2019, these results are examples of when the MDOl falls short of the corresponding SV values which is to be expected as SP values were low due to economic crises. Another observation that can be made regarding SV, is that it constantly increases throughout the years, with a few exceptions.

6.6 Pearson Correlation - SP & BV+EPS

This following section presents the result of the correlation between the actual market price of a company's share (SP) and the predicted market price of the share as the result of the Ohlson Model (BV+EPS).

Table 7. Showing Pearson Correlation results between the SP and BV+EPS in the Ohlson Model, 2-tailed significance.

Year	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Pearson Correlation	0.459	0.354	0.562	0.630	0.853	0.911	0.650	0.581	0.697	0.705	0.727	0.473	0.308	0.356	0.420	0.357
Sig. (2-tailed)	0.016	0.070	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.013	0.118	0.068	0.029	0.067

Notes: Underlined years signify years of financial crises where data is unreliable.

The significance of the correlation is in the 5% range in all cases with the exception of 2005, 2007, 2008 and 2019. The correlation is the highest in 2015, which corresponds to the results in the value relevance regression in section 6.1 above. The period of 2010-2018 has the highest correlation as well as the strongest significance and the years 2008 and 2019 are highlighted to address the two different financial crises occurring during these years. Both these years had the weakest significance and correlation with 2008 being the lowest. The mean correlation is 0.565.

6.7 Correlation between Value Relevance Regression Analysis and the OMXS30 Index

Table 8. Correlation between R^2 *for each year (from section 6.1) and the corresponding OMXS30 Index Value taken from the same date as SP values for each year.*

		R-Squared (R^2**)**	**Index**
R-Squared (R^2**)**	Pearson Correlation	1.000	0.180
	Significance		0.506
	N	16.000	16.000
Index	Pearson Correlation	0.180	1.000
	Significance	0.506	
	N	16.000	16.000

We tested if there was a correlation between the level of value relevance of our sample of companies on the OMXS30 (R^2) and the OMXS30 Index. When testing the result it resulted in a correlation of 0.180 between the R^2 and the Index, but there was no significance to our result. The significance was 0.506 which is not close to the highest threshold, which is at a 5% level (0.050). As there is no significance it can be concluded that there is no correlation between the value relevance of the companies in our study and the Nasdaq OMXS30 index.

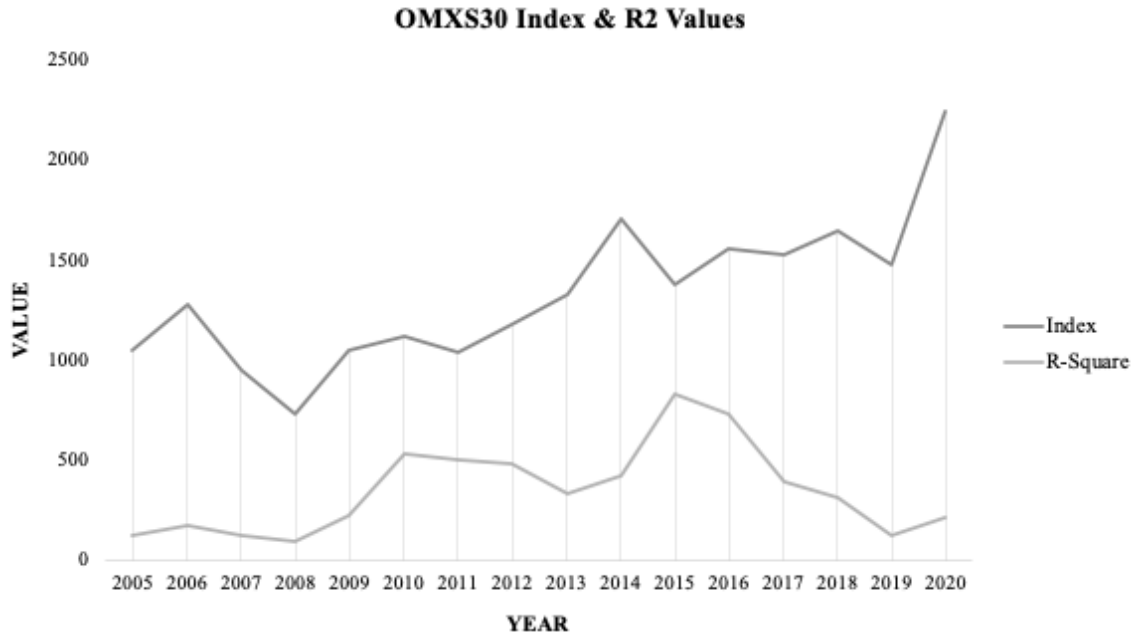

Figure 1. A graphical illustration on the changes in the OMXS30 Index and the corresponding R^2 *value change for each respective year. Notes: The* R^2 *values have been scaled up by a factor of 100 for easier comparison.*

6.8 Macroeconomic Regression Analysis & Correlation

Table 9. The chosen macroeconomic factors; currency exchange rates (EUR, USD) and repo rate (RR) as independent variables, against OMXS30 Index as the dependent variable.

