Has the amendment of IAS 19 increased the value-relevance of OCI in the Swedish stock market?

Authors:  Sebastian Bauer  
Victor Lake

Supervisor:  Catherine Lions
ABSTRACT

The evidence of this research paper suggests an increased value-relevance of OCI in the Swedish stock market after the 2011 amendment of IAS 19. This amendment eliminated the popular corridor approach that ‘smoothed’ the recognition of actuarial gains and losses and required companies instead to recognize such remeasurements directly to their full extent in OCI. We reason that the current economic environment marked by low interest rates together with demographic trends in life expectancy have amplified the impact of the standard revision on financial statements. Moreover, this research paper is conducted in a Swedish setting that is characterized by widespread occupational pension schemes. In line with informational accounting research, we use regression models to identify whether OCI has more explanatory power for stock market prices and returns. Shares listed on NASDAQ OMX Stockholm are investigated for this purpose. Furthermore, in the course of this research, we revisit the controversial debate on comprehensive income reporting and work out inconsistencies in current IFRS reporting.

Keywords:

Value-relevance; accounting standard change; pension accounting; IAS 19; defined benefit pensions; OCI; comprehensive income reporting.
THIS PAGE IS LEFT BLANK INTENTIONALLY
ACKNOWLEDGEMENT

We are deeply indebted to Catherine Lions whose prudent supervision laid the foundation of this thesis project and greatly enhanced its quality. Merci beaucoup!

Umeå, 20th May 2016

___________________  ___________________
Sebastian Bauer       Victor Lake
THIS PAGE IS LEFT BLANK INTENTIONALLY
# TABLE OF CONTENTS

1. Introduction .................................................................................................................. 1
   1.1 Problem background ................................................................................................. 1
   1.2 Research question .................................................................................................... 2
   1.3 Research gap ............................................................................................................ 3
   1.4 Research purpose ..................................................................................................... 3
   1.5 Target audience ....................................................................................................... 4
   1.6 Research contribution .............................................................................................. 4
   1.7 Limitations ............................................................................................................... 5
   1.8 Ethical considerations .............................................................................................. 6
   1.9 Disposition ............................................................................................................... 7

2. Methodology .................................................................................................................. 9
   2.1 Research philosophy ............................................................................................... 9
      2.1.1 Epistemology .................................................................................................... 9
      2.1.2 Ontology ......................................................................................................... 10
   2.2 Research approach ................................................................................................. 11
   2.3 Research design ....................................................................................................... 12
      2.3.1 General design purpose ................................................................................... 12
      2.3.2 Research strategy ............................................................................................ 13
      2.3.3 Research choice .............................................................................................. 14
      2.3.4 Time horizon .................................................................................................. 14
   2.4 Literature selection ................................................................................................. 15
   2.5 Ethical considerations ............................................................................................. 16

3. Situating the research question – The broader picture ............................................. 17
   3.1 Occupational pensions ............................................................................................ 17
   3.2 Low interest rate environment ............................................................................... 19
   3.3 Other remeasurement considerations ..................................................................... 22
   3.4 A closer look into Sweden ...................................................................................... 22
   3.5 Ethical considerations ............................................................................................. 23

4. Theoretical framework ................................................................................................. 25
   4.1 Accounting standards and accounting theory ......................................................... 25
      4.1.1 General accounting theory .............................................................................. 25
      4.1.2 Relevant economic or managerial theories ....................................................... 26
      4.1.3 Accounting standards’ conceptual framework ................................................. 28
4.1.4 Trends in the perspective of financial reporting .................................................. 31
4.1.5 Changes in accounting standards ........................................................................ 32
4.2 Pension accounting .................................................................................................. 33
  4.2.1 International Accounting Standard 19 – Employee Benefits ................................ 33
  4.2.2 Significant changes and implications ................................................................. 36
  4.2.3 Concerns in pension accounting ......................................................................... 37
4.3 Other comprehensive income .................................................................................. 39
  4.3.1 Overview of current IFRS OCI ........................................................................... 39
  4.3.2 Issues in comprehensive income reporting ....................................................... 42
  4.3.3 The point of view of the IASB ............................................................................. 45
4.4 Value-relevance ....................................................................................................... 45
  4.4.1 Interpretations and perspectives of value-relevance ......................................... 45
  4.4.2 Types of value-relevance studies ...................................................................... 47
  4.4.3 Theories underlying value-relevance studies .................................................... 48
  4.4.4 Models on value-relevance ............................................................................... 49
    4.4.4.1 General discussion of value-relevance models ........................................... 49
    4.4.4.2 Price-level models ...................................................................................... 50
    4.4.4.3 Return-level models ................................................................................... 51
  4.4.5 Literature review of previous studies ................................................................. 52
4.5 Ethical considerations .............................................................................................. 55
5. Data ........................................................................................................................... 58
  5.1 Company selection ................................................................................................. 58
  5.2 Market data selection ............................................................................................ 60
  5.3 Accounting data selection .................................................................................... 61
  5.4 Ethical considerations ............................................................................................ 63
6. Results ....................................................................................................................... 64
  6.1 Descriptive data discussion ................................................................................... 64
  6.2 Inferential data discussion ..................................................................................... 72
    6.2.1 Statement of hypotheses and corresponding data sets .................................... 72
    6.2.2 Pre-testing of data .......................................................................................... 74
    6.2.3 Interpreting parameters .................................................................................. 76
    6.2.4 Regression results .......................................................................................... 77
      6.2.4.1 Regression results for our first set of hypotheses ....................................... 77
      6.2.4.2 Regression results for our second set of hypotheses ................................... 81
LIST OF TABLES

Table 1. Summary of previous studies. ................................................................. 55
Table 2. Overview of collected market data. ......................................................... 60
Table 3. Overview of collected accounting data. .................................................. 62
Table 4. Status of defined benefit plans (2010). .................................................. 65
Table 5. Status of defined benefit plans (2015). .................................................. 66
Table 6. Magnitude of unrecognized gains and losses. ........................................ 67
Table 7. Magnitude of OCI .................................................................................. 68
Table 8. Magnitude of net income....................................................................... 68
Table 9. Relative size of OCI to net income. ...................................................... 69
Table 10. Magnitude of OCI (absolute values). .................................................... 70
Table 11. Relative size of OCI to net income (absolute values). ......................... 70
Table 12. Magnitude of remeasurements. ............................................................ 71
Table 13. Set 1 regression results - Price-level model (1a). .................................. 77
Table 14. Set 1 regression results - Price-level model (1b). .................................. 78
Table 15. Set 1 regression results - Return-level model (2a). ............................... 78
Table 16. Set 1 regression results - Return-level model (2b). .............................. 79
Table 17. Set 1 regression results - Price-level model (1c). .................................. 79
Table 18. Set 1 regression results - Price-level model (1d). .................................. 80
Table 19. Set 1 regression results - Return-level model (2c). .............................. 80
Table 20. Set 1 regression results - Return-level model (2d). .............................. 81
Table 21. Set 2 regression results - Price-level model (1a). .................................. 81
Table 22. Set 2 regression results - Price-level model (1b). .................................. 82
Table 23. Set 2 regression results - Return-level model (2a). .............................. 82
Table 24. Set 2 regression results - Return-level model (2b). .............................. 83
Table 25. Set 2 regression results - Price-level model (1c). .................................. 83
Table 26. Set 2 regression results - Price-level model (1d). .................................. 84
Table 27. Set 2 regression results - Return-level model (2c). .............................. 84
Table 28. Set 2 regression results - Return-level model (2d). .............................. 85
Table 29. Summary on relative value-relevance (set 1). ...................................... 85
Table 30. Summary on incremental value-relevance (set 1). ............................... 86
Table 31. Summary on relative value-relevance (set 2). ...................................... 87
Table 32. Summary on incremental value-relevance (set 2). ............................... 87
Table 33. Summary on hypotheses. ................................................................... 89
LIST OF FIGURES

Figure 1. Active membership in pension schemes (U.K.) .............................................................. 17
Figure 2. Status of defined benefit schemes (U.K.), ........................................................................ 18
Figure 3. Status of defined contribution schemes (U.K.) ................................................................. 18
Figure 4. Trend in 10y government bond yields. ............................................................................ 20
Figure 5. Trend in Aaa corporate bond yields. ................................................................................ 20
Figure 6. Trend in IAS 19 discount rates. ....................................................................................... 21
Figure 7. Classification of pension expenses (IAS 19 revised). ....................................................... 35
Figure 8. Components of OCI. ......................................................................................................... 40
Figure 9. Illustrative example of OCI accounting. ........................................................................ 41
Figure 10. Industry classification before adjustments. ................................................................. 58
Figure 11. Industry classification after adjustments. ................................................................. 59
Figure 12. Market capitalization classification ............................................................................. 60
Figure 13. Occurrence of defined benefit plans. ............................................................................ 64
Figure 14. Occurrence of material defined benefit plans. ............................................................. 65
Figure 15. Overview of chosen method IAS 19 old. ..................................................................... 66
LIST OF ABBREVIATIONS

EPS  Earnings per share
FASB  Financial Accounting Standards Board
IAS  International Accounting Standards
IASB  International Accounting Standards Board
IFRS  International Financial Reporting Standards
OCI  Other comprehensive income
SEC  Securities and Exchange Commission
SFAS  Statement of Financial Accounting Standards
U.S. GAAP  United States Generally Accepted Accounting Principles
1. INTRODUCTION

1.1 Problem background

This IAS 19 guides the accounting for and disclosure of employee benefits which include amongst others retirement benefits in the form of pensions (IAS 19.1; IAS 19.3). The basic idea in accounting for post-employment benefits is that an expense and a corresponding liability for current and future payments to employees shall be recognized by the entity already at the time when the employee provides the underlying service (IAS 19.1). This accrual accounting due to the temporal divergence between expense recognition and payment requires a yearly estimate of the eventual pension obligation (IAS 19.55). In order to perform such an estimate, actuarial assumptions are necessary to determine the ultimate pension cost (IAS 19.55; IAS 19.76). Such actuarial assumptions comprise e.g. discount rates in order to determine present values and mortality rates in order to estimate the duration of pension payments (IAS 19.76).

The accounting rules in place before the amendment of IAS 19 allowed recognizing such actuarial gains and losses in three arbitrary ways: An immediate recognition of the total amount through OCI, an immediate recognition through profit or loss or a deferred recognition through profit or loss (the so-called corridor approach) (Ernst & Young, 2011b, p. 3). The amended version of IAS 19 in contrast allows only an immediate recognition in OCI (Ernst & Young, 2011b, p. 3). The introductory example of SAS Group which used the corridor approach highlights the potentially material effect that this change in an accounting standard has. Moreover SAS Group is not an isolated case as the corridor approach was a popular option for many companies (Ernst & Young, 2011b, p. 3).

Demographic trends together with the economic environment amplified actuarial effects. Nowadays economic environment is characterized by low interest rates. These low interest rates have a direct effect on the size of actuarial gains and losses as they influence the discount rate needed to calculate the present value of pension obligations. Hence, a low interest rate implies a low discount rate which ceteris paribus increases the present value of the obligations. In addition to interest rates, demographic trends in life expectancy put pressure on pension liabilities as longer lives mean longer periods to be covered by pension benefits. In consequence pension costs increased for companies offering such pension plans (Bräuninger, 2014, p. 9).

Against this background, the Swedish stock market seems a logic choice to study the impact of changed IFRS pension accounting rules for mainly the following two reasons. Firstly, Sweden is known for its social welfare state and the widespread occurrence of
occupational pension schemes (OECD, 2015, p. 1). Secondly, Swedish listed companies are bound by EU Regulation 1606/2002 which requires them to publish their consolidated financial statements according to IFRS.

The abolishment of the corridor approach in the course of the amendment of IAS 19 is based on a long-standing concern about the misleading effect of obscured pension costs that a deferred or ‘smoothed’ recognition of such costs creates (Fasshauer et al., 2008, p. 13). The accounting issues involved are, however, not limited to this. Rather we argue that the requirement to recognize actuarial gains and losses in OCI puts the discussion of comprehensive income reporting back on the agenda. Arguments in favor of OCI reporting usually point to an increased informational value of disaggregated accounting statements (Rees & Shane, 2012, p. 790, 791). Taking such an informational perspective in evaluating accounting standards mirrors the trend in financial reporting to put investors’ information needs at the heart of accounting standard setting (Beaver, 1998, p. 5). Hence, disaggregated income reporting benefits investors if transitory gains and losses are separately reported from earnings that reflect an entity’s operating performance (Rees & Shane, 2012, 790, 791). Such a distinction is decision-useful from an investors’ point of view as it facilitates the valuation process (Linsmeier et al., 1997, p. 124, 125). Economic events and transactions recognized in OCI are said to differ to those captured in net income by their value-relevance, persistency or predictive value (Jones & Smith, 2011, p. 2049). The literature review of Rees & Shane (2012) on OCI demonstrates the sizeable amount of academic research that has been performed in order to identify differences in informational characteristics between net income and OCI. However, research on the value-relevance of OCI and its individual components is best described by finding mixed evidence (Jones & Smith, 2011, p. 2051).

1.2 Research question
As argued for in the problem background, the recent amendment of IAS 19 has material effects on financial statements. It is reasonable to assume that as a consequence the amounts disclosed in OCI have increased in absolute size as well as relative to those in profit or loss. This puts the question of OCI’s value-relevance back on the agenda, especially as former research on this topic led to mixed results and left the issue unsolved.

Hence, the abovementioned considerations lead to the following research question:

“Has the amendment of IAS 19 increased the value-relevance of OCI in the Swedish stock market?”

In order to address the research question stock market prices and returns will be used to assess whether correlations between those and accounting performance measures can be established. This will serve as a proxy to gauge whether investors deem OCI measures as containing value-relevant information. To be able to answer the research question and fulfill the research purpose we will investigate two time periods, namely the financial years 2010 to 2012 and the financial years 2013 to 2015. The former period is regulated by IAS 19 in its outdated version while the latter is adopting the revised version. By comparing and analyzing the separate findings we argue for whether the data allow inferring a change in value-relevance of OCI.
1.3 Research gap
Research on the value-relevance of different accounting measures such as revenue, net income, comprehensive income and OCI is not new and several studies have been covering this area (Rees & Shane, 2012, p. 794). Yet, there is a clear research gap for the following four reasons.

Firstly, because accounting standards are in a constant process of revision and change. OCI has been a particularly hot topic the last years accompanied by various amendments to it (Rees & Shane, 2012, p. 790-792). As every change – to a different extent – entails consequences on the way economic transactions are recognized and presented in the financial statements, it also has consequences on how the information provided can be interpreted and used. Therefore, results of previous studies assessing the value-relevance based on outdated comprehensive income conceptions cannot simply be extrapolated to date. Thus, the material amendment of IAS 19 and the likely material consequences it has on the allocation of gains and losses to OCI puts the issue of value-relevance of OCI back on the agenda.

Secondly, the current economic environment contributes to the impact that the change in IAS 19 has on financial statements. The low interest rate environment puts pressure on companies’ pension liabilities as their present value increases due to a low discount rate. In addition, demographic changes, particularly increasing longevity add to pension costs. These remeasurements are now recognized in OCI. As this leads to relatively material amounts to be recognized in OCI over the last years, it is likely to reinforce financial statement users’ attention to OCI.

Thirdly, the use and definition of OCI varies significantly between accounting standards such as US GAAP or IFRS, so that e.g. OCI components according to US GAAP are unlike those according to IFRS (Rees & Shane, 2012, p. 791, 792). The majority of the literature covers value-relevance of OCI in a US GAAP setting which at least questions the validity of these studies’ results in an IFRS setting.

Fourthly, in line with this argumentation goes the fact that no study focused on a pure Swedish context. This is relevant since Sweden is known for its widespread occupational pension scheme which implies relatively higher remeasurements in retirement benefits than in other countries or regions with less developed employer pension schemes. This paves the way to assume that OCI’s value-relevance is different and unique to the national setting which in turn implies that studies covering different countries or a particular group of countries cannot be applied to Sweden and leaves a gap to be researched.

1.4 Research purpose
The objective of this paper is to assess whether a change in an accounting standard, i.e. IAS 19, induced equity investors to scrutinize OCI more closely and in turn increased OCI’s value-relevance. Apart from presenting an answer to this overarching research question, the research serves additional purposes.

Firstly, from an accounting theory point of view, this research intends to add to the longstanding discussion on whether there should only be one single comprehensive income statement or whether it is justified to subdivide net income and OCI. This division is often
argued for by assuming that OCI items are of less importance for investors as they are
transitory and not reliable for forecasting future cash flows (Rees & Shane, 2012, p. 790, 791). In other words, OCI items are not seen as value-relevant. In case we obtain evidence
for increased value-relevance this presumption must be questioned. Secondly, we will
investigate the view of the IASB on how accounting standards ought to be and which
objectives they shall serve. Based on the evidence found in this research paper we will
gauge whether the amendment of IAS 19 leads to consequences that are consistent with
these principles. Thirdly, we will investigate whether the changes introduced by the
revision of IAS 19 can be supported by broader economic theories. Fourthly, the research
intends to shed light into the real, measurable effects accounting standard changes have.
Particularly, whether such standard changes translate into adapted behavior of equity
investors as mirrored by stock market to accounting data correlations. Last but not least, an
important purpose of this paper is to put the changed accounting rules into context. This
way we want to demonstrate not only the complexity of issues involved in accounting
standard setting but also to highlight intertwined ethical issues.

As the standard amendment came into effect for financial years beginning January 1st,
2013, there are no studies yet that specifically address these issues by using actual data
from annual reports. The explicit focus on Swedish listed companies is motivated by the
fact that post-employment benefits are well developed which serves the purpose of
specifying our research findings and eliminating potential distortive effects that a different
legal and social environment could have on the results.

1.5 Target audience
This paper addresses an amendment in an IFRS accounting standard and its consequences
on the use of financial statement information by equity investors. The results are of interest
for various parties. Firstly, as this research uses stock market figures to infer value-
relevance of OCI and as stock markets are by default driven by equity investors (in a broad
definition including all kind of investors in equity stock), this study provides the single
equity investor with evidence on how the equity market on average assesses the value-
relevance of OCI. Secondly, accounting standard setters are informed about the
implications of a specific change in an accounting standard from an equity investor’s
perspective and are therefore enabled not only to compare the realized consequences with
the amendment’s intention but also to assess eventual unintended outcomes. Thirdly, this
paper targets accounting standard setters as well as academics by furthering the discussion
on accounting theory and in particular the discussion on the role of OCI. Fourthly, financial
statement preparers and users in general are provided with evidence on the consequences
that the amendment of IAS 19 had on financial statements which facilitates their analysis.
Lastly, as a side effect, this research paper collects, structures and analyzes a sizeable
amount of data concerning occupational defined benefit pension plans in Swedish listed
companies which can be of interest to various parties in the broader context of trends in
pension plans.

1.6 Research contribution
The abovementioned considerations lead to the following theoretical and practical research
contributions:
From a theoretical point of view, this paper adds to the so far mixed results on OCI’s value-relevance from previous studies and updates this strain of literature to the current IFRS accounting rules. In particular, it explores whether the amendment of IAS 19 increased the value-relevance of OCI for equity investors. By focusing on the Swedish equity market, the study clearly delimits its conclusions to a specific socio-economic context. At the same time, our findings contribute to accounting theory by furthering the discussion on the usefulness of separating net income and OCI. Moreover, we contribute to accounting theory and accounting standard setters’ conceptual frameworks in comparing the effects of an accounting standard change with its likely intentions. In addition, we shed light on whether and how equity investors adapt their behavior in case of standard amendments.

From a more practical point of view, our findings inform the IASB about implications of the amended IAS 19 from an equity market perspective. The study therefore allows comparing its findings with the amendment’s intentions and drawing up eventual unintended consequences. In addition, this paper enables financial statement users and preparers to better understand the implied consequences of the amendment of IAS 19 on financial statements and its interrelations with equity market prices. Furthermore, the collected data set informs interested parties on the size of defined benefit pension plans in Swedish listed companies and on developments in such pension plans over the last years. Finally, implications of the revision of IAS 19 in the broader socio-economic context are discussed.

The study comes in due time since, while the amendment is still quite recent, the data available from now three subsequent annual reports that are based on the new rules render an assessment of the effects possible.

1.7 Limitations
This paper does not allow drawing conclusions on whether stock market participants actually use accounting information in their decision process. This limitation is due to the fact that accounting information is neither the only nor necessarily the timeliest information that investors are able to receive about a company. This possibility of investors using other information can neither be sufficiently controlled for nor eliminated in our research method. Yet, in order to limit the effect of more timely information we collect market data directly at the end of the publishing deadline set by the Swedish stock market, namely two months after the reporting date. In addition, insider trading regulations limit the opportunities to exploit more timely information. More importantly, however, we will argue in the theoretical discussion of value-relevance that the actual use of accounting data in evaluating stock market prices is not a necessary condition for value-relevance of accounting data.

This paper is a time-series analysis. In its very definition such an analysis covers a specific event over more than one period. The research periods, however, are not only different with regard to IAS 19. Market prices can be influenced by a sheer endless plurality of factors and events. To illustrate, the first years of our research time frame can reasonably be said to be relatively more influenced by the financial crisis of 2007 than more recent periods. Such a setting can translate in different investor behavior that influences the results of our regression models. Carving out the exact effect that is due exclusively to a change in an accounting standard is therefore a methodological impossibility as one cannot control for
every possible variable. Such distorting effects are inherent in time-series research and eliminating these would require alternative approaches, e.g. experimental designs. However, as our research design was used in similar academic research we assume that our findings are suitable to imply an answer to our research question. However, in drawing conclusions from this research paper the mentioned inherent research problem should be borne in mind.

In addition, it is not possible to draw a conclusion on the degree of value-relevance of pension plans in general. Our line of argumentation argues for increased value-relevance of OCI due to a relatively more sizeable display of actuarial gains and losses arising from pension plans in OCI. Yet, the value-relevance of pension plans itself could also be inferred from balance sheet positions or explanations in the notes. Neither of these is tested in our research design which prohibits a general statement on the value-relevance of a firm’s pension plan.

1.8 Ethical considerations
The selection of this master thesis’ topic is foremost influenced by our educational background. We are students of business administration with one majoring in finance whilst the other one is majoring in accounting. A basic precondition for the final topic was therefore the fulfillment of both interests – accounting and finance. This is achieved by scrutinizing the change of an IFRS standard and evaluating its effect on the Swedish stock market. It shall be noted that we perform this research independently and do therefore receive neither financial support nor are we bound to any ideological external pressures.

Interest rates, demographic trends and old-age social security concerns are common topics in the economic media over the last years and raised our interest to not only further our knowledge in these areas but also to contribute to insights with theoretical and practical relevance. In addition, companies’ economic burden stemming from pension obligations is and continues to be a hot topic. Therefore, the coincidence of the ongoing topicality of these issues with the rather recent release of the amendment of IAS 19 provided an outstanding opportunity to seize upon.

As the amended IAS 19 leads ceteris paribus to more gains and losses to be accounted for in OCI compared to net income, we expect that the amendment of IAS 19 made OCI relatively more value-relevant than it was before this change took effect. We therefore believe that financial markets are to a certain extent efficient in processing information, or as shown in the theoretical discussion, that annual reports are at least summarizing value-relevant information. We are also convinced that accounting standard setting has to be situated in a broader context and that it has consequences on the socio-economic environment beyond the sole technical accounting aspects.

These preconceptions existed at the beginning of this research project. An author’s personal beliefs and feelings inevitably influence a research project (Saunders et al., 2009, p. 9). Yet, by reflecting upon and determining such preconceptions we add to obviate a possible research bias. The objectivity of this research is strengthened by the methodology elaborated upon in the following chapter.
1.9 Disposition
The structure of this research paper follows the flow of argumentation. In chapter one, we introduced the amendment of IAS 19 and highlighted material implications. In addition, we touched upon the broader economic and social context which will remain a major building block throughout this thesis. From these starting points we logically derived our research question and presented what we want to accomplish with this research paper. In the same step, we clarified whom we are going to address and what cannot be expected from this research paper.

The elaboration upon our methodological choices in chapter two is self evident and we get into the substantial discussion of our research topic by situating the research question into its broader context in chapter three. We opted for such an in-depth presentation of the broader context as we deem the economic and social environment to have material implications on our research question. In fact, we argue that missing the context leads to misunderstanding and misinterpretation of research results. The context serves another important purpose as it allows us to discuss the socio-ethical implications of our research topic.

After having situated the research question we build the theoretical framework in chapter four. In order to allow us making judgments on the revision of IAS 19 we first present general accounting theory. Yet, as we discover that such a comprehensive theory does not exist, we refer back to general economic and managerial theories to derive indications on how accounting standards should be designed. As we deal specifically with IFRS, we introduce their conceptual framework which will serve as a proxy for a general accounting theory. The fact that this thesis is centered on an accounting standard change leads us to further investigate which trends exist in financial reporting and to argue for why accounting standards are necessarily in a constant process of change. The subsequent in-depth discussions on pension accounting and OCI serve two purposes, namely fostering our readers’ understanding of these advanced areas of accounting and presenting the issues involved. After having established these fundamental theoretical pillars of our research paper, we continue with an elaboration upon value-relevance conceptions and provide an illustrative overview of previous studies in this context. The demonstration of the breadth of this subject allows us to sharpen the focus of our research paper. In addition, we establish the link between these previous studies and our research paper in deriving our empirical approach.

Chapter five serves the purpose of introducing our data base. We will argue for the inclusion or exclusion respectively of companies and provide a descriptive overview of the composition of our data base. Furthermore, we will make transparent which market and accounting data we collected and the respective collection method. Both sources and reasons for eventual data adjustments are provided in order to allow our readers to proof review our data base.

Subsequently we will use descriptive and inferential statistics to structure and analyze our data base in chapter six. We opted for an extensive descriptive data discussion as it contributes valuable insights into our research question as well as the related research purposes and even illuminates meaningful implications for our subsequent inferential statistics. Based on our research question and the so far established evidence we derive
telling hypotheses that will be tested using regression analysis. The results will be used to infer statements on value-relevance. The chapter closes with a consolidation of our descriptive and inferential results and a discussion of these based on our theoretical framework.

Chapter seven works out the conclusions of our research paper and summarizes our theoretical and practical contributions. The subsequent discussion of truth criteria serves the purpose of reflecting about the quality of this research paper and clarifies which inferences from our results can be made or which inferences should not be made respectively. Lastly, we provide some ideas for future research in this area.

Finally, we want to point to our choice of concluding each chapter with ethical considerations. This renders two aspects possible. Firstly, our discussion on ethical considerations is thereby performed in a more specific fashion that is closely linked to the discussion in the respective chapters. Secondly, this enables us to distinguish and elaborate separately upon ethical issues that arise in conducting research and such that relate to the socio-ethical context of the research.
2. METHODOLOGY

2.1 Research philosophy

2.1.1 Epistemology

Epistemology is a philosophical research branch and concerns the theory of knowledge and justified belief (Steup, 2005). It tries to answer issues such as what qualifies as knowledge, or in other words, which conditions need to be fulfilled in order to qualify something as knowledge (Steup, 2005). Moreover, epistemology investigates from which information knowledge can be derived and what are the boundaries of knowledge (Steup, 2005). In addition, epistemology inquires the justification of beliefs, in particular how justifications can be deemed as justified themselves and whether such justification exists separately from one’s mind (Steup, 2005). The knowledge of propositions in the form of a subject knows that a proposition is true is at the heart of epistemology (Steup, 2005). Epistemology asks then which conditions need to be fulfilled to qualify a subject’s belief about a proposition as knowledge (Steup, 2005).

According to Saunders et al. (2009, 113-116), there are three major streams within epistemology, namely interpretivism, positivism and realism. These three will be briefly outlined in the following and our chosen stance will be argued for.

An interpretivist stance upon knowledge denies that social sciences can be treated the same way as natural sciences (Saunders et al., 2009, p. 115, 116). It is therefore neither possible nor sufficient to describe the social world via ‘social laws’ that are similar in nature to, e.g. laws in physics (Saunders et al., 2009, p. 116). As the notion ‘interpretivism’ indicates, a focus is brought on the interpretation of humans’ role as social actors and the acknowledgement as well as investigation of differences that arise among humans due to both the individuals concerned and the particular circumstances pertinent at the research timeframe (Saunders et al., 2009, p. 116). The subjectivity of such interpretation stemming from the respective observer or researcher is explicitly acknowledged in interpretivism (Saunders et al., 2009, p. 116). An interpretivist research strives to understand and see the world through the research subjects’ eyes (Saunders et al., 2009, p. 116).

Positivism takes the extreme opposite stance. Instead of perceiving humans as social actors and interpreting their actions and behaviors, positivists concentrate on examining observable information, i.e. facts (Saunders et al., 2009, p. 113). In addition, information that is not observable is denied the status of credibility (Saunders et al., 2009, p. 113). By collecting observable data, positivists strive to establish hypotheses which are subsequently tested for confirmation or denial which closely mirrors a natural science approach (Saunders et al., 2009, p. 113). Contrary to the interpretivist researcher, subjectivity is not licensed in the research. Rather, a as objective and value-free approach as possible is sought after and the knowledge is therefore deemed to be external to the researcher’s own mind (Saunders et al., 2009, p. 114).

In line with positivism, realism states that knowledge in social sciences can be established using methods similar to those in natural sciences (Saunders et al, 2009, p. 114). Therefore, a realist researcher also engages in data collection and analysis in order to create knowledge (Saunders et al, 2009, p. 114). There are two subgroups within realism, namely direct
realism which assumes that we experience the real world in a direct manner independent of our representations of the world and critical realism which adds a mental processing to the experience of the real world (Saunders et al., 2009, p. 114, 115). In consequence, critical realism opens the door to a social construction of knowledge so that knowledge is not fully external to the social actors (Saunders et al., 2009, p. 115). This is best explained in the words of Dobson (2002) who states that “the reality and the value-laden observation of reality operating in two different dimensions, one intransitive and relatively enduring; the other transitive and changing.” Additionally, critical realism allows for changes in the social world, especially that research can drive the change (Saunders et al., 2009, p. 115).

This paper takes a critical realist stance. We deem the use of statistical methods as appropriate in order to create knowledge in management and economics research. Therefore, we will investigate our research question in an empirical manner by collecting observable data and testing hypotheses in order to draw conclusions. In consequence, we do think that by observing stock market reactions we are able to solve our research question and we do not think that a direct inquiry of individual stock market participants in order to establish their subjective meanings and motivations is necessary to create justifiable knowledge. Yet, we share the view that observations of the real world undergo a mental processing and are therefore not external to social actors. This is argued for in our research by the fact that information on actuarial gains and losses were at least to some extent already present before the amendment in IAS 19 in financial statements. The amendment changed mainly their presentation and to a smaller extent knowledge about their absolute value. In conclusion, the perceived sensations have changed which is part of mental processing. Therefore, we go to great lengths in presenting the bigger picture or context in which our research is to be placed. Moreover, research leads to changes in accounting standards which is also in line with a critical realist’s view.

