What Drives Risk Disclosure Quality?

- The Impact of the Financial Crisis -

Amanda Lindqvist

Department of Accounting and Commercial Law

Hanken School of Economics

Helsinki

2016
Title of the thesis:
What drives risk disclosure quality? The impact of the financial crisis

Abstract:
This study examines if the quality of firm risk disclosures improved after the financial crisis. The Finnish Accounting Practice Board introduced a new risk disclosure standard in 2006. This regulatory change made Finland a forerunner in the field of corporate risk disclosures, and therefore the country offers a unique setting for the study. In addition, Finland was one of the countries that were most affected by the financial crisis which shows that studying the impact of the financial crisis on risk reporting is motivated.

In this study risk disclosure quality is examined with risk indicators developed by Beattie et al. (2004) and Beretta & Bozzolan (2004). We examine year 2007 and 2009 sing a sample consisting of 24 companies from the OMXH25 index, which are the largest and most traded companies in Finland. The regression results showed that the quality of firm risk disclosure had not improved after the occurrence of the financial crisis neither for the indicator variable Quantity nor Coverage.

Risk disclosures in combination with the financial crisis is an area of research that has gained very little attention this far. Therefore this study contributes to the risk disclosure literature, and to our knowledge it constitutes the first study conducted on the matter in a Finnish context.

Keywords: Risk disclosure, disclosure quality, financial crisis, information asymmetry, informative reporting
# TABLE OF CONTENTS

1 INTRODUCTION........................................................................................................1
   1.1 Background to the problem..............................................................................2
   1.2 Research objective.........................................................................................3
   1.3 Structure of the thesis ...................................................................................3

2 THEORY..................................................................................................................4
   2.1 What is risk management? ............................................................................4
   2.2 What is risk disclosure? .................................................................................7
   2.3 An ‘ideal’ framework for corporate risk disclosure .....................................8
   2.4 Quality of risk disclosure ..............................................................................11
   2.5 The risk disclosure standard of the Finnish Accounting Practice Board ......13
   2.6 Financial Reporting Release No.48 ..............................................................15
   2.7 The financial crisis in 2008 ..........................................................................16
   2.8 Relevant theories ..........................................................................................21

3 LITERATURE REVIEW .........................................................................................25
   3.1 Regulation of risk disclosure and risk disclosure quality .........................25
   3.2 Reporting incentives ......................................................................................27
   3.3 Risk disclosure and the financial crises .......................................................28
   3.4 Capital market consequences of firm’s narrative risk disclosures ..........31
   3.5 The quality impact risk disclosure standards .............................................33
   3.6 Hypothesis development ..............................................................................34

4 RESEARCH DESIGN ...............................................................................................36
   4.1 A risk disclosure framework ......................................................................36
   4.2 Quality of risk disclosure in empirical indicators .....................................38
      4.2.1 Quantity of risk disclosure ..................................................................39
      4.2.2 Coverage of risk disclosure ..................................................................39
   4.3 Regression models and independent variables ...........................................41
      4.3.1 Reporting incentives ..........................................................................42
   4.4 T-test, Pearson correlation, Spearman rank and Wilcoxon test .................45
   4.5 Multicollinearity ..........................................................................................45
   4.6 Summary ........................................................................................................46
5 SAMPLE, DATA AND DESCRIPTIVE STATISTICS .............................. 47
5.1 Sample .................................................................................. 47
5.2 Data ...................................................................................... 49
5.3 Descriptive statistics .............................................................. 50

6 EMPIRICAL RESULTS .................................................................. 56
6.1 Correlation analysis ................................................................. 56
6.2 The financial crisis’ impact on risk disclosure quality .............. 58
6.3 Reporting incentives and risk disclosure .................................. 64
   6.3.1 Quantity and reporting incentives ..................................... 64
   6.3.2 Coverage and reporting incentives .................................... 65

7 SUMMARY AND CONCLUSIONS ................................................... 69
7.1 Main findings .......................................................................... 69
7.2 Contribution ........................................................................... 71
7.3 Limitations ............................................................................ 72
7.4 Suggestions on future research .............................................. 73

8 SVENSK SAMMANFATTNING ...................................................... 74

REFERENCES ................................................................................ 90

APPENDIX
Appendix 1: A risk disclosure framework ..................................... 97
Appendix 2: Risk disclosure examples ......................................... 98
Appendix 3: Control regressions for coverage ............................... 99

TABLES
Table 1: Difference in the quality indicators for each observable company .......... 48
Table 2: Variable definitions .......................................................... 51
Table 3: Descriptive statistics ......................................................... 53
Table 4: Descriptive statistics for firm-level regression variables .................. 54
Table 5: Correlation matrix ............................................................. 57
Table 6: Regression analysis for dependent variable Quantity .......................... 61

Table 7: Regression analysis for dependent variable Coverage ........................... 63

FIGURES

Figure 1: An ideal framework for corporate risk disclosure .................................. 9

Figure 2: Examples of drivers of key risks according to the Institute of Risk Management .......................................................... 11

Figure 3: The development of the gross domestic product (GDP) in Finland at market prices ........................................................................................................... 19
Word list/abbreviations

AAA= American Accounting Association
AICPA= American Institute of Certified Public Accountants
AIRMIC= The Association of Insurance and Risk Managers
ALARM= The National Forum for Risk Management in the Public Sector
CGHB= The Corporate Governance Handbook
ERM= Enterprise risk management
FASB= Financial Accounting Standards Board
FEI= Financial Executives International
FERMA= Federation of European Risk Management Associations
FIN-FSA= The Financial Supervisory Authority
FRR No.48= Financial Reporting Release No.48
GDP= Gross Domestic Product
IASB= International Accounting Standards Board
ICAEW= The Institute of Chartered Accountants in England and Wales
IFRS= International Financial Reporting Standards
IIA= Institute of Internal Auditors
IMA= Institute of Management Accountants
IRM= Institute of Risk Management
MD&A= Management Discussion and Analysis
NYSE= The New York Stock Exchange
OFR= Operating and Financial Review
OMXH25= OMX Helsinki 25 stock exchange index
SEC= United States Securities and Exchange Commission
US GAAP= Generally Accepted Accounting Principles
1 INTRODUCTION

We all take risks in our daily lives. There is a risk that we could lose our job, that our property would get damaged or that the interest rates on our mortgages increase to unexpected levels. Risks are present everywhere and while some people actively take on risks, most people are trying to protect themselves against risks through e.g. insurances. Companies on the other hand take risks to create value. Because of that it is essential for investors to understand and be aware of these risks. Company directors are most likely more informed than company shareholders about the current state and future prospects of their company. By improving the flow of information between the company and its investors, information asymmetry will be reduced, investor relations will be improved, and there will be a positive effect on the quality of corporate governance within the firm as a whole.

In 2008 the financial crisis struck the financial world with full force. In Finland the crisis hit the hardest in 2009 when the country’s GDP reached its lowest point accompanied by high unemployment. Billions of euros had been invested in financial instruments on a global scale and a vast amount of these investments were made by banks with international operations. When interest rates skyrocketed in the US in 2007, the values of apartments went drastically down, causing severe mortgage repayment problems in the US. These events started a snowball effect that caused the global financial world to tremble and remarkable losses occurred in value of financial instruments worldwide.

The financial crisis has increased the interest for risk disclosures and it has been questioned whether disclosures and reporting in general was a part of the reason behind the crisis (Barth & Landsman, 2010). Discussions surrounding high quality, efficient reporting gained newfound attention and is something that engages standard setters and academics all over the world. High quality risk disclosures enables well-informed decisions from investors based on transparent, true and fair information. Without such information the confidence in the markets cannot be maintained, something that materialized during the financial crisis.

Risks can be explained as uncertainties causing potential gains or losses. Prioritizing these risks is an important part of the risk management process since risk is something every company faces (ICAEW, 1998, Solomon et al, 2000). By raising confidence in the markets company management can reduce cost of capital, and in this process the
communication of risk management policies is a crucial factor (The Corporate Governance Handbook, 1996).

In this paper, the term ‘risk’ is used in its broadest sense referring to all types of risks affecting Finnish companies. The term ‘risk’ could be defined as an uncertainty that can be associated with both loss and gain (ICAEW 1998, Solomon et al, 2000). Every company is facing risks in their operations, and how they document and assess these risks is an essential part in keeping the shareholders informed and the management up to date with the firm’s operations.

1.1 Background to the problem

In Finland the requirements on risk disclosures were vague in the beginning of the 2000’s and Finnish Accounting Practice Board identified a need for more specific guidelines in order to produce more qualitative risk reporting. In 2006, this lead to the introduction of a new risk disclosure standard in Finland. The standard was short, only six pages, with concrete examples on how companies should disclose risk in their annual statements. By breaking down the concept of risk into several components the purpose was to provide more informative risk disclosure and to standardize the risk reporting in general.

Miihkinen’s (2012) study showed that the quality of firm risk disclosure improved in year 2006 when the standard was introduced, compared to the risk reporting in the previous year before the standard was applied. The improvement in quality was clearly observed in several dimensions and indicated that the regulatory change in Finland had been successful. This study, however, was conducted right after the introduction and does not take into account the changes that the financial crises starting in 2008 might have caused.

The field of disclosures in the light of the financial crisis is a relatively unexplored area within the accounting literature, not to mention risk disclosures and the financial crisis. Scott (2009) developed an idea that is called “the unravelling result theorem” or “the disclosure principle” stating that firms will disclose all relevant information to investors to make sure that they are certain about all of the firm’s scenarios. Taking this theorem into practice could be interpreted as that firms would disclose more information and also information of high quality to ensure that their investors are certain during such financially challenging and uncertain times. The reality is not that simple Martikainen
et al. (2015) concluded: disclosures are highly cost generating for the reporting firm which restricts the amount (and quality) of disclosures. Previous research has also documented several other factors that have an impact on risk disclosure quality.

1.2 **Research objective**

The purpose of this study is to find out whether an improvement in the quality of firm risk disclosures can be observed in annual reports from year 2007 compared to annual reports from 2009. Year 2007 represents status quo while year 2009 represents the financial crisis year. When comparing these two years it is possible to determine whether there has been an improvement in risk disclosure quality between the two years. We also want to see whether there are other potential variables that could have had an effect on risk disclosure quality during years 2007 and 2009.

*Research question: Did the financial crisis improve the quality of firm risk disclosure in annual reports from year 2009 compared to annual reports from 2007?*

1.3 **Structure of the thesis**

The thesis will start by defining the theory surrounding the research question while defining the most important concepts discussed in the thesis. This will be followed by a literature review summarizing the most important articles and studies related to this study. The articles are mainly from the 2000’s, since this is a recently discovered area within Academia, but cover a timeline from the end of the 1970’s to year 2015. Following the literature review the research design is defined, which in its turn is followed by a chapter covering data, the research sample and descriptive statistics. The empirical results will be built on statistical analysis followed by the final conclusions of the study. Recommendations on future research will also be provided.
2 THEORY

In this chapter the main concepts affecting the research question will be defined and discussed. This is done in order to define the framework and legislation surrounding the problem addressed in this paper. The chapter begins with defining risk management and risk disclosure as a whole. It continues with discussing an ideal framework for corporate risk disclosure and how to define the quality of risk disclosure. The chapter ends by discussing the financial crisis in a global scale and from the Finnish perspective and relevant theories connected to disclosures.