	ANOVA Sig.	R-Squared (R^2)	R-Squared (%)	VIF
EUR + RR	<0.001a***	0.438	43.8	1.154
USD + RR	<0.001a***	0.497	49.7	1.873

a. Dependent Variable: OMXS30
b. Independent Variables: EUR, USD, RR

*Notes: ***Significant at 1% level.*

The above results in Table 9 were produced in order to detect the macroeconomic explanatory degree of the stock market values on the OMXS30 index. The regression shows that when using Euro as a benchmark for the Swedish currency in tandem with the Swedish repo rate, there is a 43.8% explanatory power. When instead using the USD as the exchange currency the explanatory power is at a slightly higher rate, at 49.7%.

Table. 10. Pearson Correlation tables between the macroeconomic variables, repo rate (RR), currency exchange rates (SEK per EUR, SEK per USD) & OMXS30 Index. Split by currency.

		RR	EUR	OMXS30
RR	**Pearson Corr.**	1	-0.345	-0.631***
	Sig. (2-tailed)		0.191	0.009
	N	16	16	16
EUR	**Pearson Corr.**	-0.345	1	0.202
	Sig. (2-tailed)	0.191		0.454
	N	16	16	16
OMXS30	**Pearson Corr.**	-0.631***	0.202	1
	Sig. (2-tailed)	0.009	0.454	
	N	16	16	16

		RR	USD	OMXS30
RR	**Pearson Corr.**	1	-0.711***	-0.631***
	Sig. (2-tailed)		0.002	0.009
	N	16	16	16
USD	**Pearson Corr.**	-0.711***	1	0.619**
	Sig. (2-tailed)	0.002		0.011
	N	16	16	16
OMXS30	**Pearson Corr.**	-0.631***	0.619**	1
	Sig. (2-tailed)	0.009	0.011	
	N	16	16	16

*Notes: ***Correlation is significant at the 1% (0.01) level. **Correlation is significant at the 5% (0.05) level.*

From the results of the performed Pearson correlation between the macroeconomic variables above, the US Dollar (USD) is the most significantly correlated exchange rate to the repo rate

and the OMXS30 index. The Euro (EUR) is not significantly correlated at an acceptable level, as its significance is over 5%. Furthermore, the repo rate has a negative correlation to both currencies and the OMXS30 index. Following these results, a multiple line graph was constructed to illustrate the relationships between these macroeconomic variables.

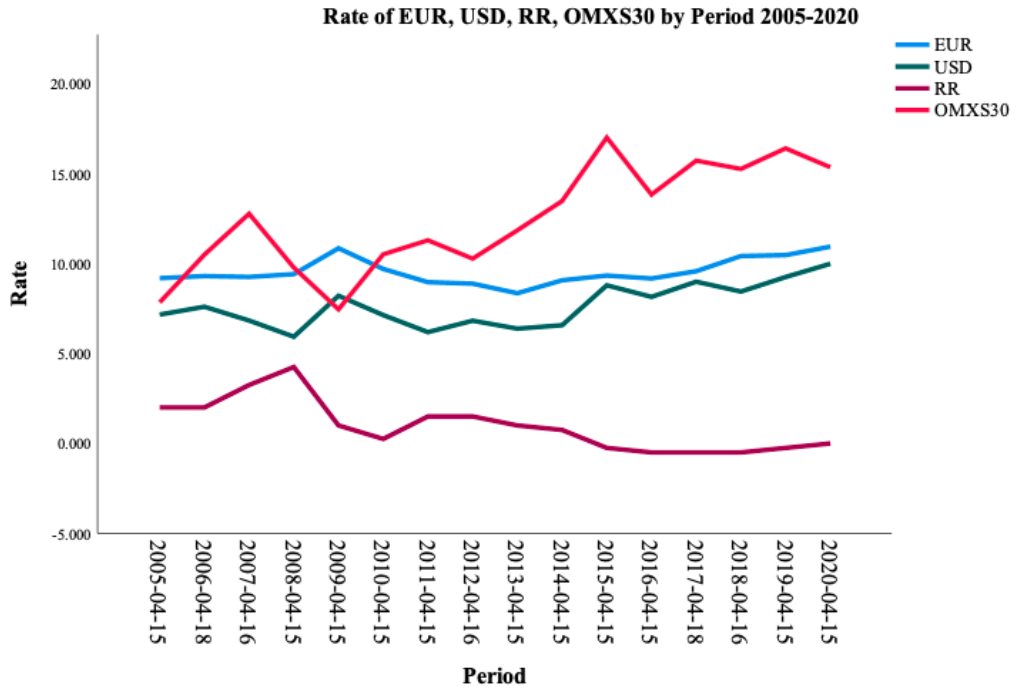

Figure 2. The chosen exchange rates, the repo rate and the relative OMXS30 index trends are shown in the above graph for each year between 2005-2020.
Notes: OMXS30 values have been scaled down by a factor of 100 for easier comparison.

Equivalent to what the Pearson correlation results indicate, the graphical illustration above shows the negative relationship between the repo rate and the exchange currency rates and OMXS30 index values. It is important to note that the exchange rates are written in SEK per EUR/USD and therefore as the slope of the line increases, SEK gets relatively less valuable.

6.9 Limitations with Results

While the R^2 values obtained from a multiple regression will show an estimate of the relationship between movements in dependent and independent variables, this value cannot explain which of the independent variables are the most important. It is also sometimes the case that a low R^2 value can still be the result of the presence of clinical significance and therefore choosing the correct regression evaluation tests is of high importance.