2.1.2 Ontology
Ontology is another fundamental area of philosophy and is broadly spoken a “study of what there is” (Hofweber, 2011). It is concerned with whether things, or in a more abstract manner, entities do actually exist (Hofweber, 2011). In addition, ontology deals with basic features and relations of these entities (Hofweber, 2011). Applied to the social sciences, ontology is about the nature of social entities and asks whether these exist externally to the social actors or whether they are construed and therefore a function of social actors (Bryman & Bell, 2011, p. 20).

The latter stance is taken on by constructionism. This position adheres to the view that social actors are at the origin of social entities and permanently produce and revise them (Bryman & Bell, 2011, p. 22). In consequence, constructionism denies social entities a reality external to social actors (Bryman & Bell, 2011, p. 21). Rather, social entities are the outcome of perceptions and actions of social actors which puts social interactions at the heart of constructionism (Saunders et al., 2009, p. 111). This stance is also reflected by the notion subjectivism which is used as a close synonym to the concept of constructionism (Saunders et al., 2009, p. 111).

Admittedly generally speaking, information about actuarial gains and losses could have been derived, e.g. by studying the respective note on pension obligations in the financial statements.
Objectivism at the opposite corner of the ontological spectrum grants social entities an existence external to social actors (Bryman & Bell, 2011, p. 21). Social entities in an objectivist view therefore have features or attitudes that are not linked to or dependent of features or attitudes of the respective social actor (Bryman & Bell, 2011, p. 21).

This paper takes on an objectivist stance. The main social entities studied in this research are ‘stock markets’ and ‘accounting standards’. We deem them to have a reality that is external to their social actors which comprise, e.g. individual investors, individual financial statement analysts or individuals working at standard setting institutions. Accounting standards are not subject to instantaneous and permanent social construction but delimit rules and regulations that apply to many individuals and should at least in theory be as objective and unaffected by subjective interpretations as possible. Additionally, we test the social entity ‘stock market’ as a whole and do not break down our results on individual investors or inquire them but are interested by the reaction of the stock market perceived as a social entity on its own. Yet, in line with our epistemological point of view, while we grant social entities a reality independent of social actors, we deem this reality to undergo a mental processing by social actors in a second step and therefore to be open to interpretation by social actors. We argue for this point of view as the social entities stock market and accounting standards are not perceived in the same manner by social actors which would condition a uniform response from social actors to them. In reality, however, social actors do not act in the same way to the same underlying reality of social entities and therefore it is reasonable to assume that this reality is subject to mental processing.

### 2.2 Research approach

To approach a research question two generic ways are available, namely a deductive and an inductive approach (Saunders et al., 2009, p. 124). These two approaches differ basically in the logical order of theory and data or information. While data or information precedes theory in an inductive approach, the opposite order is true in a deductive approach (Saunders et al., 2009, p. 124).

Using an inductive approach, a researcher tries to infer theories from observations (Saunders et al., 2009, p. 126). An inductive researcher will first try to understand the nature of the problem before she engages in analyzing the collected information and building theory (Saunders et al., 2009, p. 126). Therefore, a focus is put on the specific context in which the research question is situated (Saunders et al., 2009, p. 126). Inductive approaches are therefore suitable to uncover a broad range of underlying motivations and reasons that lead to alternative explanations for the studied phenomenon (Saunders et al., 2009, p. 126).

Deductive approaches on the other hand are based on the application of theories to collected information or data (Saunders et al., 2009, p. 124). Based on the chosen theories, hypotheses will be deducted which in turn are tested using statistical methods in order to draw conclusions on the viability of the theories tested (Saunders et al., 2009, p. 124, 125). Saunders et al. (2009, p. 125) outline the following characteristics of deductive research

---

2 Saunders et al. (2009, p. 119) present a matrix of how realism or, e.g. positivism relates to a researcher’s ontology and epistemology. This matrix was influential to our understanding and classification of our epistemological and ontological stance.
approaches: The examination of cause-and-effect between variables, the establishment of hypotheses, the collection of data, the use of control variables or controlling tests, the application of a well structured methodology, an objective stance towards the research subject and a tendency to reduce the research question into measureable concepts.

This paper uses a deductive approach. The purpose of this research is not to establish new theories but to apply existing theories in order to draw conclusions that allow answering the research question. The theoretical framework used is not only well established but has also been successfully used in addressing similar research questions in differing contexts. In order to answer the research question, a deductive approach using empirical methods is especially suitable as we are not interested in individual, personal motivations of investors but in measurable reactions of the stock market as a whole. The cause-and-effect relationship in question is moreover readily operationalizable with objective and traceable variables.

The authors acknowledge that the use of a deductive approach leads to a narrow picture of the issue at hand and does by definition not allow producing alternative theories or uncovering effects or explanatory factors that are not incorporated in the research model (Saunders et al., 2009, p. 126). Valuable insight could be gained by using an inductive approach on top of this paper’s deductive approach by interviewing investors and determining their views on OCI and whether they perceive and incorporate OCI differently in their investment decisions after the amendment of IAS 19. This would, however, exceed the time limitations of this research and is therefore left to future research.

2.3 Research design

2.3.1 General design purpose
The research design is inherently linked to and derived from the research question and the research purpose (Saunders et al., 2009, p. 136). Furthermore, a chosen research design has to be compatible with one’s research philosophy (Saunders et al., 2009, p. 137). From an overall point of view, a research purpose can be clustered into three categories, namely exploratory, descriptive and explanatory (Saunders et al., 2009, p. 139).

Explanatory studies are used when a research problem is not straightforward because, e.g. the topic has not been researched extensively before or has just recently emerged and therefore issues regarding a basic understanding and the actual nature of the problem remain unsolved (Saunders et al., 2009, p. 139). In consequence, explanatory studies are often based upon the conduction of interviews to discover the issue at hand (Saunders et al., 2009, p. 140).

As the notion descriptive already indicates, these studies are concerned with describing the research issues at hand. Yet, exclusively descriptive studies will not provide further insight into, e.g. cause-and-effect relationships that are at the heart of the research topic but rather will the reader be left with a clear picture of the issue from which he needs to draw his own conclusions (Saunders et al., 2009, p. 140). Descriptive elements precede often an inductive analysis in explanatory studies (Saunders et al., 2009, p. 140).
At the heart of such explanatory studies is the investigation of cause-and-effect relationships (Saunders et al., 2009, p. 140). Such relationships are often examined with regress to statistical methods in order to draw robust conclusions about them (Saunders et al., 2009, p. 140, 141).

Our research question treats such a relationship. We are examining whether the revision of an accounting standard – the cause – has changed the value-relevance of a financial statement component – the effect. In addition, this research’s objective is not to discover an alternative view or explanation but to see whether an already established relationship has changed. This paper has in consequence an explanatory purpose. As Saunders et al. (2009, p. 138) indicate, the aforementioned categories are not mutually exclusive but can be combined in a useful manner. As we deem the context in which our research question is situated to be highly important for the informative value of our conclusions, we decided to integrate an elaborative section on the bigger picture at hand. Additionally, we are providing extensive descriptive statistics in this paper’s empirical section as these lead to valuable insights in a complementary manner to the regression results. The fact that we do not deem it appropriate to rely solely on explanatory features is also in line with our epistemological stance of critical realism.

2.3.2 Research strategy
The research strategy is first and foremost a logical choice derived from the research question and the research objectives (Saunders et al., 2009, p. 141). It has to be coherent with the aforementioned methodological choices and is restricted by time and available resources (Saunders et al., 2009, p. 141). In the following we will constrain our argumentation to briefly dismiss the research strategy that was in our opinion the most potential candidate aside our final choice and reason for our choice.

An interesting and at first glance appealing research strategy would be to conduct a survey. A survey is generally suitable to investigate relationships and to dismantle their underlying cause and effects (Saunders et al., 2009, p. 144). Applied to our research questions, this could be achieved by creating a standardized questionnaire that is sent to equity investors in the Swedish market and inquire them about their perception and relevance of OCI before and after the amendment of IAS 19. Alternatively, structured interviews could be performed with a sample of these investors. This approach has nevertheless two main shortcomings. Firstly, sampling would be necessary which would introduce uncertainties into the validity of our findings. Secondly, this paper is not interested in the individual motivations or reasoning of certain equity investors but rather in the reaction of the Swedish stock market as a whole. We deem observable capital market data to be superior for these reasons to data collected via a survey. Nevertheless we do acknowledge that such a survey would provide useful information that would be supplementary to our findings. As already stated, we do encourage future research on this topic using survey techniques.

The research strategy we deem most suitable for this research project and which we adopt therefore is archival research. Archival research concerns primarily the use of existing information and data which were not recorded for the purpose of serving any research but for diverse administrative and documentary reasons (Saunders et al., 2009, p. 150). This research strategy is particularly suitable to investigate changes over time (Saunders et al., 2009, p. 150). And this is exactly what our research is about. The archival data we will use
are publicly available in published annual reports or can be collected via economic databases. These data can therefore be deemed to be transparent and objective which greatly adds to this research’s truth criteria. This research strategy follows further logically from our research philosophy and our research approach and is in line with our research purpose. We deem an archival research strategy in consequence superior to other strategies in order to allow us to answer our research question.

2.3.3 Research choice

The term research choice is used by Saunders et al. (2009, p. 151) to describe which kind of data, i.e. quantitative or qualitative, the research is based upon. It concerns therefore both the data collection process and the data analysis procedures (Saunders et al., 2009, p. 151). Quantitative techniques focus on the use of numerical data while qualitative data can be deemed everything else (Saunders et al., 2009, p. 151). The choices are not mutually exclusive but can be combined to form so-called mixed method approaches (Saunders et al., 2009, p. 152).

The issue is to decide which method is best to answer our research question. Our research question is deeply concerned with numerical, i.e. quantitative issues. We are interested in whether a transformed numerical indicator of financial performance, i.e. OCI, has an altered influence on stock market performance which is also measured and expressed in quantitative figures. In addition, we assess that conclusions drawn from ‘hard’, quantitative data are relevant for and trusted by our target audience which are used to think and evaluate issues in quantitative terms. Moreover, quantitative data also enable us to objectively compare the time periods before and after the amendment of IAS 19. As Saunders et al. (2009, p. 153) highlight, mixed methods are especially useful when different research purposes are best answered using different techniques. After reviewing our research purposes we conclude that no research purpose calls for the use of qualitative data and that quantitative data is suitable to fulfill all of the identified purposes.

2.3.4 Time horizon

There are two generic options on how a research project can be set up in regard to the time period studied, namely in a cross-sectional or a longitudinal way (Saunders et al., 2009, p. 155). A research project that applies the former option is structured in a manner that multiple data points are collected at one point in time (Bryman & Bell, 2011, p. 53). Central to a cross-sectional approach is an examination of variation in the data which exists at a certain point in time (Bryman & Bell, 2011, p. 54). A longitudinal approach on the other hand collects data on the same objects at multiple points in time (Bryman & Bell, 2011, p. 58). With respect to the objects studied, a longitudinal study can either be a panel study or a cohort study (Bryman & Bell, 2011, p. 58). In the cohort study design, the objects are held fixed so that the objects share the same predetermined characteristics at the different time points (Bryman & Bell, 2011, p. 58). A panel design, in contrary, would allow drawing different representative samples with slightly different characteristics of the study object at the different points in time (Bryman & Bell, 2011, p. 58). The main focus of a longitudinal design is the study of how a phenomenon changed or evolved over time (Saunders et al., 2009, p. 155).

This paper is a longitudinal research which follows in a straightforward manner from the research question which asks whether an amendment of an accounting standard introduced
change in a before and after comparison. The research purpose is not about identifying any possible variations among our study objects but to draw conclusions on the total of our study objects. As we do no sample but investigate all Swedish listed companies on two periods of time, our research project can further be categorized as a cohort study.

2.4 Literature selection
In nowadays information age a vast amount of information is readily accessible for academic researchers. Hjørland (2012, p. 258) argues therefore that this abundance is amplifying the requirement of researchers to be able to evaluate the information sources regarding their reliability for academic research purposes. Thus, he presents different evaluation methods that can be used for this purpose (Hjørland, 2012). In this context he advocates the view that “a source is not in itself good or bad, but just more or less fruitful or relevant in relation to a given question” (Hjørland, 2012, p. 258). In the following we will enumerate the main types of literature sources used in this paper and apply the respective evaluation approach as listed in Hjørland (2012).³

- Research articles in scientific journals with a focus on accounting and finance – reliable because of classical peer review;
- Research papers published in university records – reliable because of publisher reputation;
- Academic text books – reliable because of author credentials;
- Publications from international organizations such as the OECD or World Bank – reliable because of publisher reputation;
- Publications from research institutes and non-profit organizations such as the Friedrich-Ebert-Stiftung – reliable because of publisher reputation;
- Publications from professional economic bodies such as the Federal Reserve Bank or ECB – reliable because of publisher reputation;
- Publications from professional private firms such as Deloitte or Ernst & Young – reliable because of publisher reputation.

We are aware that the aforementioned evaluation methods are only broad criteria and that e.g. publications from professional private firms are influenced by the publishers’ commercial and financial interests or publications from research institutes by their ideological stance. Nevertheless, we deem all the aforementioned sources to provide relevant information on our research question.

The literature sources were found and accessed via either the use of Umeå University Library’s search engine that provides access to databases such as EBSCO or via the use of Google, or Google Scholar’s search engine respectively. The main keywords used comprise ‘pension accounting’, ‘actuarial gains and losses’, ‘pension system Sweden’, ‘comprehensive income reporting’, ‘other comprehensive income’, ‘value-relevance’ ‘IAS 19’, ‘accounting theory’, ‘accounting standard setting’, ‘defined benefit pensions’ and ‘interest rates’.

³ Sources used in our data collection process will be introduced in the respective chapter five.
2.5 Ethical considerations

The European Code of Conduct for Research Integrity (ESF, 2011) serves as the basis for the following discussion about ethical and societal considerations. First of all, this code of conduct provides a very useful categorization of ethical issues in the context of academic research. On the one hand, ethical issues arise out of the “socio-ethical context of research” (ESF, 2011, p. 10). This perspective concerns the impact that knowledge created by the research has on its social, environmental and economic environment and their interactions (ESF, 2011, p. 10). On the other hand, ethical issues originate “when conducting research” (ESF, 2011, p. 10). Ethical issues of the latter category involve issues of scientific integrity, misconduct and good research practices (ESF, 2011, p. 10, 5, 6).

Our research paper adheres to this categorization as we deem it to be both clarifying and fruitful. We conclude every chapter with a reflection on ethical issues related to its content. Ethical considerations at the end of chapters 1, 3, 4 and 7 can be classified as being concerned with the socio-ethical context of research. Contrariwise, ethical considerations at the end of chapter 2, 5 and 6 are elaborating upon ethical issues in conducting research. This section, in particular, comments on all principles of scientific integrity, misconduct and good research practices as laid out in ESF (2011) except those relating to data processing and interpretation.

The European Code of Conduct for Research Integrity lists principles of scientific integrity and elaborates upon how they can be adhered to (ESF, 2011, p. 5, 10, 11). In the following we will go through these principles that are pertinent to our research and in a way ‘tick off’ the suggestions for implementation. Honesty in communication is fostered by clearly outlining our research intention in the first chapter and the elaboration upon our research methodology in this chapter. We engage ourselves in performing our research in a reliable way, i.e. meticulously and carefully. As we choose a quantitative approach, all our interpretations and conclusions will be based on observable and traceable data which strengthens objectivity. In addition, theoretical arguments are not made up out of thin air but taken on from academic and professional publications. We are neither influenced by any ideological or political pressure group nor are we funded or writing on commission of third parties which assures our impartiality and independence. We contribute to public knowledge by mandatory publishing our results in Umeå University’s electronic research database DiVA which adheres to the principle of open communication. From a fairness point of view, we observe throughout this thesis intellectual property rights and make references whenever we use the thoughts and ideas that are neither our own’s nor can be reasonably said to be in the domain of public knowledge. The latter is related to scientific misconduct due to plagiarism.

For further discussions on ethical issues beyond the above touched upon basic or general considerations we refer to the respective sections at the end of each chapter.
3. SITUATING THE RESEARCH QUESTION – THE BROADER PICTURE

3.1 Occupational pensions

Occupational pensions can be traced back to the late nineteenth century when they occurred in concordance with industrialization and increased longevity after active work life (Coronado & Sharpe, 2003, p. 325). The plans were designed as defined benefit schemes and served such purposes as strengthening the tie between an employee and its employer or increasing the workforce’s productivity (Coronado & Sharpe, 2003, p. 325). They became not only a centerpiece of the modern labor market but also a substantial pillar for the financial security of employees and their families (Towers Watson, 2015a, p. 2).

Over the past years, the occupational pension landscape witnessed a significant change. Formerly dominant defined benefit schemes are becoming more and more replaced by defined contribution schemes or a hybrid version of both (Broadbent et al., 2006, p. 11). This pattern applies to many EU-countries (Eichhorst et al., 2011, p. 31, 32). The yearly conducted Occupational Pensions Schemes Survey in the U.K. provides extensive and insightful statistics on the evolution of the occupational pension system in the U.K. (U.K. ONS, 2015). Figure 1 is based on data from the survey and shows that active membership in occupational defined contribution schemes gradually increased over the last decade while active membership in defined benefit plans is declining.\(^4\)

\[\text{Figure 1. Active membership in pension schemes (U.K.).}\]

\(^4\) We use this U.K. survey to illustrate our reasoning as no similarly informative Swedish survey exists. In addition, we argue for the universality of this phenomenon which allows drawing conclusions based on data from other countries.

\(^5\) Active members are defined as those who are usually currently employed by the sponsor and who either contribute or have contributions made on their behalf to the scheme (U.K. ONS, 2015, p. 4).
Furthermore, many of the defined benefit schemes in place do not take in new members anymore but are closed (see Figure 2). Defined contribution schemes, however, remain to an overwhelming majority open to new participants (see Figure 3).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{defined_benefit_schemes}
\caption{Status of defined benefit schemes (U.K.).}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{defined_contribution_schemes}
\caption{Status of defined contribution schemes (U.K.).}
\end{figure}

Besides a complete cessation of defined benefit plans, hybrid forms that shift some retirement risks to employees are also emerging (Bräuninger, 2014, p. 3). Such a risk sharing arrangement is e.g. an indexation of pension payments on financial market returns.
instead of using a fixed increase and therefore limiting the investment risk of the plan sponsor (Bräuninger, 2014, p. 3).

The transition from defined benefit plans to defined contribution plans is usually a long term process as a company’s decision to offer only defined contribution plans will affect in the first instance only new employees (Broadbent et al., 2006, p. 4). The workforce that already existed will continue to be in defined benefit plans unless an agreement to change is concluded (Broadbent et al., 2006, p. 4).

Reasons for this gradual transition are manifold. Aaronson & Coronado (2005, p. 15, 16) use a regression model to identify factors that drive this change and find evidence that flexible employment patterns, caused by changing production processes (such as a higher emphasis on skills that are transferable between companies relative to in-house developed skills) and changing employee demographics (such as the emergence of dual-earner couples and implied demands on job mobility), can be held accountable for the shift. In conclusion, defined contribution plans gained importance as job switching affects such plans less negatively than defined benefit plans (Aaronson & Coronado, 2005, p. 21). Further push factors were changes in the regulatory governance and fiscal treatment of defined benefit pensions which increased in some countries the burden of administering the plans and lowered their tax incentives (Broadbent et al., 2006, p. 19). From the employers’ point of view, increased costs associated with defined benefit plans lessened the appeal of offering such schemes. A material cost driver is increasing life-expectancy as benefits usually have to be provided until a pensioner’s demise (Broadbent et al., 2006, p. 19, 20). Important for this research is that also pension accounting itself is blamed for the shift to defined contribution plans (Broadbent et al., 2006, p. 21). This will be furthered in the pension accounting discussion in this paper’s theoretical framework section.

3.2 Low interest rate environment
Interest rates have witnessed a significant downturn over the last years. In some circumstances, debtors were even compensated to borrow which in turn leads to the awkward situation that investors receive no compensation for interest rate risk (Hannoun, 2015, p. 1). Figure 4 depicts the yields of 10-year government bonds for a sample of countries between 2008 and 2015. While the yield corridor as of 2008 fluctuated around 3.5% to 4.5%, it does so nowadays between 0.7% and 2.2%. This trend is not only restricted to government bonds but affects also the corporate debt market. Figure 5 shows triple-A rated corporate bond yields between 2008 and 2015. The interest yield decreased during these years from around 5.5% to around 4%.

---

6 This bond portfolio is composed of corporate bonds with a maturity of as close as possible to 30 years (Board of Governors of the Federal Reserve System (US), 2016).
The low interest rate environment affects funded defined benefit plans as investment opportunities for the funds set aside to finance the obligations are sparse and plan assets therefore yield relatively low returns (Bräuninger, 2014, p. 7). This is evidenced in the case of re-investment when older debt securities are terminated and need to be rolled over into now lower yielding securities or when coupon payments need to be invested (Antolin et al., 2011, p. 243). Furthermore, and more importantly, market yields of bonds define the discount rate to be applied to the defined benefit liability and their low values increase the present value of the promised cash flows (Bräuninger, 2014, p. 7). The closer interest rates get to a zero level, the more accentuated is their effect on discounting cash flows (World...
Bank Group, 2015, p. 18). To illustrate, a one percentage point decrease in the applied discount rate is estimated to lead to an increase of the pension obligation between 10% and 22%, depending on the group composition of the employees in the defined benefit scheme (Heim & Hilka, 2013, p. 4). The size of the effect is also dependent on the maturity structure so that defined benefit schemes with a relatively higher percentage of promises that still have a long duration until payment are more heavily affected (Antolin et al., 2011, p. 245). In consequence, low interest rates threaten pension schemes’ fixed long-term obligations (Hannoun, 2015, p. 8).

Figure 6 shows the stark fall in the discount rate as defined by IAS 19 among selected countries over the last five years. Referring to the year 2014, Towers Watson (2015, p. 2) state that as a result, the growth in plan obligations outpaced the growth in plan assets – even as investment returns on plan assets were significant in 2014. As a consequence, the net defined benefit position deteriorated on average between 2014 and 2015 (Towers Watson, 2015, p. 5). Further pressure is generated by the practice of defined benefit plans to adjust the pensions according to fixed wage or inflation levels which could absorb the plan assets’ returns and in consequence threaten the fulfillment of the retirement benefits (Bräuninger, 2014, p. 2; Antolin et al., 2011, p. 245). However, low interest rate environments often coincide with weak overall economic conditions that bring along barely any wage rises and only modest inflation which in turn could alleviate the pressure on pension obligations from low interest rates over time (Antolin et al., 2011, p. 245). Yet, Antolin et al. (2011, p. 246-247) point out that actuarial assumptions for inflation and future wage growth are adjusted slower than discount rates.

As underlying factors that contributed to the downturn in interest rates persist in Europe, it is reasonable to assume that the low interest environment is likely to last longer (World Bank Group, 2015, p. 15). And “as discount rates of zero or less have no economic meaning, a prolonged period of negative interest rates would create large ambiguities for the valuation of assets and liabilities” (World Bank Group, 2015, p. 18).
3.3 Other remeasurement considerations

Besides the effect of interest rates, actuarial assumptions include mortality estimates (IAS 19.76). Longevity is on the rise since a long time and is continuing to do so. Canada and the U.S. published updated mortality tables in 2014 that are marked by a significant increase in life expectancy (Towers Watson, 2015, p. 5). To illustrate with data, life expectancy at age 65 in Europe is expected to increase by 4.8 years for males and by 4.6 years for females from 2013 to 2060 (European Commission, 2015, p. 16). On the other hand, the average effective exit age from the labor market is projected to decrease slightly by 0.2 years to 65.6 for male Swedes and to remain constant for female Swedes at 64.4 in the period 2014 to 2060 (European Commission, 2015, p. 66). As a consequence, the duration of retirement is expected to increase from 17.9 to 21.8 years for male Swedes and from 22.1 to 26.5 years for female Swedes (European Commission, 2015, p. 67). This leads to sizeable pension obligations as the benefits need to be granted over a longer time period and also a higher percentage of employees live up to retirement age (Bräuninger, 2014, p. 9). In addition, the co-occurrence of low interest rates and increased longevity reinforce each other as cash flows with an even longer time horizon weigh stronger in determining the defined benefit liability (Antolin et al., 2011, p. 247).

3.4 A closer look into Sweden

Sweden is often cited as a role model of a generous and working welfare state. One of the decisive building blocks of a welfare state is the provision of retirement benefits to its citizens. Compared to the OECD average, Sweden is characterized by both a higher percentage of total pension spending and public pension spending in terms of GDP (OECD, 2015, p. 1). The Swedish pension system is currently based on three pillars, namely public pensions, quasi-mandatory occupational pension plans and private individual pension plans (OECD, 2015, p. 1). Occupational pension plans cover approximately 90% of workers and are collectively negotiated by unions (OECD, 2015, p. 1). In a 2008 OECD working paper, Sweden has one of the highest percentages of companies reporting defined benefit obligations (Severinson, 2008, p. 4). The Swedish sample exhibits further on average a defined benefit obligation that represents around 16% of the firms’ market capitalization (Severinson, 2008, p. 7).

The share that each of the three pillars contributes to an individual’s total pension income changed over the last years and will continue to evolve but the trend is that occupational retirement benefits will gain in importance (Anderson, 2015, p. 3). Occupational pension capital in Sweden has increased materially over the past years from SEK 320 bn in 1996 to SEK 1,710 bn in 2013 (Nilsson et al., 2014, p. 4). Together with private individual pension plans the total amount represents roughly two-thirds of Sweden’s GDP (Nilsson et al., 2014, p. 4). The importance of these amounts even lead researches to raise the question whether these pension savings crowded out other saving plans such as fixed interest deposits and in consequence can partly explain the increased indebtedness (relative to disposable income) of Swedish households (Nilsson et al., 2014, p. 1).

There are currently four collective schemes in place that cover different sectors and functions (Anderson, 2015, p. 3). Relevant for this research are the two schemes applicable
to private sector workers, namely ‘SAF-LO’ and ‘ITP’. The design of these programs deserves a closer look as it has consequences on the discussion in this paper. The ITP, which covers white-collar workers, has been reformed and can be subsequently subdivided in two blocks. The older ITP-2 which affects members born in 1978 or earlier is designed as a defined benefit scheme with a defined contribution complement (Anderson, 2015, p. 4). ITP-1, however, which covers all other members, is set up as a defined contribution scheme (Anderson, 2015, p. 4). This gradual switch from a defined benefit to a defined contribution scheme is also the case for the SAF-LO agreement which is similarly constructed to the ITP and concerned with blue-collar workers (Anderson, 2015, p. 4).

In consequence, defined benefit schemes are being gradually replaced with defined contribution schemes in the private sector. This is important as we assume a higher value-relevance of OCI due to the fact that actuarial gains and losses arising from defined benefit plans are now to be recognized in OCI. Yet, in line with defined benefit plans becoming less important in the coming years, the remeasurements in OCI will become, ceteris paribus, less important as well. This limits the future validity of our research’s results and conclusions.

3.5 Ethical considerations

Abandoning defined benefit plans in favor of defined contribution plans has consequences for both employers and employees. Employers can budget and forecast costs arising from post-employment benefits easier with defined contribution schemes as the annual payments are fixed and the ultimate cost is not affected by various variables that are often not under a management’s control (Anderson, 2015, p. 5, 6). Yet, put bluntly, the opportunities but particularly the investment risk and risks arising from biometric changes of pensions are now outsourced from the companies to their employees (Bräuninger, 2014, p. 3). In consequence, “workers increasingly shoulder the responsibility and risk of ensuring retirement income” (Towers Watson, 2015a, p. 4) Turmoil in financial markets will directly translate into individual pensions as companies are not required to make up an eventual shortfall (Anderson, 2015, p. 6). In defined contribution plans, employees have to manage these financial risks on their own and are facing non-trivial financial decisions such as the determination of the contribution size, the selection of the appropriate investment vehicle or the timing and amount of back-payments (Broadbent et al., 2006, p. 28, 29). In consequence, sufficient retirement income will be directly linked to an individual’s level of education in financial matters (Broadbent et al., 2006, p. 29). Despite the fact that empirical evidence on whether employees are sufficiently prepared for this transition and whether they are able to handle these new tasks are not yet abundant due to the long-time horizons in question, some studies undertaken in the U.S. and the U.K. raise serious concern about the adequacy of the decisions and behaviors of participants in defined contribution schemes (Broadbent et al., 2006, p. 30, 31, 36).

The above argument has to be restrained to some extent as employees also faced risks in defined benefit plans. Defined benefit plans are often underfunded and the chosen plan assets do not adequately match the characteristics of the pension liabilities which in combination made defined benefit plans risky for both the employer and the employee.

---

7 The other two schemes in place are PA03 for state employees and KAP-KL/AKAP-KL for municipal employees (Anderson, 2015, p. 3).
Increased economic burden from defined benefit plans could apart from plan changes and freezes also lead companies to employ more risky investment strategies for their plan assets and ceteris paribus increase the risk exposure of an employee’s occupational pension promise (Antolin et al., 2011, p. 244).

Nevertheless, the shift to defined contribution plans could hamper the perceived incentives for employees and ultimately also damage an employer’s attraction (Bräuninger, 2014, p. 2). This is a legitimate line of argumentation since generous retirement benefits are among the most sought after preferences for nowadays workforce (Towers Watson, 2015a, p. 7). In addition, different investment returns imply different pension amounts for two otherwise equal individuals and therefore create inequality (Anderson, 2015, p. 6). This fact is aggravated as the relative importance of occupational pensions in an individual’s old-age provisions will grow (European Commission, 2015, p. 82; Anderson, 2015, p. 6). Hannoun (2015, p. 9) argues that inequality is also increased by the relatively lower skills of single households to manage their financial assets compared to sophisticated asset managers.

Despite these disadvantages for employees, it is worth hinting at that the arrangement was agreed upon between unions and employer’s associations (Anderson, 2015, p. 5) which is interesting as a decline in union coverage and union bargaining power is quoted as a reason for the shift to defined contribution plans (Broadbent et al., 2006, p. 20).
4. THEORETICAL FRAMEWORK

4.1 Accounting standards and accounting theory

4.1.1 General accounting theory

This paper is centered on a change in an accounting standard, namely IAS 19. This revision introduced additional information about economic events into the financial statements and altered the presentation of gains and losses within the set of statements of an annual report. The main research purpose of our paper is to find out whether these changes resulted in an increased value-relevance of a certain statement, namely the statement of OCI. This research idea is formulated in very specific terms. Yet, it is neither trivial nor clear why financial statements or more specifically certain parts of financial statements should be value-relevant for the stock market. Nor is it obvious why accounting standards are not stable but are changed from time to time. These two issues are just examples of questions that can legitimately be raised when reading our research idea. The common denominator of these issues is which role accounting standards are supposed to take on and what drives changes in established standards. We talk therefore about accounting theory.