2.1 What is risk management?

The fundamental objective of risk management is to maximize profitability while minimizing the likelihood of financial failure. Therefore it is needed to maximize shareholder’s wealth (Solomon et al., 2000). Firms engage in enterprise risk management because it creates value for its shareholders. The value creation effect shows on both a macro (company-wide) level and micro level (business-unit focused) (Nocco & Stulz, 2006). A decision every company has to face is how much risk it can actually take on. Risk management can be viewed as a substitute for equity capital which is an expensive way of funding their operations. Nocco & Stulz (2006) suggests that risk management reduces risks, and therefore also can reduce the amount of expensive equity capital needed by the firm.

Improved risk disclosure enables investors to deal effectively with risk diversification, something that is also suggested by modern portfolio theory (Solomon et al., 2000). Investors are expected to require information on the unsystematic risks affecting their investee companies in order to form a comprehensive overview of the corporate risk, as well as form a perception of the company as a going concern. Almost one third of the institutional investors in Solomon et al.’s (2000) study agreed that increased information on corporate risk would help them with decision-making concerning their portfolio investments.

Risk management is a broad concept with many aspects to take into account. Maingot et al. (2012) are defining risk management as effective management of opportunities and adverse effects that potentially could arise. The concept also includes the processes, culture and structures contributing to the management of these effects and opportunities. Risk management processes as a whole are the result of a systematic
application of management policies, practices and procedures. These aspects are used through the whole life cycle of risk disclosure in the company: identification, analysis, assessment, management, monitoring and finally communication of risk (Maingot et al., 2012).

Maingot et al. (2012) identified two approaches for a corporation to manage their risks. The traditional risk management approach focuses on managing risks of only some departments, products or divisions within the firm instead of taking the whole business into account. This approach emphasizes management of one risk at a time in a highly decentralized and compartmentalized manner that ignores potential implications on firm value (Manab et al., 2010).

The second risk management approach advocates treating risks together as a group and under a strategic, coordinated framework (Nocco & Stulz, 2006; Maingot et al., 2012). This approach emphasizes firm value and how it can be destroyed, preserved or created by suitable risk management (Fabozzi & Drake, 2009). It all comes down to how the management can manage uncertainty and how risks and opportunities should be assessed in relation to firm value. Nocco & Stulz (2006) claim that companies that are successfully implementing this risk management approach have a clear and long-run competitive advantage over those companies who monitor risks on an individual basis. In addition, this approach gives managers the right incentives and information they need in order to optimize the trade-off between risk and return when they carry out their strategic plans.

In the risk disclosure standard published in 2006 by the Finnish Accounting Practice Board risk management is viewed as a systematic and anticipative way of analyzing and managing threats and opportunities in connection with the company’s operations, not only an elimination of the risks. A risk management function should be established in companies to fulfill the risk management objectives, acknowledging the existing prominent threats including strategic risks, operational risks, financial risks and damage risks that all might constitute a threat against the company achieving its objectives (Finnish Accounting Practice Board, 2006). The main principles for managing economical risks are to define the scope of the risks as detailed as possible and follow up on them to risk limits that have been previously decided. In these activities value-at-risk analysis should be used together with other quantitative methods.
The fact that there are several approaches to risk management confirms the complexity of the process and shows that this is not a black and white issue with only one compatible approach. There is a strong consensus though that all companies should integrate risk management throughout their organization (Maingot et al., 2012). Doing so adds reality to the process while clarifying the relationship between multiple risks and the integration of risks.

**Risk management in an international context**

The discussion around the importance of risk disclosures has been active over 20 years, with a clear increase in interest in the beginning of 2000’s. Therefore it is not surprising that research shows an increasing interest in risk disclosures over the years (Cole & Jones, 2005). What is surprising though is that it took until 2005 for the International Accounting Standards Board to publish an exposure draft on improving disclosures of financial instruments and the risks surrounding them. This exposure draft later became IFRS 7 which came into effect in 2007. Banks are also required to report certain risks since 2008 when Basel II pillar 3 came into effect.

Risk disclosure and risk management are often used as very closely related topics in the existing literature. While the term ‘risk disclosure’ is used to some extent, even more literature can be found under the term ‘risk management’ in an international context. The most developed countries in the field of risk disclosure are Finland, Germany, UK, Canada and Australia. These countries all have some kind of standard (some more coercive than others) or supervisory body that request companies to provide more extensive information on risks and uncertainties.

Risk disclosures in Finland reached a new level thanks to the risk disclosure standard becoming effective in 2006. By providing a clear framework for risk reporting over several risk topics the standard made sure that Finnish risk disclosure regulation is among the most developed globally. The Finnish risk disclosure standard regards risk management as one of the five risk areas companies should disclose in their financial statements. In other countries with less specific and coercive regulation, risk

---

1 The Basel Committee on Banking Supervision is the primary global standard-setter for banks. The standards they issue are not legally binding but functions more like an informal forum with the purpose of strengthening the regulation, practices and supervision of banks worldwide. The member countries are expected to implement the Basel recommendations and by that enhance financial stability. (Bank for International Settlements, retrieved on 10.6.2016)
Management seems to be the umbrella term for all the areas specified in the Finnish standard.

Especially companies in the US have provided very little information on their enterprise risk management to their stakeholders (Maingot et al., 2012). The increasing interest in risk management have also been noticed by credit rating agencies such as Standard & Poor that responded to the “trend” by announcing their intentions on including assessments of risk management in their rating of non-financial companies (Standard & Poor’s, 2009). With bringing risk management into risk rating the situation in the US is most likely to change into an environment with more disclosure (Maingot et al., 2012). If the US can reach the same levels of risk disclosure as e.g. Finland can still be discussed, since the competitive environment and more prominent threat of law suits brings its own challenges to risk disclosure in the US.

United Kingdom is one of the most developed countries within risk disclosure and putting focus on risk disclosure quality. The Institute of Risk Management (IRM) developed a standard for risk management in 2002 (Maingot et al., 2012). The standard is still effective and was developed by a team built up by risk management professionals from the major risk management organizations The Association of Insurance and Risk Managers (AIRMIC) and the National Forum for Risk Management in the Public Sector (ALARM) in the UK. It is also used as the foundation for the Federation of European Risk Management Associations (FERMA) whose mission is to “lead and enhance the effective practice of risk management, risk financing and insurance”. Many important studies, such as Linsley & Shrives (2005, 2006) and Spira & Page (2003), have been conducted in the UK under the UK risk management standard, which makes the UK an important forerunner in the research around risk disclosures.

### 2.2 What is risk disclosure?

In this paper, firm risk disclosure is a common term for all the information concerning the risks a company discloses in their annual statements. The risk disclosure information describes major risks that are imposed towards the company together with the expected impact that these risks might have on the firm’s future performance (Miihkinen, 2012). The forward-looking information provides a tool for external investors that help them build an estimate of future cash flows. Investors will also pay attention to the factors of uncertainty that surrounds the forecasts of the firm’s future
cash flows, as well as information on sources of non-diversifiable risk that is to be included in cost of capital. Also historical information on which actions have been taken to face risks together with forward-looking information on how the firm has planned to face risks in the future are taken into account (Miihkinen, 2012).

Companies may disclose risks that they are subject to in four different sections in the annual report: in their operating and financial reviews, in separate risk disclosure sections, in the notes to the financial statements and in the corporate governance sections (Martikainen et al., 2015). This study focuses on the risk information disclosed in the operating and financial reviews and in the notes to the financial statements.

For example Kone Oyj disclosed a variety of risks in different sections of their annual report from 2009. These can be found in the Review by the Board of Directors (the company disclosed environmental risks, strategic and business risks, operational risks, financial risks, short-term risks and uncertainties, risks from significant legal proceedings), in the notes to the financial statements (market risk, foreign exchange rate risk, interest risk, commodity and energy price risk, security price risk, country and credit risk, liquidity and refinancing risk, capital management risk and insurance risk, risks associated with defined benefit plans), in the corporate governance report and in the specific risk management report (enterprise-wide risks).

2.3 An ‘ideal’ framework for corporate risk disclosure

In an international setting several different frameworks for corporate risk disclosure and management can be found both in academia and among standard-setters. As one could assume, there is no generally accepted ideal framework for risk management and disclosure, which also has been suggested in previous literature (Beasley et al., 2005; Moeller, 2007). The authors of different frameworks usually point out the importance of taking into account the needs and requirements of different firms and letting the firms themselves take responsibility for accommodating frameworks to their individual needs (COSO, 2004). Thus, high quality risk disclosures come in many different formats and varieties.

Solomon et al. (2000) introduced a framework for ideal corporate risk disclosure identifying six elements that interrelate, contributing to the so called ideal framework. In their study they asked institutional investors to create their own ideal framework for risk disclosure by asking them to indicate their preferences among these six elements.
Solomon et Al. (2000) were pioneers in the field of risk disclosure, and this study can be seen as the foundation for many studies conducted later on.

**Figure 1: An ideal framework for corporate risk disclosure (Solomon et al., 2000)**

The first element that investors and standard setters have to take a stand on is whether disclosure should be mandatory or voluntary. IFRS does not give clear guidance on risk disclosure other than IFRS 7 that requires disclosure about the significance of financial instruments to an entity as well as the nature and extent of the risks arising from the financial instruments. When reporting in accordance with IFRS 7 it is recommended to mention inquiries in the board of directors report that refer to the notes where these inquiries are described more in detail. The inquiries that should be mentioned in the notes can be e.g. exposure to credit risk, liquidity risk and market risk for financial instruments.

The following element in Figure 1 is the level of risk disclosure. One assumption in this paper is that more risk disclosure equals better informed decision making, which is why increased risk disclosure is feasible. Then again there is a limit for how much
information investors can actually process and make use of and that should be taken into account when disclosing corporate risk. Locating disclosed information in Finnish annual statements can be challenging since the risk disclosure can be spread out in up to four different sections of the statements. Solomon et al. (2000) questions what the ideal location for this information would be, proposing the operating financial review as one option.

We already concluded that the amount of disclosures usually indicates high quality. Another indicator for quality is so called coverage which refers to the balance of the disclosed information. Equal balance over risk topics is regarded feasible and a sign of high quality information (Miihkinen, 2012). Not all academics agree on this though. Some risks may be more prominent than others and putting equal emphasis on all reported risks may not be beneficial to investors (Solomon et al., 2000). If the risks are reported separately or in a general statement is also something to assess when creating the ideal framework for corporate risk disclosure. The relevance of the reported information is the most important aspect to the users of the disclosed information.

Investor's attitudes towards corporate governance and risk disclosure may be influenced by several factors. These attitudes affect the requirements on disclosure and the reporting climate, which also makes it an important factor to take into account. A framework taking all of these elements into account is likely to result in informative risk disclosure for investors.

The figure below describes the drives of key risks according to the British Institute of Risk Management (2002). It describes that both external and internal factors cause risks within the organization and because some risks can be classified into both of these categories they are shown as an overlap in the figure. The figure also shows that the UK classifies risk very similar to the Finnish standard into four risk types (plus risk management), and these are financial risk, strategic risk, operational risk and hazard risk (compare to damage risk in the Finnish standard).
2.4 Quality of risk disclosure

Quality of firm risk disclosures might sound like a straightforward concept but quality can mean several different things in this context. Disclosures may have great influence
on investment decisions and is therefore most important both for companies and their shareholders. Researchers define quality in a variety of ways since no standardized approach has yet been presented. Sengupta (1998) defined high quality disclosures as timely and detailed information that lowers shareholders’ perception of default risk. Verrecchia (1990) describes disclosure quality as an uncertain event’s distributional variance or characteristics. High quality disclosures can be both mandatory and voluntary but they need to have credible content and come from a reliable source. For investors it is also highly important that the disclosures they access give them enough information to make investment decisions and be certain about the company’s scenarios. Therefore high quality disclosures would equal such information that fulfills the company’s shareholder’s demands (Beretta & Bozzolan, 2004).