When testing value relevance there are multiple factors to take into consideration and it is close to impossible to get a definite answer. When analysing the different results there are obviously external factors that have a great impact on the outcome. First and foremost, there are two major financial crises (2008 and 2019) that have a great effect on all the study results. The IFRS results in particular, were expressly affected by the COVID-19 pandemic, as two out of the three IFRS regulations (IFRS 9 and IFRS 16) that were included in the study, were introduced in connection with COVID-19 (2018 and 2019). The IFRS variable was proved to be insignificant in the study, but it might be due to the market volatility these specific years rather than anything else. Furthermore, the market volatility the economic crises lead to, made it difficult to see any clear linear trends over the 15 years included in the study. It is obviously impossible to say how the result would have been without these great market recessions, but it is probably safe to assume that the curves would have been far less volatile.

§7 Analysis

In the following section the hypotheses will be answered and analysed, and the implications of this thesis findings will be discussed.

7.1 Hypothesis 1

During the period of 2005-2020 various new IFRS standards have been introduced and/or updated. In this thesis the implementation of IFRS 9 (Financial Instruments), IFRS 13 (Fair Value Measurement) and IFRS 16 (Leases) are considered to be the most influential on the booked values of companies listed on the OMXS30. The analysis in this section will be based on the results provided from the sections 6.1-6.5.

Hypothesis 1: There has been an increase in value relevance of financial statements post-introduction of IFRS 9 (Financial Instruments), IFRS 13 (Fair Value Measurement) and IFRS 16 (Leases).

The presented results from both the multiple regression and the Ohlson model itself, suggest no signs of a linear increase in value relevance in financial reports from 2005 up until 2020 for the 27 OMXS companies in this study. The multiple regression (section 6.1, table 1) shows a slight increase but the results are far too volatile for us to conclude that there has been a linear increase in the value relevance. The results (section 6.5, table 6) from the Ohlson model shows the following pattern; the difference between the output from the model and the actual share prices increases with time. This is interpreted as a decrease in value relevance, as the output is based on the accounting data in which value relevance is assessed.

When testing the three IFRS (9, 13 & 16) implementations as separate dummy variables, we found the result (section 6.2, table 3) for each specific year of the chosen IFRS introductions (2013, 2018 and 2019) insignificant. The threshold of significance for our study is 5% and the result exceeded that (15.1%, 0.151). The collective insignificance of the dummy variables further add to the results in the previous paragraph that contribute to Hypothesis 1 having to be discarded.

One reason for the difficulties in finding trends in the R^2 values (section 6.3, table 4) could be due to the two large economic crises during the period of the study. Both 2005-2012 and 2013-2020 are heavily affected by two separate economic crises (the financial crisis of 2008 and the COVID-19 pandemic during 2020). As mentioned in the limitations of the results (section 6.9), both IFRS 9 and IFRS 16 were introduced in the latter years of the study (2018 and 2019), therefore it is difficult to draw a conclusion on their effect on the value relevance of the booked values.. The results for 2019 are especially controversial since they are so influenced by the COVID-19 pandemic.

As opposed to IFRS 9 and IFRS16, IFRS 13 (Fair Value Measurement) has been around for a longer period (introduced in 2013). Thus, IFRS 13 proved to have a broader statistical basis in this thesis as well as allowing for more suitable comparison pre- and post-introduction. To investigate how the implementation of IFRS 13 affected the value relevance between booked values and stock market values, stacking was implemented. The results showed an indication that the value relevance improved after the IFRS 13 introduction, with a slight increase of the R^2 value post 2013 (from 21.9% to 28.3%). As stacking is a controversial statistical method, this result can not be viewed as a statistically acceptable evidence of an increase in value relevance. However, as stacking assists in leveling out the results, this might indicate that without the volatility the results might have been of greater linearity and significance.

Another interesting factor which could be seen as an indicator of improved value relevance after the IFRS 13 introduction is the mean value, pre and post 2013. The mean value, similar to the stacking results, shows an increase in the value relevance after 2013 with a 42.1% mean correlation compared to a previous 28.3% mean correlation. Although the variance (S^2) is slightly higher 2013-2020 than before, this result could give a strong indication that the value relevance improved over time after 2013. This is also supported by the values in the coefficient of variance, as a lower value is prefered (CV). Since the CV is relative to the mean values, it gives a more relevant representation of the mean values than the variance does. 2013-2020 has a coefficient of variation of 57.587, which is lower than the years leading up to the IFRS 13 introduction, proving that this result has lower volatility.

Although the overall results had no significance and therefore could not confirm Hypothesis 1, the different data presented underlined the fact that the IFRS 13 introduction had a positive

effect on the value relevance. It is difficult to see any clear trends on the R^2 value throughout the years of the study, but when using stacking alongside mean value an indication of improvement in the value relevance can be spotted after 2013.

A factor that might contribute to the results are the distinction between the real users and the thought of users the ISAB aims the statements to. Previous studies (Georgiou, 2017; Stenka & Jaworska, 2019) have found that the statements are not developed for the real reader and thereby not used as intended. This might be reflected in the findings that the new implementations do not have a significant impact on the value relevance. We can not confidently say it is the sole explanation to our results, but previous findings in combination with our findings might indicate that the standards are not developed, implemented and intended for investors trying to find value in the financial reports. This discussion can be related to the study by Andersson & Hellman (2020), where they concluded that a user that does not understand regulatory standards can not fully use the financial reports as intended, which in this study might be seen in the insignificant change in value relevance when implementing IFRS 9,13, and 16.