Accounting theory can in analogy to any theory be constructed in two generic ways, either through a normative approach or through a positive approach (Kam, 1990, p. 490, 491). A normative discourse establishes how accounting standards ought to be and is therefore a statement of ideals (Miller & Bahnson, 2010, p. 420, 421). In contrast, a positive discourse states what the case is and is therefore based on observations of facts or relationships among ideas (Miller & Bahnson, 2010, p. 420). This way, positive accounting theory induces general conventions from descriptions of the current practice (Miller & Bahnson, 2010, p. 420).

A normative discourse, in turn, needs premises such as objectives that financial reporting shall fulfill and from which appropriate accounting standards can then be deducted (Miller & Bahnson, 2010, p. 420). Normative accounting theories, in stating the ideal of accounting standards, are therefore free of pragmatism and compromises (Miller & Bahnson, 2010, p. 420). Constructed this way, a normative accounting theory contributes to financial reporting in identifying how accounting standards should work which in turn can subsequently be compared to current accounting practices in order to deduct recommendations for improvement (Miller & Bahnson, 2010, p. 420).

However, neither a comprehensive normative nor a comprehensive positive accounting theory exists today (Kam, 1990, p. 490). Rutherford (2000, p. 1-3) argues for the necessity of such a theory even if it only takes the form of “some, more or less systematic, structure of abstract propositions” (Rutherford, 2000, p. 2). Therefore, such a theory must be approximated “as a set of assumptions, definitions, recognition and measurement principles and procedures for determining income and capital” (Kam, 1990, p. 490). The closest

---

8 To remain clear and stringent with the notions of IAS 1, it should be mentioned that an entity is free to report one single statement of profit or loss and OCI with two distinct sections or to report two statements, namely one for profit or loss and one for OCI (IAS 1.10, IAS 1.10A). When this paper refers in this context to the notion ‘statement’, it shall comprise also the distinct sections of one single statement.
approximation of an accounting theory inherent in nowadays prevailing accounting standards is a standard setter’s conceptual framework (Kam, 1990, p. 490).

4.1.2 Relevant economic or managerial theories
As there is no accepted overall theory of accounting, we must look into relevant other economic and managerial theories in order to draw conclusions on how an accounting standard should be designed. It shall be made clear at this point that inference from various economic theories could be drawn. Yet, we will only take into account theories that have a direct bearing on the particular purpose of financial statements that this paper is focusing on, namely providing accounting information that is useful for decisions of investors in allocating capital.

The first theory we deem to provide important implications for financial reporting is agency theory. The basic setting therein is that “one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf” (Jensen & Meckling, 1976, p. 308). In order to enable the agent to perform his service, the principal transfers decision making power to her (Jensen & Meckling, 1976, p. 308). The problem in this relationship arises when both parties strive to maximize their own utility since under this assumption the agent will not always act in the best interest of the principal (Jensen & Meckling, 1976, p. 308). This agency problem is pertinent to modern capital markets in which diffuse ownership structures of public firms prevail and in which therefore a separation of ownership and control is the normal case (Jensen & Meckling, 1976, p. 309).

The principal can address this issue in two ways. She can provide incentives such as incentive compensation systems to the agent that will increase the likelihood of her performing in a way congruent to the principal’s objectives (Jensen & Meckling, 1976, p. 308, 323). Moreover, the principal can engage in monitoring and controlling activities such as auditing or an establishment of formal control systems to discover and counteract on undesired behavior (Jensen & Meckling, 1976, p. 308, 323). The agent might also have in certain situations an interest to signal the principal that she is acting on her behalf, which is called ‘bonding’ (Jensen & Meckling, 1976, p. 308). In consequence, this agency relationship creates agency costs, namely the monitoring costs by the principal, the bonding costs by the agent and any welfare losses of the principal caused by an agent’s aberrant behavior (Jensen & Meckling, 1976, p. 308).

The aforementioned issue is among other variables a function of the degree of information asymmetry between an investor and management. In addition, the degree of asymmetric information can differ between different groups of investors and management (Beaver, 1998, p. 28). In both cases, accounting information can play a viable role. Transparent financial reporting facilitates monitoring by the investor and incentive contracts based on accounting figures could help to align both parties’ interests (Beaver, 1998, p. 31). Increased public disclosure requirements can counteract on unfair information asymmetries between investors (Beaver, 1998, p. 32). This view on the role of accounting forms the basis of the so-called stewardship function (Beaver, 1998, p. 2). In the context of our research topic, the amendment of IAS 19 can be judged on whether it led to a decreased information asymmetry regarding a firm’s pension commitments.
The second theory we deem to be relevant for financial reporting is the efficient capital markets theory. The theory is basically concerned with whether capital markets process available information so that stock prices always reflect this information (Fama, 1970, p. 383). As Fama (1970, p. 388) himself states that the extreme version that capital markets always fully reflect all information is not likely to be true, the efficient market hypothesis becomes subdivided into three forms. Firstly, the weak form which asks whether stock prices reflect all historical prices and returns. Secondly, the semi-strong form suggesting that all publicly available information such as from annual reports or from earnings announcements is reflected in the capital market. Thirdly, the strong form which states that all relevant information is always reflected in the stock prices so that no single investor can have monopolistic access to price relevant information (Fama, 1970, p. 388).

Market efficiency is directly related to our research question as the theory provides the theoretical foundation on why equity prices can be deemed to reflect accounting information (Beaver, 1998, p. 125). The possible answers to our research question are a function of the degree of market efficiency in various ways. To illustrate, if markets are completely inefficient, then OCI figures would not at all be correlated with stock prices. Without going into the details of pension accounting which are left to the subsequent chapter, one general thought experiment deserves mentioning in this context. Information that the revision of IAS 19 incorporated into OCI was already at least partly available in the notes to the financial statements. If one assumes markets to be highly efficient, then we will expect that equity prices are hardly affected by the amendment.

The assumption that not only the sheer availability of information but also its presentation matters has been demonstrated by research in the domain of psychology (Hirst & Hopkins, 1998, p. 48). Hirst & Hopkins (1998, p. 48-50) argue for and find evidence that increased transparency and clarity in the presentation of value-relevant information affects its use. Harper et al. (1987) demonstrate that presentation in financial statements matters in the context of pension information. A pension liability reported on the balance sheet is more often taken into consideration in calculating a debt-to-equity ratio as if the same information is presented in the notes (Harper et al., 1987, p. 330). Van Cauwenberge & de Beelde (2007, p. 1, 2) argue that presentation issues are relevant under the assumption of a semi-strong form of market efficiency.

Research on the semi-strong form of market efficiency deserves a closer look as it has an influence on our research method. Beaver (1998, p. 133) summarizes studies on how quick stock prices reflect earnings announcements. The evidence points to a very fast incorporation of earnings data which leads us to take stock market data in our empirical model as close as practically possible to the publication of the annual results. There are also indications that prices anticipate earnings announcements which would decrease the influence of financial reports on stock prices at the publishing date (Beaver, 1998, p. 134, 135). OCI, yet, can be reasonably deemed to be more difficult to anticipate as it comprises many volatile items. In consequence this issue is of less concern for our research.

A caveat on the efficient market hypothesis must be raised. There is a vast amount of academic research which is concerned with determining whether markets are efficient or not. As an example, Fama (1970, p. 416) on the one hand provides an overview of empirical research supporting the efficient market hypothesis. Kothari (2001, p. 208) on the
other hand documents various studies pointing to market inefficiencies but questions also their methodological soundness. More recent research treats market efficiency therefore carefully and the assumption of market inefficiencies led to various new research designs (Libby et al., 2002, p. 777). Nevertheless, our research design assumes that a certain degree of market efficiency prevails in nowadays markets. Due to the continuing mixed evidence, this assumption can neither be fully acknowledged nor rejected, but taking the stance of a semi-strong form seems therefore reasonable.

Aboody et al. (2002) investigate whether results obtained in value-relevance studies are affected by market inefficiencies. The motivation of their study is directly related with the aforementioned discussion that raises doubts on a market’s efficiency. Aboody et al. (2002, p. 966) demonstrate that many value-relevance studies are silent on their stance on the degree of efficiency assumed in a market and raise the question whether the empirical evidence of unprocessed, available accounting information matters for the conclusions on value-relevance research. They construct a model that incorporates information from future price changes into adjusted current prices in order to gauge market inefficiencies (Aboody et al., 2002, p. 966, 967). Thereby they model the effect of publicly available accounting information that is not yet processed in current prices but becomes processed over time and finally becomes reflected in future prices (Aboody et al., 2002, p. 966, 967). In the context of value-relevance studies focusing on book values of equity and accounting earnings they show that the adjusted model leads to significant changes in the estimated coefficients (Aboody et al., 2002, p. 967). Correlations for both price (to a smaller extent) and return (to a greater extent) models\(^9\) are shown to be significantly higher under the adjusted model (Aboody et al., 2002, p. 967). In conclusion, markets seem to react to an incomplete degree to accounting information which leads to underestimated value-relevance coefficients (Aboody et al., 2002, p. 967).

The aforementioned economic theories will now be mirrored against the IFRS conceptual framework.

4.1.3 Accounting standards’ conceptual framework

As introduced in the introductory theory chapter, the conceptual framework of a set of accounting standards most closely resembles the role of a guiding accounting theory underlying the respective standards. The pioneering effort in this kind of conceptualization of accounting theory was made by the U.S. standard setter in the 1970s and the established principles had and still have material influence on the conceptual frameworks of other standard setting bodies that emerged subsequently (Rutherford, 2000, p. 5). The conceptual framework inter alia determines the objective of financial reporting and incorporates the qualitative characteristics that a certain set of accounting standards shall uphold (IASB, 2015b, p. 6). Its main role is therefore to support the development of consistent standards based on the principles set out therein (Rutherford, 2000, p. 6, 7). As this paper is concerned with IFRS we will focus on the conceptual framework of the IFRS.

The motivation and purpose of conceptual frameworks are not free of criticism (Rutherford, 2000, p. 11). It is argued that standard setters make use of these frameworks in order to

\(^9\) Price and return models will be introduced in a later chapter on value-relevance. At this point, only the basic conclusion that value-relevance studies could underestimate the effect of accounting information is of interest.
artificially fluff the credibility and authority of their standards for the sake of shielding
them from the inherent political power struggles among the interest groups in finance
(Rutherford, 2000, p. 11). We assent to this claim. Nevertheless, we deem the contributions
made by conceptual frameworks to accounting theory to be substantial. Therefore, we will
rely on these in our elaboration on accounting theory and standard changes.

Before we are going to scrutinize the accounting theory reflected in the conceptual
framework it is worth shedding a glance on the mission statement of the standard setter.
There the IFRS Foundation states three basic qualitative characteristics that IFRS need to
provide to financial markets (IFRS Foundation, 2015a). Firstly, transparency which shall be
achieved by increased comparability and quality of financial information in order to allow
for informed economic decision making. Secondly, accountability shall be fostered through
minimizing information asymmetries between management and investors. Thirdly,
economic efficiency shall be raised by improved capital allocation. In short, the IFRS
Foundation uses transparency, comparability and economic efficiency as qualitative proxies
for accounting quality.

The conceptual framework of the IFRS dates back to the year 1989 and remained
unchanged for many years (Deloitte, 2016b). As part of the overarching convergence
project between the IFRS and the US GAAP, the IASB and the FASB decided in 2004 to
start a joint project to create a common conceptual framework that should guide both sets
of accounting standards (Deloitte, 2016a). However, the project was put on hold in 2010 in
order to focus on other convergence projects (Deloitte, 2016a). As a result of the work
during these seven years, the objective and qualitative characteristics section of the IFRS
conceptual framework was updated (Deloitte, 2016a). The conceptual framework
nevertheless remained an important issue for the IASB and in 2012 the IASB decided to
restart working on it but this time without the FASB (Deloitte, 2016d). Major concerns
towards the existing conceptual framework comprised the lack, or ambiguity respectively,
of some material areas of financial reporting as well as the sheer fact that some concepts
were outdated (IASB, 2015b, p. 6). In May 2015 an exposure draft of a revised conceptual
framework was published for commenting (Deloitte, 2016d).

In the following, relevant characteristics of financial reporting shall be outlined in order to
provide the reader with an understanding of the IASB’s stance and to enable the reader to
interpret and judge on the amendment of IAS 19. As the current conceptual framework is
deemed out of date by the IASB we will refer to the exposure draft of a new conceptual
framework for financial reporting. From an accounting theory point of view it is
noteworthy that the IASB sees the conceptual framework as “a vision of ideal financial
reporting” (IASB, 2015b, p. 24) and therefore takes a normative approach.

It is important to highlight that objectives of financial reporting differ among parties as they
pursue different interests (Miller & Bahnson, 2010, p. 424). To construct normative
objectives, it is therefore necessary to define whose interests shall prevail (Miller &
Bahnson, 2010, p. 424). The conceptual framework takes the stance that financial
statements shall be prepared from the entity’s point of view and not from the view of
capital providers (IASB, 2015b, p. 10). Yet, the objective of financial reporting stresses the
interests of equity and debt capital providers as accounting information has foremost to be
useful to them in deciding whether or not to provide resources to the entity (IASB, 2015b,
Investors and lenders are therefore “the primary users to whom general purpose financial reports are directed” (IASB, 2015b, p. 23). It shall be highlighted that this reflects a deliberate choice taken by the standard setter. Yet, this is a long standing tradition in accounting. It is e.g. also reflected in the old-established design of the income statement’s and balance sheet’s bottom line, namely net income and equity which both are directed to inform investors (Linsmeier et al., 1997, p. 121). This design of accounting systems is not surprising judged on the historical importance of capital markets in the U.S. with a strong tradition of a separation of ownership and control (Linsmeier et al., 1997, p. 123). However, even by specifying a certain target group, namely investors, it should not be forgotten that investors are not a homogenous group (Beaver, 1998, p. 8, 9). Investors differ in categories such as wealth, tastes, beliefs or skills and therefore investors also have heterogeneous information demands (Beaver, 1998, p. 8, 9).

Accounting standards are designed in a way that shall maximize the usefulness of financial reporting. And this usefulness is judged from an investor’s perspective, namely whether the information is helpful in his capital allocation decision. In other words and at the heart of our research question, accounting information has to be value-relevant. Such information must allow estimating future expected returns from the investment which in turn are dependent on the amount, timing and uncertainty of future cash flows that the entity will experience (IASB, 2015b, p. 22, 23). Yet, as indicated in the discussion of the heterogeneity of investors, it is obvious that financial reporting defined this way will not be the only source investors base their decisions on. Depending on their individual preferences, investors may also desire different financial information or factor e.g. information about a company’s performance regarding environmental, social and governance issues into their investment decision.

The conceptual framework defines qualitative characteristics that distinguish useful from non-useful information. Relevance and faithful representation are the fundamental features of useful information that have to be present together in order for information to be useful (IASB, 2015b, p. 27, 30).

Accounting information is called relevant if it can influence the economic decisions of its users (IASB, 2015b, p. 28). Such information has in consequence either predictive value, confirmatory value or both (IASB, 2015b, p. 28). Predictability is defined as whether accounting information can help users to forecast future values (IASB, 2015b, p. 28). Confirmatory information on the contrary enables users to reassess previous judgments by either reinforcing them or altering them (IASB, 2015b, p. 28). Predictive and confirmatory attributes of financial information often coincide as the same information can be indicative of future outcomes as well as a confirmatory role in respect to past forecasts (IASB, 2015b, p. 28). It is noteworthy that information which is subject to a high degree of measurement uncertainty can still be deemed relevant (IASB, 2015b, p. 28).

---

10 The investor perspective emerged from U.S. financial markets and can be traced back to the Securities Acts of 1933 and 1934 (Beaver, 1998, p. 18).

11 The often used term reliability in this context was replaced in 2010 with the term faithful representation which the IASB deems to be more suitable (IASB, 2015, p. 9).
Faithful representation is characterized by financial information that adheres to the principle of reporting substance over form, i.e. in case of a divergence in an economic transaction’s economic and legal form the former shall prevail for the purpose of financial reporting (IASB, 2015b, p. 29). In addition, faithfully represented information is at least theoretically complete, neutral and free of error (IASB, 2015b, p. 29). Neutrality means unbiased reporting that does not try to influence users in a certain way (IASB, 2015b, p. 29).

Financial information that is both relevant and faithfully represented is useful. The usefulness is fostered if financial information is in addition comparable, verifiable, timely and understandable. The terms are straightforward to understand. It is noteworthy that in respect to comparability, it is explicitly stated that alternative accounting options for the same economic transaction lead to less useful financial information (IASB, 2015b, p. 31).

Both the mission statement and the conceptual framework strongly support our selection of economic theories from which inference can be drawn for financial reporting, namely agency theory and efficient capital markets theory. The former is highlighted by the fact that the IASB will “give more prominence, within the discussion of the objective of financial reporting, to the importance of providing information needed to assess management’s stewardship of the entity’s resources” (IASB, 2015b, p. 9). Accounting information has therefore an important role in enabling investors to monitor and control management and the design of accounting standards must reflect this overarching objective.

As the conceptual framework is centered on usefulness of financial information for investors’ decisions, it is obvious that the theory of efficient capital markets – at least in their semi-strong form – is tacitly used as the foundation of the normative conceptual framework. All discussed qualitative characteristics, i.e. both the fundamental and the enhancing ones, can legitimately be deemed to follow logically from the requirements these two theories pose on financial reporting.

4.1.4 Trends in the perspective of financial reporting

Beaver (1998, p. 2-5) argues that financial reporting has been moving towards decision-usefulness and that the stewardship function motivated by agency theory has been on the demise in financial reporting over the last decades. The main role ascribed to financial reporting in this perspective is to help investors allocate their funds and further therefore the investment process (Beaver, 1998, p. 7). Evaluated from a broader point of view, accounting standards that convey decision-useful information diminish the opportunities to exploit private information by increasing the domain of publicly available information and strengthen thereby the fairness and transparency of capital markets (Beaver, 1998, p. 152). However, the stewardship function of financial reporting remains important as can be seen by the discussion of the conceptual framework of the IFRS. In addition, stewardship’s relevance is reflected by the fact that management bears the legal responsibilities of financial reporting (Beaver, 1998, p. 12).

Financial reporting which focuses on providing decision-relevant information to investors is taking an ‘informational perspective’ (Beaver, 1998, p. 5). This paper is part of such informational accounting research. The informational perspective is based on the efficient market hypothesis and assumes that accounting data and stock prices are correlated (Van Cauwenberge & de Beelde, 2007, p. 11). From a theoretical point of view, financial
information alters the beliefs of investors regarding how likely different future outcomes are and affects therefore the expected utility function that an investor is assumed to use in her decision making process (Beaver, 1998, p. 21). Hence, accounting standards judged from an informational perspective are in first line evaluated by how well the accounting information supports investors in their capital allocation (Beaver, 1998, p. 5). Accounting information is therefore relevant if it is used by investors in evaluating stock prices (Francis & Schipper, 1999, p. 325). The better the relationship between accounting figures and stock market responses, the better ceteris paribus an accounting standard is (Van Cauwenberge & de Beelde, 2007, p. 11).

Our research design examines the strength of such a relationship, namely that between OCI and stock prices. However, we will not judge the amendment of IAS 19 solely by whether it increased or decreased the value-relevance of OCI. The reason for this is that OCI is a particular part of financial statements to which cannot simply be attributed a value-relevant role. Determining whether OCI’s value-relevance changed is therefore more a means than a goal in itself. This point will be clarified in the following chapters.

4.1.5 Changes in accounting standards
The aforementioned trend to judge accounting information from an information perspective rather than a stewardship perspective is one of manifold reasons for changes in accounting standards. An information perspective introduces e.g. demand for fair value accounting and forward-looking information into financial statements (Beaver, 1998, p. 1, 2). Other reasons for changes in accounting standards include the continuous evolution of economic activity such as a move from industrial production to service-oriented businesses. In this context one might think of new challenges for accounting standards in areas such as treatment of intangible assets. In addition, internationalization drives harmonization efforts of accounting standard setting bodies. The IFRS as of today are therefore the outcome of a decade’s long process. The first IAS was published in 1975 and the standards as well as the standard setter underwent significant changes since (Barth et al., 2008, p. 471).

In its conceptual framework, the IASB admits that the normative, ideal view of financial reporting defined by and explained in the conceptual framework is not likely to be fulfilled instantly but rather a process of reassessment and improvement over time (IASB, 2015b, p. 24). In addition, ideal financial statements could entail costs that are too large compared to the benefits that improved standards might provide (Rutherford, 2000, p.10). Amendments of accounting standards and the drafting of completely new accounting standards can therefore be seen as a constant movement towards the ultimate goal of financial reporting (as set by the IASB), namely increasing the usefulness of accounting information (IASB, 2015b, p. 24).

Academic studies are contributing to the evolution of accounting standards, too. Empirical studies that were conducted in relation to market efficiency research offered evidence on such issues as whether contemporary accounting standards induce mispricing in equity securities (Beaver, 1998, p. 129). Moreover, academic research on accounting quality defines more practical proxies for accounting quality that are measurable since the IFRS objectives of transparency, comparability and economic efficiency cannot be directly observed. Barth et al. (2008) investigate in this context whether the adoption of IFRS increased the quality of accounting in countries other than the U.S. They approximate
accounting quality in analogy to prior studies with empirically testable outcomes, namely decreased earnings management, faster loss recognition and increased value-relevance (Barth et al., 2008, p. 469). Value-relevance in particular is gauged by estimating the correlation between stock prices and earnings (Barth et al., 2008, p. 469).

The aforementioned studies just serve as an illustration on how research contributes to standard setting. The following chapters outline issues with pension accounting and OCI that have been investigated in academic research and show how standard setting has responded to these issues. However, to close the gap to our research question, it should have become obvious from our theoretical discussion of accounting standards and standard changes that changes in accounting standards are nowadays likely to be aimed at increasing the value-relevance of accounting information.

4.2 Pension accounting

4.2.1 International Accounting Standard 19 – Employee Benefits

We start the chapter on pension accounting with a rather technical explanation of how accounting for pensions actually works when using IFRS. One reason for this is that subsequent discussions on issues in pension accounting require the use of technical terms that are explained below. Another reason is that the reader will be able to understand issues in pension accounting easier after having read the following basic overview of pension accounting. The following explanations reflect the rules after the 2011 amendment of IAS 19 which was endorsed in the EU on June, 5th 2012 and became effective in the EU on January 1st, 2013 (EFRAG, 2016, p. 3).

Within the scope of IAS 19 are the following four categories of employee benefits. Firstly, short-term employee benefits such as wages, salaries, social security contributions or paid sick leave that are going to be settled in a time frame of twelve months after the reporting period (IAS 19.IN2(a)). Secondly, post-employment benefits such as pensions (IAS 19.IN2(b)). Thirdly, other long-term employee benefits such as sabbatical leave or jubilee benefits (IAS 19.IN2(c)). Lastly, termination benefits are covered (IAS 19.IN2(d)).

As this thesis is concerned with post-employment benefits, this category will be further examined in the following. Such benefits can be structured in two substantially different schemes, namely either as defined contribution plans or defined benefit plans (IAS 19.27). If an entity chooses to provide post-employment benefits via a defined contribution plan, its obligation is fulfilled by paying a fixed amount into a fund which is separate from the reporting entity (IAS 19.28). An important trait of such retirement plans is that the actuarial risk and investment risk are shifted to the employee (IAS 19.28). Defined benefit plans, however, are all post-employment benefit schemes that are not to be classified as defined contribution plans (IAS 19.8). While an entity’s obligation under a defined contribution plan is to pay a fixed amount into a saving scheme, its obligation under a defined benefit plan is to pay a fixed amount into a fund which is separate from the reporting entity (IAS 19.28). An important trait of such retirement plans is that the actuarial risk and investment risk are shifted to the employee (IAS 19.28). Defined benefit plans, however, are all post-employment benefit schemes that are not to be classified as defined contribution plans (IAS 19.8).

In the context of defined contribution plans, IAS 19.28 defines actuarial risk as the risk „that benefits will be less than expected“ and investment risk as the risk „that assets invested will be insufficient to meet expected benefits“.

12
plan is to pay the actual, agreed-upon retirement benefits (IAS 19.30(a)). In consequence, the actuarial risk and investment risk are borne by the reporting entity (IAS 19.30(b)).\footnote{Actuarial risk in the context of defined benefit plans is represented as that risk „that benefits will cost more than expected” (IAS 19.30(b)).}

The distinction is often not as straightforward in practice and plans that have features from both defined contribution and defined benefit exist in practice. A defined benefit plan sponsor can in consequence be exposed to either all retirement pension risks or outsource some risks in so-called ‘hybrid plans’ (Bräuninger, 2014, p. 3). The classification and accounting for such hybrid plans is complex and will due to its minor relevance for this paper be not further explained.

Yet, the general distinction is essential as the accounting treatment and, in consequence, the effect on the financial statements is fundamentally different between the two categories. In defined contribution plans, an entity recognizes the agreed upon contribution for each period in which an employee has rendered service as an expense and credits a corresponding liability which is usually short-term and therefore undiscounted (IAS 19.51, 52). In addition, the amount recognized for defined contribution plans should be disclosed (IAS 19.53).

While the accounting for defined contribution plans is “straightforward” (IAS 19.50), the accounting for defined benefit plans is “complex” (IAS 19.55). An entity’s promise to pay defined benefits to its employees after their active period in which they rendered service to the entity gives rise to a liability of the entity. To determine the liability, an entity must use an actuarial technique to estimate the “ultimate cost to the entity of the benefit that employees have earned in return for their service in current and prior periods (…)” (IAS 19.57(a)(i)). This determined liability has then to be discounted to its present value at reporting date (IAS 19.57(a)(ii)). While it is theoretically possible that a determined benefit plan remains unfunded, it is reasonable to expect that most companies already during an employee’s service period set aside funds which will be used to finance the benefit payments. In this case, the fair value of these so-called plan assets has to be determined at closing date and offset from the present value of the defined benefit obligation (IAS 19.57(a)(iii)). This net defined benefit liability (asset) is to be recognized on the balance sheet (IAS 19.63).\footnote{The effect of the so-called asset ceiling is neglected as it has only little relevance for the topic.}

Next to the balance sheet value of the net position, the amount to be recognized in profit or loss must be determined. This expense consists of three building blocks, namely the current service cost, past service cost and gain or loss on settlement, and net interest on the net defined benefit position (IAS 19.57(c)). Yet, unaccounted for in profit or loss are any actuarial gains and losses as well as the return on plan assets that is not yet included in the profit or loss’ net interest on the net defined benefit position. IAS 19.57(d) requires these amounts that are comprised in the newly introduced category ‘remeasurments’ to be recognized in OCI. The following figure 7 provides a schematic illustration of the income accounting for defined benefit plans.
The aforementioned ultimate cost is a long-term projection and a function of various actuarial variables and is therefore uncertain and sensitive to changes in these underlying variables (IAS 19.66). IAS 19.67 requires the reporting entity to use the projected unit credit method in executing the actuarial valuation. Hence, in line with the guiding accrual accounting principal of financial reporting, the future benefits are matched and accrued in the periods when the employee is actually rendering service (IAS 19.71).

As accounting for remeasurements and in particular actuarial gains and losses is central to the research purpose, these will be explained in more detail. IAS 19.75, 76 postulate that actuarial assumptions are on the one hand “unbiased and mutually compatible” and on the other “best estimates” to determine the ultimate cost. Variables include demographics such as mortality, employee turnover or early retirement as well as financials such as discount rate, benefit levels and future salaries (IAS 19.76). The latter assumptions have to be derived from market expectations in place at the end of the reporting period (IAS 19.80). Regarding the discount rate, IAS 19.83 specifies that it shall be based on market yields on high quality corporate bonds observed at year end. In case such corporate bonds are not available, government bonds shall be used instead (IAS 19.83). IAS 19.84 highlights that the discount rate is an actuarial assumption with “material effect”.

It is important to point out that the remeasurement amounts recognized in OCI will not be recycled\(^{15}\) in any subsequent period in profit or loss and bypass therefore eternally profit or loss (IAS 19.122). It is, however, possible to create a new line in equity to report for these

\(^{15}\) The concept of recycling will be explained and discussed in chapter 4.3.1.
remeasurements and thereby presenting these amounts separately from retained earnings (PwC, 2014, p. 2).

**4.2.2 Significant changes and implications**

We will compare the aforementioned current rules of pension accounting with those in place before the amendment of IAS 19 in 2011. In addition, significant implications resulting from these changes are elaborated upon to understand their effect on financial statements and therefore on our research question.

Reporting entities had three options to account for actuarial gains and losses under IAS 19(old), namely immediate and full recognition in profit or loss, immediate and full recognition in OCI or the use of the so-called corridor method (Ernst & Young, 2011b, p. 3). While the former two methods are easily understandable, the latter requires further explanation. The corridor approach allowed entities to defer the recognition of actuarial gains and losses if their cumulative unrecognized value is below the greater of 10% of the defined benefit obligation and 10% of the fair value of plan assets (Ernst & Young, 2011b, p. 3). As long as the cumulative unrecognized value remains in this corridor, neither effects for profit or loss nor OCI arise. In case the amount surpasses the corridor, recognition takes place in profit or loss in the form of an amortization of the surplus over the expected future service years of the concerned employees (Deloitte, 2011, p. 8).

The revised version of IAS 19 eliminates these alternatives and requires an immediate and full recognition of all actuarial gains and losses in OCI (Deloitte, 2011, p. 8). This change in the accounting treatment of actuarial gains and losses impacts financial statements in different ways. Firstly, the equity position of companies previously using the corridor approach will be altered (Deloitte, 2011, p. 8). An economic environment marked by low interest rates implying lower discount rates, weak returns on investment assets and increasing life expectancies lead to, ceteris paribus, higher present values of defined benefit liabilities and lower fair values of plan assets which are reflected in actuarial losses (Deloitte, 2011, p. 8). Entities using the corridor method have to recognize all so far unrecognized amounts in the first year of application of the revised IAS 19 in OCI and also account for remeasurements immediately in every subsequent year (Deloitte, 2011, p. 8). Therefore, the net defined benefit position on the balance sheet and the amounts recorded in OCI will incorporate market fluctuations and, in turn, be more volatile than by using the corridor approach (Ernst & Young, 2011b, p. 3). In addition, and at the heart of this thesis, actuarial gains and losses are not disclosed anymore in profit or loss but in OCI which “(…) may result in IFRS users and analysts placing greater scrutiny or importance on amounts recognised in OCI” (Ernst & Young, 2011b, p. 3).