The empirical indicators of risk disclosure quality in this paper are divided into two different categories. While quantity of disclosure is the easiest to measure, e.g. Beretta & Bozzolan (2004) concluded that quantity alone is not a sufficient measure for the overall quality of risk disclosure. Mihkinen (2012) on the other hand used the quantity and the so called coverage (evenly distributed risk information) as a proxy for risk disclosure quality. This study will measure risk disclosure quality using the same measures as Mihkinen (2012). These factors are quantity of disclosure that as a measure was developed by Beretta & Bozzolan (2004) and coverage of disclosure which was developed by Beattie et al. (2004).

Quantity of firm risk disclosure can simply be measured through counting the words describing risks in a firms’ financial statements. Also counting sentences fill the same function. Beretta & Bozzolan (2004) used size and industry as independent variables in addition to word count when determining the overall level of disclosure of a company. They concluded that and absolute index, such as number of sentences describing risks, is not adequate in defining the relative amount of disclosure made by any company.

Companies listed on several stock exchanges have shown to disclose more information than companies only listed on one stock exchange. Abraham & Cox (2007) found that UK firms listed on a US stock exchange disclosed significantly more information on risks in their annual reports released in the UK compared to those firms that were not listed in the US. Stock exchanges expect information disclosed to investors in one market will also be disclosed to investors in other markets, such as the UK in the case of Abraham & Cox (2007). This kind of “additional disclosure” occurring due to dual
listing is very beneficial to the company since the information is already available and therefore comes at zero marginal cost.

High quality disclosures is all about providing investors with useful information that keeps them aware of possible scenarios of the company and helps them make informed value creating decisions. Managers may want to disclose additional information to ensure the company’s shareholders that they are behaving optimally from an agency viewpoint (Watson et al., 2002). This is part of the agency problem arising from one party having an information advantage over the other and will be discussed further later in this chapter.

Risk disclosure quality is not very easy to define since there are several approaches to how to measure this type of quality. Core (2001) concluded that recent research has emphasized the demand for improved measures of disclosure quality. Beattie et al. (2004) identified different dimensions of disclosure quality that together are expected to cover an as widespread area of disclosure as possible. They do emphasize though that no set of quality attributes or ranking and weighting of those attributes exist since quality is a subjective measure that depends strongly on the context. The spread of disclosure over risk topics is a dimension to take into account alongside the dimension of relative amount of risk disclosure. Equal coverage over risk topics is not necessary the ideal solution, but a degree of balance is recommended (Beattie et al., 2004).

2.5 The risk disclosure standard of the Finnish Accounting Practice Board

In 2006 a unique regulatory change took place in Finland when the Finnish Accounting Practice Board published a detailed new risk disclosure standard. These general guidelines encourages the reporting entity to provide an estimate of the most prominent risks and factors of uncertainty as well as other factors that could affect the development of the entity.

The standard stipulates that the report by the board of directors, by taking into account the scope and structure of the accounting entity’s operations, should judge the most important risks, uncertainty factors and other factors that affect the development of the accounting entity’s operations as well as its financial position and result. This should be done in an objective and comprehensive manner.
While companies operating in different lines of business use different templates in identifying and handling their risks and other uncertainty factors there are still some unifying factors that every company has to assess. These factors are strategic risks, operational risks, financial risks and damage risk. It is also use a risk classification if it demonstrably better describes the risks of the operations. In those cases it is recommended to use an industry-wide recognized classification.

The standard emphasizes the importance of describing the future risks and opportunities in a balanced manner to allow stakeholders to contemplate how appropriate the business plans are considering the risks and opportunities. Including tools and other means used in risk and uncertainty management, it is also feasible to include when disclosing risk, as well as stating if those kinds of tools have not been used. The annual activity report focuses on the most prominent risks.

In 2006 the methods of identifying and prioritizing risks were reconciled into a new standard on risk disclosure (Miihkinen, 2012). The risk disclosure standard includes comprehensive examples on how companies should assess and disclose risk. The standard is not meant to be applied as such, but all companies should use their own judgement in how the different parts of the standard fits their line of business and their scope of operations.

Descriptive examples of risk disclosure can be found in the attachments to the new standard from 2006. It begins by describing which risk management policies would be feasible together with recommended risk management arrangements. The standard states that the board is responsible for the group’s and the entity’s risk management policies and should monitor that they are realized. The CEO on the other hand is responsible for that the implementation of the risk management policies is assessed in an appropriate manner. Risk management should be an integrated part of the daily operations and decision making within the entity and in its support functions. It is important that every employee holds a responsibility to identify threats towards achieving the entity’s objectives.

The attachment continues with listing the four categories of risks (strategic risk, operational risk, financial risk and damage risk) with concrete examples of which risks go under which category. This part of the standard is essential and simultaneously defines the nature of the whole standard. Clear examples minimize companies’ effort put on disclosing risk and encourages extensive risk reporting in all areas.
Strategic risk can be risks related to competition, its geographical market where the company is operating, the company’s position in the production line, changes in customer preferences, dependence on a few customers or suppliers and technological development of a competing product. Operational risks are related to dependence on employees’ knowhow, disruption in the supply chain, price fluctuations for raw material and other production factors as well as the validity of patents and other immaterial rights.

Accounting entities applying IFRS standards shall apply IFRS 7 when assessing financial risks. If the entity is not applying IFRS they should disclose financial risks such as interest risks, currency risks, liquidity risks and credit risks. It is also important to disclose other financial risk factors that might have an impact on the entity’s operations and the judgement of its profit or loss, such as assets, liabilities and financial instruments. In connection to damage risks it should be stated to which extent the entity’s operations are covered by insurances against damages and disruptions in operations as a result of an accident. Disclosing information on law suits where the compensation requirement on the entity is remarkable is also recommended as well as other legal risks or risks related to governmental errands. It is also recommended that the entity’s interest bearing debt is categorized by maturity when disclosing corporate risks.

2.6 Financial Reporting Release No.48

Financial Reporting Release No. 48 (FRR No.48) was issued in the United States in 1997. It required SEC registrants to disclose qualitative and quantitative information on market risks that are such as potential losses from adverse changes in interest rates, commodity prices, foreign currency rates and equity prices. The intention behind the standard was to address the general concern of security analysts and accountants that ‘users are confused’ (Jorion, 2002). Prior to FRR No.48 the guidelines had been insufficient in requiring information on the scope of firm’s involvement in financial instruments and what effects derivatives activity could have on corporate profits.

After reviewing US public corporations qualitative disclosure the United States Securities and Exchange Commission (SEC) found that management discussion was typically most uninformative. Almost all companies claimed that they used derivatives for the purpose of ‘hedging’ and few of them admitted that they had conducted pure speculation even though the losses some of them faced proved the opposite (Jorion,
There is a thin line between selective hedging and speculation, and the general statements provided little substance in assessing the extent and effectiveness of corporate derivatives activities. This is the reason why SEC decided to mandate quantitative disclosures of market risk.

The major difference between the Finnish standard and FRR No.48 is that the Finnish one dictates the overall risk reviews of a firm (disclosure on strategic risk, operational risk, financial risk, damage risk, risk management etc.). The length of the standards differ dramatically as well, when the Finnish standard lies at 6 pages compared to FRR No.48’s over 100 pages that also lacks the illustrative examples on risk disclosure that are the foundation of the Finnish standard.

Roulstone (1999) demonstrated an improvement in firm’s market risk disclosures after the introduction of the FRR No.48 in the US. Also other studies have been conducted that confirmed to usefulness of this kind of information to investors, among them Jorion (2002) found that analysts can successfully compare risk profiles of different banks by using their disclosed value-at-risk. Despite these positive findings several empirical studies have found that the FRR No.48 requirements have a minor impact on enhancing the quality of risk reporting. Listed companies provide disclosed information with wide variations in detail and clarity (Roulstone, 1999), the risk information is usually not centralized but spread throughout the Management Discussion & Analysis (MD & A) section and the notes to the financial statements obstruct investors from easily gathering information and making truthful risk assessments (Hodder et al., 2001).

**2.7 The financial crisis in 2008**

The phenomenon most commonly called the financial crises of 2008 hit the global markets hard and the aftermaths are dealt with even today. Imbalances in the foreign exchange currency markets, light-minded monetary policies (particularly in the US), financial innovations, incomplete regulation, inadequate monitoring and financial institution’s failure in their own risk management are all reasons that contributed in bringing down economies on their knees in a global context in the late 2000’s (Jokivuolle, 2010). At the end of the 2000’s the world’s financial systems were more complicated and globalized than ever, something that was believed to spread risk and increase flexibility. When it came down to the crises in 2008, it was the globalized
nature of the systems together with its lack of transparency that enforced the crises and enabled its’ global proliferation (Jokivuolle, 2010).

Financial crises are not new to the world. In the last 30 years four waves of financial crises has hit the world, each one of them followed by a recession (Kindleberger & Aliber, 2011). The first fairly recent crisis occurred in the early 1980s when US dollar-denominated loans with a total worth of 800 billion dollars were defaulted by Brazil, Argentina, Mexico and ten other developing countries. The second wave of financial crisis was most prominent in Finland, Sweden, Norway and Japan (Kindleberger & Aliber, 2011). In Asia, the third wave hit Thailand, Indonesia and Malaysia as a start and the crises spread further to South Korea, Argentina, Brazil and Russia. The most recent economic contraction commenced in 2008, and turned out to be the most severe and global financial crises seen by the USA and Europe since the end of the Second World War (Barth & Landsman, 2010).

What is common for every financial crisis is that each one of them was followed by a wave of credit bubbles. Researchers have suspected a common cause behind these bubbles because of observed similarity of price increases in asset prices occurring simultaneously in several countries (Kindleberger & Aliber, 2011). They also found it unlikely that the different waves of bubbles were unrelated and independent. The underlying pattern was found to be increases in the flows of money into a country leading to increased currency value, real estate prices and stock and bond prices

Most policy-makers, bankers and academics agree that the most recent financial crisis started after the housing bubble bursting in the USA (Barth & Landsman, 2010). Though, some analysts argued that the US housing price run-up was not a bubble at all. In fact it was a justified financial reaction due to financial innovations, such as sub-prime mortgages, and the steady capital inflow coming from the petroleum exporters and Asia (Reinhart & Rogoff, 2008).

The most prominent catalysts of the crises were mortgage assets and derivatives in the US that started tumbling in 2007, while prices of homes started to decline already in 2006 (Hsu, 2013). Excessive overleveraging of subprime mortgage assets built up to become a real problem when the subprime mortgages were given to individuals who did not have the resources to repay these loans. When these individuals lost their homes it started to unravel that new synthetic, mortgage-backed assets had been based on these subprime loans. Hsu (2013) explains that these assets, worth billions of
dollars, were owned across the financial system. Therefore the falling prices of homes in the US caused assets based on mortgages to tumble with an overwhelming threat to bring down powerful financial institutions globally.

Markets connected to the US financially or through trade across the globe started to decline, global stock markets tumbled and large scale failure hit several global banks. The crises hit Europe’s financial system rapidly and brought down established financial institutions and reversed carry trades (Hue, 2013). The true budget deficit covered up by the government of Greece strengthened the crises in Europe because of the common currency and the aftermaths can be seen in the Eurozone still on this day. The most recent financial crises, also called the Great Recession of 2008 (Hsu, 2013), is the one of importance to this paper and will be examined to look out for potential effects of the crises on corporate risk disclosure.