7.2 Hypothesis 2

During the period 2005-2020 booked values and macroeconomics factors, along with other factors, have had an impact on the companies in our study and thereby on the OMXS30 Index. The analysis in this section will be based on correlations and regressions, which further will be compared to show the explanatory strength of macroeconomic factors versus booked values. The results are provided from sections 6.1-6.8.

Hypothesis 2: Macroeconomic factors, such as interest rate and currency exchange rate, have a more significant impact than booked values on the OMXS30 Index.

The results found in 6.1 show a range of different values, ranging from 0.095-0.830 which indirectly show the explanatory ability of the booked values on the share price. These results were compiled in section 6.4, and a mean R^2 value was calculated to be 0.352 or 35.2%. This result is a more accurate of the average explanatory rate of share prices derived from the booked values. In addition, the correlation between the Ohlson model's output and the actual share prices (section 6.6, table 7) shows similar results as the Value Relevance Regression Analysis (section 6.1, table 1) but with a stronger explanatory power, which is expected when the Ohlson model is used. The mean Pearson correlation between SP and BV+EPS was 0.565 or 56.5%, which will be compared to the macroeconomic variable correlation.

In contrast to the Pearson correlation in section 6.6, the following can be said about the Pearson correlations of the macroeconomic variables (section 6.8, table 10). Firstly, it is evident that the interest rate and the OMXS30 are negatively correlated, as they have a correlation value of -63.1%. This is not a surprising phenomenon, rather basic macroeconomic theory that supports Hypothesis 2.

Visual observations that can be made in section 6.8 (figure 2), also arrive at the conclusion that OMXS30 and exchange rates are negatively correlated, where the actual Pearson correlations are -34.5% for EUR and -71.1% for USD respectively. A basic macroeconomic assumption tells us that when the strength of SEK is weakened against other currencies, it becomes relatively cheaper for other countries to import goods from Swedish companies. Overall this should improve the performance of the Swedish exporting companies, and therefore have a positive effect on the OMXS30 index, as also supported by our results in

section 6.8 (table 10).

The results of the macroeconomic regression gave us R^2 values of 43.8% and 49.7% (section 6.8, table 9), depending on if SEK was converted to EUR or USD. The R^2 value explains to what degree the variation in the OMXS30 index can be explained by the exchange rate and the repo rate variables. To put these results into context, they need to be compared to the R^2 values received from the regression of the booked values. As previously stated, the book values had a mean explanatory power of 35.2% (section 6.4, table 5), which proved to be lower than both the R^2 values gathered from the macroeconomic regression.

The correlation findings regarding the booked values (section 6.7), show that there was no significant (0.506) correlation between the value relevance of the booked value and the OMXS30 index. One would think that there should be a correlation, either positive or negative between the value relevance and the index. As the index (stock market prices of companies) tends to increase more, relative to the companies' booked values, the value relevance should go down as the two get further away from each other (see Mean Surplus Value, MSV, section 6.5). The results however, do not follow that logic and show no distinguished pattern, which is an indication of the insignificant impact that booked values have on the OMXS30.

Moreover, the results (section 6.7) might be a sign of the unpredictable and irrational investor alongside the theory of information asymmetry. The findings show that the performance of the companies does not matter in all instances, as the OMXS30 index does not always follow or go against the combined value relevance of the companies. The direction of OMXS30 might change because of a macroeconomic or psychological factor, which for the latter is difficult to measure. The companies internally may not be affected by these factors, but the external information asymmetry forces the investors to guess and/or overreact. The sentiment of the investors can increase the difference in value relevance as their sentiment has been found to either over- or undervalue share prices (Riedl et al., 2021). The results from Riedl et al. may be part of the explanation of our results. This investor behavior is further exemplified during the 1987 'Black Monday' crash. Insiders saw no decline in the company's performance, i.e. accounting data, and bought stocks when most people sold their holding positions. Most investors did however not think that the companies were in a bad spot

financially, yet still sold their holdings (Morck et al., 1990). We believe that the information asymmetry and the phenomena of the irrational investor is present, evidenced by the lack of correlation presented in the results previously discussed.

Recalling the arguments made by Oxelheim & Wihlborg (1991) concerning macroeconomic effects, the results in this thesis support their theories that macroeconomy significantly impacts the performance of companies and therefore stock market prices (thereby impacting the OMXS30 index).

To summarise, we can ascertain that both the R^2 values and the correlations of the macro-economic variables support Hypothesis 2 that the specific macroeconomic effects have a more significant impact on the OMXS30 index (thereby stock market prices) than the booked values found in the companies' financial reports. Thus, we hold Hypothesis 2 as true.

§8 Conclusion, Contribution & Future Research

In this section the overall conclusion to this thesis' data is presented, as well as potential contributions to existing research and possible future research opportunities.

8.1 Conclusion

The purpose of this thesis was to investigate the potential effects of IFRS implementations on the value relevance of booked values over time, and furthermore study if macroeconomic factors are better than booked values in predicting stock market values, on the OMXS30.

Based upon the results found, no conclusive evidence of statistical significance of the IFRS introductions on the value relevance of booked values over time can be made. However, there are some indications that the introduction of IFRS 13 can be attributed to a small increase in value relevance in the period 2013 and onwards. Hypothesis 1 is thereby rejected.