Another change with impact on OCI pertains to the definition and calculation of the net interest. IAS 19 requires entities to determine the net interest by multiplying the net defined benefit liability (asset) with the discount rate that was introduced above (IAS 19.123). This net interest is to be recognized in profit or loss (IAS 19.120(b)). The discount rate used, however, is constructed with yields on corporate or government bonds and does therefore in most cases not reflect the actual return on the plan assets (PwC, 2014, p. 2). The resulting difference has to be determined and is subsequently recognized in OCI as part

---

16 IAS 19.123 specifies using the discount rate determined at the start of the reporting period.
of the remeasurements (IAS 19,125, 120(c)). Yet, this will not affect comprehensive income as the amendment of IAS 19 did not alter the way to establish the discount rate (PwC, 2014, p. 2). Though, the amount to be recognized is now split into profit or loss and OCI (PwC, 2014, p. 2).

The last change that will be touched upon is that past service costs need to be recognized now immediately in profit or loss (PwC, 2014, p. 2). The origin of such costs is an amendment to a defined benefit plan by the entity which increases or decreases benefits for employees for services they already provided in the past (PwC, 2014, p. 2). IAS 19(Old) distinguished between vested and unvested past service costs and allowed to recognize the latter over a defined time period (PwC, 2014, p. 2, 3).

In consequence, not only OCI’s role is revalued by the amendments of IAS 19 but also the net deficit position on the balance sheet resembles the actual (current) status of an entity’s defined benefit plan as deferred recognition of actuarial gains and losses as well as past service costs is abandoned (Deloitte, 2011, p. 6).

The revision of IAS 19 has streamlined the accounting for remeasurements and led in consequence to greater consistency and comparability of IFRS financial statements between companies (Ernst & Young, 2011b, p. 17). Furthermore, the streamlining facilitates the interpretation of the respective accounting disclosures by financial statement users. It is therefore reasonable to assume that investors are more willing to refer to OCI in assessing a company as companies have fewer options that distort and complicate the task.

4.2.3 Concerns in pension accounting
The aforementioned changes were responses to various concerns that have been raised regarding previous pension accounting rules. We will focus on those with the most direct link to our research topic. The following discussion serves basically the purpose to demonstrate why pension plans are influencing the value of a company and how investors process pension-related data in their analysis.

The corridor method, or in other words a smoothing mechanism, that was abolished by the amendment of IAS 19 in 2011 has a long and controversial history. The discussion can be traced back until the year 1985 when the U.S. standard setter introduced a new pension accounting standard, namely SFAS 87 (Fasshauer et al., 2008, p. 13). This standard paved the way for a market-based approach to the recognition of defined benefit pension plans (Fasshauer et al., 2008, p. 13). In simple terms, such an approach aims at accounting for the present value of the pension liability and the fair value of pension assets which implies a yearly remeasurement of the respective values (Fasshauer et al., 2008, p. 13). The consequential yearly recognition of actuarial gains and losses, however, did not find much favor among corporations (Saemann, 1995, p. 562). In consequence, a mechanism that allowed for a deferred recognition of actuarial gains and losses was introduced which led to an underestimation of pension related costs in the income statement and a corresponding partial reporting of the pension position on the balance sheet (Fasshauer et al., 2008, p. 13). The respective fair values were only tracked off-balance-sheet in the notes (Fasshauer et al., 2008, p. 13).
In light of this smoothing mechanism, Coronado & Sharpe (2003) investigate whether pension accounting rules in the U.S. led investors to erroneous valuations of companies and thereby contributed to the stock market bubble in the early 2000s. The bull market of the 1990s inflated plan assets of defined benefit plans and the accounting rules in place allowed for lower pensions cost accruals to be recognized in net income (Coronado & Sharpe, 2003, p. 323). This mechanism led to a disparate treatment of pension risk and return where returns could be recognized immediately but costs gradually over a longer period (Fore, 2004, p. 177). Coronado & Sharpe (2003, p. 323, 324) cite two reasons, namely firstly that pension costs did not capture the volatility and riskiness of returns due to the smoothing mechanism and, secondly, that the discrepancy between the expected future rate of return on plan assets and the discount rate used for the plan liabilities led to an artificial stream of income understating the real pension costs. Gold (2005, p. 1) called the former an anticipation of equity risk premia without simultaneously assuming the risks giving rise to them. Coronado & Sharpe (2003, p. 359) conclude that overvaluation of S&P 500 companies with defined benefit plans did occur. In addition, Fore (2004, p. 177) states that pension accounting rules in the U.S. favored a high allocation of plan assets in equity securities which was inadequate and did not represent the maturity structure of the pension liabilities. The financial turmoil at the beginning of the 21st century revealed the detrimental effect of this pension accounting mechanism and turned so far overfunded defined benefit plans into largely underfunded ones (Fore, 2004, p. 177).

The matter of how pensions are valued in the context of equity valuation is hypothesized in two conflicting theoretical models. The standard transparent model assumes a dollar for dollar integration of a plan’s fairly valued net defined benefit position in the firm value (Coronado & Sharpe, 2003, p. 324). Pension obligations and their corresponding assets are therefore treated like any financial asset or liability in valuing a company (Coronado & Sharpe, 2003, p. 327). The opaque model proposed by Gold (2005, p. 4-6), however, questions the former model’s underlying assumption that pension accounting is sufficiently transparent and that in consequence the focus is not on the net position in the balance sheet but on the income effects of the defined benefit plan. This is problematic as pension cost accruals at that time were not adequately reflecting the underlying value of a defined benefit position (Coronado & Sharpe, 2003, p. 323). Gold argues for this point of view in referring to the earnings management literature that proves the value-relevance of earnings as well as pension earnings in particular and the emphasis analysts and investors place on them in valuing stocks (Gold, 2005, p. 10, 13, 14). In addition, he argues that pension accounting rules that are not based on fair value recognition of pensions or that hide the fair value in the notes are not suitable for the consensus analyst to incorporate the pensions’ fair value in his report (Gold, 2005, p. 19). Coronado & Sharpe (2003, p. 355) find empirical evidence for the latter opaque hypothesis.17 The term ‘opaque’ implies that pension positions are therefore valued in different ways between companies and in general lead to mispriced stock valuations (Coronado & Sharpe, 2003, p. 328). Coronado & Sharpe (2003, p. 356) estimate that this erroneous pension valuation induced an overvaluation on the aggregate of 5% of firm market value in the S&P 500 in the year 2001. For the 90th

---

17 The 2005 paper from Gold is a revised version of a working paper from 2000 (Gold, 2005, p. 18). This explains the at first sight awkward fact that Coronado & Sharpe’s 2003 paper confirms a hypothesis from Gold’s 2005 paper.
percentile of valuation errors ordered by size, yet, the effect is estimated to be more than 20% of firm market value (Coronado & Sharpe, 2003, p. 356).

As a result, this smoothing mechanism faced harsh critique (Fasshauer et al., 2008, p. 14). With the introduction of FRS 17 in the early 2000s, the U.K. was first to abandon smoothing techniques and introduced instead a fair value accounting of pension plans together with the immediate recognition of operating, finance and actuarial gains and losses (Fore, 2004, p. 174). Although with a technically different approach, the U.S. standard setter followed suit in 2006 with the issuance of SFAS 158 that abolished deferred recognition (Fasshauer et al., 2008, p. 16). The IASB, however, left the smoothing practice optional until the 2011 amendment of IAS 19.

4.3 Other comprehensive income

4.3.1 Overview of current IFRS OCI

Having discussed the subject of pension accounting, we will turn to the second accounting particularity of our research topic, namely OCI. Analogous to the structure of the chapter on pension accounting, we will first start with an overview of current OCI reporting according to IFRS.

The presentation of financial performance of an entity that reports according to IFRS is currently split into two separate parts, namely profit or loss and OCI. The combination of both parts leads to comprehensive income (IAS 1.82). An entity is free to choose between presenting a separate profit or loss statement followed directly by a statement of comprehensive income or to present a single statement combining both parts in two distinct sections (IAS 1.10A). Displaying OCI only in the statement of changes in equity is therefore not possible.

To date there is no comprehensive standard in the IFRS which provides an overview over all the single items which are to be classified as OCI. This information is spread throughout various IAS/IFRS. The illustrative enumeration of OCI items below is quoted from Deloitte (2016c).
In the course of an amendment of IAS 1 which became effective for financial years beginning after July 2012, a further specification was introduced into the presentation of OCI (Ernst & Young, 2011a, p. 1, 2). This amendment requires companies to group OCI items into two categories, namely those items that can be reclassified to profit or loss and those items that cannot be reclassified to profit or loss (IAS 1.82A). The line item at the center of this paper, namely remeasurements of a net defined benefit liability or asset cannot be reclassified to profit or loss in subsequent periods (Ernst & Young, 2011a, p. 1). A contrary item e.g. is the effective portion of gains and losses on hedging instruments in a cash flow hedge (Ernst & Young, 2011a, p. 1). When such reclassifications shall take place is specified in the respective standard. IAS 1.93 provides the example of realized gains on the disposal of available-for-sale financial assets which have during the period of holding the asset been tracked as unrealized gains in OCI. A reclassification occurs here in the period the asset is sold.

For the purpose of this paper it is of less importance to elaborate on all details of current IFRS OCI reporting. Rather, a schematic understanding of the articulation between statements of an annual report and the influence of OCI on earnings per share is sufficient to apprehend the issues discussed in this paper. Hence, an own illustrative example is provided in the following.
Figure 9. Illustrative example of OCI accounting.

Figure 9 depicts the following accounting example: In period 1 a company generates a profit of +100 which will be displayed in the statement of profit or loss. This measure serves as the numerator in calculating earnings per share (EPS) according to IFRS (IAS 33.10). In addition, the company earns OCI in total of +20 which is composed of an income of +40 that originates from transactions that can be reclassified into profit or loss and an expense of -20 that arose from e.g. remeasurements of pension obligations and which is not to be reclassified. Total comprehensive income of period 1 is therefore +120 (= +100+40-20). All these accounts are to be closed into the equity portion of the balance sheet with the particularity that amounts recognized in OCI are usually booked into two separate accounts. Amounts that will not be reclassified are booked directly into retained earnings while those amounts that can later be reclassified are tracked in a separate line item. In our example this line is called ‘other reserves’.

In a subsequent period, nothing but the reclassification at exactly the same amount as anticipated in period 1 shall occur. Hence, the amount tracked in other reserves enters once again OCI, yet, this time by the opposite sign in order to avoid double counting. Simultaneously, the income becomes now recognized in the statement of profit or loss. Consequently, EPS for this period are +40. Total comprehensive income of this period, however, is 0 (= -40 +40). The statement of profit or loss is again closed into retained earnings in equity.

The aforementioned example shall highlight three considerations. Firstly, focusing on EPS misses all economic effects of transactions and events that are recognized for the first time in OCI in the respective year. Secondly, items in OCI that cannot be subsequently recycled bypass the statement of profit or loss eternally and never show up in EPS. This is the case
with remeasurements of defined benefit plans. Thirdly, the current accounting of OCI with its reclassification demands is not straightforward and interpretation of performance indicators as well as period totals requires careful consideration.

This overview of current IFRS OCI reporting shall facilitate the understanding of the following discussion of issues related to comprehensive income reporting.

4.3.2 Issues in comprehensive income reporting
Rees & Shane (2012, p. 790-792) provide an overview of the historical development of OCI. The issue of what exactly is the right performance statement is not a new one but exists since decades (Rees & Shane, 2012, p. 790). In addition, not only standard setters are engaged in defining earnings but also e.g. finance academics, analysts or valuation professionals (Barker, 2004, p. 159, 160). At the heart of the debate is whether the income statement should reflect the impact of all transactions and events other than those that arise from transactions with an entity’s owners or whether some gains and losses should be excluded as they are not representative for an entity’s operating performance (Rees & Shane, 2012, p. 790, 791).

Arguments of advocates of comprehensive income reporting can be summarized in the following manner. An accounting system that requires all income and expenses to be recognized in a single income statement is in theory consistent with clean surplus accounting. This states that all changes in stockholders’ equity are tracked in the income statement – except those arising from transactions with owners (Ohlson, 1995, p. 1). Linsmeier et al. (1997, p. 120, 121) strongly criticize both the verbal distinction between net income and comprehensive income and the practice of recycling which thwart accounting transparency and contradict fundamental accounting principles. Income that bypasses the income statement is violating the very fundamental economic distinction between capital and income (Linsmeier et al., 1997, p. 121). In consequence, accounting would fail to capture value creation (Linsmeier et al., 1997, p. 121). In addition, economic values recognized in OCI are not happening by pure chance but originate from management’s strategic and operative choices which determine a firm’s assets and liabilities (Jones & Smith, 2011, p. 2053). Outsourcing some income and expenses from the income statement weakens financial reporting’s disciplinarian nature on management as it is no more held accountable for all sources of value creation or destruction (Linsmeier et al., 1997, p. 122).

Arguments of advocates of so-called ‘dirty surplus accounting’ which displays a certain net income and some additional ‘dirty surplus’ lead us back to the discussion in chapter 4.1.4 that financial reporting is increasingly taking an information perspective. Early research on the value-relevance of accounting figures for equity prices showed an unexpectedly low correlation between accounting information and stock market values which was ascribed to earnings figures including supposedly non value-relevant information (Van Cauwenberge & de Beelde, 2007, p. 11). Proponents of an informational perspective therefore argue to separate earnings components in order to increase the relevance of earnings and their

---

18 This line of argumentation is based on the identification of investors as primary users of accounting information and the consequential purpose of accounting to be useful for valuation purposes (Linsmeier et al., 1997, p. 120, 121). This issue was touched upon in chapter 4.1.
decision-usefulness. Increased fair value accounting intensified the discussion in recent times as revaluation gains and losses can obscure operating performance (Barker, 2004, p. 159). An intertwined issue is that mark-to-market approaches are often said to be too volatile and transitory to be reflected in an entity’s net income and therefore not useful in determining the value of the company (Linsmeier et al., 1997, p. 124).

A reasonable objection to the presented discussion on comprehensive income reporting is that even by reporting some income and expenses in OCI and by closing them directly into equity no information is missing in financial statements (Linsmeier et al., 1997, p. 122). A due user of financial statements could therefore infer the same information in both accounting variants. In elaborating upon the efficient market hypothesis we already demonstrated that presentation is relevant under the assumption of a semi-strong form. In addition, value-relevant information that is too widespread increases direct and indirect costs of equity valuation (Hirst & Hopkins, 1998, p. 48). Most important, however, is the long established behavioral pattern of emphasizing net income and the thereof derived earnings per share figure (Linsmeier et al., 1997, p. 122). These performance indicators are focused on by users of financial statements that aim to evaluate a firm’s performance (SEC, 2008, p. 17). That humans rely on such heuristics in judgment and decisions under uncertainty is well established in psychological research (Tversky & Kahneman, 1974). Tversky & Kahneman (1974, p. 1124) show that people use specific heuristic principles when faced with complicated activities that involve predicting values and determining probabilities. While these heuristics are often beneficial, they can involve biases and lead to significant errors (Tversky & Kahneman, 1974, p. 1124). Reporting either clean surplus or dirty surplus can therefore reasonably be deemed to influence decisions.

The core problem of a sound comprehensive income reporting is a lack of an adequate definition that is able to distinguish net income components from OCI components (Rees & Shane, 2012, p. 793). Rees & Shane (2012, p. 792, 793) investigate the definitions provided by the FASB and IASB conceptual frameworks in place at that time and conclude that these definitions are insufficient and do not allow to cohesively separate earnings from OCI items. Barker (2004, p. 158, 159) observes in a similar vein that the classification of items under U.S. GAAP did not develop following a common objective but represented rather a hasty reaction to practical issues. Inconsistencies therefore exist e.g. in reporting unrealized gains and losses from fair value accounting as some unrealized gains and losses are directly tracked in the income statement while others are outsourced into OCI (SEC, 2008, p. 19).

Any separation in reporting financial performance is feasible if the income and expenses recognized in the respective statements have different informational properties (Barker, 2004, p. 158). Barker (2004, 162-164) investigates three common approaches to delineate net income from OCI, namely defining OCI as transactions outside an entity’s core operations, as nonrecurring and as outside of management’s control. In a complementary manner to the theoretical reasoning, empirical accounting research investigates whether separate reporting of net income and OCI can be justified by significant differences in their value-relevance, in their persistency or their predictive value (Jones & Smith, 2011, p. 2049). It is obvious that these attributes are driven by valuation practice and therefore reflective of an investor’s point of view on financial reporting (Barker, 2004, p. 162).
Ohlson (1999, p. 145) assigns such nonrecurring items the term transitory earnings and identifies disjointedness of current and subsequent transitory earnings, irrelevancy for earnings forecasting purposes and irrelevancy for estimating the present value of expected dividends as their attributes. Ohlson (1999, p. 145) demonstrates that transitory items are similar to dividends regarding their informational content. Applied to the Ohlson valuation model, the value-relevance of transitory items is fully accounted for by their effect on book value (Ohlson, 1999, p. 145). A caveat must be raised here as while dividends are regarded to be value-irrelevant, transitory items bear value which translates in a dollar per dollar fashion by their effect on book value (Ohlson, 1999, p. 145, 146). Ohlson’s argumentation therefore supports the separation of ‘core earnings’ and ‘transitory earnings’ as they are to be treated differently in valuing a company. A case for OCI that reports only transitory items can therefore be made (Ohlson, 1999, p. 159).

However, Jones & Smith (2011, p. 2049) observe that OCI is not transitory. Rather, OCI items tend to predict future values of themselves in a reversing manner (Jones & Smith, 2011, p 2049). Yet, this tendency is unlike net income as the latter is positively persistent (Jones & Smith, 2011, p. 2049). This observation can be interpreted in so far as that OCI in its current version does not fulfill the transitory character on which a case in line with Ohlson’s (1999) argumentation for separately displaying OCI could be made. Nevertheless, another argument for OCI reporting based on the different persistency could be made (Jones & Smith, 2011, p. 2049).

Barker (2004, p.162-164) shows that a coherent definition of OCI based on the aforementioned attributes is not possible. This conclusion can on the other hand not be equated with uselessness of OCI reporting. In analyzing the value-relevance literature Barker (2004, p. 160, 161) states that reporting income and expenses in separate categories is useful in so far as investors use different multiples for the respective components. Categories that contain more recurring items hence outweigh those with less recurring ones when valuing companies (Barker, 2004, p. 160). Hence, items not included in net income are also value-relevant, yet, to a smaller degree (Barker, 2004, p. 161). Therefore, OCI seen as a form of disaggregated information reporting has informational value for investors (Barker, 2004, p. 161). Linsmeier at al. (1997, p. 124, 125) also argue for disaggregated reporting of different income components based on informational properties similar to those introduced above. Yet, this disaggregation should occur within the income statement and lead to a final EPS figure based on comprehensive income (Linsmeier et al., 1997, p. 124, 125).

It should be clear at this point that the identification of coherent informational properties to base the distinction of income components on is the key to further comprehensive income reporting. Hence, this paper’s purpose is to revisit the informational property of value-relevance of OCI and to shed light on whether a changed accounting environment and new accounting rules affected this property. After introducing the point of view of the IASB on comprehensive income reporting, we will therefore elaborate upon the value-relevance of OCI in a detailed manner.
4.3.3 The point of view of the IASB
As the raison d’être of OCI is apparently a matter of accounting theory, we will examine the exposure draft of a conceptual framework that already formed the basis of our discussion on the IFRS conceptual framework in the accounting theory chapter.

In the basis for conclusions on the exposure draft the IASB recognizes that while varying views on the issue exist among the interested public, a definition of OCI is commonly demanded (IASB, 2015a, p. 91). The IASB admits that there is currently no conceptual basis that unifies items classified into OCI (IASB, 2015a, p. 91). In addition, there are no distinguishable characteristics that can be consistently applied to those items recognized in profit or loss compared with those recognized in OCI (IASB, 2015a, p. 91). In conclusion, even as reasons for classification as OCI are provided in the respective standards, the overall distinction remains artificial as no clear definition is found.

The exposure draft states that the reason of separating income and expenses into profit or loss and OCI is “to communicate information about financial performance more efficiently and effectively” (IASB, 2015b, p. 75). The IASB argues in the exposure draft for profit or loss to mirror the financial performance of an entity and therefore to serve the financial reporting purposes of providing decision-useful information and to hold management accountable (IASB, 2015b, p. 76). It is therefore in the statement of profit or loss in which a total or subtotal has to be published (IASB, 2015b, p. 76). In other words, this accounting earnings figure which is also the basis for the accounting earnings per share figure reflects only income and expenses which are included in profit or loss and is not affected by OCI.

The IASB argues nevertheless that in principle all income and expenses should be included in profit or loss (IASB, 2015b, p. 76). A case for classifying some income and expenses as OCI can only be made if these income and expenses arise from assets or liabilities measured at current value and (!) if recognizing these income and expenses separately in OCI increases the relevance of the profit or loss statement (IASB, 2015b, p. 76, 77). Yet, the decision authority remains at the IASB as standards have to explicitly permit recognition in OCI (IASB, 2015a, p. 93). As discussed in the accounting theory chapter, increasing the relevance of accounting information means enhancing the decision-usefulness of financial reporting information. This kind of indirect definition of OCI indicates the arduousness the IASB suffers in providing a rational for OCI. The IASB states itself that in principle all OCI should be recycled through profit or loss in subsequent periods (IASB, 2015b, p. 77). If recycling turns out to be difficult as no clear indication of the appropriate recycling period is identifiable, then the original classification as OCI is questionable (IASB, 2015b, p. 77).

4.4 Value-relevance
4.4.1 Interpretations and perspectives of value-relevance
In the previous chapters we laid the foundation for the following in-depth discussion on value-relevance. We showed that based on the theory of efficient markets, capital markets are reasonably expected to process accounting information. In addition, we elaborated upon the choice of accounting standard setters to place investors’ needs at the center of accounting standards. Hence, accounting information has to be decision-usefully.
Moreover, this trend is reflected in the propagation of the information perspective in evaluating accounting standards.

Yet, what is value-relevance and which definition best describes value-relevance in accounting depends on the context the term is used within. The diversity of value-relevance research is reflected by the various research questions addressed (Nilsson, 2003, p. 1). How capable are accounting figures to provide equity values? Which figures mirror value or which figures can be used to support valuations? Nilsson (2003, p. 1) argues that the issue of value-relevance of accounting information is controversial as financial reporting is historically an evaluation of past performance while valuation is concerned with future outcomes. Hence, the traditional purpose of accounting and the resulting design of accounting standards conflicts with investors’ needs (Nilsson, 2003, p. 1). In addition, accounting information competes with other sources of information such as non-financial information or analysts’ opinions (Nilsson, 2003, p. 1). What kind of information eventually drives equity values is open for discussion (Nilsson, 2003, p. 1).

We will use a categorization by Francis & Schipper (1999, p. 325-327) to define the otherwise rather loose notion of value-relevance for our paper. Francis & Schipper (1999, p. 325-327) classify value-relevance into four interpretations. Value-relevance of accounting information according to interpretation 1 defines accounting information as reflecting intrinsic values, while prices do not (Francis & Schipper, 1999, p. 325). Hence, investors use accounting information to adjust prices to mirror intrinsic value more closely (Francis & Schipper, 1999, p. 325). Interpretation 2 to the contrary assigns financial information value-relevance if accounting measures are inputs in a valuation model (Francis & Schipper, 1999, p. 325). The use of accounting earnings and cash flow figures in a discounted dividend model or discounted cash flow model can serve as an example (Francis & Schipper, 1999, p. 325). Interpretation 3 assigns value-relevance a more indirect role. It defines value-relevance in terms of a statistical association between financial information and equity prices (Francis & Schipper, 1999, p. 325). This interpretation assigns value-relevance to accounting information when it contains information that was unknown to investors before the release of the information and in consequence leads investors to revise their expectations (Francis & Schipper, 1999, p. 326). Interpretation 4 takes an even more indirect stance to value-relevance which is based on timeliness and predictability issues of financial information within interpretation 3 (Francis & Schipper, 1999, p. 326). Interpretation 4 no longer assumes a statistical association between accounting information and stock market values in a direct manner but rather in an indirect manner, namely whether accounting information is correlated or a summary of other information that is actually used by investors (Francis & Schipper, 1999, p. 326). Accounting information is therefore said to be value-relevant if it is able to mirror the information content of that information which is actually used by investors (Francis & Schipper, 1999, p. 327).

Nilsson (2003, p. 2-8) revisits the aforementioned interpretations. He calls interpretation 3 the information view of value-relevance (Nilsson 2003, p. 2, 3). Studies in this perspective are conducted to examine the behavior of stock markets at the point in time when the financial statements are published (Nilsson, 2003, p. 4). As the actual accounting information is deemed to alter equity prices in this view, such studies focus on examining returns (Nilsson, 2003, p. 4). To the contrary, he calls interpretation 4 the measurement
view of value-relevance (Nilsson, 2003, p. 5). The underlying idea of this view is that financial statements are basically a summary of business transactions and economic events (Nilsson, 2003, p. 5). He stresses that it is neither necessary under this view that investors use the provided accounting information nor that financial statements incorporate timely information (Nilsson, 2003, p. 5). Dumontier & Raffournier (2002, p. 139, 140) classify such studies that focus on establishing whether accounting information mirrors value-relevant information as indirect tests of the value-relevance of accounting figures. The reasoning is that these studies do not assume a direct link between accounting information and investors’ decisions (Dumontier & Raffournier, 2002, p. 140). Hence, value-relevant information is not always decision-useful information (Barth et al., 2001, p. 80). Under the measurement view of value-relevance, studies are using both stock price and return as dependent variables (Nilsson, 2003, p. 6). Studies using prices investigate whether accounting information mirrors all economic transactions and events that an entity experienced up to the point in time the price data is taken (Nilsson, 2003, p. 6). Studies using returns delimit the purpose of price-based models to whether accounting data was successful in mirroring those economic transactions and events that an entity experienced over the period defined by the return measure (Nilsson, 2003, p. 6). Nilsson (2003, p. 7, 8) shows that distinguishing studies that use the information perspective from those using a measurement perspective is not straightforward as the lines between both types are often blurred.

Academic research on value-relevance has used each of the aforementioned interpretations of value-relevance. The trend in recent decades was marked by a shift from information view towards measurement view (Easton, 1999, p. 399). Which perspective researchers use in their studies depends on the research question and the nature of the study (Nilsson, 2003, p. 7). Our paper is concerned with statistical associations between financial statement information and stock prices and returns. Hence, our research is situated in line with the aforementioned views. Francis & Schipper (1999, p. 326) discussed the issues of predictability and timeliness that interpreting value-relevance of accounting information under interpretation 3, or information view respectively, suffers. Our research is exposed to the same problem. However, we are basically interested in whether information contained in OCI is value-relevant for investors. Whether there exists a direct link between the statement of OCI and stock prices is not a necessary condition. Rather, the necessary condition for our research question is whether the information content of OCI is value-relevant and therefore reflected in stock prices. We will therefore discuss our results under interpretation 4, or the measurement view respectively. Our research design reflects a measurement view in line with Nilsson’s argumentation (2003, p. 7, 8) that studies taking on a measurement perspective are characterized by longer return windows, the use of regression analysis and do not necessarily assume a direct cause-and-effect relationship between accounting information and stock market data.

4.4.2 Types of value-relevance studies

Besides classifying value-relevance studies according to the respective interpretation of the notion, such studies can be further classified depending on the envisaged conclusions to be drawn from the study. Holthausen & Watts (2001, p. 5, 6) state that value-relevance studies fall into the following three main categories: Relative association studies, incremental
association studies and marginal information content studies. We will only explain the former two types in the following as they are used in our paper.

Relative association studies are concerned with a comparison of the value-relevance of different accounting performance indicators (Holthausen & Watts, 2001, p. 5). Such studies infer value-relevance if accounting indicators are correlated with stock prices or returns (Holthausen & Watts, 2001, p. 5). The focus of such studies is to compare the strength of the association regarding various accounting measures (Holthausen & Watts, 2001, p. 5). To illustrate, such studies could investigate whether the association is higher when using EBIT, net income or OCI (Biddle et al., 1995, p. 3). Further, a comparison of the same earnings figure before and after a change in an accounting standard fulfills the definition of relative association studies (Holthausen & Watts, 2001, p. 5). Biddle et al. (1995, p. 2) argue from an investment perspective that relative value-relevance helps to rank information by its information content for financial analysis. This is beneficial as it reduces transaction costs in investment analysis (Biddle et al., 1995, p. 2). The judgment criterion to establish which accounting indicator is more value-relevant is usually the $R^2$ of regressions (Holthausen & Watts, 2001, p. 5). The higher $R^2$ the more value-relevant the figure is (Holthausen & Watts, 2001, p. 6).

Incremental association studies to the contrary are not directly comparing different accounting indicators. Rather, these studies are designed in order to infer whether an accounting figure provides additional value-relevant information (Holthausen & Watts, 2001, p. 6). Usually focusing on longer time horizons, such studies test e.g. whether OCI provides additional value-relevant information when already including the value-relevant information of e.g. net income in the regression. In other words, incremental value-relevance studies test whether the inclusion of additional variables increases the association with market values (Biddle et al, 1995, p. 3). If the respective regression coefficient of the additional variable is statistically different from zero, value-relevance will be assumed for this variable (Holthausen & Watts, 2001, p. 6). Regarding our research context, prior incremental association studies were conducted to assess the incremental value-relevance of OCI in total (e.g., Dhaliwal et al. (1999), Chambers et al. (2007) or Kanagaretnam et al. (2009)). In addition some studies measure the incremental value-relevance of individual components of OCI (e.g., Chambers et al. (2007) or Ernstberger (2008)). We kindly refer to our literature overview at the end of this chapter.

This paper performs both relative and incremental association studies. This will be further detailed in the chapter on value-relevance models.

4.4.3 Theories underlying value-relevance studies

In a critical review of the usefulness of value-relevance studies for accounting standard setting, Holthousen & Watts (2001, p. 11) state that value-relevance studies are silent on their theoretical foundations. Holthousen & Watts (2001, p. 11) identify and classify such studies into two theoretical conceptions, namely a direct valuation theory and an inputs-to-equity-valuation theory.

The former theory is used in studies that investigate whether accounting income figures can measure or are associated with stock returns (Holthousen & Watts, 2001, p. 11). In addition, these studies test whether book values of equity are able to measure or are
associated with stock prices (Holthousen & Watts, 2001, p. 11). Hence, inferences of such studies for standard setting would take the form of comparing alternative accounting income and equity measures and their association with stock markets (Holthousen & Watts, 2001, p. 11). Depending on whether the strength of association or the strength of measurement is tested, the relevant statistical measures are a regression’s R² or the correlation coefficient (Holthousen & Watts, 2001, p. 11).