**Finland and the financial crises**

The financial crisis that had its source in the global financial markets hit Finland harder than many other countries when measured in reduction of production in the country. This can partly be explained by the economic upswing in Finland before the start of the crisis when signs of uneven development of the economy were unraveled (Freystätter & Mattila, 2011). External disruptions quickly put the Finnish economy on hold which showed in an 8% reduction of the GDP in 2009 (Tilastokeskus). The largest drivers of the economic upswing before the crisis, export and private investments were the ones that faced the largest decrease (Freystätter & Mattila, 2011).

In fall 2008 the financial crises reached Finland with full force and put the country into a deep recession. The strong positive financial development observed in 2004-2007 now went into the opposite direction: compared to other developed countries the drop in Finland’s GDP was among the largest.
Finland was one of the countries in which the financial crisis was most prominent. The country’s GDP dropped from 193.7 billion euros in 2008 to 181.0 billion euros in 2009. If comparing the GDP/capita Finland went from 36,457 euro/capita in 2008 to 33,908 euro/capita in 2009 (Tilastokeskus).

In 2009 a 20% decrease of export and 17% decrease of private investments were signs of exceptionally strong negative development (Freystäätter & Mattila, 2011). A small decrease also showed in private consumption, but owing to tax cuts and light monetary policies by the European Central Bank households had more income to dispose of. The results of these actions also showed in the housing market: apartment prices were not subject to any significant decrease. In addition Finnish companies had relatively little debt in proportion to equity which diminished the external disruptions in the form of a global financial crisis. It is evident that the crisis could have hit the Finnish economy even harder under different, less favorable conditions (Freystäätter & Mattila, 2011).

Jokivuolle (2010) identified three subcategories of risks that contributed to problems during the financial crisis: credit risk, counterparty risk (also called default risk) and liquidity risk. With the Finnish risk disclosure standard in mind, these risks can all be classified as financial. Market risks were realized in the stock markets but as a consequence to the impact of other risks on the overall liquidity and real economy of
the financial markets. Jokivuolle (2010) pointed out the challenge in measuring and managing liquidity risk, especially during a financial crisis. The greater information asymmetry between the buyer and the seller of a bond, the lower is the liquidity of the bond in a crisis.

In the beginning of the 1990’s Finland suffered from another great recession. The corporate sector became heavily indebted and the devaluation of the Finnish markka did great damage to Finnish businesses. In 2008 when the latest crisis occurred companies did not face nearly as severe monetary risk as in the 1990’s, and companies also have a stronger equity structure in general (Bank of Finland, 2009). Finnish household’s debt levels were similar when comparing the 1990’s and 2000’s, but in the 2000’s a lot smaller fraction of the household’s income went to interest payments.

The financial crisis lead to a stricter supervisory environment through the founding of the Financial Supervisory Authority² (FIN-FSA). It was founded by the Bank of Finland in the beginning of year 2009 when it was evident that dividing risks between the banking- and insurance sector was contra productive. The Bank of Finland conducted stress testing of banks in cooperation with the FIN-FSA, and found that banks can handle a situation with poor economic development better than in the 1990’s. Many banks in Finland have their headquarters in another Nordic country, which puts the FIN-FSA in an important position in supervising the Finnish subsidiaries.

Despite these positive developments compared to the recession in the 1990’s the current one will leave a heavy mark on the Finnish economy. It will take years for the political economy to reach same levels as we had in 2008 (Bank of Finland). The weak state of the labor markets is evident in the everyday lives of young job seekers and for experienced employees who withdraw from the labor markets before their actual age of retirement. Jokivuolle (2010) pointed out that risk management functions have an important task in the economies as a whole. When an unbalanced economic development is viewed as “the new balance”, justified by restructuring of economies and the financial systems, it should be up to risk management to spot the red flag.


² Finnish: Finanssivalvonta (Fiva). The authority that is responsible for supervision of Finland’s financial and insurance sectors. This also includes the Helsinki Stock Exchange.
2.8 Relevant theories

The agency theory

Capital markets need corporate disclosure in order to function efficiently. A vast amount of this disclosure is forwarded as regulated financial reports, but also e.g. press releases, presentations and internet sites disclose additional information about companies. This information is of interest for mainly two parties: managers and outside investors.

The agency theory is building on one of the most fundamental principles of modern capital markets: the separation of ownership and management. Because of this separation, the agency theory argues that managerial actions might depart from the actions that would be required to maximize shareholder value (Berle & Means, 1932). Since ownership and management is separated, the two parties have access to different kinds of information, often to the owner's disadvantage. This is called information asymmetry, which Stiglitz (2002) defined as when “different people know different things”. Information can in some cases be private, and because of that information asymmetry occurs between those holding the information and those who might be able to make better decisions if they had access to that information.

The reasoning behind the agency theory is that there is an unspoken relationship between a principal and an agent Jensen & Meckling (1976). People are expected to be greedy and acting in their own best interest. In the agency theory it is the owners of the company who represents the principal, disposing of the legal and moral rights of the company. Indirectly it is also the owners who then dispose of the assets that are under the company’s control (Nordberg, 2011). The management of the company is regarded as the agent, employed to act in the best interest of the principal against a compensation. Considering that the agent might be acting in his own best interest the management needs to be supervised or control mechanisms need to be put in place to prevent him from acting against shareholder’s value.

Management (the agent) raises capital from investors (the principal) in order to cash out his own holdings in the company or to put the capital in productive use (Shleifer & Vishny, 1997). Since investors are seldom able to participate in the management processes of the firms they invest in they have to submit the responsibility of managing the operations to the firm itself. The shareholders (investors) need someone with specialized human capital to maximize the value of their investments. Managers have
the human capital but seldom enough capital of his own to manage the company’s operations. Therefore it is beneficial for managers and investors to combine their efforts. The problem is that this setting creates incentives for managers to exploit the situation for their own best and using investor’s capital in a way that drives the managers’ interests (Healy & Palepu, 2001).

The difficulty of the agency theory lies in how investors can be sure to get return on their invested capital after they have given it over to the firm management. Creating a situation where investors can be sure that the managers are acting in the investor’s best interest is impossible (Jensen & Meckling, 1976). Investors can minimize deviation from their own interest though by putting in place control mechanisms and compensation schemes for the managers. The agency problem can also be controlled for by signing a contract between the investors and the manager that clearly specifies what the manager should do with the funds and how the returns are allocated between the investors and the manager (Shleifer & Vishny, 1997). In practice, complete contracts are impossible to construct since all possible outcomes cannot be predicted and reflected in the contracts. Therefore the principal and agent has to agree on who has the rights to make decisions under circumstances that are not covered by the contract.

When investors want to address the agency problem they do it through control mechanisms, incentive programs and contracts. Agency costs are all such costs that occur due to the supervision of the company management (Jensen & Meckling, 1976). An efficient system requires the parties to have confidence in each other. The less trust there is between the principal and the agent the higher the agency costs are.

Jensen & Meckling (1976) identified three categories of agency costs. The first category comprises the costs arising for the principal from supervising the management and e.g. their compensation. The second category is all the costs arising from reducing the confidence problem between the principal and the agent, which for example could be contracting cost. Finally, the third cost category is the increase in costs arising from the difference between the decision of the agent and the decision that would have served the principal’s best interest.
**Signaling theory**

The signaling theory can be used to describe why company management gives out voluntary disclosures. In unison with the agency theory, the signaling theory is based on the assumption that there is information asymmetry between managers and shareholders (Connelly et al, 2011). Management has an information advantage over investors and other shareholders since they have access to insider information. Stiglitz (2002) states that voluntary disclosure is a product of the judgement of the company management.

The assumption behind the signaling theory is that managers are likely to disclose or “signal” such information to investors that makes the company look good. Therefore management in firms that are performing well have more reason to signal about their company’s success compared to firms that are not performing as good (Watson et al, 2002; Xiao et al, 2004). Voluntary disclosure can be seen as a tool for management to communicate their performance to the capital markets and to distinguish them from companies of lower quality and performance.

In order for management signals to have the desired effect they need to be perceived as trustworthy. If the disclosed information discovered to be false it would be very harmful to the reputation and all the future disclosures of the firm (Watson et al, 2002). Then again it is important that the company’s signals are interpreted in a correct manner and that the public disclosures are not used wrongfully.

The similarities of the agency theory and the signaling theory are evident in the way both of the theories strive to explain how management communicates with investors under the presumption of information asymmetry. These features also enables parallel use of the two theories to achieve better understanding of the reasons why management gives out voluntary disclosure.

**Legitimacy theory**

The third theory that occurs in the disclosure literature is the legitimacy theory. In accordance with both the agency and signaling theory, the legitimacy theory is based on the idea of that management has the ability to affect the company’s position in the capital markets by disclosing information. The legitimacy theory is mostly used in a corporate social responsibility context, since it emphasizes corporations as a part of society.
The legitimacy theory says that corporate disclosure reacts to economic, social and political factors (environmental factors) and that disclosure legitimizes the actions of the company (Guthrie & Parker, 1989). Legitimacy is a perquisite for the company’s whole existence in the capital markets and a necessity for its integration in society. This theory states that companies continuously strive to ensure that they operate within the norms and expectations of their respective societies. The embodied view in the legitimacy theory is that companies will be punished if they do not act and operate in consistence with the society’s expectations. Brown & Deegan (1998) concluded that managers generally understand the importance of operating within the norms and expectations of society. They also stated that variations in the social disclosures made in companies’ annual reports are responses to perceived changes in the society’s perceptions and expectations concerning its operations.

Management can create legitimacy through disclosure on how the company will assess its weaknesses or disclosing information that moves the general public’s attention from the actual problems in the company (Anbumozh et al. 2011). In contract to the signaling theory, stating that companies disclose information voluntarily to communicate performance, the signaling theory is about management disclosing so called negative information in order to legitimize their actions.
3 LITERATURE REVIEW

In this part of the thesis the most prominent research in the field of risk disclosure quality will be discussed under three key topics: regulation of risk disclosure and risk disclosure quality, reporting incentives and risk disclosure quality and the financial crisis. The chapter continues with discussing the capital market consequences of narrative risk disclosures, and then we take a brief look at the quality impact that risk disclosure standards have. As a conclusion, a hypothesis development is presented together with the two research hypotheses of the thesis.

3.1 Regulation of risk disclosure and risk disclosure quality

Researchers have shown increasing interest in the field of risk disclosure in recent years (e.g. Solomon et al., 2000; Beretta & Bozzolan, 2004; Miihkinen, 2012; Martikainen et al., 2015). Despite the increased interest it is still one of the most unexplored and ambiguous areas within corporate disclosure. Especially the quality of risk disclosure needs more research in order to be fully comprehended.

The purpose of risk management is to maximize profitability while minimizing the likelihood of financial failure, and therefore it is needed to maximize shareholder’s wealth (Solomon et al., 2000). Risk disclosure is also beneficial for other stakeholders such as customers and employees. Financial reporting is often criticized for not providing a sufficient and detailed description of risks and uncertainties facing the company. The problem has been noticed by standard-setters, practitioners and academics and a question has been raised on whether specific standards should be developed for risk disclosure in annual reports.