The macroeconomic factors have been shown to better predict the stock market values (greater OMXS30 variance explanatory degree), than the booked values of these companies which is in line with Hypothesis 2 presented near the beginning of this thesis. Hypothesis 2 is thereby accepted.

8.2 Contribution

This thesis adds to the current research field concerning factors that explain stock market prices. As this thesis was the first of its kind issued on the Swedish stock market (OMXS30), it further contributes to studies of value relevance and stock market price affecting factors on this specific market. In addition, this study supplies a point of view of what effect the IFRS standards had on the value relevance of the Swedish stock market prices.

It could be concluded that the IFRS implementations of IFRS 9, IFRS 13, and IFRS 16 did not increase the value relevance of the stock market prices on the OMXS30. As one objective of IFRS is to "provide financial information about the reporting entity that is useful to existing and potential investors" (IASB, 2018, paragraph 1.2), it can be seen as a failure by the IASB that the new implementations did not increase the value relevance on the Swedish market. The result might be an indication for the regulating body IASB to focus more on the

understandability of their standards, so that investors or other intended users can comprehend the financial information and use it in their investment decision-making process.

This thesis could also provide an indication for investors that macroeconomic factors such as currency exchange rates and interest rates seem to have a more substantial significance on the stock market prices of companies on the OMXS30 index, rather than their booked values.A further reasoning about the conclusion in this thesis is that the current regulatory framework provided by the IASB does not cover its full purpose. The financial statements might increase in usefulness to intended users if some particularly important macroeconomic factors are accounted for in the financial statements. This argument goes back to the thoughts and research by Oxelheim and Wihlborg (1987) who are strong advocates for the implementation of macroeconomic factors in the financial statements.

8.3 Future Research

We suggest that further research is carried out regarding the effects of the overall index changes and its relative effect on value relevance, as more extensive data analysis on the matter would be of great interest. By for example widening the sample size, including more companies over a greater time span, as a way to investigate whether there is a statistical significance, that indicates that value relevance fluctuates in accordance with index fluctuations.

The choice of the Ohlson model (1995) used in this study to predict the share prices of companies was made through reading past studies on the subject value relevance. One problem however, is that the Ohlson model is over 25 years old and may therefore not be suitable for the estimation of stock prices as a measure of value relevance. There are questions to be asked of the model and whether it can take into account all parameters that are present in today’s companies' financial reports. It is also of high importance to further take into account the behavioural changes that the users of the financial reports may have gone through compared to 1995 when the model was introduced by Ohlson. As this study was carried out on companies situated on the OMXS30 index, it would be interesting to see further research on companies from several different country indices that can further prove or disprove the continued relevance of the Ohlson model in measuring financial statement value relevance.

An interesting finding, contrary to the purpose of this study, was that earlier studies on value relevance have stated that the accounting numbers remain relevant during economic crises (Laux & Leuz, 2010). They suggest that BV and EPS stay relevant before, during and after economic crises. Looking at our R^2 values throughout the years between 2005 and 2020 there are a few notable dips in the correlation between the book values and the stock market value. The years influenced by the financial crisis (2008) and the COVID-19 pandemic (2020, affecting 2019 result) had notably low R^2 values. This suggests, in opposition to the study by Laux and Leuz (2010), that book values are less relevant in economic crises particularly in years with great recession. It would therefore be of interest in further research to find out the value relevance of the financial reports during years in economic crises/recession.

Finally, as the value relevance of financial reports of any individual company is dependent on numerous variables, an inclusion of more variables tied to value relevant figures in a new revised model or regression analysis would presumably be able to provide better overall R^2 coefficients. An interesting suggestion could be to incorporate the CAPM model in the Ohlson model regression to examine if there is any increase in R^2 values and hence whether that shows any increase in value relevance over time or not.

References

Ball, R. & Brown, P. (1968) An Empirical Evaluation of Accounting Income Numbers *Journal of Accounting Research Vol. 6, No. 2* (Autumn, 1968), pp. 159-178 Published By: Wiley Journal of Accounting Research

Beaver, W. H. (1968) The Information Content of Annual Earnings Announcements Journal of Accounting Research *Vol. 6, Empirical Research in Accounting: Selected Studies 1968 (1968)*, p. 67-92 Published By: Wiley

Beaver, W. H. (2002) Perspectives on Recent Capital Market Research *The Accounting Review Vol. 77, No. 2* (Apr., 2002), pp. 453-474 Published By: American Accounting Association

Belesis, N. Sorros, J. & Karagiorgos, A. (2020) Financial Market Data Versus Accounting Data: Which Better Explains Stock Returns?. *Int Adv Econ Res 26*, 59–72 .

Bryman, A. and Bell, E. (2015) *Business research methods*. Published By: Oxford: Oxford Univ. Press

Bucevska V. (2011) Heteroscedasticity. In: Lovric M. (eds) *International Encyclopedia of Statistical Science.* Springer Verlag Berlin Heidelberg.

Collins, D. W. Maydew, E. L. and Weiss, I. S. (1997) Changes in the value-relevance of earnings and book values over the past forty years, *Journal of Accounting and Economics*, Vol 24, Issue 1: 39-67

Dahmström, K. (2011). *Från datainsamling till rapport - att göra en statistisk undersökning*. Published By: Studentlitteratur, Volume 5:2, ISBN: 978-91-44-06027-9

de Maria, L. J. (1987) STOCKS PLUNGE 508 POINTS, A DROP OF 22.6%; 604 MILLION VOLUME NEARLY DOUBLES RECORD, *New York Times,* (October 20, 1987)

Deegan, C. & Unerman, J. (2011) *Financial Accounting Theory. 2. European ed.* Published By: McGraw-Hill.