Studies that rely on the inputs-to-equity-theory on the other hand focus on whether accounting figures are actually an input variable to valuation models or whether accounting figures provide input that is processed in valuation models (Holthousen & Watts, 2001, p. 12). Hence, inferences of such studies for standard setting would take the form of whether investors are using an actual accounting figure in their valuation model or whether a newly introduced accounting figure would be used in their valuations (Holthousen & Watts, 2001, p. 12). This theoretical foundation assumes therefore the use of a valuation model and a processing of accounting information in such a model (Holthousen & Watts, 2001, p. 12).

We deem the discussion of Holthousen & Watts (2001, p. 11, 12) to be similar in nature to the already introduced discussion on possible interpretations of value-relevance by Francis & Schipper (1999, p. 325-327). We argued throughout this chapter that we do not necessarily assume a direct link between accounting information and stock market values. Inputs-to-equity theory, to the contrary, would require that accounting information is processed in stock markets and therefore driving stock market values. As we argue for a more indirect view of value-relevance of accounting information, our research paper is better described by direct valuation theory.

4.4.4 Models on value-relevance

4.4.4.1 General discussion of value-relevance models
Value-relevance research is characterized by the use of many different models which also differ a lot in their specifications (Holthousen & Watts, 2001, p. 52, 53). These models can be broadly categorized as balance sheet models, earnings models and the so-called Ohlson-model (Holthousen & Watts, 2001, p. 52, 53). In addition, such models are either directed at testing share prices or at testing changes in share prices, or share returns respectively (Barth et al., 2001, p. 95). While studies examining share prices are interested in how much accounting information is incorporated in market values, those focusing on returns are testing to which extent accounting information can explain changes in value over a certain time period (Barth et al., 2001, p. 95).

The models are open to a wide variety of independent variables based on accounting information (Barth et al., 2001, p. 96, 97). The choice of which accounting variables to include is obviously a direct conclusion drawn from the research question (Barth et al., 2001, p. 96). This paper is investigating whether a changed accounting standard has led to an increased value-relevance of OCI. This research question leads us to the following considerations on our model. Firstly, we will use a relative value-relevance design to compare whether net income or comprehensive income is more value-relevant. Secondly, we will use an incremental value-relevance design to draw conclusions on whether OCI conveys additional value-relevant information to net income. Moreover, as our paper is
centered on changes in the remeasurements item of OCI, we will use an incremental design to infer whether this item contains value-relevant information. In our point of view, both price and return models are suitable to address our research purpose. As therefore neither price nor return models can be reasonably repudiated, we will use both of them to strengthen our conclusions. The respective models shall be introduced in more detail in the following.

4.4.4.2 Price-level models
This study uses a common modification of the Ohlson-model (Ohlson, 1995). Ohlson (1995, p. 663) derives mathematically a valuation model that ultimately leads to an explication of market value only by accounting data. The model assumes that a firm’s market value is equivalent to the present value of expected dividends (Ohlson, 1995, p. 663). Based on the clean surplus relation, Ohlson (1995, p. 681) shows that this market value can also be expressed by book value plus the present value of expected abnormal earnings. Abnormal earnings are defined as the difference of accounting earnings and the product of beginning of the year book value and cost of capital (Ohlson, 1995, p. 662). Assuming a certain statistical behavior, abnormal earnings can be further replaced by current or subsequent period’s earnings (Ohlson, 1995, p.662-664). The valuation model is in consequence only dependent on current book value and capitalized current earnings (Ohlson, 1995, p. 662).

It must be stated that this model, in line with all theoretical models, is a simplification of the real world and relies on assumptions to achieve such a simplification (Barth et al., 2001, p. 92). The assumptions include e.g. a perfect and complete capital market and linear information dynamics (Barth et al., 2001, p. 91). Holthousen & Watts (2001, p. 59-62) sharply criticize the use of such a model as its assumptions restrict the usefulness of conclusions. Barth et al. (2001, p. 91-95) scrutinize the arguments brought up by Holthousen & Watts (2001) and invalidate most of their criticism.

Our study uses a slightly amended version of this model which is used in similar contexts by e.g. Dechow et al. (1999), Graham et al. (2003) and Kanageretnam et al. (2009). The model we used is set up by the following value equation:

\[
MVE_{it} = \alpha_0 + \alpha_1 BVE_{it} + \alpha_2 NI_{it} + \varepsilon_{it} \quad ---- (1)
\]

In this equation MVE is equal to the market capitalization (price per share \(\times\) number of shares outstanding) of the firm i at time t. BVE equals the book value of equity at time t, NI stands for net income for the period from t-1 to t and \(\varepsilon\) equals other information about future abnormal earnings that is reflected in the equity value of the firm but currently not displayed in the financial statements.

We use this model to test the relative value-relevance of net income compared with comprehensive income. We further test for incremental value-relevance in line with other studies such as Barth & Clinch (1996), Rees & Elgers (1997) or Harris & Muller (1999). Specifically, we investigate whether OCI conveys additional value-relevant information over book value and net income. In addition, we explicitly look at whether we find incremental value-relevance of the remeasurements category of OCI. All measures are deflated by shares outstanding.
Relative value-relevance:

\[ \text{Price}_{it} = \alpha_{0,1} + \alpha_{1} \left[ \frac{\text{BVE}}{S} \right]_t + \alpha_{2} \left[ \frac{\text{NLI}}{S} \right]_t + \epsilon_{it} \]  \quad (1a)

\[ \text{Price}_{it} = \alpha_{0,2} + \alpha_{3} \left[ \frac{\text{BVE}}{S} \right]_t + \alpha_{4} \left[ \frac{\text{CI}}{S} \right]_t + \epsilon_{it} \]  \quad (1b)

Incremental value-relevance:

\[ \text{Price}_{it} = \alpha_{0,3} + \alpha_{5} \left[ \frac{\text{BVE}}{S} \right]_t + \alpha_{6} \left[ \frac{\text{NLI}}{S} \right]_t + \alpha_{7} \left[ \frac{\text{OCI}}{S} \right]_t + \epsilon_{it} \]  \quad (1c)

\[ \text{Price}_{it} = \alpha_{0,4} + \alpha_{8} \left[ \frac{\text{BVE}}{S} \right]_t + \alpha_{9} \left[ \frac{\text{NLI}}{S} \right]_t + \alpha_{10} \left[ \frac{\text{REM}}{S} \right]_t + \epsilon_{it} \]  \quad (1d)

Denotation of variables:

\[ \text{Price}_{it} = \text{Price per share taken two months after the end of fiscal year } t. \]
\[ (i) \text{ represents the respective company and } (t) \text{ the respective fiscal year;} \]
\[ \left[ \frac{\text{BVE}}{S} \right]_t = \text{Book value of common equity at the end of fiscal year } t \text{ deflated by number of outstanding shares}; \]
\[ \left[ \frac{\text{NLI}}{S} \right]_t = \text{Net income for the fiscal year } t \text{ deflated by the number of shares outstanding}; \]
\[ \left[ \frac{\text{CI}}{S} \right]_t = \text{Comprehensive income for the fiscal year } t \text{ deflated by the number of shares outstanding}; \]
\[ \left[ \frac{\text{OCI}}{S} \right]_t = \text{OCI for the fiscal year } t \text{ deflated by the number of shares outstanding}; \]
\[ \left[ \frac{\text{REM}}{S} \right]_t = \text{Remeasurements category of OCI for the fiscal year } t \text{ deflated by the number of shares outstanding}; \]
\[ \epsilon_{it} = \text{Error term which reflects the part of expected and unexpected information that is not captured by the share price.} \]

4.4.4.3 Return-level models

Kothari & Zimmermann (1995) compare the use of price and return models in value-relevance research and argue to use both in a complementary manner. As already introduced, return-level models investigate changes in share prices and their relation to accounting earnings figures over a specific time period (Barth et al., 2001, p. 95). We use the following model that has its foundations in Ball & Brown (1968) and which has been used in similar contexts. See e.g. Kanagaretnam et al. (2009), Biddle & Choi (2006) or Dhaliwal et al. (1999). The basic formulation of the model is as follows:

\[ \text{RET}_{it} = \beta_0 + \beta_1 \Delta \text{ERN}_{it} + \epsilon_{it} \]  \quad (2)

In this equation \( \text{RET} \) is equal to the market share return of the firm \( i \) over the period \( t \). The change in \( \text{ERN} \) equals the change in the respective accounting earnings figure between two
following periods and $\varepsilon$ equals other information that is reflected in the market return of the firm but not captured in the respective accounting earnings figure. All measures are deflated by shares outstanding.

Relative value-relevance:

\[
ircraft = \beta_{0.1} + \beta_1 \left( \frac{\Delta NI}{S} \right)_{it} + \varepsilon_{it} \quad \text{(2a)}
\]

\[
ircraft = \beta_{0.2} + \beta_2 \left( \frac{\Delta CI}{S} \right)_{it} + \varepsilon_{it} \quad \text{(2b)}
\]

Incremental value-relevance:

\[
ircraft = \beta_{0.3} + \beta_3 \left( \frac{\Delta NI}{S} \right)_{it} + \beta_4 \left( \frac{\Delta OCI}{S} \right)_{it} + \varepsilon_{it} \quad \text{(2c)}
\]

\[
ircraft = \beta_{0.4} + \beta_5 \left( \frac{\Delta NI}{S} \right)_{it} + \beta_6 \left( \frac{\Delta REM}{S} \right)_{it} + \varepsilon_{it} \quad \text{(2d)}
\]

In these equations (i) represents the respective entity and (t) denotes the observation year. All variables are the same as represented in the price model, except:

\[
ircraft = \text{Stock return (cum-dividend) for the year lagging two months after fiscal year t}
\]

\[
\Delta = \text{change in the income component between t and t-1}
\]

In a previous chapter we discussed research insights on the semi-strong form of market efficiency. We showed that stock markets process accounting information very quickly and stated that this leads us to take accounting data as close as practically possible to the publication of those. Therefore, we investigated the publication criteria that Swedish listed companies have to follow. Companies listed on NASDAQ OMX which compose our data base are required to publish their annual results within two months after the end of the respective financial year (NASDAQ, 2016, p. 30). Therefore, we chose to take market data two months after the end of the respective financial year.

4.4.5 Literature review of previous studies

Research in the area of value-relevance is plentiful. As our research is focusing on the value-relevance of OCI and the role of remeasurements of defined benefit pension plans, we will concentrate our literature overview to similar contexts. The literature overview does not claim to be exhaustive but rather to provide an overview of the so far mixed results and varying settings.

The following studies focus mainly on comparing net income with comprehensive income:

O’Hanlon & Pope (1999) studied the value-relevance of accounting income figures for accumulated share returns focusing on both ordinary profits and extraordinary items. The study was based on U.K. companies from 1972 to 1992. They concluded that accounting figures without extraordinary items are value-relevant. They found no evidence that extraordinary items provide additional value-relevant information to ordinary profits. Extending their tests led to minor evidence that other information than ordinary profits is value-relevant.
Brimble & Hodgson (2005) studied the value-relevance of comprehensive income and OCI. The study was conducted on the Australian market from 1988 to 1997. They found that comprehensive income has lower value-relevance than net income. However, OCI provides incremental value-relevant information using non-linear models.

Wang et al. (2006) studied value-relevance by using a return-level model. They evaluate clean surplus versus dirty surplus accounting. The study was conducted on the Dutch market from 1988 to 1997. They found that both net income and clean surplus income figures are relevant for predicting share returns. Dirty surplus accounting information, however, is not value-relevant for investors. Yet, they found that some parts of OCI, namely asset revaluations and currency-translation differences can provide incremental value-relevant information.

Kanagaretnam et al. (2009) studied the value-relevance of net income versus comprehensive income by their association with share prices and share returns. The study was conducted on Canadian companies that were cross-listed in the U.S. from 1998 to 2003. They found that comprehensive income is more value-relevant than net income in both models. However, net income is superior to comprehensive income in forecasting future net income which they ascribe to the transitory nature of items in comprehensive income.

Goncharov & Hodgson (2011) conduct a study comprised of a sample of 16 EU countries from 1991 to 2005. They conclude that net income is superior to comprehensive income judged from a decision-usefulness perspective. However, they also find that some individual components of comprehensive income which were reclassified according to their unrealized nature are also value-relevant. In conclusion, they argue that a reporting system that mixes realized with unrealized events has lower value-relevance than a separation according to this criterion.

Devalle & Magarini (2012) studied the value-relevance of comprehensive income and OCI in the context of the IFRS implementation in the EU. The study was conducted on the largest companies listed on the stock exchanges of the U.K., France, Germany, Spain and Italy from 2005 to 2007. Their study did not provide any evidence that comprehensive income would be a better performance measure than net income. Robustness tests of their regression model at the level of the total sample as well as at an individual country level did not alter the result that comprehensive income is not more value-relevant than net income.

Mechelli & Cimini (2014) also studied the value-relevance of comprehensive income versus net income. Their study was conducted on a sample of EU-countries from 2006 to 2011. They found that net income is more value-relevant than comprehensive income. Interestingly, a revision of IAS 1 which altered the presentation of IFRS statements did not have any effect on the value-relevance of the different income measures.

The following studies include a focus on individual components of OCI:

Dhaliwal et al. (1999) studied the value-relevance of three components of OCI, namely gains and losses on marketable securities, foreign currency translation adjustments and changes in pension liabilities in a U.S. GAAP setting. They found that only one component of OCI, namely gains and losses on marketable securities, increases the association of
income measures and returns. Including companies from the financial sector did not alter the results.

Cahan et al. (2000) studied the value-relevance of comprehensive income versus net income as well as the incremental informational value of OCI components. The study was conducted on a sample of New Zealand companies from 1993 to 1997. They found that comprehensive income is more value-relevant than net income. In addition, they concluded that explicit reporting of OCI components, namely fixed asset revaluations and foreign currency translation adjustments, provide incremental value-relevant information.

Biddle & Choi (2006) studied the value-relevance of OCI components, namely adjustments for unrealized gains and losses on available for sale marketable securities, foreign currency translations and changes in pension liabilities. The study was conducted on the U.S. market from 1994 to 1998. They found that the reporting of these OCI items enhances the decision-usefulness. However, these components are not very useful for future predictions.

Chambers et al. (2007) studied the value-relevance of OCI components, namely unrealized gains and losses on available for sale securities and foreign currency translation adjustments. The study was conducted on the U.S. market from 1998 to 2003. They found that these two components are value-relevant and priced by investors.

Ernstberger (2008) studied the value-relevance of OCI components, namely unrealized gains and losses on available for sale financial assets, changes in foreign currency translation adjustments and gains and losses on cash flow hedges. The study was conducted on German companies practicing U.S. GAAP or IFRS from 2001 to 2004. It was shown that comprehensive income does not provide more incremental value-relevant information than net income. Yet, comprehensive income as of IFRS provides more incremental value-relevant information than comprehensive income as of U.S. GAAP. Moreover, only unrealized gains and losses on available-for-sale financial assets under IFRS convey value-relevant information.

Mitra & Hossain (2009) studied the value-relevance of different OCI components, namely pension related adjustments, foreign currency translation adjustments, unrealized gains and losses from available-for-sale securities and gains and losses on hedging activities. The study was conducted in a U.S. GAAP setting on companies from different S&P indices from 2005 to 2006. They found a statistically significant positive association between share returns and two components of OCI, namely pension related adjustments and foreign currency translation adjustments.

The already introduced study of Kanagheretnam et al. (2009) found that changes in the fair value of cash flow hedges, changes in the fair value of available for sales investments and foreign currency translation adjustments are significantly correlated to share prices and share returns.

The abovementioned studies can be best summarized as providing mixed evidence with a trend that net income provides at least as value-relevant information as comprehensive income. Furthermore, the value-relevance of OCI seems restricted to certain items of OCI. If one abstracted from possible measurement or methodological shortcomings, a reasonable conclusion would be that value-relevance is esteemed differently in different contexts.
The following table provides a quick overview of the settings of the aforementioned studies:

<table>
<thead>
<tr>
<th>Study</th>
<th>Time frame</th>
<th>Sample size</th>
<th>Country</th>
<th>Models</th>
</tr>
</thead>
</table>

### 4.5 Ethical considerations

A change in accounting rules, particularly a change in pension accounting rules must, as has been shown, not only be judged from a technical point of view in assessing its effect on the economic position and the presentation of financial statements. Nor is it in our point of view sufficient to judge changed accounting rules on defined criteria such as decision-usefulness. Rather, it must also be judged from a broader perspective by assessing its potential implications on the decisions a company is taking. Changed pension accounting rules did play a part in the scale-back of defined benefit plans. This scale-back has implications well beyond the company level and affects social welfare by altering old-age social security. Opponents to the new rules “argue that this is a case where accounting rules not only drive decision-making but also affect the lives of active employees:” (Fore, 2004,
p. 184). It is more than questionable whether this consequence attracted interest in the standard setting process. We want to put straight that this issue is not at all straightforward. The changed pension accounting rules made pension accounting e.g. more transparent. This is desirable. Yet, our point of view is that an accounting standard setting process should require a due diligence of its economic, social and for respective cases as natural resources accounting, its environmental consequences. These issues seem overshadowed today by decision-usefulness considerations. We are not advocating less transparent accounting rules for pensions that somehow conceal the economic burden of such obligations. Our point is that the standard setting process should place more emphasis on broader societal consequences. Whether this would have led in effect to a different pension accounting treatment is not our point.

In a more general line of argumentation, research in financial reporting has implications on society since financial reporting has consequences on the wealth distribution and risk allocation among individuals and on the proration of resources among companies (Beaver, 1998, p. 13, 14). Hence, the choice between alternative accounting options is also a function of preferences for the respective distribution of wealth (Beyer et al., 2010, p. 315). As with any normative approach, the values and beliefs from which a theory or financial reporting system is deducted are vital to its outcomes. Due to the diversity of interested groups and their respective values, it is not of much avail to try to define a ‘best’ financial reporting system alone on technical accounting questions (Beaver, 1998, p. 35). Beaver (1998, p. 14) rightly states therefore that the ‘best’ financial accounting standard is also a matter of its economic consequences. In conclusion, Beaver (1998, p. 2) asserts that “a particular financial reporting requirement is the outcome of a political (or social choice) process”. As shown, such a social choice affects the wealth distribution in a society and is therefore linked to questions of economic inequality (Beaver, 1998, p. 36).

As accounting standard setting is a political process, it is influenced by various interested parties. Such a process is exposed to lobbying by parties whose interest is at stake and the final accounting standards deviate therefore certainly from a normative ideal (Miller & Bahnson, 2010, p. 421, 422). Lobbying judged from an ethical perspective is complicated as the line between pure information providing and advocacy is often blurred (Crane & Matten, 2010, p. 505). In case of accounting standard setting it is, however, reasonable to raise an ethical concern insofar as investors’ and corporations’ interests are likely to be overrepresented compared to public interest groups.19 To illustrate, Correia (2009, p. 123-125) not only finds evidence that corporations use their power to influence the SEC but also succeed in altering outcomes to their favor. In a more specific example, Miller & Bahnson (2010, p. 422) mention the effect of such lobbyism in the context of releasing SFAS No. 115 by the American standard setter FASB in 1993. The originally envisaged rules presented in an exposure draft would have dictated to recognize all unrealized changes in the value of marketable securities in the statement for profit or loss. Intensive lobbying by managers from the financial service sector who were disgraced by the prospect of having to recognize volatile equity security revaluations and thereby display their risk in the bottom line led to offloading these amounts into OCI. The diligent reader spots the similarity to the development in IAS 19.

19 Crane & Matten (2010, p 505, 506) discuss this problem in general terms.
In addition, without going into the details of its organization, the IASB is a private foundation and therefore not a government entity. Government organizations have a fiduciary duty to the society that elected them (Crane & Matten, 2010, p. 498). Constructing a fiduciary duty to the wider society for a private organization such as the IASB is more delicate. However, we argued before that standard setters should take social consequences more into consideration. This is in line with the reasoning that by conceding regulatory power from governments to private bodies, the latter have a strong ethic responsibility to govern the respective citizenship rights (Crane & Matten, 2010, p. 523).
5. DATA

5.1 Company selection
As reasoned for in the introductory chapter to this paper, our research is focusing on the Swedish stock market. The natural choice for our data base is therefore to turn to shares that are listed on the Stockholm exchange run by NASDAQ OMX Group. At the end of March 2016, when we collected the data for this research paper there were 324 different shares listed on this exchange.\(^{20}\) The following figure 10 provides an overview of these shares with regard to their industry classification.

![Figure 10. Industry classification before adjustments.](image)

Figure 10 shows that shares listed on NASDAQ OMX Stockholm operate in a variety of industries. As this research paper is not concerned with a cross-industry-sectional analysis, the variety supports the possibility to generalize our findings. However, we argue for an exclusion of shares that represent companies operating in the financial sector on the following reason. Financial statements of companies from the financial sector differ substantially to those operating in a non-financial sector. We will demonstrate this only for the focus point of our research question, namely OCI. In the theory chapter we showed that OCI is comprised among others by the following items:

- Gains and losses on remeasuring *available-for-sale financial assets* in accordance with IAS 39 Financial Instruments: Recognition and Measurement
- The effective portion of gains and losses on *hedging instruments in a cash flow hedge* under IAS 39 or IFRS 9 Financial Instruments
- Gains and losses on remeasuring an *investment in equity instruments* where the entity has elected to present them in OCI in accordance with IFRS 9
- The effects of changes in the *credit risk of a financial liability* designated as at fair value through profit or loss under IFRS 9.

The relative importance of financial instruments, as regulated by IFRS 9 or IAS 32 and IAS 39 respectively, is stronger for financials compared to non-financials. As accentuated

\(^{20}\) All data regarding the NASDAQ OMX Stockholm composition are retrieved via the search and filter function available at [http://www.nasdaqomxnordic.com/shares](http://www.nasdaqomxnordic.com/shares).
in italic among the OCI categories, such financial instruments can impact OCI through various ways. Therefore, we argue that the value-relevance of OCI is different for financials and non-financials. Hence, we exclude financials from our data base. It is noteworthy, however, that the amendment of IAS 19 is also applicable to financial sector firms.

As there were 73 shares issued from companies operating in the financial sector, our data base after excluding those consists of 251 shares. A further adjustment to this data base is required due to the reason that we conduct a time-series analysis comprising the years 2010 to 2015. To ensure comparability, all shares that have not been listed throughout the entire period have to be eliminated from the data base. A total of 71 companies had their IPO on NASDAQ OMX Stockholm during this period. Hence, after eliminating these companies our data base contains 180 shares.

In the course of collecting our accounting data we encountered a further restriction, namely that two companies are not reporting their financial statements in accordance with IFRS. This reduced our data base to 178 shares.

Finally, a total of 19 companies have listed two classes of shares on the exchange. In order to avoid a bias in our results due to double counting these companies, we eliminated a share class and included only shares of class B. The reason for taking class B shares is that, by checking on a sample of companies, these shares were more numerous and therefore more liquid. Our final data base consists therefore of 159 shares. The following figure 11 provides an overview of the final distribution of our data base with regard to industry classification.

![Industry classification after adjustments](image)

**Figure 11. Industry classification after adjustments.**

NASDAQ OMX Stockholm further classifies companies according to the size of their market capitalization into three groups. Large cap companies have a market capitalization exceeding EUR 1 bn while mid cap companies’ market capitalization exceeds EUR 150 m (NASDAQ OMX, 2011, p. 8). Companies that have a market capitalization below the latter threshold are classified as small cap (NASDAQ OMX, 2011, p. 8). The following figure 12 provides the distribution of our data base according to the aforementioned size criteria.
5.2 Market data selection
We already introduced the regression models we will use in order to test for value-relevance. The main market data needed in these models are share prices and share returns.

In our discussion on market efficiency, we derived from previous research in this area that prices are allegedly incorporating accounting information very quickly after their publication. A reasonable compromise between accuracy and practicability is to take prices at the end of the period during which the year-end results have to be published. According to the rules for issuers on NASDAQ OMX Stockholm, year-end results must be published within two months after the end of the reporting period (NASDAQ OMX, 2016, p. 30). Therefore, we decided to collect share prices at this point in time. We bore in mind that the companies in our data base can have different reporting periods. We therefore checked the reporting period for each company and adjusted the share price date accordingly. Thomson Reuters Datastream was used to collect the market data. We selected ‘adjusted prices’ as they account for stock splits and similar events which is necessary for our share prices as we run a time-series analysis over six years.

In order to derive market returns, we additionally collected ‘dividends per share’ from Thomson Reuters Datastream. Then market returns were constructed manually based on these two variables. In consequence our market returns represent annual cum-dividend share returns. The adjustment is necessary as dividends are irrelevant for the value of a company (Modigliani & Miller, 1958, p. 281) and their effects on stock prices would distort our market returns.

Moreover, as our value-relevance models are constructed on a per share basis we collected the ‘number of shares outstanding’ for our data base during the relevant years. This variable was also collected from Thomson Reuters Datastream. The following table 2 summarizes our market data collection.

<table>
<thead>
<tr>
<th>Data</th>
<th>Collection method</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share prices</td>
<td>Retrieved</td>
<td>Thomson Reuters Datastream</td>
</tr>
<tr>
<td>Dividends per share</td>
<td>Retrieved</td>
<td>Thomson Reuters Datastream</td>
</tr>
<tr>
<td>Number of shares outstanding</td>
<td>Retrieved</td>
<td>Thomson Reuters Datastream</td>
</tr>
</tbody>
</table>
5.3 Accounting data selection

Our regression models need various accounting data. Firstly, book values of equity per share were collected via Thomson Reuters Datastream using the corresponding variable. Secondly, net income to common figures were retrieved from Thomson Reuters Datastream. As we collected comprehensive income and OCI figures on a comprehensive level, or in other words for the sum of common and minority interest, we had to adjust the retrieved net income figures with minority interest. Hence, we also retrieved minority interest from Thomson Reuters Datastream. However, no suitable data for OCI exits on Thomson Reuters Datastream. This deficiency is well recognized in similar value-relevance studies of OCI that point out that hand-collected data leads to different results than variously retrieved data (Jones & Smith, 2011, p. 2051).

This led us to hand-collect yearly OCI figures from the companies’ annual reports. Fulfilling the requirements of the return-level model required us to collect such data from 2009 to 2015. Considering prior year figures reporting, this task entailed the collection and examination of four annual reports per company or applied to our sample of 159 companies a total of 636 annual reports. As some annual reports for the year 2015 were not yet published, we referred in these cases to the published year-end results that companies are required to finalize within the mentioned two-month period. Moreover, we paid attention to collect figures for the financial year 2012, or before the effectiveness of the amendment of IAS 19 respectively, from the annual reports 2012 in order to avoid collecting adjusted figures. This point will be furthered in the subsequent chapter.

Simultaneously, we hand-collected comprehensive income as well as remeasurements figures. In addition, we used yearly data on the present value of defined benefit obligations and the fair value of plan assets in our descriptive results discussion. For the years before the amendment of IAS 19 we also collected the recognized net defined benefit position on the balance sheet. These figures have been hand-collected from the notes to the financial statements. For companies that did not publish their annual reports during the data collection period, data from the notes for 2015 is missing. This is, however, of minor importance as these variables are not entering our regressions. Moreover, we retrieved information from the notes regarding the accounting option chosen for actuarial gains and losses in the years before the amendment of IAS 19. For the purpose of our descriptive data discussion, we also retrieved total assets figures from Thomson Reuters Datastream. Table 3 summarizes the collected accounting data. The data collection process led to over 6000 hand-collected observations.

21 Such reports are in effect similar to interim statements or quarterly reports.
Table 3. Overview of collected accounting data.

<table>
<thead>
<tr>
<th>Data</th>
<th>Collection method</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book value of equity per share</td>
<td>Retrieved</td>
<td>Thomson Reuters Datastream</td>
</tr>
<tr>
<td>Net income to common</td>
<td>Retrieved</td>
<td>Thomson Reuters Datastream</td>
</tr>
<tr>
<td>Minority interest</td>
<td>Retrieved</td>
<td>Thomson Reuters Datastream</td>
</tr>
<tr>
<td>OCI</td>
<td>Hand-collected</td>
<td>Annual reports; Year-end reports</td>
</tr>
<tr>
<td>Comprehensive income</td>
<td>Hand-collected</td>
<td>Annual reports; Year-end reports</td>
</tr>
<tr>
<td>Remeasurements</td>
<td>Hand-collected</td>
<td>Annual reports; Year-end reports</td>
</tr>
<tr>
<td>Present value of def. benefit obligation</td>
<td>Hand-collected</td>
<td>Annual reports</td>
</tr>
<tr>
<td>Fair value of plan assets</td>
<td>Hand-collected</td>
<td>Annual reports</td>
</tr>
<tr>
<td>Recognized net defined benefit position</td>
<td>Hand-collected</td>
<td>Annual reports</td>
</tr>
<tr>
<td>Accounting option chosen – IAS 19 old</td>
<td>Hand-collected</td>
<td>Annual reports</td>
</tr>
<tr>
<td>Total assets</td>
<td>Retrieved</td>
<td>Thomson Reuters Datastream</td>
</tr>
</tbody>
</table>

The usual reporting currency of the companies listed on NASDAQ OMX Stockholm is SEK. However, four companies are reporting in EUR, five companies in USD and one company in GBP. We decided to keep these companies in our data base and translated their currencies into SEK. The currency translation was performed in accordance with IAS 21.39, 40 which essentially require the translation of assets and liabilities at year-end closing rates and income figures with average rates for the year. The respective rates were retrieved from the European Central Bank or Riksbanken respectively.

At this point we must emphasize an important obstacle encountered during the data collection process. In collecting our defined benefit pension plan related accounting data we strive to collect them as complete as possible to provide a full picture of their occurrence and magnitude. However, the reporting of certain defined benefit plans that we encountered benefits from an exceptional ruling issued by the Swedish Financial Reporting Board. These pension plans concern multi-employer plans based on the collective scheme ‘ITP’ that are insured by the company Alecta. In statement UFR 3 the Swedish Financial Reporting Board rules that these plans are in principle defined benefit plans and shall be recognized as such (RFR, 2011, p. 5, 6). However, in case the company will not get sufficient information from Alecta that allows accounting for these plans as defined benefit plans such plans can exceptionally be accounted for as defined contribution plans (RFR, 2011, p. 6). In the notes to their financial statements, a non-negligible number of companies refer to this ruling. To illustrate we provide a direct quote from the annual report 2015 of Semcon AB:

“Commitments for retirement pensions and family pensions for salaried employees in Sweden are safeguarded via insurance with Alecta. According to a statement from the Swedish Financial Reporting Board. UFR 3, this is a defined- benefit plan that encompasses several employers. As in previous years the company has not had access to information to enable it to report this plan as a defined benefit plan, which means that the ITP pension plans secured via insurance with Alecta are therefore reported as defined contribution plans.” (Semcon AB, 2016, p. 60).