Before Miihkinens’ (2012) study there had been no evidence on how effective regulation can be in improving overall risk disclosure quality within one single country. Beretta and Bozzolan (2004) suggested future research to assess the problem of whether the extent of regulation of the operating environment of firms can explain the quality of firm risk disclosure. Previous researched showed that firms do react to new disclosure recommendations and requirements (Roulstone, 1999; Miihkinen, 2008). This research gap suggested by Beretta and Bozzolan (2004) was later assessed by Miihkinen (2012) in light of the unique regulatory change in Finland in 2006.
By introducing a new detailed risk standard Finland took a leap towards being one of the most developed countries concerning risk disclosure regulation. Miihkinen was one of the pioneers in examining the drivers of quality of firm risk disclosure when he examined the results of the regulatory change in Finland when the new national disclosure standard was introduced in 2006. By using data from all the firms listed on OMX Helsinki, Miihkinen (2012) used different proxies (quantity, coverage and semantic properties of firm risk disclosures) in defining the quality of risk disclosure.

Miihkinen (2012) found that the new risk disclosure standard increased firm’s quality of risk disclosure in several dimensions. There was still a notable reluctance in providing monetary estimates of risk though, which is consistent with e.g. Beretta and Bozzolan (2004). The second major finding was that increases in the overall quality of risk disclosure were driven by the standard’s coercive (forcing) effect. Other factors found to drive quality are size of the firm, profitability and a potential listing on NYSE.

In an international setting there is in general very little clear regulation concerning firm risk disclosure. Italian firms disclose some risk information voluntarily but are mostly oriented towards a policy of ‘formal disclosure but substantial nondisclosure’ concerning the expected influence of risks on firm’s futures (Beretta & Bozzolan, 2004). Risk disclosures in Canada were found to lack uniformity, clarity and quantification and therefore they are not very useful to stakeholders (Lajili & Zéghal, 2005). Linsley & Shrives (2006) examined UK risk disclosure practices and concluded that quantitative risk information is provided by only a few firms and that coherence is lacking from risk narratives. These findings indicate a gap in risk information and that stakeholders cannot appreciate the risk profiles of firms in an accurate manner. Another UK study by Linsley & Lawrence (2007) analyzed UK companies’ risk disclosure writing style and demonstrated a lack of readability of those disclosures.

Research has shown that there is a strong association between globalized operations and disclosure levels (Cahan et al., 2005; Khanna et al., 2004). Dobler et al. (2011) conducted an international study on attributes of corporate risk disclosures. The results were that managers generally disclose risks in management reports while concentrating on financial risk categories. Very little forward-looking and quantitative risk information was given across the sample countries (Germany, UK, US and Canada). The conclusions of the study was that domestic regulation only can explain cross-country differences in disclosure to some extent, indicating that motives for risk disclosure have a major impact on the reporting decisions managers make.
3.2 Reporting incentives

Risk disclosure in regulated environments is also influenced by risk reporting incentives (Dobler et al., 2011). Some firms are naturally more exposed to risk and as a result they have more potential information to disclose to the capital markets. Firm’s risk of bankruptcy is increased by high leverage and simultaneously those firms are also more vulnerable to risks. What firms decide to disclose, including risk disclosure, is determined by several different factors including firm size (Brammer & Pavelin, 2006), profitability (Lang & Lundholm, 1993), growth prospects (Miihkinen, 2008), listing status (Cooke, 1989) and need for external financing (Lang & Lundholm, 1993).

Brammer & Pavelin (2006) found that large, less indebted firms with spread ownership are noticeably more likely to disclose information on their environmental impact voluntarily. The quality of the disclosed information could also be observed to be positively associated with the size of the firm and its corporate environmental impact. Larger firms have higher agency costs, lower proprietary cost and most importantly in this context: lower unit costs of disclosure (Miihkinen, 2008). In the context of manager’s disclosure incentives Miihkinen (2008) concludes that firm size and growth prospects are positively associated with recommended disclosure.

The Nordic countries have a lot of similarities but there are remarkable differences between e.g. the economies in Sweden and in Finland. The economy in Sweden is dominated by a small number of multinational companies with multiple quotations. In Finland, only a handful of companies listed on OMX Helsinki are quoted elsewhere too. Cooke (1989) showed that listing status is a crucial factor in explaining variability of voluntary disclosure in Sweden. If a company had to raise foreign capital there was a much higher likelihood of increased voluntary disclosures which could be explained by foreign regulation and SEC regulations in particular.

In general, companies like to disclosure information that makes them look good so that they can attract more investors and keep their shareholders satisfied. Lang & Lundholm (1993) found that firms performing well, especially concerning stock returns, had more extensive disclosure. Firms that received a high quality rating by analysts usually had a high disclosure score, and they also used more conservative accounting practices. Research has shown that the need to attract new capital is what managers see as the primary motivation for issuing earnings forecasts. If managers
place a lot of weight on maximizing the current firm value, the larger is the incentive to disclose positive information right before a security offering.

In countries where disclosures are voluntary managers have a remarkable impact on what is disclosed and what is not. That is why it is of great importance to research what it is that motivates managers in their disclosure processes. Manager's risk disclosure behavior may be influenced by business risk, which is the joint definition of volatility of yearly cash-flows and globalization (Cahan et al., 2005). Increased disclosure helps investors in the monitoring of the firm’s management, reducing investor's transaction costs and the firm’s cost of capital.

Marshall & Weetman (2007) showed that managers sit on a lot more mandatory information on foreign exchange risk management than they actually disclose and that the managers prefer to leave scope for obfuscation in this disclosure area. This means that there is an information gap between the managers and the users of the financial statements and therefore also a lack of transparency. The authors concluded that managers seem to prefer reacting to market demands instead of setting an ideal target for the level of risk disclosure.

Ownership structure and board composition are corporate governance mechanisms with potential impact on disclosure. This relation was examined by Eng & Mak (2003) who wanted to find out whether there is an impact on voluntary disclosure that can be derived from board structure and corporate governance mechanisms. The results showed that low managerial ownership combined with significant government ownership is associated with an increased amount of voluntary disclosure. This relationship supports the arguments of that moral hazard and agency problems arising from government ownership are controlled by disclosure, which forms a strong tool in resisting these problems (Eng & Mak, 2003). The authors also found that larger firms provide greater disclosure and that low debt firms provide more extensive information as well. These results are consistent with previous findings on that managerial ownership, debt and outside directors can be viewed as substitutes for disclosure in corporate governance.

### 3.3 Risk disclosure and the financial crises

The financial crises starting in 2008 caused long-term effects in the Finnish economy. Companies in Finland started paying attention to the crises at an early stage and many
of them mentioned the crises as a prominent risk in their annual statements from year 2009. There is quite limited academic research on risk disclosure and the effect of the financial crises on risk disclosure is even less examined. Some forerunners in the field, such as Canada and Italy, have paid attention to this research gap which will be discussed further in this subchapter.

Canada is one of the industrialized countries that are most forthcoming about their risk and enterprise risk management activities (Quinn, 2010). Maingot et al. (2012) hypothesized that the global financial crises had a remarkable effect on companies’ risk profiles and thereby also on the disclosures of enterprise risk management. The purpose of their study was to examine how the financial crisis affected enterprise risk disclosures by Canadian companies.

Maingot et al. (2012) conducted their study by a content analysis of Canadian corporations’ annual reports from 2007 and 2008. The study comprised companies listed on the S&P TSX composite index. The authors tracked and categorized 14 types of risks. Results from the study showed a 3.6% increase in overall risk disclosures from year 2007 to year 2008. An even smaller increase in the disclosed levels of risk was also observed. Only economic and credit risk showed more than minor increases in the disclosure of risk consequences (Maingot et al., 2012). The conclusion was that the 2008 financial crises did not have a major impact on the risk disclosures by non-financial Canadian corporations.

In Europe, Italy has been a forerunner in the field risk disclosure research for quite some time. The Italian researchers Malafronte & Starita (2014) examined disclosure practices and the effect of the financial crises in the European insurance industry between 2005 and 2010. Focus lies on the readability of the disclosed documents, the amount of disclosed risk information and its’ determinants. The authors want to provide evidence on the relationship between risk disclosure levels, characteristics of the insurers and the impact of the financial crises.

The sample in the study by Malafronte & Starita (2014) consisted of 47 European insurance companies observed over years 2005-2010. Results from the study show that there is a serious lack of readability of the annual reports, mainly affecting regular consumers. This can be seen as a threat against consumer protection even though it is not ruled out that financially educated stakeholders can read and interpret the reports
in a correct manner. Companies do not seem to increase efforts in improving the
readability over time either.

During the research time horizon the level of disclosure increased over time
(Malafronte & Starita, 2014). A stronger growth of disclosure was observed between
2008 and 2010. Several tests conducted by the authors show that there is no
relationship between the quantity and quality of disclosure, which indicates that
choices surrounding readability and disclosure are based on different criteria. The
analysis of the end results also show that the amount of disclosed risk information is
strongly affected by the insurer’s characteristics, such as firm size, profitability, reserve,
home country, year of observation and the financial crises. These findings show that the
European insurance industry invested more in disclosure during the financial crisis. In
other words, it was necessary to disclose more relevant risk information in an effective
manner to maintain market confidence (Malafronte & Starita, 2014).

Barth & Landsman (2010) examined the role of financial reporting in the financial
crisis context under IFRS and US GAAP. Their study focused on four topics: the
reporting of fair values, asset securitizations, derivatives and loan loss provisioning.
Banks played a large role in the 2008 financial crises and the discussion and analysis by

The authors summarized financial reporting requirements under IFRS and US GAAP
for each one of the four topics. Then they offered insights in whether the reported
information available to investors was transparent enough to make appropriate
judgements. Loans comprise a large part of banks’ assets which is why it was also
discussed how loan loss provisioning could have contributed to the financial crises
through its effects on procyclicality and market discipline effectiveness (Barth &
Landsman, 2010).

The results from the study by Barth & Landsman (2010) showed that fair value
accounting played an insignificant role in the financial crises. However, the
transparency of information and the information disclosure on securitizations and
derivatives were most likely insufficient for investors to properly assess the riskiness
and values of affected bank assets and liabilities. By requiring enhanced disclosures, the
FASB and IASB have taken action in improving disclosures of asset securitizations.
Despite this, more actions are needed to reach the objective of more transparent and
efficient reporting (Barth & Landsman, 2010).
Probohudono et al. (2011) examined the disclosure of key risk factors experienced by companies in Indonesia, Malaysia, Singapore and Australia during the turbulent financial period of 2007-2009. Of these countries Singapore and Malaysia experienced a significant drop in their economic activity. The authors wanted to determine the extent of manufacturing companies’ risk disclosures in annual reports during 2007-2009, to what extent those risk disclosures changed over time and what the factors were that could explain the levels of firm risk disclosures. Better communication and disclosures are essential in economically challenging times to overcome public distrust and to make standard setters take action as well.

The results of the study showed that companies disclosed less risk information during the whole financial crises period. This scarce communication of comprehensive risk elements led to even more uncertainty (Probohudono et al., 2011), in addition to the widespread distrust that affected the markets as a result of highly published failures. The biggest difference in disclosure could be observed in year 2009. In a regression analysis the authors also found that company size and board independence statistically helped in explaining the extent of risk disclosures.

### 3.4 Capital market consequences of firm’s narrative risk disclosures

When a significant news event or relevant financial information is released there are consequences in the capital markets called market reactions. A market reaction is the strong directional movement or incessant period of volatility that follows these types of information releases (Kim & Verrecchia, 1991). Depending on the contents of the disclosures, the market reaction can be positive, negative or uncertain.