Devalle, A. Onali, E. and Magarini, R. (2010) Assessing the Value Relevance of Accounting Data After the Introduction of IFRS in Europe. *Journal of International Financial Management & Accounting*, 21: 85-119.

Easton, P. D. and Harris, T. S. (1991) Earnings as an explanatory variable for returns, *Journal of Accounting Research Vol. 29*, No. 1, pp. 19-36

Eko, S. (2020) The Evolution in Value Relevance of Accounting Measures in Indonesia, *Gadjah Mada International Journal of Business*, 22(1), pp. 49–73.

Fama, E.F. Fisher, L. Jensen, M.C. & Roll, R. (1969) The Adjustment of Stock Prices to New Information, *International Economic Review*, Department of Economics, University of

Pennsylvania and Osaka University Institute of Social and Economic Research Association, vol. 10(1), pages 1-21, February.

Fama E.F. (1970) Efficient Capital Markets: A Review of Theory and Empirical Work The Journal of Finance Vol. 25, No. 2, *Papers and Proceedings of the Twenty-Eighth Annual Meeting of the American Finance Association New York*, N.Y. December, 28-30, 1969 (May, 1970), pp. 383-417

FASB (2018) Statement of Financial Accounting Concepts No. 8, *International Accounting Standards Board*, London, UK (2018)

Francis, J. & Schipper, K. (1999) Have Financial Statements Lost Their Relevance?
Journal of Accounting Research Vol. 37, No. 2 (Autumn, 1999), pp. 319-352
Published By: Wiley

Garavaglia, S. & Sharma, A. (1998) A Smart Guide to Dummy Variables: Four Applications and a Macro, Dun & Bradstreet Murray Hill, New Jersey 07974

Georgiou, O. (2017) The worth of fair value accounting: Dissonance between users and standard setters. *Contemporary Accounting Research* vol. 35, no. 3, pp. 1297-1331

Goldberger, A. S. (1991) Multicollinearity. *A Course in Econometrics*. Cambridge: Harvard University Press. pp. 245–53.

Gordon, M.J. and Shapiro, E. (1956) Capital Equipment Analysis: The Required Rate of Profit, *Management Science, 3*,(1) (October 1956) 102-110.

Gulhan, S. (2012) Value Relevance of Book Value Earnings Under the Local GAAP and IFRS: Evidence from Turkey, *Ege Akademik Bakis (Ege Academic Review)* 2012/07/01

Hair, J. Ringle C. and Sarstedt M. (2011) PLS-SEM: Indeed a Silver Bullet, *Journal of Marketing Theory and Practice,* vol. 19, no. 2 (Spring 2011), pp. 139–151

IFRS Foundation (2021a) About IFRS Foundation, Available from:
https://www.ifrs.org/about-us/who-we-are/
[Accessed 7th May 2021]

IFRS Foundation (2021b) About IASB, Available from:
https://www.ifrs.org/groups/international-accounting-standards-board/
[Accessed 10th May 2021]

IFRS Foundation (2021c) Why global accounting standards? Available from:
https://www.ifrs.org/use-around-the-world/why-global-accounting-standards/
[Accessed 10th May 2021]

IFRS Foundation (2021d) IFRS 13 Fair Value Measurement, Available from:
https://www.ifrs.org/issued-standards/list-of-standards/ifrs-13-fair-value-measurement/
[Accessed 7th May 2021]

IFRS Foundation (2021e) Post-Implementation Review: IFRS 13 Fair Value Measurement, December 2018. page 6. Available from:
https://www.ifrs.org/content/dam/ifrs/project/pir-ifrs-13/published-documents/pir-ifrs-13-feedback-statement-dec-2018.pdf [Accessed 7th May 2021]

IFRS Foundation (2021f) IFRS 9 Financial Instruments, Available from:
https://www.ifrs.org/issued-standards/list-of-standards/ifrs-9-financial-instruments/
[Accessed 10th May 2021]

IFRS Foundation, (2021g), IFRS 16 Leases, Available from:
https://www.ifrs.org/issued-standards/list-of-standards/ifrs-16-leases/
[Accessed 10th May 2021]

International Accounting Standards Board (IASB) (2018) Conceptual Framework for Financial Reporting 2018, IFRS Foundation Publications Department, 30 Cannon Street, London, EC4M 6XH, United Kingdom.

James, G. Witten, D. Hastie, T. Tibshirani, R. (2013) *An Introduction to Statistical Learning: with Applications in R*. Publisher: Springer-Verlag New York. Series ISSN 1431-875X, DOI 10.1007/978-1-4614-7138-7. p. 69-71

Kutner, M. H. Nachtsheim, C. J. Neter, J. (2004) *Applied Linear Regression Models* (4th ed.). Published By: McGraw-Hill Irwin.

Karğın, S. (2013) The Impact of IFRS on the Value Relevance of Accounting Information: Evidence from Turkish Firms, *International Journal of Economics and Finance; Vol. 5, No. 4; 2013*

King, R. D. and Langli, J. C. (1998) Accounting diversity and firm valuation, *The International Journal of Accounting, 1998,* vol. 33, issue 5, 529-567

Kirch W. (2008) Pearson's Correlation Coefficient.
(eds) *Encyclopedia of Public Health*. Springer, Dordrecht.