---

22 We introduced these collective schemes in chapter 3.4.
The consequences for our research paper are that the reported figures regarding defined benefit plans are understated and do thus not represent the defined benefit landscape in Swedish listed companies to its full extent. However, our research paper is still representative for the real interaction between reported accounting data and stock markets as investors do not have access to these data either. In interpreting our data discussion this issue is nevertheless worth to be kept in mind.

5.4 Ethical considerations
In analogy to chapter 2.5, we base our ethical considerations regarding our data collection on the European Code of Conduct for Research Integrity (ESF, 2011). A relevant principle of scientific integrity in this context is reliability (ESF, 2011, p. 10). We strengthened the reliability of our data collection process as we committed ourselves to discuss ambiguous or unclear data points in a four-eyes principle. Moreover we used logical tests (e.g. by checking the truth of basic accounting principles such as comprehensive income equals net income plus OCI) to identify errors in our data collection process. Objectivity is foremost fostered by transparent data (ESF, 2011, p. 10, 11). Hence, we decided to publish our whole data base. Via the following hyperlinks can be found two excel sheets that can be freely accessed by anyone having the links.

http://drive.google.com/file/d/0BxyrSOcPck6RVnh3YWUkdlbEU/view?usp=sharing

This link leads to an excel sheet which contains all our retrieved and hand-collected raw data arranged in a clear manner.

http://drive.google.com/open?id=0BxyrSOcPck6RVzJFdS1LUlV5Ymc

This link leads to an excel sheet which includes the thereof derived IBM SPSS Statistics inputs for the respective price-level and return-level models.

In publishing our data base, we enable interested parties to proof review our data and make our results verifiable. Thereby we contribute also to the principle of open communication (ESF, 2011, p 11).

The European Code of Conduct for Research Integrity derives from the principles of scientific integrity guidelines for good research practices (ESF, 2011, p. 13, 14). Those good practices that relate to data center on availability of and access to data (ESF, 2011, p. 13). In greater detail, the guidelines highlight that data should be documented, stored and archived (ESF, 2011, p. 13). In addition, the data should be readily accessible for interested parties (ESF, 2011, p. 13). In publishing our results we fulfill these good data practices. Restrictions to the aforementioned principles can arise out of confidentiality reasons (ESF, 2011, p. 14). However, none of our data is confidential as we use only published accounting and accessible market data.
6. RESULTS

6.1 Descriptive data discussion

As explained in the data chapter of this paper, our final sample consists of 159 companies. Before we are conducting our inferential statistics, we will examine the data using descriptive statistics. The following shall not only describe the data further but also allow us to draw conclusions on our research question.

We scrutinized the evolution of occupational pensions in chapter 3.1. The main conclusion thereof was that defined benefit plans are gradually being displaced by defined contribution plans. Yet, the occurrence of defined benefit plans is crucial to our research question as it tacitly assumes that defined benefit plans are still prevalent to a material extent. Hence, we examined our sample about the occurrence of such plans. The result is depicted in the following figure 13.23

![Occurrence of defined benefit plans](image)

Figure 13. Occurrence of defined benefit plans.

Based on all companies in our sample, companies that report defined benefit plans (88) exceed those that do not report such plans (71). Furthermore, this figure provides the momentous finding that the occurrence of defined benefit plans is not spread evenly throughout varying company sizes. Rather, large companies report such plans with a prevalence of 88% compared to small companies with a prevalence of 27%. This finding is reasonable with regard to the complexity of defined benefit schemes that require a certain company size to be efficient. Likewise, Fasshauer et al. (2008, p. 26) argue that such plans are particularly important for large multinationals.

The sole occurrence of defined benefit plans, however, is not sufficient to argue that such plans could have an impact on financial statements that is strong enough to influence investors’ decisions. We therefore investigate how material such defined benefit plans are. In line with Fasshauer et al. (2008, p. 26) we define such plans as material if they represent

---

23 We define companies with defined benefit plans as companies that explicitly report in their financial statements in at least two out three years from 2010 to 2012 on their occurrence.
at least 2% of a company’s total assets. The following figure 14 depicts the share of material defined benefit plans on the total of defined benefit plans reported by companies.

![Occurrence of material defined benefit plans](image)

**Figure 14. Occurrence of material defined benefit plans.**

Applied to the total sample, one can assert that if companies are reporting defined benefit plans, those plans are material. The ratio of material plans to total plans is 72%. However, while more than three out of four mid to large size companies have material plans, less than half of the small companies have those.

The following table quantifies the discussed differences in size of defined benefit plans. In addition, the present value of the defined benefit obligation is contrasted with the fair value of the plan assets to provide an overview of the funding status of such plans. Table 4 is based on data for the year 2010.

**Table 4. Status of defined benefit plans (2010).**

<table>
<thead>
<tr>
<th></th>
<th>Present value of defined benefit obligation</th>
<th>Fair value of plan assets</th>
<th>Funded status %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>median</td>
<td>mean</td>
<td>std. dev.</td>
</tr>
<tr>
<td>Small</td>
<td>22,850</td>
<td>85,977</td>
<td>227,956</td>
</tr>
<tr>
<td>Mid</td>
<td>124,514</td>
<td>1,530,370</td>
<td>6,227,247</td>
</tr>
<tr>
<td>Large</td>
<td>2,065,000</td>
<td>6,951,576</td>
<td>12,749,861</td>
</tr>
<tr>
<td>Total</td>
<td>326,000</td>
<td>3,973,289</td>
<td>10,077,082</td>
</tr>
</tbody>
</table>

Throughout all company sizes, defined benefit obligations exhibit a right-skewed distribution. Hence, some companies have relatively big pension obligations compared to the median company. In addition, the standard deviation is high throughout all sizes. Under the assumption that this distribution is not a direct function of other firm characteristics such as total assets, this fact raises a caveat regarding the generality of empirical evidence. Secondly, mid and large size companies’ pension plans are funded by more than 75% while small companies put fewer assets aside.

---

24 The same definition as in figure 13 applies.
25 Companies without defined benefit plans as defined in figure 13 are excluded from the data. Figures are in TSEK.
Table 5. Status of defined benefit plans (2015).

<table>
<thead>
<tr>
<th></th>
<th>Present value of defined benefit obligation</th>
<th>Fair value of plan assets</th>
<th>Funded status %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>median mean std. dev.</td>
<td>median mean std. dev.</td>
<td>mean</td>
</tr>
<tr>
<td>Small</td>
<td>13,417 85,057 236,875</td>
<td>17,022 31,895 109,563</td>
<td>37%</td>
</tr>
<tr>
<td>Mid</td>
<td>191,000 1,002,425 3,629,181</td>
<td>51,800 1,003,770 4,407,755</td>
<td>100%</td>
</tr>
<tr>
<td>Large</td>
<td>3,206,500 11,164,866 20,724,430</td>
<td>2,275,000 8,396,135 16,181,284</td>
<td>75%</td>
</tr>
<tr>
<td>Total</td>
<td>487,500 5,885,578 15,627,644</td>
<td>183,940 4,496,537 12,262,417</td>
<td>76%</td>
</tr>
</tbody>
</table>

Table 5 reports the same companies and measures, yet, based on data for the year 2015. The distributional pattern remained similar over the reported period. However, the present values of the pension obligations increased strongly in large companies. This finding is in line with our argumentation in chapter 3. Hence, the data confirms our assumption that economic and demographic trends led to an increase in pension obligations over the period that we are examining. In consequence, the data strengthens our reasoning for the validity of our research question. Interestingly, the companies in our sample managed to keep the funding levels of the defined benefit plans.

Moreover, we argued in the theory chapter that the amendment of IAS 19 has material effects on financial statements because companies used the corridor method before the amendment. The use of the corridor method had an off-balance-sheet financing effect as companies did not disclose the full value of their pension obligations on the balance sheet. The greater the number of companies that used the corridor approach, the greater on the average the effect of IAS 19 on financial reporting. Figure 15 shows therefore the distribution of methods chosen under IAS 19 old.²⁶

Figure 15. Overview of chosen method IAS 19 old.

²⁶ Data on the choice of the pension accounting method under IAS 19 old was collected for the years 2010 to 2012. A small number of companies changed the accounting method during this time. The classification into the respective categories is therefore based on the most frequently used category over the specified period.
Figure 15 shows that the corridor method was the preferred option for most companies (70% of total companies). The direct recognition in OCI option was relatively often used in large companies (34% of large companies). However, the corridor method was also the most common option in large companies with a share of 59%. In consequence, the findings support the validity of our research question.

After having established that most companies used the corridor approach, we will inquire the magnitude of unrecognized gains and losses. Therefore, we compare the fair values of the defined benefit pension position to the book values of these positions during the years 2010 to 2012. Table 6 reports the results. 27

Table 6. Magnitude of unrecognized gains and losses.

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Mid</th>
<th>Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>863</td>
<td>11,500</td>
<td>24,738</td>
<td>5,636</td>
</tr>
<tr>
<td>2011</td>
<td>210</td>
<td>13,923</td>
<td>18,100</td>
<td>7,280</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
<td>22,066</td>
<td>9,356</td>
<td>5,075</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>15,234</td>
<td>439,938</td>
<td>315,255</td>
<td>285,899</td>
</tr>
<tr>
<td>2011</td>
<td>20,700</td>
<td>515,160</td>
<td>610,631</td>
<td>456,137</td>
</tr>
<tr>
<td>2012</td>
<td>5,174</td>
<td>578,457</td>
<td>825,034</td>
<td>577,968</td>
</tr>
<tr>
<td>Standard deviation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>51,615</td>
<td>2,040,285</td>
<td>1,306,576</td>
<td>1,419,828</td>
</tr>
<tr>
<td>2011</td>
<td>56,924</td>
<td>2,404,073</td>
<td>2,039,273</td>
<td>1,924,820</td>
</tr>
<tr>
<td>2012</td>
<td>12,520</td>
<td>2,687,124</td>
<td>2,386,854</td>
<td>2,215,909</td>
</tr>
</tbody>
</table>

Analogous to the aforementioned size characteristics of defined benefit plans, the distribution of unrecognized amounts is right-skewed. Hence, the same conclusions for our research as drawn under the size discussion apply. In addition, except for small companies, the standard deviation is growing over the years. This hints to an increasing heterogeneity among the companies. How big the unrecognized amount has to be to be judged as value-relevant cannot be determined as this depends on its relativity to other firm characteristics. Unrecognized amounts for the respective median company seem rather small. However, mean figures can reasonably be deemed as material for the respective companies.

Having discussed the characteristics of the companies’ defined benefit plans, we will now turn to OCI traits. Whether an income figure is value-relevant or not depends on the magnitude of such a figure. Yet, not only the absolute amount but also the relative magnitude will matter. Therefore, we first depict the amounts of OCI reported for the years 2010 to 2015 in table 7. Thereafter, we will show reported net income for these years in table 8. Finally, table 9 presents the relative size of reported OCI to net income. 28

---

27 Once again, we only included companies that reported their defined benefit pensions as defined in figure 13. To calculate the unrecognized amount, we took the present values of defined benefit obligations and the fair values of the plan assets from the notes. Subsequently we subtracted from their net position the book value of the defined benefit position which we determined based on information provided in the notes.

28 These figures are based on the whole sample of 159 companies.
Table 7. Magnitude of OCI.

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Mid</th>
<th>Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>-2,106</td>
<td>-18,500</td>
<td>-305,500</td>
<td>-10,000</td>
</tr>
<tr>
<td>2011</td>
<td>-11</td>
<td>-3,400</td>
<td>-87,500</td>
<td>-671</td>
</tr>
<tr>
<td>2012</td>
<td>-1,092</td>
<td>-7,200</td>
<td>-134,650</td>
<td>-4,518</td>
</tr>
<tr>
<td>2013</td>
<td>0</td>
<td>0</td>
<td>43,500</td>
<td>96</td>
</tr>
<tr>
<td>2014</td>
<td>1,158</td>
<td>9,869</td>
<td>170,827</td>
<td>4,067</td>
</tr>
<tr>
<td>2015</td>
<td>-1,508</td>
<td>-4,800</td>
<td>-23,479</td>
<td>-3,000</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>-16,387</td>
<td>-16,200</td>
<td>-988,578</td>
<td>-322,061</td>
</tr>
<tr>
<td>2011</td>
<td>-1,018</td>
<td>-28,114</td>
<td>-709,784</td>
<td>-230,547</td>
</tr>
<tr>
<td>2012</td>
<td>-4,240</td>
<td>-23,667</td>
<td>-645,701</td>
<td>-210,722</td>
</tr>
<tr>
<td>2013</td>
<td>-936</td>
<td>-13,854</td>
<td>80,251</td>
<td>21,426</td>
</tr>
<tr>
<td>2014</td>
<td>-1,312</td>
<td>-6,968</td>
<td>383,521</td>
<td>118,317</td>
</tr>
<tr>
<td>2015</td>
<td>-7,818</td>
<td>-2,233</td>
<td>-374,760</td>
<td>-121,838</td>
</tr>
<tr>
<td>Std. dev.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>55,265</td>
<td>91,906</td>
<td>3,025,109</td>
<td>1,745,421</td>
</tr>
<tr>
<td>2011</td>
<td>24,257</td>
<td>60,923</td>
<td>1,593,478</td>
<td>945,912</td>
</tr>
<tr>
<td>2012</td>
<td>12,587</td>
<td>57,135</td>
<td>1,144,316</td>
<td>703,103</td>
</tr>
<tr>
<td>2013</td>
<td>23,202</td>
<td>70,786</td>
<td>700,210</td>
<td>393,849</td>
</tr>
<tr>
<td>2014</td>
<td>85,753</td>
<td>164,747</td>
<td>2,165,887</td>
<td>1,223,534</td>
</tr>
<tr>
<td>2015</td>
<td>38,506</td>
<td>147,629</td>
<td>1,560,665</td>
<td>889,264</td>
</tr>
</tbody>
</table>

Table 8. Magnitude of net income.

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Mid</th>
<th>Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>15,844</td>
<td>94,500</td>
<td>1,477,500</td>
<td>61,657</td>
</tr>
<tr>
<td>2011</td>
<td>15,364</td>
<td>126,700</td>
<td>1,477,500</td>
<td>84,800</td>
</tr>
<tr>
<td>2012</td>
<td>10,192</td>
<td>126,400</td>
<td>1,383,500</td>
<td>63,741</td>
</tr>
<tr>
<td>2013</td>
<td>10,900</td>
<td>159,000</td>
<td>923,000</td>
<td>63,175</td>
</tr>
<tr>
<td>2014</td>
<td>20,307</td>
<td>177,000</td>
<td>1,128,000</td>
<td>100,237</td>
</tr>
<tr>
<td>2015</td>
<td>24,509</td>
<td>248,577</td>
<td>1,512,500</td>
<td>126,077</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>-55,050</td>
<td>105,186</td>
<td>4,437,886</td>
<td>1,397,126</td>
</tr>
<tr>
<td>2011</td>
<td>-11,452</td>
<td>152,873</td>
<td>4,496,408</td>
<td>1,446,420</td>
</tr>
<tr>
<td>2012</td>
<td>-6,177</td>
<td>116,110</td>
<td>3,792,427</td>
<td>1,218,347</td>
</tr>
<tr>
<td>2013</td>
<td>-20,132</td>
<td>163,384</td>
<td>3,063,630</td>
<td>994,618</td>
</tr>
<tr>
<td>2014</td>
<td>-7,300</td>
<td>200,320</td>
<td>2,666,146</td>
<td>884,332</td>
</tr>
<tr>
<td>2015</td>
<td>765</td>
<td>261,014</td>
<td>3,520,313</td>
<td>1,171,376</td>
</tr>
<tr>
<td>Std. dev.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>564,111</td>
<td>450,046</td>
<td>9,065,765</td>
<td>5,472,540</td>
</tr>
<tr>
<td>2011</td>
<td>123,565</td>
<td>475,970</td>
<td>9,961,272</td>
<td>5,927,270</td>
</tr>
<tr>
<td>2012</td>
<td>99,281</td>
<td>288,519</td>
<td>7,109,136</td>
<td>4,331,174</td>
</tr>
<tr>
<td>2013</td>
<td>140,492</td>
<td>163,993</td>
<td>4,799,918</td>
<td>3,023,508</td>
</tr>
<tr>
<td>2014</td>
<td>215,406</td>
<td>257,226</td>
<td>4,174,227</td>
<td>2,629,122</td>
</tr>
<tr>
<td>2015</td>
<td>167,541</td>
<td>211,944</td>
<td>5,458,335</td>
<td>3,438,098</td>
</tr>
</tbody>
</table>
Table 9. Relative size of OCI to net income.

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Mid</th>
<th>Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>-13%</td>
<td>-20%</td>
<td>-21%</td>
<td>-16%</td>
</tr>
<tr>
<td>2011</td>
<td>0%</td>
<td>-3%</td>
<td>-6%</td>
<td>-1%</td>
</tr>
<tr>
<td>2012</td>
<td>-11%</td>
<td>-6%</td>
<td>-10%</td>
<td>-7%</td>
</tr>
<tr>
<td>2013</td>
<td>0%</td>
<td>0%</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>2014</td>
<td>6%</td>
<td>6%</td>
<td>15%</td>
<td>4%</td>
</tr>
<tr>
<td>2015</td>
<td>-6%</td>
<td>-2%</td>
<td>-2%</td>
<td>-2%</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>30%</td>
<td>-15%</td>
<td>-22%</td>
<td>-23%</td>
</tr>
<tr>
<td>2011</td>
<td>9%</td>
<td>-18%</td>
<td>-16%</td>
<td>-16%</td>
</tr>
<tr>
<td>2012</td>
<td>69%</td>
<td>-20%</td>
<td>-17%</td>
<td>-17%</td>
</tr>
<tr>
<td>2013</td>
<td>5%</td>
<td>-8%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>2014</td>
<td>18%</td>
<td>-3%</td>
<td>14%</td>
<td>13%</td>
</tr>
<tr>
<td>2015</td>
<td>-1023%</td>
<td>-1%</td>
<td>-11%</td>
<td>-10%</td>
</tr>
</tbody>
</table>

The following conclusions can be drawn from the three tables above. Firstly, the relative size of OCI to net income fluctuates strongly among the years. For large companies the relative size varies from -21% to 15% based on median figures and from -22% to 14% based on mean figures. Secondly, OCI tends to be negative in total. Thirdly, OCI varies strongly among different companies and no clear trend towards an increase or decrease can be drawn based on the data. Fourthly, and importantly, with restriction to the fact that only a screenshot of six years is taken, OCI seems not to behave like a zero-sum-game. Rather, while admittedly fluctuating, judged from a six year perspective OCI seems to recognize mainly expenses that do not fully reverse.

The total amounts of OCI depicted in table 7 look at first sight rather immaterial. Yet, it must be recalled that the median and mean statistics net the effect of positive OCI amounts and negative OCI amounts. The following table 10 reports therefore the OCI amounts in absolute values. Table 11 compares OCI to net income taken both in absolute values.
Table 10. Magnitude of OCI (absolute values).

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Mid</th>
<th>Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>3,552</td>
<td>33,000</td>
<td>362,500</td>
<td>20,000</td>
</tr>
<tr>
<td>2011</td>
<td>550</td>
<td>6,000</td>
<td>203,000</td>
<td>3,695</td>
</tr>
<tr>
<td>2012</td>
<td>1,668</td>
<td>14,400</td>
<td>270,552</td>
<td>9,000</td>
</tr>
<tr>
<td>2013</td>
<td>1,030</td>
<td>16,599</td>
<td>167,218</td>
<td>10,653</td>
</tr>
<tr>
<td>2014</td>
<td>3,151</td>
<td>31,000</td>
<td>711,000</td>
<td>17,371</td>
</tr>
<tr>
<td>2015</td>
<td>3,167</td>
<td>21,000</td>
<td>307,000</td>
<td>13,564</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>17,341</td>
<td>52,671</td>
<td>1,223,703</td>
<td>405,366</td>
</tr>
<tr>
<td>2011</td>
<td>6,103</td>
<td>32,461</td>
<td>778,261</td>
<td>255,385</td>
</tr>
<tr>
<td>2012</td>
<td>5,946</td>
<td>31,455</td>
<td>766,701</td>
<td>251,434</td>
</tr>
<tr>
<td>2013</td>
<td>8,019</td>
<td>39,730</td>
<td>361,391</td>
<td>126,920</td>
</tr>
<tr>
<td>2014</td>
<td>23,650</td>
<td>75,385</td>
<td>1,190,746</td>
<td>403,351</td>
</tr>
<tr>
<td>2015</td>
<td>13,482</td>
<td>57,730</td>
<td>760,922</td>
<td>259,379</td>
</tr>
</tbody>
</table>

Table 11. Relative size of OCI to net income (absolute values).

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Mid</th>
<th>Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>11%</td>
<td>25%</td>
<td>25%</td>
<td>19%</td>
</tr>
<tr>
<td>2011</td>
<td>2%</td>
<td>4%</td>
<td>14%</td>
<td>3%</td>
</tr>
<tr>
<td>2012</td>
<td>4%</td>
<td>9%</td>
<td>20%</td>
<td>7%</td>
</tr>
<tr>
<td>2013</td>
<td>4%</td>
<td>10%</td>
<td>17%</td>
<td>8%</td>
</tr>
<tr>
<td>2014</td>
<td>8%</td>
<td>14%</td>
<td>58%</td>
<td>13%</td>
</tr>
<tr>
<td>2015</td>
<td>7%</td>
<td>8%</td>
<td>16%</td>
<td>8%</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>14%</td>
<td>22%</td>
<td>28%</td>
<td>27%</td>
</tr>
<tr>
<td>2011</td>
<td>9%</td>
<td>12%</td>
<td>17%</td>
<td>17%</td>
</tr>
<tr>
<td>2012</td>
<td>10%</td>
<td>14%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>2013</td>
<td>12%</td>
<td>21%</td>
<td>12%</td>
<td>12%</td>
</tr>
<tr>
<td>2014</td>
<td>33%</td>
<td>30%</td>
<td>42%</td>
<td>41%</td>
</tr>
<tr>
<td>2015</td>
<td>18%</td>
<td>21%</td>
<td>19%</td>
<td>19%</td>
</tr>
</tbody>
</table>

Judged in absolute terms, the magnitude of OCI compared to net income becomes more material. For large companies e.g. the relative size varies now from 14% to 58% based on median figures and from 12% to 42% based on mean figures. As already mentioned, one cannot define a threshold at which OCI amounts become value-relevant. However, the reported relative sizes are sufficiently material to assume that such amounts could be value-relevant and support therefore the validity of our research question.
We will finish this section with a look at the magnitude of remeasurements recognized in OCI. The periods in which the amendment of IAS 19 has been effective are displayed in the following table 12.

Table 12. Magnitude of remeasurements.

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Mid</th>
<th>Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>1,000</td>
<td>5,000</td>
<td>113,000</td>
<td>15,091</td>
</tr>
<tr>
<td>2014</td>
<td>-5,047</td>
<td>-20,344</td>
<td>-309,359</td>
<td>-67,500</td>
</tr>
<tr>
<td>2015</td>
<td>700</td>
<td>2,000</td>
<td>139,500</td>
<td>15,050</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>19,150</td>
<td>12,135</td>
<td>411,152</td>
<td>241,247</td>
</tr>
<tr>
<td>2014</td>
<td>-29,429</td>
<td>-34,897</td>
<td>-846,900</td>
<td>-498,039</td>
</tr>
<tr>
<td>2015</td>
<td>17,089</td>
<td>5,979</td>
<td>421,989</td>
<td>245,445</td>
</tr>
<tr>
<td>Std. dev.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>54,256</td>
<td>28,244</td>
<td>890,438</td>
<td>698,453</td>
</tr>
<tr>
<td>2014</td>
<td>68,102</td>
<td>40,997</td>
<td>1,462,911</td>
<td>1,172,759</td>
</tr>
<tr>
<td>2015</td>
<td>46,148</td>
<td>35,511</td>
<td>955,288</td>
<td>747,404</td>
</tr>
</tbody>
</table>

At first sight, these figures might look like a surprise as the distribution between the years and the respective signs seem to contradict the discussion in earlier chapters. Particularly, the reported figures for the year 2013, when the amendment of IAS 19 became effective, are unexpected. Based on the prevalence of so far unrecognized actuarial gains and losses, material negative amounts would have been expected. Yet, the reason for the reported amounts is both simple and of great importance for this research.

The transition from IAS 19 old to IAS 19 as of 2013 is regulated in IAS 19.173 which essentially requires in accordance with IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors a retrospective (!) application. It is not necessary to go into the details. What counts is the basic logic. A retrospective application means for a company that has its financial year ending on December, 31st that the financial statements for the year 2013 will be displayed as if the amendment of IAS 19 was already effective in prior years. Hence, the effect of IAS 19 revised on prior year figures translates into the financial statements for the year 2013 only though the adjustment of beginning of the year equity. The so far unrecognized actuarial gains and losses are therefore not accounted for in OCI for the year 2013 but in the previous year figures presented in the annual report for the year 2013. Therefore, the positive sign and the unexpectedly low amount of the above reported OCI figures for the year 2013 are comprehensible. It is noteworthy to clarify that companies do not alter their already published annual reports for prior years. The published annual report for the year 2012 e.g. is still based on the rules before the amendment of IAS 19. In collecting the data we were aware of this fact and deliberately took our accounting data for the year 2012 based on the published annual report for the year 2012. The figures for 2012

---

The data is based on companies that have a financial year ending in December. This has been done out of comparability reasons, as at the point of time this research was performed, figures based on IAS 19 revised over a three year period were only available for those companies. Only 14 companies out of 159 had a financial year that ends not in December.
are therefore not retrospectively adjusted but taken at the amount at which they became public for investors in the respective year.

The consequences challenge the appropriateness of our research design. A justified objection to our design is that, while we reason for increased value-relevance of OCI because of an amendment of IAS 19, our research design does not capture the transition effects. However, we are not investigating a onetime transition effect which would have called for an event study design but a permanent change in the relationship between OCI and stock markets. While our regression model does indeed not capture the transition effect, the underlying reasoning is still valid. There is a different treatment of remeasurements in OCI before and after the amendment of IAS 19 which is not only leading to a onetime effect. The discussion of this issue is, however, very interesting as it raises questions that are related to our research question but, at the same time, go beyond the scope. Namely, how do stock markets process such transition effects? Are stock markets capturing prior year adjustments and if they do, how? The implication for our research design, however, is that changes in the relationship as captured by our regression model might occur to a smaller degree.

This apart, the reported figures vary strongly between the years, a pattern that indicates low persistency or a transitory nature. Yet, the data is only available for three years which calls for cautious conclusions. As discussed in the theory chapter, a transitory nature would oppose value-relevance.

6.2 Inferential data discussion

6.2.1 Statement of hypotheses and corresponding data sets

The first hypotheses are straightforwardly deduced from our research question. To recall, we asked whether the amendment of IAS 19 has increased the value-relevance of OCI in the Swedish stock market. In our description of the broader picture we showed that economic and demographic trends together with socio-economic traits inherent to Sweden point to a relative importance of pension costs. In our theoretical discussion we laid the foundation to understand both why accounting data is value-relevant and why standard changes are likely to be aimed at increasing the value-relevance of accounting information. In addition, we elaborated upon the particularities of OCI and pension accounting which cast doubt on a plain assumption of their distinct value-relevance. Lastly, our roundup of academic value-relevance research pointed to the diversity of this topic especially the distinction between relative and incremental value-relevance.

Hence, we state the first hypothesis as follows:

\( H1a: \text{The incremental value-relevance of OCI is stronger after the amendment of IAS 19.} \)

In order to test this hypothesis we will run the price-level and return-level regression models presented in chapter 4.4.4 on two data sets. The first data set comprises accounting and market data for the years 2010 to 2012, or in other words data during the application of IAS 19 old. The second set comprises the years 2013 to 2015, or in other words data which
is based on IAS 19 revised. As explained in the theoretical discussion on incremental value-relevance, the decision criterion will be the respective size and statistical significance of the correlation coefficient of OCI.

The second hypothesis concerns relative value-relevance and is stated as follows:

H2a: The relative value-relevance of comprehensive income compared to net income is stronger after the amendment of IAS 19.

Testing a relative value-relevance of OCI directly is nonsense as a suitable comparing accounting candidate is missing. Rather, relative value-relevance of comprehensive income compared to net income offers valuable clues to value-relevance of OCI. The reason is in the fundamental definition of comprehensive income under IFRS, namely the accounting equation which equals comprehensive income to net income plus OCI. If OCI is more value-relevant, then comprehensive income must ceteris paribus be more relatively value-relevant compared to net income. As explained for the first hypothesis, we will run the already introduced price-level and return-level regressions on the aforementioned two data sets. Moreover as presented in the theoretical discussion on relative value-relevance the decision criterion will be the respective magnitude of the models’ R².

In addition we will test the following hypothesis:

H3a: Remeasurements are incrementally value-relevant after the amendment of IAS 19.

This additional hypothesis shall strengthen our evidence on value-relevance of OCI. The reasoning for this hypothesis follows in a straightforward manner from the discussion in this research paper. The compulsory annual reporting of remeasurements in OCI introduced by the revision of IAS 19 is the motivation for this research paper. Our line of argumentation for increased value-relevance of OCI is based on these remeasurements. Hence, as we expect them to be the catalyst for increased value-relevance of OCI in total, we deem remeasurements to provide incrementally value-relevant information. Again we will rely on the introduced price-level and return-level regressions and investigate the correlation coefficient of remeasurements.

---

30 This basic explanation needs further clarification due to the fact that our data base contains companies which differ in their fiscal years. The statement is fully representative for companies with a fiscal year end in December. Such companies enter the regression models with observations for three years before the amendment of IAS 19 and three years after the amendment of IAS 19. In addition, however, we have also companies that have their fiscal year ending in March, April, August, October and November. For these companies we include only observations for two years before the amendment of IAS 19 and two years after the amendment of IAS 19. The reason is simply that for such companies data for IAS 19 revised is only available for two years. To illustrate, a company having its fiscal year end in August has to apply IAS 19 revised the first time for the fiscal year beginning on 2013/09/01 and ending on 2014/08/31. Therefore, at the time of this research project only two years based on IAS 19 revised are available. In order to avoid a bias we included for such companies also only observations for two years based on IAS 19 old. A final particularity applies to SAS Group which changed its fiscal year in 2012 from previously December to October. This way, the group delayed the first time application of IAS 19 revised until its financial statements for the period 2013/10/01 to 2014/09/30. Hence, SAS Group enters our regression models only with two year observation periods as well.
All the aforementioned hypotheses concern the total set of our data base, namely 159 companies. The in-depth descriptive data discussion in chapter 5 demonstrated a high level of heterogeneity in our data base regarding the occurrence and materiality of defined benefit plans. As our main line of argumentation relies on the occurrence and materiality of such plans, the evidence gained on running the regression models on data from all the companies of our data base could be materially affected by those companies that have only immaterial or no defined benefit pension plans. The evidence from our descriptive data discussion together with our theoretical reasoning therefore suggests running the models only for those companies that have material defined benefit plans. As in our descriptive classification, we define material defined benefit plans in line with Fasshauer et al. (2008, p. 26) who assume those defined benefit obligations that represent at least 2% of total assets as material.