Several studies have shown that when a firm reveals information to the public in order to reduce information asymmetry the firm can reduce its cost of capital simultaneously. This happens when an increased liquidity of the firm’s securities starts attracting increased demand from large investors. One of the studies confirming these findings is Diamond & Verrecchia (1991). They showed how market makers with limited risk bearing capacity interact with effects of private information when determining security prices. Diamond & Verrecchia (1991) also found that voluntary disclosure can improve stock liquidity since it reduces the information asymmetry between informed and uninformed investors.
Diamond & Verrachia (1991) emphasized the risk bearing capacity in market making. Increased disclosure can cause some market makers to exit when an endogenous amount of risk bearing capacity is allowed in market making. Disclosures were found to reduce the cost of capital for firms despite the exit of some market makers. However, the authors also identified situations where reduced information asymmetry had a negative effect and raised the cost of capital. In these cases a reduction of information asymmetry had caused a too rapid exit from market making.

Corporate disclosure is a critical for having functioning and efficient capital markets (Healey & Palepu, 2001). Capital markets are constantly subject to the lemon problem³, and when this problem remains unsolved it will lead to undervaluation of some good ideas and overvaluation of bad ideas based on the available information. Healy & Palepu (2001) identify three types of capital market consequences: improved stock liquidity, reduced cost of capital and increased information intermediation.

Investors can be sufficiently confident that stock transactions occur at a “fair price” when a firm discloses high levels of information. This can lead to improved stock liquidity for a firm, since information asymmetry is reduced (Healy & Palepu, 2001). When firm disclosure is incomplete it is the investors who bear the risk when forecasting their investments’ future payoffs, and if the risk is non-diversifiable investors will demand return for bearing the information risk. That is why firms with high disclosure levels (and therefore low levels of information risk) most likely have lower cost of capital. Healy & Palepu (2001) also concluded that in cases where management is not fully revealing private information through disclosures, the cost of information acquisition for analysts can be lowered by voluntary disclosure and hence increase their information supply. Extensive voluntary disclosure will therefore increase information intermediation.

Lambert et al. (2007) investigated how and whether disclosed accounting information affects firms’ cost of capital. Cost of capital was defined as the expected return on a firm’s stock. The authors found that the quality of the accounting information influences the cost of capital of a firm both directly and indirectly.

³ Healy & Palepu (2001) explain the lemon problem as a situation where half of business ideas are “good” and the other half are “bad”. The situation involves investors and entrepreneurs, both rational who value investments that are conditional on their own information. When information is withheld, entrepreneurs might convince investors that their “bad” ideas are as valuable as the “good” ones. Investors are rational and realize this possibility, and will therefore have to value both ideas at an average level.
The direct effect is seen in market participants affected perceptions about future cash flow distributions. Assessed covariance between a firm’s cash flow and other firm’s cash flows are affected by the quality of disclosures, which caused the direct effect (Lambert et al., 2007). The indirect effect can be observed as affected real decisions that later can alter the distribution of future cash flows.

3.5 The quality impact risk disclosure standards

FRR No.48 is an extensive standard, something that is characteristic for the rules-based accounting environment in the US (Miihkinen, 2012). Roulstone (1999) showed that FRR No.48 has a coercive effect on firm’s market risk reporting and that market risk disclosures, which only was recommended and not required under FAS No.119, expanded remarkably under FRR No.48. Despite the coercive effect the comprehensive standard had on firms’ reporting, there still was a great variation in detail and clarity of the market risk disclosures.

The Finnish standard introduced in 2006 shares some features with FRR No.48 in the sense that they both are detailed. A major difference between them is the illustrative examples that form an appendix to the Finnish standard and those should increase the standards’ coercive effect. Because of its descriptive nature, the Finnish standard promotes the importance of providing both quantitative and qualitative risk information on the whole scale of risk topics. The guidance provided by the Finnish Accounting Practice Board emphasizes that one of their main objective with the new standard is to motivate firms to provide wide coverage of risk topics in their risk disclosure.

In December 2005 SEC started requiring overall risk reviews in both annual and quarterly reports (Marshall & Weetman, 2002). Compared to the Finnish standard its coercive effect is much weaker because of it being a lot shorter, vaguer and lacking disclosure examples, all of these factors contributing to the lack of coercion. As a direct consequence SEC warned for low-quality overall risk reviews provided by firms. Miihkinen (2012) proposes that Finnish firms may have been unwilling to report risks fearing litigation costs and/or proprietary costs before the introduction of the standard. Firms facing bad news may also have been motivated to take distance from risk disclosures to avoid the negative impact they could have on valuation. Miihkinen (2012) argues that the standard introduced in Finland in 2006 has a strong enough coercive effect in order to influence firms’ risk disclosure choices.
3.6 Hypothesis development

When standard setters introduce new standards on reporting they expect that the quality of the reporting in question will be improved. By providing more detailed guidelines and perhaps even concrete examples reporting, reporting might in a best case scenario become more standardized, transparent and informative. When discussing the potential improvement in quality of risk disclosures in Finland it can be compared to the effects of the U.S. standard FRR No. 48.

The new Finnish risk disclosure standard was introduced in year 2006. Two years later the global financial crisis hit Finland with full force, with year 2009 as its most affected year measured in GDP loss and attention in companies’ annual reports. Miihkinen (2012) found that the new standard had had a positive effect on risk disclosure quality in year 2006, and his robustness tests also showed that the improvement continued in years 2007 and 2008. This means that risk disclosure quality in year 2009, in the light of the financial crisis, remains unexplored.

According to previous literature shareholders request more information during financially challenging times (Starita & Malafronte, 2010; Barth & Landsman, 2010). As they want to make informed decisions, it is important that companies disclose relevant information that raises confidence in the markets. Research has shown that transparency of information during the financial crisis was insufficient for investors to evaluate the riskiness of e.g. bank assets and liabilities (Barth & Landsman, 2010).

Under financial crisis circumstances managers might use corporate disclosure to explain poor earnings performance and reduce the risk of undervaluation. This is the hypothesis under voluntary disclosure theory, and is especially prominent when there is a risk for job loss for the management accompanied by poor stock and earnings performance (Healy & Palepu, 2001). Diamond & Verrecchia (1991) argues that company disclosure reduces the information asymmetry between informed and less informed investors, which means that stock transactions with companies that have high levels of disclosure should occur at a “fair price”. This is highly desirable for investors during the uncertain times of a financial crisis.

Risk disclosure quality is in this study determined as the amount of risk disclosure quantity and coverage. The studies discussed in this subchapter stipulate that increased disclosure would have positive effects for both companies and their investors. We argue
that the financial crisis has increased the amount of risk disclosures and therefore also improved risk disclosure quality. Therefore we test the following hypothesis:

**H1.** The financial crisis has improved the quality of firm risk disclosure significantly.

Previous research has found that certain reporting incentives have had an impact on disclosure quality (Cooke, 1989; Eng & Mak, 2003; Miihkinen, 2012 etc.). These reporting incentives have shown to be present in both environments with voluntary and mandatory risk disclosures. The risk disclosure standard introduced in 2006 serves as guidance for the Finnish risk reporting but other factors might have an impact on the disclosures as well. Previous studies have documented an impact on disclosures by certain firm specific features that have had an effect on quantity and coverage. Therefore we test our second hypothesis:

**H2.** The quality of risk disclosures has been affected by reporting incentives.
4 RESEARCH DESIGN

The main objective of this study is to find out if there has been any significant change in risk disclosure quality when comparing the years 2007 and 2009. As a follow up question we also want to map out which reporting incentives, if any, have had an impact on risk disclosure quality. The nature of the thesis is hypothesis-driven research, which means that we are trying to find a causal relationship between the research years and risk disclosure quality. Primary data is gathered from databases and annual reports while some secondary data is retrieved from companies’ annual reports. The data is then analyzed through statistical methods in accordance with quantitative research methods.

Data analysis is done by collecting and classifying data from annual reports for the companies listed on OMXH 25 for the respective years. Based on this data, scores for the quantity and coverage of risk disclosure are calculated. To control for relevant reporting incentives, regressions are performed including seven independent variables together with the main test variables; years 2007 and 2009.

We begin the chapter by defining a framework for risk disclosure. Disclosure quality is defined by two different properties: quantity and coverage. Empirical indicators for risk disclosure quality are needed to form an extensive measure of the risk disclosure quality. In this study an extensive measure, or full model, consists of the risk indicators (separate models for quantity and coverage) together with all the reporting incentives discussed later in this chapter.

4.1 A risk disclosure framework

The purpose of the study is to see whether the financial crisis has had an effect on the quality of firm risk disclosures. The problem area also includes other aspects, such as which control variables (also called reporting incentives in this study) might have an effect on the quality. Even though the Finnish risk reporting standard has given clear guidelines on how to disclose risks, there are still other firm specific factors that might have an impact on the quality. Previous studies are used as guidance when determining and selecting which variables might have had an impact on disclosure quality.

Previous research has used different indicators as a measure for risk disclosure quality. These include quantity of disclosure (Abraham & Cox, 2007), coverage of disclosure
(Beattie et al., 2004) and semantic properties of disclosure (Beretta & Bozzolan, 2004; Beretta & Bozzolan, 2008). This study will use quantity and coverage as proxies for firm risk disclosure since those measures have been used the most in previous studies. Miühkinen (2012) summarized a set of control variables that possible could have an effect on firm risk disclosures that he used in his regressions. Of these variables seven have been selected for this study with the motivation that these seven variables have a lot of support in previous research and literature.

In 2008 the financial crisis hit the world markets with full force and affected economies worldwide. In 2009, which is one of the years under scrutiny in this study, the crisis was strongly evident in Finland. Risk reporting had gained more attention due to the new risk disclosure standard that was introduced a couple of years earlier. With the presence of the financial crisis it suddenly was not as clear anymore that risk disclosures had been standardized due to the new standard. Despite the interest for risk disclosure in Finland, the effect of the financial crisis on corporate risk disclosure is still an unexplored topic in a Finnish context.

Research on risk disclosure and the financial crisis has been conducted in certain other countries with different regulatory backgrounds than Finland. Maingot et al. (2012) found that there was only a slight increase in the quantity of risk disclosures for Canadian companies due to the financial crisis. In Italy, Malafronte and Starita (2014) found a continuous increase in disclosures that was particularly evident between the years 2008-2010. Probohudono et al. (2012) found that companies in Southeast Asia disclosed less information during the crisis years. This illustrates the opposing research results and shows a need for contributing studies in the field of risk disclosure quality during the financial crisis.

In this paper risk disclosure is defined as all the information firms provide in their risk reviews that they present in their annual reports. The information classified as risk disclosure is such that describes the major risks opposing the firm as well as their expected economic impact they have on the firms’ future performance. In practice this also takes form as forward-looking information helping investors to approximate future cash flows in an appropriate way. An important part of the disclosures are also potential sources of uncertainty that are surrounding the forecasts of future cash flows of the firm, and sources of non-diversifiable risk information that should be included in cost of capital (Miühkinen, 2012).
The five risk categories defined in the standard by the Finnish Accounting Practice Board constitutes the foundation of the risk disclosure framework in this paper. These risk categories are typical for all firms, and they are defined in the standard as strategic risks, operational risks, financial risks, damage risks and risk management. Examples of risk disclosure formats together with numerous examples of the risk items in the different categories can be found in the standard. This reduces the risk for companies misunderstanding the standard and interpreting it in a different manner than the standard setters intended. Miihkinen (2012) extended his framework by adopting risk disclosure subtopics from Linsley & Shrives (2006). This thesis will focus only on the main risk topics listed in the Finnish standard. A more detailed overview of the five risk categories can be found in Appendix 1.

This study is conducted as a hypothesis-based quantitative research. The reason for this study to be quantitative and not qualitative is that it used numerical data and statistical analysis to reach a conclusion. This method is also established in the field of risk disclosure research, and the method is based on previous studies. In contrast to qualitative research, this study will also assess two hypotheses and conclude whether these hypotheses are true or not.