Laux, C. and Leuz, C. (2010) Did Fair-Value Accounting Contribute to the Financial Crisis?, J*ournal of Economic Perspectives,* 24 (1): 93-118.

Lo, K. and Lys, T. Z. (2000) The Ohlson Model: Contribution to Valuation Theory, Limitations, and Empirical Applications, *Sauder School of Business Working Paper*

Lööw, A. (2015) IFRS 16 - ny leasingstandard, *pwc.se*
https://www.pwc.se/sv/redovisning/ny-leasingstandard-snart-klar.html
[Accessed 10th May 2021]

Modigliani, F. and Miller, M.H. (1958) The cost of capital, corporate finance and the theory of investment. *American Economic Review* 48, 261–97.

Morck, R. Shleifer, A. and Vishny, R. (1990) The Stock Market and Investment: Is the Market a Sideshow?, *Brookings Papers on Economic Activity,* 21 (2): 157-216.

Nasdaq - OMX Nordic, (2021) "OMXS30", Available online: http://www.nasdaqomxnordic.com/index/index_info?Instrument=SE0000337842, [Accessed 28th March 2021]

Nijam, H. M. and Jahfer, A. (2018) IFRS Adoption and Value Relevance of Accounting Information: Evidence from a Developing Country, *Global Business Review*, 19(6), pp. 1416–1435.

Ohlson, J.A. (1995) Earnings, Book Values, and Dividends in Equity Valuation. *Contemporary Accounting Research* 11: 661-687.

Osborne, J. & Waters, E. (2002). Four Assumptions of Multiple Regression That Researchers Should Always Test. *Practical Assessment, Research & Evaluation*. Vol. 8, Article 2.

Oxelheim, L. and Wihlborg, C. (1987) *Macroeconomic uncertainty : international risks and opportunities for the corporation,* Published By: Wiley

Oxelheim, L, (1990) *International Financial Integration*, Published By: Springer-Verlag Berlin Heidelberg

Oxelheim, L. and Wihlborg, C. (1991) 'ACCOUNTING FOR MACROECONOMIC INFLUENCES ON THE FIRM', *THE INDUSTRIAL INSTITUTE FOR ECONOMIC AND SOCIAL RESEARCH,* No. 308, 1991

Paolone, F. (2020) *Accounting, Cash Flow and Value Relevance*. Published By: Springer Nature Switzerland AG, First Edition, p. 42.

PwC, (2017) IFRS 9 Financial Instruments, p. 3, Available from: https://www.pwc.com/gx/en/audit-services/ifrs/publications/ifrs-9/ifrs-9-understanding-the-basics.pdf [Accessed 10th May 2021]

Retriever Business (2021). Business Info. Available from: https://app-retriever-info-com.ludwig.lub.lu.se/services/archive? [Accessed 16th April 2021]

Riedl, E. J. Sun, E. Y. and Wang, G. (2021) 'Sentiment, Loss Firms, and Investor Expectations of Future Earnings', *Contemporary Accounting Research*, 38(1), pp. 518–544.

Riksbanken.se, (2021), "Årsgenomsnitt valutakurser (ackumulerat), Available online: https://www.riksbank.se/sv/statistik/sok-rantor--valutakurser/arsgenomsnitt-valutakurser/, [Accessed 12th May 2021]

Shih-Cheng, L. Jiun-Lin, C. and Ming-Shann, T. (2014) An Empirical Investigation of the Ohlson Model–A Panel Cointegration Approach, *Australasian Accounting, Business and Finance Journal*, 8(2), pp. 35–51.

Shreyes, N. R. and Gowda, K. N. (2018) An Empirical Study of Value Relevance of Financial Reporting in Indian Corporate Sector, *IUP Journal of Accounting Research & Audit Practices*, 17(2), pp. 7–21. [Accessed 19th May 2021].

Stenka, R. and Jaworska, S. (2019) The use of made-up users. Acc. *Organ. Soc*.

Tsalavoutas, I., Andre, P., Evans, L. (2012) The transition of international financial reporting standards and the value relevance of financial statements in Greece. *The British Accounting Review*, 44, p. 262-277

Wolpert, D. H. (1992) Stacked Generalization Neural Networks 5(2):241-259
December 1992

Yasean, A. T., Mohammad A. (2017) Have accounting numbers lost their value relevance during the recent financial credit crisis?, *The Quarterly Review of Economics and Finance*, Volume 66, Pages 182-191, ISSN 1062-9769.

Appendix A - Companies Included

Table 11. List of companies included in this thesis and their respective industry sector.