We filter our data base according to this criterion and run the same regression models as introduced in the respective hypotheses above in order to test the following slightly adjusted hypotheses:

**H1b**: The incremental value-relevance of OCI for companies with material defined benefit plans is stronger after the amendment of IAS 19.

**H2b**: The relative value-relevance of comprehensive income compared to net income for companies with material defined benefit plans is stronger after the amendment of IAS 19.

**H3b**: Remeasurements are incrementally value-relevant for companies with material defined benefit plans after the amendment of IAS 19.

### 6.2.2 Pre-testing of data

In our theoretical discussion of value-relevance we introduced the regression models that will be used in order to help us answer the research question. In total we use eight different equations which are comprised of simple linear regressions and multiple linear regressions. The regression models will be run in IBM SPSS Statistics. However, before we ran the regression models we tested whether our data base is suitable for such an analysis. The following explanation is based on Laerd Statistics (2015).

We will shortly introduce the six assumptions on our data base necessary for regression analysis and demonstrate that we checked our data base for each of them. These six assumptions are the following:

- Independence of observations;
- Linear relationship between dependent and independent variables (individually and collectively);
- Homoscedasticity of data;
- No multicollinearity;
- No significant unusual points;
- Normal distribution of residuals.

*Independence of observations* concerns first-order autocorrelation. In multiple linear regressions the observations should not relate with each other. Such a first-order
autocorrelation test investigates whether adjacent observations, or more specifically their error terms are dependent. A commonly used test hereto is the Durbin-Watson test. This test statistic takes values from 0 to 4. A value of approximately 2 indicates independence of observations. We ran this test for all our regressions and the Durbin-Watson values ranged from 1 to 1.9. The obtained values are acceptable for running multiple regressions.

*Linear relationship between dependent and independent variables (individually and collectively)* can be tested in two ways using IBM SPSS Statistics. Firstly, one can design a scatterplot in SPSS of studentized residuals (SRE_1) against predicted values (PRE_1). The data are readily available as these are automatically created by IBM SPSS Statistics in running multiple linear regressions. Secondly, one can perform partial regression plots of each independent variable with the dependent variable. We used both approaches. The former was used to test the collective linear relationship while the latter was used to test for individual linearity. The assumption was fulfilled in all regression models.

*Homoscedasticity of data* concerns whether the variances of residuals are similar for all values that the dependent variable is taking on. Homoscedasticity was tested using the aforementioned partial regression plots by visually inspecting the spread of residuals along the line of best fit. We did not find increases or decreases among the spread of residuals. Hence, the assumption of homoscedasticity is fulfilled.

*Multicollinearity* is present if two or more independent variables are highly correlated with each other. Multicollinearity can be detected in IBM SPSS Statistics by inspecting the correlation coefficients and Tolerance/VIF values. Correlation coefficients should not exceed 0.7. Hence, we analyzed all the tables of correlations produced by our tests and did not find any multicollinearity. In addition we investigated the Tolerance/VIF values which should not be lower than 0.1 or greater than 10 respectively. Our regressions led to values between 1 and 2 which indicates that no multicollinearity is present.

*No significant unusual points* concern the presence of significant outliers, high leverage points and highly influential points. Common to all these points is that they can have a negative effect on the regression equation leading to less predictive accuracy and statistical significance. An outlier is an observation which is far away from the usual pattern of the data points. We used standardized residuals and studentized residuals to identify such outliers. Their standard deviation should not exceed 3 to 4. Hence, we investigated all observations having either standardized or studentized residuals greater than 3.5 and eliminated all observations with values greater than 3.5. High leverage points can be detected in IBM SPSS Statistics by investigating the automatically created variable LEV-1. These values should not exceed 0.2 and we eliminated therefore all observations greater than 0.2. Lastly, highly influential points can be detected in IBM SPSS Statistics by investigating the so-called Cook’s distance value which is automatically created in running multiple regressions (COO-1). This test statistic should not exceed 1 which was true for all our regressions. Our total of observations was 463 before such adjustments. After the aforementioned adjustments our total of observations ranged between 443 and 448.

*Normal distribution of residuals* can be tested is IBM SPSS Statistics by creating a histogram and a so-called normal P-P plot. The standardized residuals should be approximately normally distributed in the histogram. Their mean value should be 0 and
their standard deviation below 1. The histograms of our models were characterized by standard deviations below 1. Yet, while mean values fell typically between 0 and 2, we found a mean of -8 as well. Hence, we investigated the approximate normal distribution of our residuals further by creating normal P-P plots. In such normal P-P plots normally distributed residuals should be aligned along the diagonal line approximately. We created such P-P plots for all our regressions and found that the residuals were approximately aligned along the diagonal line. Hence, we conclude that the assumption of normally distributed residuals is fulfilled in our regression models.

### 6.2.3 Interpreting parameters

Running simple or multiple regressions in IBM SPSS Statistics produces a great bunch of statistical data. We will only report those outputs relevant to our research question and delimit reported variables to the following:

- F-values;
- Adjusted R²;
- Unstandardized regression coefficients (B);
- Standard errors of coefficients (SEₜₐₓ);
- Standardized regression coefficients (β);
- Significance levels and p-values.

**F-values** are reported for the individual regressions by IBM SPSS Statistics as part of the analysis of variance (ANOVA) which calculates the ratio of explained (regression) to unexplained (residual) variance. F-values inform about the significance of the regression model in the sense of whether the null hypothesis that all regression coefficients are zero can be rejected (Niketta, 2009).

R-values concern the multiple correlation of the dependent variable with all independent variables in the model. They take on values between zero and one and the larger the value of R, the higher the explanatory power of the regression model. R values refer to the model as a whole or in other words how well the set of explanatory variables predicts the dependent variable (Agresti & Finlay, 2009, p. 331, 332). Hence, adjusted R² values represent the explained variance of the regression model and are a measure of the strength of association or in other words the overall fit of the model (Niketta, 2009; UCLA, n.d.).

**Unstandardized regression coefficients** (B) are the coefficients of the independent variables for the respective regression equation. Inserting these values into the regression equation quantifies our estimated coefficients. The interpretation is straightforward. Namely, increasing an independent variable by one unit leads ceteris paribus to an increase in the dependent variable by B times one unit (UCLA, n.d.).

**Standard errors of coefficients** (SEₜₐₓ) indicate the precision of the aforementioned coefficients. In addition, these standard errors are used to determine the statistical significance of the coefficients (Niketta, 2009).

**Standardized regression coefficients** (β) mirror the importance of the corresponding independent variable in explaining the regression variance. The higher this indicator, the more explanatory power a corresponding independent variable has (Niketta, 2009).
Standardized means in this context that all dependent and independent variables are adjusted to the same scale (UCLA, n.d.). Hence, the size of $\beta$ can be compared across the variables. In greater detail, standardized regression coefficients represent those values of the regression coefficients that they would take on if their units are such that independent and dependent variables have all an equal standard deviation (Agresti & Finlay, 2009, p. 351, 352).

*Significance levels and p-values* are used to summarize the evidence and strength of the respective statistical test. They provide information on whether the reported coefficients are different from zero in a statistically significant manner (UCLA, n.d.). We use a confidence level of $p \leq 0.05$ to indicate statistical significance. Such values are marked with an asterix.

### 6.2.4 Regression results

#### 6.2.4.1 Regression results for our first set of hypotheses

In the following we will present the results of our regression models as introduced in chapter 4.4.4. The regressions are based on data for all 159 companies of our final data base. The presentation of the regression models is clustered into relative and incremental value-relevance. All regression models are run two times, namely firstly with data for the years before the effectiveness of the amendment of IAS 19 and secondly with the data for the years after the effectiveness of the amendment of IAS 19.

We recall that we have in total eight different regression models. Therefore, even as we limit the presentation to the most relevant results, the reporting spreads over the following four pages. As we are aware that it is hard for our readers to follow and keep in mind the main results from each regression, we provide a consolidation of the results in chapter 6.2.5. Readers that are merely interested in grasping a quick overview of the results are referred there and free to come back to the more detailed results below.

In the following the relative value-relevance regression models are reported:

$$Price_{it} = \alpha_{0,1} + \alpha_{1} \frac{BVE}{S}_{it} + \alpha_{2} \frac{NI}{S}_{it} + \epsilon_{it} \quad ----- \ (1a):$$

**Table 13. Set 1 regression results - Price-level model (1a).**

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE$_B$</th>
<th>$\beta$</th>
<th>Sig.</th>
<th>Variables</th>
<th>B</th>
<th>SE$_B$</th>
<th>$\beta$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>26.498</td>
<td>2.556</td>
<td>0.000</td>
<td>0.000</td>
<td>Intercept</td>
<td>27.524</td>
<td>3.486</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>BVE</td>
<td>0.671</td>
<td>0.065</td>
<td>0.403*</td>
<td>0.000</td>
<td>BVE</td>
<td>1.148</td>
<td>0.077</td>
<td>0.550*</td>
<td>0.000</td>
</tr>
<tr>
<td>NI</td>
<td>2.883</td>
<td>0.274</td>
<td>0.411*</td>
<td>0.000</td>
<td>NI</td>
<td>4.368</td>
<td>0.354</td>
<td>0.413*</td>
<td>0.000</td>
</tr>
</tbody>
</table>
\[
\text{Price}_{it} = \alpha_0 + \alpha_3 \left( \frac{\text{BVE}}{S} \right)_{it} + \alpha_4 \left( \frac{\text{CI}}{S} \right)_{it} + \varepsilon_{it} \quad \cdots \quad (1b):
\]

Table 14. Set 1 regression results - Price-level model (1b).

<table>
<thead>
<tr>
<th></th>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of model fit:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( F (2, 441) = 195.122, p &lt; .0005 )</td>
<td>( F (2, 440) = 311.048, p &lt; .0005 )</td>
<td></td>
</tr>
<tr>
<td>Adjusted ( R^2 ) = 0.467</td>
<td>Adjusted ( R^2 ) = 0.584</td>
<td></td>
</tr>
<tr>
<td><strong>Summary of multiple regression analysis:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variables</td>
<td>( B )</td>
<td>( \text{SE}_B )</td>
</tr>
<tr>
<td>Intercept</td>
<td>28.244</td>
<td>2.601</td>
</tr>
<tr>
<td>BVE</td>
<td>0.738</td>
<td>0.065</td>
</tr>
<tr>
<td>CI</td>
<td>2.563</td>
<td>0.278</td>
</tr>
</tbody>
</table>

\[
\text{RET}_{it} = \beta_{0.1} + \beta_1 \left( \frac{\Delta \text{NI}}{S} \right)_{it} + \varepsilon_{it} \quad \cdots \quad (2a):
\]

Table 15. Set 1 regression results - Return-level model (2a).

<table>
<thead>
<tr>
<th></th>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of model fit:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( F (1, 442) = 11.564, p &lt; .0005 )</td>
<td>( F (1, 446) = 0.072, p &gt; .0005 )</td>
<td></td>
</tr>
<tr>
<td>Adjusted ( R^2 ) = 0.023</td>
<td>Adjusted ( R^2 ) = -0.002</td>
<td></td>
</tr>
<tr>
<td><strong>Summary of simple regression analysis:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variables</td>
<td>( B )</td>
<td>( \text{SE}_B )</td>
</tr>
<tr>
<td>Intercept</td>
<td>4.871</td>
<td>0.812</td>
</tr>
<tr>
<td>( \Delta \text{NI} )</td>
<td>0.198</td>
<td>0.058</td>
</tr>
</tbody>
</table>
\[ RET_{it} = \beta_{0,2} + \beta_2 \left( \frac{\Delta CF}{S} \right)_{it} + \varepsilon_{it} \]  \quad \text{-------(2b):}

Table 16. Set 1 regression results - Return-level model (2b).

<table>
<thead>
<tr>
<th></th>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td>\text{Summary of model fit:}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>\text{F (1, 442) = 9.741, p &lt; .0005}</td>
<td>\text{F (1, 444) = 3.123, p &gt; .0005}</td>
<td></td>
</tr>
<tr>
<td>\text{Adjusted R² = 0.019}</td>
<td>\text{Adjusted R² = 0.005}</td>
<td></td>
</tr>
<tr>
<td>\text{Summary of simple regression analysis:}</td>
<td>\text{Variables B SE β Sig.}</td>
<td>\text{Variables B SE β Sig.}</td>
</tr>
<tr>
<td>Intercept</td>
<td>4.965</td>
<td>0.812</td>
</tr>
<tr>
<td>\Delta CI</td>
<td>0.168</td>
<td>0.054</td>
</tr>
</tbody>
</table>

In the following the incremental value-relevance regression models are reported:

\[ Price_{it} = \alpha_{0,3} + \alpha_5 \left( \frac{BVE}{S} \right)_{it} + \alpha_6 \left( \frac{NI}{S} \right)_{it} + \alpha_7 \left( \frac{OCI}{S} \right)_{it} + \varepsilon_{it} \]  \quad \text{-------(1c):}

Table 17. Set 1 regression results - Price-level model (1c).

<table>
<thead>
<tr>
<th></th>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td>\text{Summary of model fit:}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>\text{F (3, 440) = 146.783, p &lt; .0005}</td>
<td>\text{F (3, 439) = 219.957, p &lt; .0005}</td>
<td></td>
</tr>
<tr>
<td>\text{Adjusted R² = 0.497}</td>
<td>\text{Adjusted R² = 0.598}</td>
<td></td>
</tr>
<tr>
<td>\text{Summary of multiple regression analysis:}</td>
<td>\text{Variables B SE β Sig.}</td>
<td>\text{Variables B SE β Sig.}</td>
</tr>
<tr>
<td>Intercept</td>
<td>25.515</td>
<td>2.581</td>
</tr>
<tr>
<td>BVE</td>
<td>0.654</td>
<td>0.065</td>
</tr>
<tr>
<td>NI</td>
<td>2.812</td>
<td>0.274</td>
</tr>
<tr>
<td>OCI</td>
<td>-2.14</td>
<td>0.945</td>
</tr>
</tbody>
</table>
\[ \text{Price}_{it} = \alpha_{0,4} + \alpha_8 \left[ \frac{\text{BVE}}{\text{S}} \right]_{it} + \alpha_9 \left[ \frac{\text{NI}}{\text{S}} \right]_{it} + \alpha_{10} \left[ \frac{\text{REM}}{\text{S}} \right]_{it} + \varepsilon_{it} \quad \text{------- (1d):} \]

Table 18. Set 1 regression results - Price-level model (1d).

<table>
<thead>
<tr>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of model fit:</strong></td>
<td><strong>Summary of model fit:</strong></td>
</tr>
<tr>
<td>F (3, 439) = 145.561, p &lt; .0005</td>
<td>F (3, 439) = 225.436, p &lt; .0005</td>
</tr>
<tr>
<td>Adjusted R² = 0.495</td>
<td>Adjusted R² = 0.604</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE_b</th>
<th>β</th>
<th>Sig.</th>
<th>Variables</th>
<th>B</th>
<th>SE_b</th>
<th>β</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>26.605</td>
<td>2.555</td>
<td>0.000</td>
<td>0.000</td>
<td>Intercept</td>
<td>26.715</td>
<td>3.472</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>BVE</td>
<td>0.653</td>
<td>0.066</td>
<td>0.392*</td>
<td>0.000</td>
<td>BVE</td>
<td>1.167</td>
<td>0.077</td>
<td>0.508*</td>
<td>0.000</td>
</tr>
<tr>
<td>NI</td>
<td>2.858</td>
<td>0.273</td>
<td>0.407*</td>
<td>0.000</td>
<td>NI</td>
<td>4.353</td>
<td>0.351</td>
<td>0.412*</td>
<td>0.000</td>
</tr>
<tr>
<td>REM</td>
<td>-5.488</td>
<td>2.985</td>
<td>-0.064</td>
<td>0.067</td>
<td>REM</td>
<td>-5.924</td>
<td>2.142</td>
<td>-0.083*</td>
<td>0.006</td>
</tr>
</tbody>
</table>

\[ \text{RET}_{it} = \beta_{0,3} + \beta_3 \left[ \frac{\Delta \text{NI}}{\text{S}} \right]_{it} + \beta_4 \left[ \frac{\Delta \text{OCI}}{\text{S}} \right]_{it} + \varepsilon_{it} \quad \text{------- (2c):} \]

Table 19. Set 1 regression results - Return-level model (2c).

<table>
<thead>
<tr>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of model fit:</strong></td>
<td><strong>Summary of model fit:</strong></td>
</tr>
<tr>
<td>F (2, 439) = 8.243, p &lt; .0005</td>
<td>F (2, 439) = 10.475, p &lt; .0005</td>
</tr>
<tr>
<td>Adjusted R² = 0.032</td>
<td>Adjusted R² = 0.041</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE_b</th>
<th>β</th>
<th>Sig.</th>
<th>Variables</th>
<th>B</th>
<th>SE_b</th>
<th>β</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>4,822</td>
<td>0.788</td>
<td>0.000</td>
<td>0.000</td>
<td>Intercept</td>
<td>11,578</td>
<td>1,176</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>ΔNI</td>
<td>0.231</td>
<td>0.057</td>
<td>0.190*</td>
<td>0.000</td>
<td>ΔNI</td>
<td>0.33</td>
<td>0.137</td>
<td>0.200*</td>
<td>0.000</td>
</tr>
<tr>
<td>ΔOCI</td>
<td>0.002</td>
<td>0.132</td>
<td>0.989</td>
<td>0.001</td>
<td>ΔOCI</td>
<td>1.065</td>
<td>0.252</td>
<td>0.114*</td>
<td>0.016</td>
</tr>
</tbody>
</table>
\[ RET_{it} = \beta_{0.4} + \beta_{\Delta NI} \left( \frac{\Delta NI}{S} \right)_{it} + \beta_{\Delta REM} \left( \frac{\Delta REM}{S} \right)_{it} + e_{it} \quad \text{----------(2d)}: \]

Table 20. Set 1 regression results - Return-level model (2d).

<table>
<thead>
<tr>
<th></th>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of model fit:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F (2, 439) = 10.167, p &lt; .0005</td>
<td>F (2, 439) = 6.146, p &lt; .0005</td>
<td></td>
</tr>
<tr>
<td>Adjusted R² = 0.040</td>
<td>Adjusted R² = 0.023</td>
<td></td>
</tr>
<tr>
<td><strong>Summary of multiple regression analysis:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variables</td>
<td>B</td>
<td>SE₀</td>
</tr>
<tr>
<td>Intercept</td>
<td>4.904</td>
<td>0.785</td>
</tr>
<tr>
<td>∆NI</td>
<td>0.235</td>
<td>0.057</td>
</tr>
<tr>
<td>∆REM</td>
<td>1.659</td>
<td>0.861</td>
</tr>
</tbody>
</table>

6.2.4.2 Regression results for our second set of hypotheses

In this section, the results for our regression models using the data base as defined in the second set of hypotheses are reported in the same way as above. In analogy to our first set of hypotheses, the results are again concentrated further in chapter 6.2.5.

In the following the relative value-relevance regression models are reported:

\[ Price_{it} = \alpha_{0.1} + \alpha_{1} \left( \frac{\text{BVE}}{S} \right)_{it} + \alpha_{2} \left( \frac{NI}{S} \right)_{it} + e_{it} \quad \text{----- (1a)}: \]

Table 21. Set 2 regression results - Price-level model (1a).

<table>
<thead>
<tr>
<th></th>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of model fit:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F (2, 179) = 155.166, p &lt; .0005</td>
<td>F (2, 176) = 139.112, p &lt; .0005</td>
<td></td>
</tr>
<tr>
<td>Adjusted R² = 0.630</td>
<td>Adjusted R² = 0.608</td>
<td></td>
</tr>
<tr>
<td><strong>Summary of multiple regression analysis:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variables</td>
<td>B</td>
<td>SE₀</td>
</tr>
<tr>
<td>Intercept</td>
<td>48.368</td>
<td>4.066</td>
</tr>
<tr>
<td>BVE</td>
<td>0.537</td>
<td>0.079</td>
</tr>
<tr>
<td>NI</td>
<td>1.85</td>
<td>0.377</td>
</tr>
</tbody>
</table>
\[ Price_{it} = a_0 + a_3 \frac{BVE}{S}_{it} + a_4 \frac{CI}{S}_{it} + \varepsilon_{it} \quad ------ (1b): \]

**Table 22. Set 2 regression results - Price-level model (1b).**

<table>
<thead>
<tr>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of model fit:</strong></td>
<td><strong>Summary of model fit:</strong></td>
</tr>
<tr>
<td>F (2, 178) = 162.869, p &lt; .0005</td>
<td>F (2, 173) = 186.866, p &lt; .0005</td>
</tr>
<tr>
<td>Adjusted R² = 0.643</td>
<td>Adjusted R² = 0.680</td>
</tr>
</tbody>
</table>

| **Summary of multiple regression analysis:** | **Summary of multiple regression analysis:** |
| Variables | B | SE | β | Sig. | Variables | B | SE | β | Sig. |
| Intercept | 49.375 | 3.935 | .000 | Intercept | 39.913 | 6.249 | .000 |
| BVE | 0.632 | 0.078 | 0.584* | 0.000 | BVE | 1.03 | 0.102 | 0.497* | .000 |
| CI | 1.351 | 0.372 | 0.260* | 0.000 | CI | 4.72 | 0.505 | 0.460* | .000 |

\[ RET_{it} = \beta_0 + \beta_1 \frac{\Delta NI}{S}_{it} + \varepsilon_{it} \quad ------- (2a): \]

**Table 23. Set 2 regression results - Return-level model (2a).**

<table>
<thead>
<tr>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of model fit:</strong></td>
<td><strong>Summary of model fit:</strong></td>
</tr>
<tr>
<td>F (1, 182) = 4.042, p &gt; .0005</td>
<td>F (1, 182) = 0.007, p &gt; .0005</td>
</tr>
<tr>
<td>Adjusted R² = 0.016</td>
<td>Adjusted R² = -0.005</td>
</tr>
</tbody>
</table>

| **Summary of simple regression analysis:** | **Summary of simple regression analysis:** |
| Variables | B | SE | β | Sig. | Variables | B | SE | β | Sig. |
| Intercept | 8.766 | 1.383 | .000 | Intercept | 21.3 | 2.521 | .000 |
| ΔNI | 0.147 | 0.073 | 0.147* | .046 | ΔNI | -0.016 | 0.186 | -0.006 | .931 |
\[ RET_{it} = \beta_{0,2} + \beta_2 \left[ \frac{\Delta CI}{S} \right]_{it} + \varepsilon_{it} \]  
\[ \text{---------------(2b):} \]

Table 24. Set 2 regression results - Return-level model (2b).

<table>
<thead>
<tr>
<th></th>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of model fit:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( F (1, 182) = 4.608, p &gt; .0005 )</td>
<td>( F (1, 182) = 0.442, p &gt; .0005 )</td>
<td></td>
</tr>
<tr>
<td>Adjusted ( R^2 = 0.019 )</td>
<td>Adjusted ( R^2 = -0.003 )</td>
<td></td>
</tr>
<tr>
<td><strong>Summary of simple regression analysis:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variables</td>
<td>( B )</td>
<td>( SE_B )</td>
</tr>
<tr>
<td>Intercept</td>
<td>8.908</td>
<td>1.377</td>
</tr>
<tr>
<td>( \Delta CI )</td>
<td>0.146</td>
<td>0.068</td>
</tr>
</tbody>
</table>

In the following the incremental value-relevance regression models are reported:

\[ Price_{it} = \alpha_0 + \alpha_5 \left[ \frac{BVE}{S} \right]_{it} + \alpha_6 \left[ \frac{NI}{S} \right]_{it} + \alpha_7 \left[ \frac{OCI}{S} \right]_{it} + \varepsilon_{it} \]  
\[ \text{------(1c):} \]

Table 25. Set 2 regression results - Price-level model (1c).

<table>
<thead>
<tr>
<th></th>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of model fit:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( F (3, 177) = 125.992, p &lt; .0005 )</td>
<td>( F (3, 173 ) = 118.795, p &lt; .0005 )</td>
<td></td>
</tr>
<tr>
<td>Adjusted ( R^2 = 0.676 )</td>
<td>Adjusted ( R^2 = 0.668 )</td>
<td></td>
</tr>
<tr>
<td><strong>Summary of multiple regression analysis:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variables</td>
<td>( B )</td>
<td>( SE_B )</td>
</tr>
<tr>
<td>Intercept</td>
<td>40.906</td>
<td>4.217</td>
</tr>
<tr>
<td>BVE</td>
<td>0.606</td>
<td>0.074</td>
</tr>
<tr>
<td>NI</td>
<td>1.504</td>
<td>0.356</td>
</tr>
<tr>
<td>OCI</td>
<td>-4.236</td>
<td>1.324</td>
</tr>
</tbody>
</table>
\[ \text{Price}_{it} = \alpha_{0,4} + \alpha_8 \left[ \frac{BVE}{S} \right]_{it} + \alpha_9 \left[ \frac{NI}{S} \right]_{it} + \alpha_{10} \left[ \frac{REM}{S} \right]_{it} + \varepsilon_{it} \quad \text{------} (1d): \]

Table 26. Set 2 regression results - Price-level model (1d).

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE_B</th>
<th>β</th>
<th>Sig.</th>
<th>Variables</th>
<th>B</th>
<th>SE_B</th>
<th>β</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>46.119</td>
<td>3.845</td>
<td>.519*</td>
<td>.000</td>
<td>Intercept</td>
<td>37.893</td>
<td>6.458</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>BVE</td>
<td>0.562</td>
<td>0.075</td>
<td>0.336*</td>
<td>.000</td>
<td>BVE</td>
<td>1.092</td>
<td>0.105</td>
<td>0.527*</td>
<td>.000</td>
</tr>
<tr>
<td>NI</td>
<td>1.74</td>
<td>0.356</td>
<td>0.519*</td>
<td>.000</td>
<td>NI</td>
<td>4.899</td>
<td>0.574</td>
<td>0.427*</td>
<td>.000</td>
</tr>
<tr>
<td>REM</td>
<td>-3.558</td>
<td>.000</td>
<td>-0.099*</td>
<td>.024</td>
<td>REM</td>
<td>-5.231</td>
<td>2.233</td>
<td>-0.103*</td>
<td>.020</td>
</tr>
</tbody>
</table>

\[ \text{RET}_{it} = \beta_{0,3} + \beta_3 \left[ \frac{\Delta NI}{S} \right]_{it} + \beta_4 \left[ \frac{\Delta OCI}{S} \right]_{it} + \varepsilon_{it} \quad \text{---------} (2c): \]

Table 27. Set 2 regression results - Return-level model (2c).

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE_B</th>
<th>β</th>
<th>Sig.</th>
<th>Variables</th>
<th>B</th>
<th>SE_B</th>
<th>β</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>8.874</td>
<td>1.392</td>
<td>.015</td>
<td>.000</td>
<td>Intercept</td>
<td>20.71</td>
<td>2.514</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>ΔNI</td>
<td>0.15</td>
<td>0.074</td>
<td>0.15*</td>
<td>.043</td>
<td>ΔNI</td>
<td>0.038</td>
<td>0.186</td>
<td>0.015</td>
<td>.837</td>
</tr>
<tr>
<td>ΔOCI</td>
<td>0.119</td>
<td>0.159</td>
<td>0.055</td>
<td>.455</td>
<td>ΔOCI</td>
<td>1.059</td>
<td>0.507</td>
<td>0.155*</td>
<td>.038</td>
</tr>
</tbody>
</table>
\[ \text{RET}_{it} = \beta_{0.4} + \beta_{5} \left( \frac{\Delta NI}{S} \right)_{it} + \beta_{6} \left( \frac{\Delta REM}{S} \right)_{it} + e_{it} \quad \text{-------(2d):} \]

Table 28. Set 2 regression results - Return-level model (2d).

<table>
<thead>
<tr>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of model fit:</strong></td>
<td></td>
</tr>
<tr>
<td>F (2, 180) = 5.285, p &gt; .0005</td>
<td>F (2, 181) = 6.918, p &lt; .0005</td>
</tr>
<tr>
<td>Adjusted R² = 0.045</td>
<td>Adjusted R² = 0.061</td>
</tr>
<tr>
<td><strong>Summary of multiple regression analysis:</strong></td>
<td></td>
</tr>
<tr>
<td>Variables</td>
<td>B</td>
</tr>
<tr>
<td>Intercept</td>
<td>9.074</td>
</tr>
<tr>
<td>∆NI</td>
<td>0.363</td>
</tr>
<tr>
<td>∆REM</td>
<td>2.081</td>
</tr>
</tbody>
</table>

6.2.5 Inferences on value-relevance

6.2.5.1 Inferences on value-relevance for our first set of hypotheses

In our theory chapter on value-relevance we stated that relative value-relevance is judged by comparing the strength of association between stock market data and different accounting measures. In our case we compare the strength of association between net income and stock market data with comprehensive income and stock market data. We further showed that R² measures usually serve as a proxy for the strength of association. Incremental value-relevance on the other hand is assumed if accounting measures provide additional value-relevant information. Whether accounting measures provide such additional value-relevant information is usually judged by whether the regression coefficients are statistically different from zero. Hence, we summarize our regression results in the following tables 29 and 30 according to these value-relevance concepts.

Table 29. Summary on relative value-relevance (set 1).

<table>
<thead>
<tr>
<th>Relative value-relevance</th>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price-level models (1a/1b)</td>
<td>NI</td>
<td>CI</td>
</tr>
<tr>
<td>adjusted R²</td>
<td>0.492</td>
<td>0.467</td>
</tr>
<tr>
<td>Return-level models (2a/2b)</td>
<td>∆NI</td>
<td>∆CI</td>
</tr>
<tr>
<td>adjusted R²</td>
<td>0.023</td>
<td>0.019</td>
</tr>
</tbody>
</table>
Table 30. Summary on incremental value-relevance (set 1).

<table>
<thead>
<tr>
<th>Incremental value-relevance</th>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price-level models (1c/1d)</strong></td>
<td>OCI</td>
<td>REM</td>
</tr>
<tr>
<td>β</td>
<td>-0.078*</td>
<td>(-0.064)</td>
</tr>
<tr>
<td>Return-level models (2c/2d)</td>
<td>ΔOCI</td>
<td>ΔREM</td>
</tr>
<tr>
<td>β</td>
<td>0.001</td>
<td>(0.090)</td>
</tr>
</tbody>
</table>

Our price-level models for relative value-relevance show in both cases before and after the amendment of IAS 19 that net income has greater explanatory power than comprehensive income. Hence, defined this way net income is more value-relevant than comprehensive income. While IAS 19 revised figures show a higher association for both net income and comprehensive income, the hierarchy remains unchanged. Yet, to an admittedly small extent, the difference between the explanatory powers has decreased. This can be cautiously interpreted as an increase in value-relevance of comprehensive income compared to net income. In other words, OCI components are therefore decreasing the association to a lower degree.