4.2 Quality of risk disclosure in empirical indicators

Previous literature has suggested different methods and measures in assessing the quality of firm risk disclosure. Many of these studies show a positive correlation between quantity and quality (Botosan, 2004; Abraham & Cox, 2007) and to simplify it is often seen as that more disclosure equals higher quality disclosure as well. Botosan (2004) states that the conceptual frameworks IASB and FASB provide good guidelines for judging information quality based on generally accepted views. In reality, it is difficult to find a single framework that would determine whether disclosures are of high quality or not.

It is important to recognize the fact that there are some conceptual difficulties in measuring disclosure quality because of its subjective nature. Risk disclosure is formed by text, numbers and figures that are used by mostly educated end-users. What is high quality to one person might not be that to another. To simplify, high quality information is usually defined as efficient information that helps investors in making informed decisions. In addition, risk disclosures often include some elements that are difficult to measure in a quantitative manner, such as pictures and risk charts.
To assess disclosure quality in the best possible manner reaching results that are complete, reliable and valid, one can utilize existing quality indicators from previous literature. Beattie et al. (2004) and Beretta & Bozzolan (2004) provide indicators relating to the quantity and coverage of the disclosed risk information. These indicators have been widely used in the risk disclosure field by e.g. Miihkinen (2012). Based on these well-tried methods we select our proxies for risk disclosure quality: quantity and coverage.

4.2.1 Quantity of risk disclosure

The first proxy for firm risk disclosure is calculated by the number of risk disclosure words provided by the firm. This data was gathered by hand from companies’ annual reports that were retrieved online from the respective companies’ homepages. The annual reports used in this study were all in Finnish since that is the original reporting language for these companies. Because this disclosure data is collected and analyzed as a first-hand experience it is classified as primary data.

After downloading annual reports for each company for the years 2007 and 2009, the risk section in the OFR and the note with financial risks in the financial statements was copied word by word into an electronic word count program. The total amount of words provided in the OFR risk section together with the note on financial risks from the financial statements together constitute the total number of risk disclosure words.

The empirical indicator for risk disclosure quantity is:

⇒ QUANTITY = ln (total number of risk disclosure words)

Using the logarithm instead of just the raw number of words makes the distribution more symmetric (Martikainen et al., 2015). If a firm provides 500 words of risk information we can calculate the disclosure score as follows:

Disclosure score = Quantity = ln (500) = 6.21.

4.2.2 Coverage of risk disclosure

Beattie et al. (2004) showed that investors need a broad and balanced overview of the major risks facing a firm to be able to evaluate a firm’s value. This factor was also emphasized in the standard by the Finnish Accounting Practice Board. The data for
calculating risk disclosure coverage was also collected by hand from annual reports and therefore it is categorized as primary data as well.

After copying the OFR risk review section and the note in the financial statements describing financial risks into an electronic document the total amount of words was obtained, identical to the process with risk disclosure quantity. Then the retrieved risk information was read through and analyzed, while classifying the text into one of the five risk categories (operational risk, strategic risk, financial risk, damage risk and risk management) based on the risk categories provided in the Finnish risk disclosure standard. A detailed description of how the risk disclosures were classified can be found in Appendix 3. Finally, the amount of words in each risk category was calculated.

The Herfindahl index (H) measures concentration of corporate disclosures across risk topics in this study. Risk topics are taken straight from the Finnish standard by reading the statements and hand picking and classifying the risk disclosure words into one of the five categories. The empirical indicator for risk disclosure coverage is:

\[ \text{Coverage} = \frac{1}{H} \times \frac{1}{\text{the number of main risk topics}} \]

This measure describes how balanced the major firm risks descriptions are disclosed in the annual report and how evenly corporate risk disclosures are divided across risk topics. In order for investors to understand the overall risk profile of the firm it can be useful for investors to receive equal coverage of all the major risk information dimensions (Martikainen et al., 2015). In some cases an unbalanced risk profile may be more informative if emphasis is put on the firm’s most important risks.

To illustrate the process of reaching the score for Coverage an example will be presented below. We calculate that the risk information provided by Kone Oyj in 2009 could be divided across risk topics as follows:

- Strategic risk: 111 words
- Operational risk: 102 words
- Financial risk: 708 words
- Damage risk: 33 words
- Risk management: 93 words
(Total 1047 words)

Herfindahl index = \( H = \frac{(111/1047)^2 + (102/1047)^2 + (708/1047)^2 + (33/1047)^2 + (93/1047)^2}{0.487} \)

Disclosure score = Coverage = \( \frac{1}{0.487} / 5 = 0.411 \)
The Herfindahl index $H$ is a measure of concentration across risk topics and calculated as $H = \sum_{i} = 1 P_i^2$, where $p_i$ is defined as the proportion of risk disclosure words on the topic $i$. By taking the inverse of $H$ a greater Herfindahl index is achieved and that reflects disclosure coverage more extensively. A scaling of the value is made by dividing it with 5, which is the number of main risk topics.

Firms naturally have different levels of exposure to risk. Despite this fact, they all get the same opportunity to provide balanced risk disclosure in their annual reports and thereby get a high value for Coverage. After the introduction of the Finnish standard in 2006 a balance of higher and lower exposures to risks in the OFR was pronounced. It can be easy to put the focus on financial risks (that can be more extensively reported in the notes to the financial statements) when it is equally valuable to report on minor risks in the OFR. In other word, this section of the annual report is not meant for over-reporting on the firms’ major and most significant risks (Martikainen et al., 2015).

### 4.3 Regression models and independent variables

In this study, regression analysis constitutes the main tests and these will be made separately for the quality indicators Quantity and Coverage. More specifically a classical linear regression model will be used. Regressions want to evaluate relationships between a given variable and one or several other variables (Brooks, 2008). This means that regressions attempt to explain movements in one variable by referring to other variables’ movements.

The reason for using a classical linear regression model is that the regressions are performed separately for the independent variables Quantity and Coverage. Therefore there is only one independent variable per regression. An indicator variable for year 2009 is the main test variable in this study. This is an empirical measure for the financial crisis. This year is selected because it is the year in which Finland had its’ lowest GDP which means that the crisis was very much prominent in the country. The unstable financial situation was also mentioned in the risk sections of most sample firm annual reports. Year 2007 is selected because it was after the introduction of the new risk disclosure standard in Finland and before the financial crisis started in Finland in 2008.
Regression models will be used to control for the impact of relevant reporting incentives (such as risk sensitivity and profitability), corporate governance structures (such as ownership distribution) and industry.

Estimation of the following linear regressions for the two different disclosure quality indicators Quantity and Coverage represent the main tests in this study:

\[
\text{Quality indicator}_{it} = b_0 + b_1 \text{Financial crisis}_{it} + b_2 \text{Size}_{it} + b_3 \text{Leverage}_{it} + b_4 \frac{P}{B}_{it} + b_5 \text{ROA}_{it} + b_6 \text{Beta}_{it} + b_7 F_{\text{listing}}_{it} + b_8 \text{InsOwn}_{it} + e_{it}
\]

The financial crisis is here a dummy variable that is coded as 0 for year 2007 and 1 for year 2009. \(e\) represents the regression residual and the subscript \(i\) refers to the firm and \(t\) refers to the year.

This study's independent variables are represented by the different reporting incentives that have been found to have an effect on firm risk disclosures. The variables have been selected from Miihkinen’s (2012) study with focus on the variables with most support in the extant literature. These variables are firm size, ROA, foreign listing, leverage, Beta, percentage of shares owned by form insiders and the Price-to-Book ratio. The independent variables will be discussed further in the next section.

### 4.3.1 Reporting incentives

Previous research has detected certain reporting incentives that have shown to have an effect on reporting quality. Seven of these incentives are included in this study, selected based on accessibility and relevance. Miihkinen (2012) used these seven incentives in his study when evaluating the quality of firm risk disclosures in combination with a couple of other incentives that are excluded in this study. Each of the variables has also been used in other similar research which allows for a point of reference when drawing conclusions on how our independent variables will correlate with the dependent variables disclosure quantity and coverage in this study.

Firm size is the first reporting incentive used in the regression model. It is calculated as the natural logarithm of net sales with the data retrieved from Orbis database. Meek et al. (1995) found that firm size has a positive effect on the extent of voluntary disclosure. The study by Eng & Mak (2003) confirmed these results by finding that larger companies disclose more financial, non-financial and strategic information. The size of a company is a proxy of two features: political sensitivity and economies of scale. A
larger corporation is more politically sensitive because of its potentially monopolistic ability in the market (Abraham & Cox, 2007). That is why larger corporations are likely to disclose higher levels of risk-related information explaining their level of return, which then improves investor’s confidence in the company and reduces political sensitivity.

The ROA (return on assets) ratio is calculated as net income divided by total assets. This information is retrieved from the Orbis database. ROA is a profitability measure and has been explored in a disclosure context e.g. by Li et al. (2008). The study found that there is a positive relationship between profitability and levels of disclosure. There are several studies in this field with contradictory results with e.g. Meek et al. (1995) that did not find any evidence of that the profitability of a firm would have any effect on voluntary disclosures. Because of these mixed results from previous studies there is no expected outcome concerning this test variable.

Foreign listing (F_listing) is used as an indicator variable=1, if the firm is listed on the New York Stock Exchange, otherwise it is regarded as 0. Information on foreign listing was found on the sample companies’ websites and in their annual statements. Cooke (1989) found that the most crucial factor regarding the scope of voluntary disclosure was whether the firm was listed or not. The effect was even more prominent when the firm was listed abroad. Saudagar & Biddle (1992) support this thought by claiming that foreign listing leads to more disclosure by firms because of different disclosure requirements in different countries. Since the requirements are the strictest for firms listed in the U.S. stock exchanges, it can be concluded that firms listed on NYSE will provide more risk disclosures in their annual reports.

Financial leverage (Leverage) of the firms was calculated as: 1-(common equity/total assets). This information was retrieved from Orbis as well. Higher leverage is shown to reduce the amounts of disclosure because leverage helps with controlling the free cash flow problem (Jensen, 1986). Another reason is that the agency costs arising from debt are controlled through debt covenants in restrictive debt agreements rather than in the form if increased disclosure of information in annual reports. Other empirical evidence in the field has not been able to document a positive relation between risk disclosures and leverage (Meek et al., 1995; Depoers, 2000).

The price to book ratio is often viewed as an indicator for growth. Previous research shows that information asymmetry and agency problems have an effect on external
financing and therefore the firm’s ability to finance their growth opportunities. The disclosure literature in its turn states that credible and holistic disclosures improves the firm’s ability to take on potentially profitable projects by lowering the cost of external financing (Khurana et al., 2006). As a conclusion, disclosure can be of help in making firms grow by easing eternal financing constraints and allowing capital to flow to projects with positive net present value. Hyytinen and Pajarinen (2002) showed that excess growth is associated with disclosures of high quality. They interpreted their results as that firms with positive information about their growth opportunities and with limited internal resources hedge themselves against the risk of not being able to raise external financing through qualitative disclosure.

Beta measures the volatility or systematic risk for securities and portfolios in relation to the market as a whole. If beta is 1, it means that e.g. the stocks volatility is exactly the same as the volatility of the market. If beta is over 1 it is more volatile than the market and a value of less than 1 means that the security is less volatile than the market as a whole. Firth (1984) examined the relationship between disclosure levels and systematic risk and found no significant relationship between these two. He analyzed his results as that some investors may benefit from greater amounts of disclosure but that disclosure is not of great use when it comes to assessing current and future levels of systematic risk. Prodhan & Harris (1989) examined how new requirements on disclosures on geographical segments affected the systematic market risk. They found that betas were lower after the introduction of the new requirements, compared to the betas before the new requirements.