Company Name	Sector	Listed between 2005-2020
ABB Ltd	Industrial Goods and Services	YES
Alfa Laval	Industrial Goods and Services	YES
ASSA ABLOY B	Construction and Materials	YES
AstraZeneca	Healthcare	YES
Atlas Copco A	Industrial Goods and Services	YES*
Atlas Copco B	Industrial Goods and Services	YES
Autoliv SDB	Automobiles and Parts	YES
Boliden	Basic Resources	YES
Electrolux B	Consumer Products and Services	YES
Ericsson B	Telecommunications	YES
Essity B	Personal Care, Drug and Groceries	NO**
Evolution Gaming Group	Travel and Leisure	NO**
Getinge B	Healthcare	YES
Hennes & Mauritz B	Retail	YES
Hexagon B	Technology	YES
Investor B	Financial Services	YES
Kinnevik B	Financial Services	YES
Nordea Bank Abp	Banks	YES
Sandvik	Industrial Goods and Services	YES
SCA B	Basic Resources	YES
SEB A	Banks	YES
Securitas B	Industrial Goods and Services	YES
Skanska B	Construction and Materials	YES
SKF B	Basic Resources	YES
Sv. Handelsbanken A	Banks	YES
Swedbank A	Banks	YES
Swedish Match	Food, Beverage and Tobacco	YES
Tele 2 B	Telecommunications	YES
Telia Company	Telecommunications	YES
Volvo B	Industrial Goods and Services	YES
Total companies used in sample (n):		27

**Excluded as Atlas Copco B was used.*

***Excluded because of not being listed in the required period.*

Appendix B - Correlation Results

Table 12. Correlation table showing the correlations between all the data used in the regression analysis.

Correlations

		SP	BV	EPS	OMXS30
SP	**Pearson Correlation**	1	.498***	.415***	.371***
	Sig. (2-tailed)		.000	.000	.000
	N	432	432	432	432
BV	**Pearson Correlation**	.498***	1	.582***	.143***
	Sig. (2-tailed)	.000		.000	.003
	N	432	432	432	432
EPS	**Pearson Correlation**	.415***	.582***	1	.139***
	Sig. (2-tailed)	.000	.000		.004
	N	432	432	432	432
OMXS30	**Pearson Correlation**	.371***	.143***	.139***	1
	Sig. (2-tailed)	.000	.003	.004	
	N	432	432	432	432

*** *Correlation is significant at the 0.01 level (2-tailed).*

All chosen variables show a statistically significant association between each other.

Appendix C - Heteroscedasticity & Normality Tests

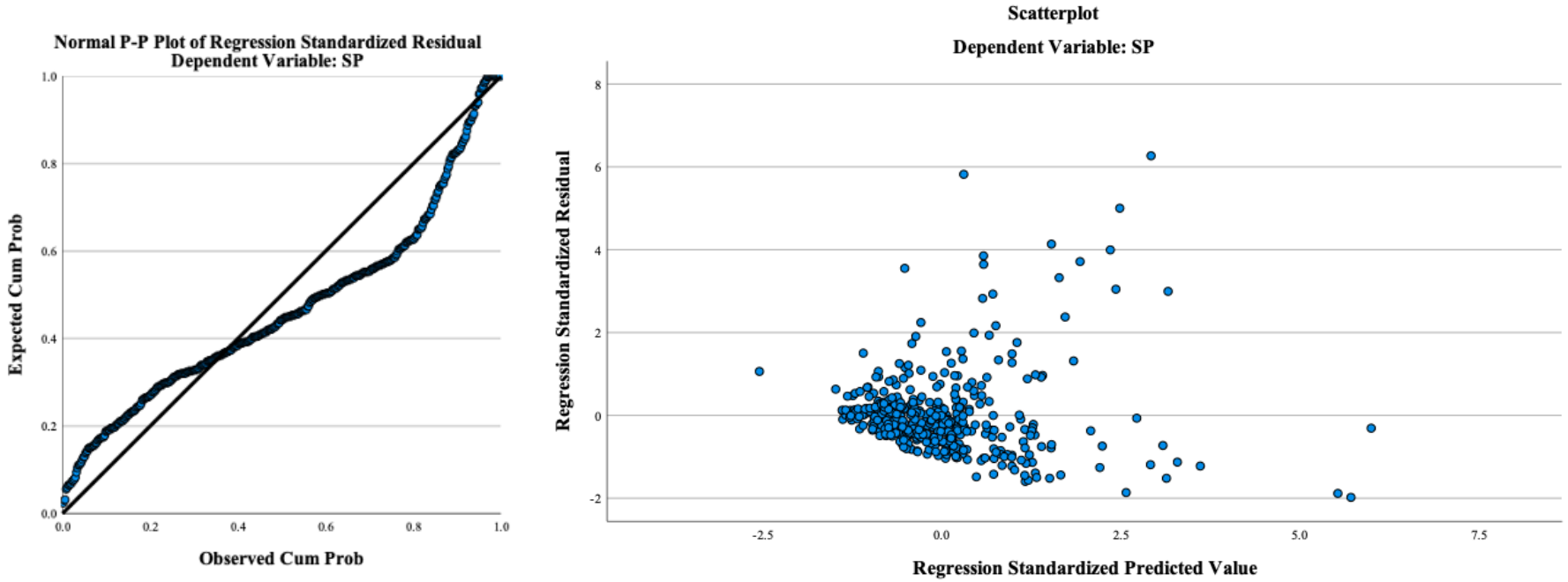

Figure 3. Normal P-P plot of the regression data to check for the normality of the error terms and scatterplot of the regression residuals to check for heteroscedasticity.

The above figure is used to test for the normality of the error terms. Perfect variance in the error terms would lie as close to the diagonal line as possible, indicating no signs of heteroscedasticity. While the above figure shows some signs of heteroscedasticity, the VIF values presented in the results section of this thesis overall show VIF values of mostly under 4, with only one observed VIF value exceeding 5. As also indicated by the above right-hand graph, no significant amounts of heteroscedasticity are present in the data.