Our results from return-level models have no informative value regarding the comparison of both periods as the models as a whole are insignificant for both changes in net income and comprehensive income after the revision of IAS 19. The results from IAS 19 old figures indicate that net income has greater explanatory power than comprehensive income. The low adjusted R² figures themselves are not exceptional compared to similar studies. Kanagaretnam et al. (2009, p. 360) e.g. report adjusted R² values for their return models between 13% and 18%.

The results from price-level models and return-level models regarding incremental value-relevance of OCI contradict each other. Price-level models find a statistically significant additional explanatory power for OCI under IAS 19 old but not under IAS 19 revised. To the contrary, return-level models find no statistically significant association for OCI under IAS 19 old but do find a significant association under IAS 19 revised. Hence, the findings are inconclusive.

However, both price- and return-level models find a statistically significant association for remeasurements under IAS 19 revised. The figures for IAS 19 old are put in parentheses as these figures rely on a small number of observations, namely those companies that reported actuarial gains and losses before the amendment of IAS 19 is OCI. A comparison of these two periods is, however, of very small interest. The relevant finding is that remeasurements have incremental value-relevance after the amendment of IAS 19.

We will now apply the aforementioned evidence and discussion on our hypotheses.

**H1a: The incremental value-relevance of OCI is stronger after the amendment of IAS 19.**

Some indications suggest an increased incremental value-relevance of OCI after the amendment of IAS 19 such as evidence regarding remeasurements and return-level models.
on OCI’s incremental value-relevance. However, as the evidence is contradictory we reject this hypothesis.

_H2a:_ *The relative value-relevance of comprehensive income compared to net income is stronger after the amendment of IAS 19._

While the evidence is admittedly weak, no evidence suggests rejecting this hypothesis. Therefore, we accept this hypothesis.

_H3a:_ *Remeasurements are incrementally value-relevant after the amendment of IAS 19._

This hypothesis is accepted as we found strong evidence in favor of it.

**6.2.5.2 Inferences on value-relevance for our second set of hypotheses**

The following tables 31 and 32 summarize our regression results on the second set of hypotheses in the same way as presented above.

**Table 31. Summary on relative value-relevance (set 2).**

<table>
<thead>
<tr>
<th>Relative value-relevance</th>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price-level models (1a/1b)</td>
<td>NI</td>
<td>CI</td>
</tr>
<tr>
<td>adjusted $R^2$</td>
<td>0.630</td>
<td>0.643</td>
</tr>
<tr>
<td>Return-level models (2a/2b)</td>
<td>$\Delta$NI</td>
<td>$\Delta$CI</td>
</tr>
<tr>
<td>adjusted $R^2$</td>
<td>insignificant</td>
<td>insignificant</td>
</tr>
</tbody>
</table>

**Table 32. Summary on incremental value-relevance (set 2).**

<table>
<thead>
<tr>
<th>Incremental value-relevance</th>
<th>IAS 19 old</th>
<th>IAS 19 revised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price-level models (1c/1d)</td>
<td>OCI</td>
<td>REM</td>
</tr>
<tr>
<td>$\beta$</td>
<td>-0.138*</td>
<td>-0.099*</td>
</tr>
<tr>
<td>Return-level models (2c/2d)</td>
<td>$\Delta$OCI</td>
<td>$\Delta$REM</td>
</tr>
<tr>
<td>$\beta$</td>
<td>insignificant</td>
<td>insignificant</td>
</tr>
</tbody>
</table>

Results on relative value-relevance from the price-level models are very interesting. Firstly, in both cases before and after the amendment of IAS 19 comprehensive income has more explanatory power than net income for stock prices. Secondly, after the revision of IAS 19 both the explanatory power of comprehensive income and its relative difference to net income increased. These results are very much in line with this paper’s line of argumentation. We argued that value-relevance of OCI will increase after the amendment of IAS 19 which translates ceteris paribus into an increased relative value-relevance of comprehensive income compared to net income. In addition, we demonstrated in our descriptive data discussion that proportionally more large companies were using the option to report actuarial gains and losses in OCI already before the amendment of IAS 19. And as these large companies were shown to have a high ratio of material defined benefit plans it
could be argued that these actuarial gains and losses were contributing to the value-relevance of comprehensive income figures. This would explain why comprehensive income was relatively more value-relevant already before the revision of IAS 19. Furthermore, from a general perspective these results confirm our assumption based on evidence from the descriptive data discussion that effects will be stronger for companies with material defined benefit plans.

Results from the return-level models on relative value-relevance must be dismissed as all models are insignificant. Why these models are insignificant is hard to establish and would imply speculation which would not further the answering of our research question. We therefore refrain from elaborating upon this issue.

Price-level regression results on incremental value-relevance of OCI are also supporting our line of argumentation. OCI is shown to be incrementally value-relevant in a statistically significant way for both periods before and after the amendment of IAS 19. In addition, the absolute size of the correlation coefficient increased after the revision of IAS 19. Therefore, the aforementioned discussion on relative value-relevance based on price-level models applies as well for OCI’s incremental value-relevance.

The evidence form return-level models on incremental value-relevance of OCI has to be interpreted cautiously as these models are insignificant as a whole for data based on IAS 19 old. In addition, both models find statistically insignificant correlation coefficients for net income. As we deem these results to be illogic, we will not use the results of these models for further discussion and dismiss the models as in relative value-relevance.

Remeasurements provide additional value-relevant information according to the results from our price-level regressions. The results strengthen greatly our line of argumentation. Firstly, the documented statistically significant incremental value-relevance of remeasurements confirms our case that they provide value-relevant information which, in turn, leads to incremental value-relevance of OCI. Secondly, the strength of incremental value-relevance of remeasurements increased under IAS 19 revised which mirrors our basic line of argumentation. Thirdly, the fact that they are value-relevant already before the amendment of IAS 19 can be explained in the same way as we argued for why it makes sense that comprehensive income was already relatively more value-relevant before the revision of IAS 19.

We will now again apply the aforementioned evidence and discussion on our hypotheses.

**H1b:** The incremental value-relevance of OCI for companies with material defined benefit plans is stronger after the amendment of IAS 19.

We accept this hypothesis as our evidence is supporting it.

**H2b:** The relative value-relevance of comprehensive income compared to net income for companies with material defined benefit plans is stronger after the amendment of IAS 19.

This hypothesis is also accepted as our evidence is supporting it.
**H3b**: Remeasurements are incrementally value-relevant for companies with material defined benefit plans after the amendment of IAS 19.

Our evidence leads us to accept also this hypothesis.

### 6.2.5.3 Summary of acceptance or rejection of hypotheses

<table>
<thead>
<tr>
<th>#</th>
<th>Hypothesis</th>
<th>Accepted</th>
<th>Rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1a</td>
<td>The incremental value-relevance of OCI is stronger after the amendment of IAS 19</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>H2a</td>
<td>The relative value-relevance of comprehensive income compared to net income is stronger after the amendment of IAS 19</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>H3a</td>
<td>Remeasurements are incrementally value-relevant after the amendment of IAS 19</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>H1b</td>
<td>The incremental value-relevance of OCI for companies with material defined benefit plans is stronger after the amendment of IAS 19</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>H2b</td>
<td>The relative value-relevance of comprehensive income compared to net income for companies with material defined benefit plans is stronger after the amendment of IAS 19</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>H3b</td>
<td>Remeasurements are incrementally value-relevant for companies with material defined benefit plans after the amendment of IAS 19</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

### 6.3 Results consolidation and discussion

Our research question asked whether the amendment of IAS 19 has increased the value-relevance of OCI in the Swedish stock market. This phrasing aims at a general statement implying a yes or no answer. We broke this basic proposition down into more subtle hypotheses in order to reach a well-founded answer. Assessing the gained evidence on our hypotheses as a whole leads to us to answer the research question in the affirmative. Our results are indeed pointing to an increased value-relevance of OCI in the Swedish stock market.  

However, both our descriptive and inferential statistics indicate that a statement representative for all listed Swedish companies is not very tellingly due to the heterogeneity among these companies. We showed that listed companies in Sweden are very individual regarding their pension plans and the magnitude of transactions and events recognized in OCI. Eliminating those companies with immaterial defined benefit plans strengthened our finding that OCI contains relatively more value-relevant information after the revision of IAS 19. Focusing on those companies with material defined benefit plans reflects our basic line of argumentation that started with a change in accounting for defined benefit plans.  

---

31 For reasons of consistency, we recall at this point the discussion in chapter 4.4.1 in which we argued for taking a measurement perspective in interpreting value-relevance. Therefore, increased value-relevance of OCI does not necessarily imply an actual use of reported OCI data in investors’ decisions but rather, that OCI mirrors value-relevant information that is actually used by investors more closely.
The findings on this segment of our total data base foster therefore this research paper’s case.

It shall not be omitted that as shown in our discussion on inferences for value-relevance that our evidence is not unequivocally. To illustrate, we did not find sufficient evidence to assert that OCI became more incrementally value-relevant for the Swedish stock market as a whole. Moreover, the size of changes in our decision criteria, namely adjusted R² and correlation coefficients are small. However, in chapter 4.4.5 we highlighted that value-relevance research on OCI is finding rather mixed evidence. Therefore, the fact that our evidence is not fully clear-cut too does not come as a surprise. The main argument for such mixed evidence is in our opinion based on the individuality of companies that were part of the respective research sample. The evidence from our extensive descriptive data analysis supports this reasoning. This argumentation implies in consequence that investors notice these differences and adjust their decision criteria accordingly. We will, however, scrutinize the results further from different vantage points.

In the following, we will revisit our theoretical discussion on market efficiency in chapter 4.1.2 and discuss the small change in explanatory power of OCI against this background. Firstly, our evidence can be interpreted as an indication that stock market participants already inferred most of the value-relevant information from the note disclosure regarding pension obligations. The effect of incorporating the data into OCI would therefore be small with regard to share price adjustments. Beaver (1998, p. 135) discusses the pricing of disclosures and argues for well sophisticated markets regarding the processing of information. If most value-relevant information of pension plans were already inferred from the notes, this would support the assumption of semi-strong market efficiency in which substance rather than disclosure matters (Beaver, 1998, p. 145, 146).

Secondly, the reported small changes can be construed in a similar but slightly different vein. Archibald (1972) investigates the reaction of stock markets to a pure change in an accounting method, namely arbitrary ways of depreciation. Theoretically, the shift in methods has no bearing on the value of a firm, yet, the timing of depreciation expenses and therefore net income figures vary (Archibald, 1972, p. 23, 24). While efficient markets are expected to disentangle sole changes in accounting methods leading to no price adjustments, rationally bound investors relying on net income figures would alter their decisions (Archibald, 1972, p. 23, 24). We discussed this issue in our elaboration upon comprehensive income in chapter 4.3.2 in which we demonstrated that investors are likely to rely on heuristics. In addition the change in IAS 19 can be interpreted, with reservations, in a similar way as a change in depreciation methods because the intrinsic economic burden of pension plans for firms did not change. The conclusion of this line of argumentation is similar to the aforementioned argument in that a pure change in an accounting method did not alter the substance conveyed by accounting information and would therefore not lead investors to scrutinize OCI more closely.

Finally, closely related lines of argumentation that underpin the logic for the modest increase in value-relevance are summarized. The comparison between pre and post amendment periods of IAS 19 can be handicapped if one assumes that prices anticipate earnings or in other words if prices adjust to expected events before they materialize in financial statements (Beaver, 1998, p. 134, 135). Hence, the cut between these two periods
would be blurred. The anticipation of such information is well possible as stock markets process information from various more sources than financial statements (Beaver, 1998, p. 146). In addition, financial analysts might have forecasted the effect of IAS 19 revised and incorporated the information into their assessment even as it was not yet explicitly reported in the financial statements (Beaver, 1998, p. 146, 147). To the contrary, as introduced in our theoretical discussion about market efficiency, Aboody et al. (2002) showed that markets do not fully process accounting information instantly but require a longer period of time. Adjusting for this time delay would ceteris paribus increase documented correlations.

From an accounting standard setting perspective, mixed results can hint at inconsistent interpretation of accounting information. In our elaboration on comprehensive income reporting in chapter 4.3.1 we touched upon the complexity of OCI. The feedback on IASB’s exposure draft of a conceptual framework revealed that investors have difficulties understanding OCI (IASB, 2015a, p. 89). In addition, OCI is often neglected by investors and analysts (IASB, 2015a, p. 91). Whether this is due to the lack of understanding or to an allegedly little relevance is not stated. Altogether these comments can reasonably explain mixed evidence as a consensus in the investment community on the use of OCI seems not to be established.

6.4 Ethical considerations
Consistent with all ethical considerations that relate to the research process, we will use again the European Code of Conduct for Research Integrity (ESF, 2011) to assess our practices related to our results compilation and presentation. We foster the principle of scientific integrity of reliability as we fully disclose the results of all intended regression models outlined in the theoretical discussion (ESF, 2011, p. 10). We report the results independent of whether they are favorable (in our case significant) or not. Our inferences on value-relevance and our results discussion observe the principle of objectivity as they are based solely on facts and data that we presented and published (ESF, 2011, p. 10). Therefore, we can assure that the reported results and their discussion is neither fabricated nor falsified (ESF, 2011, p. 11).
7. REFLECTIONS ON THIS RESEARCH PAPER

7.1 Conclusions

The amendment of IAS 19 has increased the value-relevance of OCI in the Swedish stock market.

This research question was motivated by a revision of IAS 19 that eliminated the popular corridor approach to account for actuarial gains and losses and required companies to recognize such remeasurements directly to their full extent in OCI. Situating this event into the broader picture which is marked by downward trends in global interest rates and increased longevity led us to argue that OCI has become more value-relevant. Sweden’s widespread occupational pension system fostered our presumption. Our research findings strongly sustain the basic line of argumentation in this research paper and confirm therefore the case we made.

Our research purpose contained shedding light on the decades old discussion of comprehensive income reporting. In chapter 4.3.2 we elaborated upon the difficulties accounting standard setters face in defining OCI. We showed that this challenge is caused by the failure to identify consistent informational properties that transactions and events reported in OCI have in common. Among the informational properties commonly investigated is value-relevance (Jones & Smith, 2011, p. 2051). Our research findings weaken the attempt to define the difference between net income and OCI in terms of value-relevance as we did not only find evidence for value-relevance of OCI but also for an increased value-relevance after the revision of IAS 19. Therefore, defining net income as providing value-relevant information versus OCI as non value-relevant lapsed. Moreover, our research paper adds to the existing academic discussion a temporal and dynamic perspective. For even if such informational properties are identified at a point in time, changes in the economic environment and amendments of accounting standards are likely to alter the informational properties. We demonstrated this through the differences in value-relevance of OCI between two periods.

A further purpose of this research paper was to depict consequences that the revision of IAS 19 entailed and to draw conclusions on whether these consequences are in line with the accounting standard setter’s intentions. For this we discussed that financial reporting is nowadays judged by its usefulness for investors’ decision process. By exploring the exposure draft of a conceptual framework for IFRS, we showed that IFRS follow this perspective. The normative stance taken on by the IASB that profit or loss shall be the main accounting source for decision-useful information is contradictory to increased value-relevance of OCI, especially as a recent standard amendment even increased its relevance. Hence, our evidence works out inconsistencies in current accounting theory as defined by the conceptual framework of IFRS. Furthermore, the IASB states normatively that all transactions and events recognized in OCI shall be recycled in the period when they become relevant. We showed that remeasurements are already value-relevant in the year of their first time recognition in OCI which calls for a direct recognition in profit or loss. Alongside, we demonstrated that remeasurements are currently bypassing accounting EPS permanently. As we showed that remeasurements are value-relevant, the most focused on accounting key performance indicator lacks value-relevant information. In a general
statement, our results imply that the current form of disaggregated income reporting as of IFRS is not optimal from a perspective of enhancing an investor’s decision process.

However, prescinding from the aforementioned inconsistencies, the amendment of IAS 19 provided additional value-relevant information to investors. Judged from this perspective alone, the accounting standard setter’s goal of maximizing the usefulness of financial reporting is served. We discussed the qualitative characteristics of financial reporting as determined in the conceptual framework, namely relevance and faithful representation. Both qualitative characteristics can reasonably be said to be enhanced. Relevance is achieved as we found evidence for the value-relevance of the accounting information provided by IAS 19 revised. Faithful representation is accomplished as information about pension plans is now more complete and reported in a more neutral manner.

To a minor extent, we discussed that accounting theory can be informed by agency theory. In this context we argued that accounting information takes on the function of diminishing information asymmetries that exist between investors and management. Discussing our findings from this perspective leads to the conclusion that the revision of IAS 19 decreased the degree of information asymmetry. Firstly, we argue for this due the obvious effect of IAS 19 revised in enhancing the transparency of pension accounting and thereby the accountability of management to capital providers. Secondly, increased value-relevance of OCI and remeasurements can be interpreted as a proof of added relevant information in the domain of investors.

A secondary purpose concerned the issue whether changes in accounting standards translate into changed investor behavior. This question has to be answered in the affirmative for the statistical tools employed in this research paper showed a significant measurable effect.

In the following we will summarize the theoretical and practical contributions achieved by this research paper, beginning with the former.

Firstly, this research paper added to the mixed evidence on value-relevance of OCI found in previous studies. We update this stream of literature with evidence on current IFRS accounting rules which differ greatly in their OCI treatment due to the effects of IAS 19 revised. Secondly, we demonstrate that large heterogeneity in pension plans among companies exist which helps to explain mixed evidence. Thirdly, our evidence works out inconsistencies in current accounting theory as defined by the conceptual framework of IFRS. Fourthly, we show that the current form of comprehensive income reporting under IFRS is not optimal from a decision-usefulness point of view. Fifthly, we show that the consequences of IAS 19 revised serve the qualitative characteristics of financial reporting as laid out in the IFRS conceptual framework and further therefore the objective of IFRS financial reporting. Lastly, we demonstrate that accounting standard changes lead to measurable behavioral adjustments of investors.

From a practical point of view, this thesis makes the following contributions. Firstly, the accounting standard setter is informed about consequences that the revised IAS 19 induced. Secondly, financial statement users in general are provided with a broad information set in assessing pension accounting and OCI, especially how this accounting information is treated in stock markets. Thirdly, the burden of defined benefit plans for companies is made
transparent by the descriptive data discussion together with an assessment of such plans by equity markets. Fourthly, the data compilation and discussion allows making educated statements about the evolution of defined benefit pension plans in Swedish listed companies over the last six years. Fifthly, individual investors are provided with evidence on how the market on average assesses the value-relevance of OCI and remeasurements. Last but not least, the research paper sheds light on consequences of revised pension accounting rules judged from the broader socio-ethical context.

Taken as a whole, the discussion in this research paper indicates that further standard amendments targeted on OCI can be expected. And here closes the circle to our discussion on standard amendments in chapter 4.1.5 in which we asserted that such changes are part of a “process of reassessment and improvement over time”.

7.2 Quality criteria

Every research paper is subject to an evaluation of its quality which is conducted by well-established assessment criteria, namely reliability, replicability and validity (Bryman & Bell, 2015, p. 49-53).

Reliability concerns the consistency of research results, namely whether the chosen research design can be repeated leading to closely similar results (Saunders et al., 2009, p. 156, Bryman & Bell, 2015, p. 49). More specifically, reliability assesses whether a developed measure for an economic or managerial concept is stable (Bryman & Bell, 2015, p. 49). Applied to this research paper, the economic concept is value-relevance and the developed measure is the correlation between accounting figures and stock market movements.

Reliability can be further broken down into stability, internal reliability and inter-rater reliability (Bryman & Bell, 2015, p. 168, 169). Relevant for this research paper are only the former two. Stability concerns time-invariance of the developed measure (Bryman & Bell, 2015, p. 168). Abstractly spoken, stability is achieved when the study of a certain concept on a sample population using a developed measure leads to the same results when conducted in the same way but at two different periods of time (Bryman & Bell, 2015, p. 168). Applied to our research paper, stability has two facets that need to be distinguished. Foremost, our research question aims to detect instability as we investigate a supposed change in the correlation between OCI and stock market prices and returns. Stability, to the contrary, can only be assumed for the correlation after the amendment of IAS 19. However, whether this correlation is stable is neither part of the research question nor necessary to answer the research question nor likely as accounting standards and economic conditions are in a constant process of change. In conclusion stability is an ill-suited quality criterion for this research paper. Internal reliability is pertinent when multiple-indicator measures are used (Bryman & Bell, 2015, p. 168). At a closer look this is relevant to this research paper albeit in a slightly different fashion than usually described in textbooks such as in Bryman & Bell (2015, p. 168, 169). Our multiple-indicator measure consists in the application of different versions of our general measure, namely correlation between accounting figures and stock market data. This paper uses various price-level and return-level models to measure the concept of value-relevance. The internal consistency of these measures is ascertained as previous academic research deducted these models from a common theoretical base, namely the Ohlson-model. To sum up, the quality criterion of
reliability is only partly pertinent to our research paper. Yet, as far as it is applicable, we deem the criterion based on the aforementioned discussion as fulfilled.

**Replicability** is self-evident. This criterion assesses plainly whether a research paper can be replicated (Bryman & Bell, 2015, p. 50). In other words, is a third party capable of conducting the very same research after having read the original paper? For the following reasons we deem this criterion to be fulfilled in our paper. Firstly, we elaborated upon all aspects of our research methodology. Secondly, we clearly defined which sample we used, what kind of data we selected and which sources we used. Thirdly, we described our regression models, the statistical tests and the software we used. However, this general statement of replicability must be restricted for the following reasons. For companies that did not publish their annual reports for the fiscal year 2015 in time for this research project, we relied on published year-end reports that are not audited. Hence, final figures from annual reports could differ. Furthermore, as described in the chapter 5.3 on our data, we collected more than 6,000 observations. Human errors in collecting the data can therefore not be excluded. However, we cross-checked our data base using logical tests such as whether basic accounting formulas (e.g. net income plus OCI equals comprehensive income) are fulfilled. In order to minimize the distortive effect on replicability, we published the data we collected. Therefore, we deem our research paper to be well replicable.

**Validity** concerns the integrity of conclusions (Bryman & Bell, 2015, p. 50). This criterion is broken down into more subtle categories, namely *measurement validity*, *internal validity*, *external validity* and *ecological validity* (Bryman & Bell, 2015, p. 50, 51).

**Measurement validity** scrutinizes the relationship between an economic or managerial concept and the measure developed to explore it (Bryman & Bell, 2015, p. 50). It asks whether the developed measure is really suitable and capable to measure the concept (Bryman & Bell, 2015, p. 50). To recall, this research paper investigates the economic concept of value-relevance through the measure of correlation between accounting figures and stock market movements. We deem measurement validity to be fulfilled as this measure has been used in a multitude of academic research papers and has remained in use over many years.

**Internal validity** is about causality (Bryman & Bell, 2015, p. 50). Whenever a research paper deals with a supposed causal relationship between two or more variables, the issue of whether the thereof derived conclusions are valid is raised. For the conclusions to be valid, the causal relationship must be valid (Bryman & Bell, 2015, p. 50). This paper models actually two different cause-and-effect relationships which need to be assessed separately. Firstly, on a conceptual level we rely on the causality that a changed accounting standard can lead to an increased value-relevance of OCI. We argue for the internal validity of this causal relationship based on a theoretical discussion of the link of accounting information and stock markets, the causes for accounting standard amendments, the implications of the revised standard and the broader context in which it is situated. Secondly, on a measurement level, we assume a cause-and-effect relationship between accounting figures and stock market movements. We argue for the internal validity of this relationship based on theories of efficient capital markets and the evidence of similar well-established academic research. Hence, we deem our causal relationships to be internally valid in
principle. However, we do not assume these causal relationships to be internally valid to a full extent or, in other words that the respective causes are the only explanatory factors for the observed effects. To illustrate, value-relevance of OCI is certainly not only influenced by the changed accounting standard but e.g. by a better understanding of comprehensive income accounting in the investment community or economic circumstances that increase the occurrence and size of other reported OCI items such as fluctuations in currency markets. Moreover, stock market prices are not only influenced by accounting figures. However, the arguments presented in this paper can reasonably be judged to establish a certain level of internal validity that builds confidence that our explanatory causes are at least partly responsible for the observed effects. Such issues with causality are typical for and inherent to quantitative research designs (Bryman & Bell, 2015, p. 174).

External validity asks whether the conclusions drawn from a research paper can be applied beyond the studied sample and its specific context (Bryman & Bell, 2015, p. 50, 51). This research paper focuses on Swedish listed companies and does not use a sampling technique but analyzes the whole population. However, throughout this research paper, we stressed the specific economic and social context in which our research is embedded. Generalizing the research findings beyond the national context must therefore be performed cautiously. Furthermore, OCI and remeasurements are exposed to temporal market fluctuations. Hence, while we deem a generalization along the time axis to be basically possible, it must be done carefully to ensure that fundamental economic surroundings are similar. In conclusion, this research paper avoids common problems with external validity that result from using a sampling technique. However, its external validity is limited to similar economic and social contexts.

Ecological validity concerns whether research findings are representative for and an outcome of natural human behavior or whether the results are merely an artifact created by the research paper (Bryman & Bell, 2015, p. 51). In our case, we deem the assessment of ecological validity to be closely intertwined with a researcher’s epistemological stance. We do not create an artificial research setting but rely on pure observations of the real world. In chapter 2.1.1 we outlined our critical realist stance upon knowledge which implies that we judge the quantitative method used to analyze these observations to be able to draw conclusions that are applicable to the natural social world. Hence, from our epistemological perspective, this research paper is ecologically valid.

In short, based on the aforementioned explanations, we deem our research paper to fulfill the quality criteria with a restriction to limitations that are inherent to a quantitative research design and that are due to the specific social and economic context this research is embedded.

7.3 Ethical considerations
This research paper finds evidence that accounting information about how defined benefit pension plans affect a firm’s earning position is value-relevant. We claimed in this paper that we will not only consider ethical issues that arise out of the research process but also those that relate to the socio-ethical context of the research. In the latter perspective, we demonstrated that demise in defined benefit plans can have negative effects on employees’

32 A restriction to firms of the financial sector applies.
old-age security. We stressed that accounting standard setting needs to take into consideration the implications the rules could have on the decisions a company is taking and how these decisions affect its stakeholders. In this line, we introduced in the ethical considerations in chapter 4.5 that pension accounting rules similar to IAS 19 revised are blamed for contributing to the decline in defined benefit plans. Hence, the fact that the revision of IAS 19 increased the value-relevance of defined benefit pension plans implies that stock markets are more likely to respond in a negative manner to such reported expenses. In other words, equity capital is ceteris paribus allocated to firms with less defined benefit pensions. This increases ceteris paribus companies’ incentives to scale back such plans further. Yet, the ethical issue at stake is not at all simple as the revised rules increased in the same time the transparency of pension plans. We showed in chapter 4.2.3 that the prior non-transparent rules are accused of having fuelled stock market bubbles. Such bubbles are having huge negative socio-economic consequences as well.

Making a final judgment of the amendment of IAS 19 from an ethical perspective is beyond this paper’s ambition. This task is of such complexity that it could easily provide content for many research agendas. What is not beyond the scope of this paper, however, is to at least touch upon socio-economic consequences.

7.4 Suggestions for future research
Our main suggestion for future research is based on the fact that quantitative research on value-relevance of OCI is finding mixed evidence. In addition, while our own evidence points to value-relevance of OCI, the findings are not fully clear-cut. Therefore, we encourage interested parties to alter the research design in the following fashion. We suggest the use of a qualitative research choice that directly addresses investors. Questionnaire or preferably interview techniques can provide firsthand insights on investors’ actual assessment and opinion on OCI. Not only its value-relevance and causes for a missing consensus among the investor community can be determined this way but also the possible presence of misconceptions of OCI reporting. Moreover, the investment and decision process of investors can be worked out. Last but not least, the processing of changes in accounting standards can be elaborated. The insights of such a qualitative approach would be of utmost relevance to standard setters and academic accounting researchers as evidenced in chapter 4 by the ongoing discussion on a general accounting theory and issues in comprehensive income reporting.

A further suggestion for future research is motivated by the relevance of the so far unsettled topic of market efficiency for this research paper. Our assumed cause-and-effect relationship relies to a certain degree on the notion of market efficiency which we have discussed in the theory chapter. We also hinted at the ongoing discussion in research whether markets are efficient or not and if they are, to what extent. If there are inefficiencies present in markets, then the inferences from our archival research strategy are limited. More valuable insight could then have been gained by using an experimental design. Libby et al. (2002, p. 776) take the same line promoting the use of experimental research designs. Such an experimental design could work out the decision making process of investors and establish a relationship between this decision making process and stock market prices. Again, insight on how OCI and to which extent it is used in this process could be gained.
A different research suggestion is derived from the fact that our research is motivated by changed pension accounting rules. As companies have to mandatory report remeasurements of pension plans in OCI, we argue for an increased value-relevance of the latter. However, we touched upon the issue in chapter 4.2.3 that it is unclear how value-relevant pension plans actually are for investment decisions. Moreover, it is unclear on which accounting information investors rely upon in order to process pension plans in their valuations. Information about such plans can be taken from the balance sheet, comprehensive income statements and the notes. We suggest therefore investigating particularly the value-relevance of pension plans focusing on the aforementioned open topics.

Assuming remeasurements and OCI to be value-relevant, companies could be tempted to slightly manipulate underlying actuarial assumptions out of an anxiety to please investors. Especially companies undergoing difficult financial times could e.g. set discount rates at their upper limit or future salary evolutions at their lower limit. A comparative study could try to work out whether indications for such a financial statements brush up exist.

Future research based on different country settings or time periods is possible and useful but such suggestions are not further presented due to their banality.
REFERENCES


Ernst & Young (2011a). Changes to the presentation of other comprehensive income-amendments to IAS 1.


Ernst & Young (2011b). Implementing the 2011 revisions to employee benefits.


http://www.esf.org/index.php?eID=tx_nawsecuredl&u=0&g=0&t=1462625456&hash=e5402f6700a72c06a6d569b7b9f9fd9610a46cad&file=fileadmin/be_user/CEO_Unit/MO_FORA/MOFORUM_ResearchIntegrity/Code_Conduct_ResearchIntegrity.pdf [Retrieved 2016-05-06].


PwC (2014). *Practical guide to IFRS – IAS 19 (revised) significantly affects the reporting of employee benefits*. [https://inform.pwc.com/inform2/content?action=resource&id=0000001063218083.pdf](https://inform.pwc.com/inform2/content?action=resource&id=0000001063218083.pdf) [Retrieved 2016-02-01].