Percentage of shares owned by firm insiders (Clshs) was the last variable used in the regression analysis. All sample firms reported this variable in their respective annual reports. Eng & Mak (2003) stated that voluntary disclosure is expected to increase when there is a higher proportion of outside ownership. This statement was confirmed earlier in a study by Ruland et al. (1990) who found that as inside ownership increases, firms become less likely to disclose management forecast of earnings. These results can be applied to this study as a conclusion that a high percentage of shares owned by firm insiders are associated with lower levels of risk disclosure.
4.4 T-test, Pearson correlation, Spearman rank and Wilcoxon test

When presenting the statistical results of this study, several statistical tests are used to describe the relationships and differences between scores. The tests are used in Table 3 and Table 5 in chapter 5 and 6. These tests are described in detail in this subchapter.

T-tests are used as a statistical examination of the means in two populations. It shows whether there is a significant difference between two groups. A presumption for a t-test is that the spread within the groups is the same. 1%, 5% and 10% significance levels will be used. T-tests are used in this study’s table for descriptive statistics for the means for both year 2007 and 2009.

Correlation in a set of data describes how well the data is related. The Pearson correlation (Pearson Product Moment Correlation, PPMC) is the most common measure of correlation and shows a linear relationship between two data sets. In other words it shows whether a line can be drawn in a graph to represent the data (Brooks, 2008). The Pearson correlation is not able to tell a difference between dependent and independent variables and it does not give information on the strength of the relationship between variables, it can only tell if there is a relationship. This correlation can be observed in Table 5 on page 57.

The Wilcoxon test (Wilcoxon Signed Rank Test) is designed for when subjects are measured on two occasions or under two different conditions. Compared to a t-test, Wilcoxon is the non-parametric alternative that converts scores to ranks and compares them at Time 1 and Time 2 while t-tests compare the means. This test will be performed for the medians in section “Descriptive statistics” in this paper.

4.5 Multicollinearity

Multicollinearity is tested in order to ensure that the results from the separate variables will give reliable results in the regression analysis presented in chapter 6. The assumption when using an OLS estimation method is that there is no relationship between the explanatory variables (Brooks, 2008). If this would be the case, the values of the other variables would remain the same even when adding or removing a variable from the regression model.

If multicollinearity between the variables would be an issue in this study it would mean that there would be high standard errors and low significance among the variables. This
is why multicollinearity is tested for in a correlation matrix. The correlation matrix can be found as Table 5 on page 57. From the matrix an analysis will be drawn assessing the functionality of the model and whether the correlation coefficients are too high. Also if correlations are low and significant it means that multicollinearity cannot be completely ruled out from the study. Low correlations mean that they might not necessary be an immediate problem for the study but that it shall be regarded as a potential deficiency in the study.

4.6 Summary

In this chapter we define the research design of this study. This provides a walkthrough of the methodology in the study and provides a foundation and reference point for the next chapters where the results from the main tests are presented. The research question to be answered in this study is whether the financial crisis had an impact on risk disclosure quality. This is examined by comparing year 2007 (before the crisis) to year 2009 (in the middle of the crisis).

Risk disclosure quality is examined with measures developed by Beretta & Bozzolan (2004) and Beattie et al. (2004). This method includes measuring quality with two different proxies: quantity and coverage. Quantity is calculated as a logarithm of the total amount of risk disclosure words. Coverage is calculated as words per risk topic together with the so called Herfindahl index.

To analyze the risk disclosure quality as a whole linear regressions are performed. The regressions are conducted separately for Quantity and Coverage, and the full model regression includes a quality indicator, a financial crisis dummy and all the reporting incentives that have been discussed in this chapter. These will be presented in regression tables in chapter 6.

The hypotheses in chapter 3 are based on previous research. The first hypothesis is connected to the research question and states that the quality of firm risk disclosure did improve after the financial crisis. The second hypothesis concerns the reporting incentives mentioned in section 4.1.1. Previous research has shown that certain factors have had an effect on disclosure quality, and some of these are included in this study. These incentives are all included in the full regression model.
5  SAMPLE, DATA AND DESCRIPTIVE STATISTICS

In this chapter the sample of the study is discussed further, together with the properties and limitations of the sample. The data collection process will be described in more detail to explain where the data is retrieved from, since this study uses mostly primary data. As a foundation for regression and correlation analysis, the reporting incentives will be presented as a table with descriptive statistics. This table gives a holistic view of whether there has been any improvements in the sample firm’s disclosure quality indicators (Quantity and Coverage) when comparing years 2007 and 2009.

5.1  Sample

This study’s target population consists of large Finnish firms listed in the OMXH 25 index. The Dow Jones Large-Cap 50 Index and the FTSE 100 index in the London Stock Exchange could be compared to the Finnish OMXH 25 index. The companies in the OMXH 25 index are subject to the highest public pressure because of their active role in the stock market, especially when it comes to reducing information asymmetry between corporate insiders and outsiders (Martikainen et al., 2015). In addition, the companies listed in this index can be considered to be the most international ones of Finnish listed firms, with several firms having largely international operations and some of them also being listed abroad on foreign stock exchanges.

The companies in the OMXH index are retrieved from Nasdaq (on 24.11.2015). These are the firms that are the most traded and followed in Finland and could be called the ‘crème de la crème’ of Finnish firms (Martikainen et al., 2015). All of them follow IFRS but in accordance with the Finnish Accounting Act they also have to publish operating and financial reviews in compliance with Finnish standards (Miihkinen, 2012).

Of the selected 25 companies 24 were included in the final sample. The company from OMXH 25 left out from the sample was Valmet, which was founded through a demerger in 2013. A table showing all the observable OMXH 25 companies and how the quality indicators have changes from year 2007 to 2009 can be found in Table 1 on the next page.

---

4 According to the Finnish Accounting Act all listed firms shall include an operating and financial review section (OFR) in their financial statements. OFRs are conceptually similar to the management discussion and analysis section (MD&A) in the United States (regulated by SEC), and IASB’s management commentary (MC) section. The difference lies in who gives the commentaries: OFRs are given by the board of directors while MD&A’s and MCs are given by the management.
Table 1: Difference in the quality indicators for each observable company from year 2007 to year 2009.

<table>
<thead>
<tr>
<th>Company</th>
<th>Δ Quantity</th>
<th>Δ Coverage</th>
<th>% Δ Quantity</th>
<th>% Δ Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amer Sports Oyj</td>
<td>+0.161</td>
<td>+0.041</td>
<td>2,226 %</td>
<td>9,798 %</td>
</tr>
<tr>
<td>Cargotec</td>
<td>+0.332</td>
<td>-0.006</td>
<td>4,398 %</td>
<td>1,230 %</td>
</tr>
<tr>
<td>Elisa Oyj</td>
<td>+0.089</td>
<td>-0.002</td>
<td>1,332 %</td>
<td>0,527 %</td>
</tr>
<tr>
<td>Fortum Oyj</td>
<td>+0.182</td>
<td>-0.007</td>
<td>2,221 %</td>
<td>1,360 %</td>
</tr>
<tr>
<td>Huhtamäki Oyj</td>
<td>-0.268</td>
<td>-0.164</td>
<td>3,876 %</td>
<td>30,738 %</td>
</tr>
<tr>
<td>Kemira Oyj</td>
<td>+0.04</td>
<td>-0.196</td>
<td>0,533 %</td>
<td>42,446 %</td>
</tr>
<tr>
<td>Kesko Oyj B</td>
<td>+0.271</td>
<td>+0.038</td>
<td>3,459 %</td>
<td>6,760 %</td>
</tr>
<tr>
<td>Kone Oyj</td>
<td>+0.140</td>
<td>+0.040</td>
<td>2,058 %</td>
<td>10,654 %</td>
</tr>
<tr>
<td>Konecranes Oyj</td>
<td>+0.621</td>
<td>+0.271</td>
<td>8,293 %</td>
<td>56,759 %</td>
</tr>
<tr>
<td>Metso Oyj</td>
<td>+0.371</td>
<td>+0.102</td>
<td>4,629 %</td>
<td>15,332 %</td>
</tr>
<tr>
<td>Neste Oil</td>
<td>+0.112</td>
<td>-0.013</td>
<td>1,409 %</td>
<td>3,744 %</td>
</tr>
<tr>
<td>Nokia Oyj</td>
<td>+0.133</td>
<td>-0.012</td>
<td>1,677 %</td>
<td>2,086 %</td>
</tr>
<tr>
<td>Nokian Renkaat Oyj</td>
<td>+0.160</td>
<td>+0.007</td>
<td>2,280 %</td>
<td>2,337 %</td>
</tr>
<tr>
<td>Nordea Bank AB FDR</td>
<td>+0.015</td>
<td>-0.024</td>
<td>0,183 %</td>
<td>6,109 %</td>
</tr>
<tr>
<td>Orion B/Corporation</td>
<td>+0.569</td>
<td>-0.003</td>
<td>7,935 %</td>
<td>0,444 %</td>
</tr>
<tr>
<td>Outokumpu Oyj</td>
<td>+0.008</td>
<td>-0.088</td>
<td>0,099 %</td>
<td>16,688 %</td>
</tr>
<tr>
<td>Outotec</td>
<td>+0.235</td>
<td>+0.012</td>
<td>3,147 %</td>
<td>1,941 %</td>
</tr>
<tr>
<td>Sampo A</td>
<td>+0.307</td>
<td>+0.031</td>
<td>3,531 %</td>
<td>4,434 %</td>
</tr>
<tr>
<td>Stora Enso R</td>
<td>+0.060</td>
<td>-0.029</td>
<td>0,735 %</td>
<td>4,415 %</td>
</tr>
<tr>
<td>TeliaSonera</td>
<td>+0.069</td>
<td>+0.078</td>
<td>0,842 %</td>
<td>13,160 %</td>
</tr>
<tr>
<td>Tieto Oyj</td>
<td>-0.014</td>
<td>-0.167</td>
<td>0,196 %</td>
<td>21,612 %</td>
</tr>
<tr>
<td>UPM-Kymmene Oyj</td>
<td>+0.216</td>
<td>-0.008</td>
<td>2,806 %</td>
<td>1,634 %</td>
</tr>
<tr>
<td>Wärtsilä Oyj Abp</td>
<td>+0.609</td>
<td>+0.053</td>
<td>8,305 %</td>
<td>8,143 %</td>
</tr>
<tr>
<td>YIT Oyj</td>
<td>+0.453</td>
<td>-0.099</td>
<td>6,101 %</td>
<td>14,797 %</td>
</tr>
</tbody>
</table>

This table illustrates the increase (+)/decrease (-) in risk disclosure quantity and coverage from year 2007 to 2009. The columns Δ Quantity and Δ Coverage indicate whether the amount of risk disclosure words and risk topic coverage has increased or decreased. % Δ Quantity and % Δ Coverage illustrates the proportionate change of the indicators in %.

Table 1 illustrates that risk disclosure quantity has increased for 22 firms of 24. The two firms that decreased their risk reporting are Huhtamäki Oyj (-3.876%), a producer for packaging of food and drinks, and Tieto Oyj (-0.196%), an IT software and service company. The companies with the most remarkable proportionate increase in risk disclosure quantity are Konecranes Oyj (+8.293%), a lifting equipment manufacturer and service provider, Orion Corporation (+7.935%), a pharmaceutical company, and Wärtsilä Oyj (+8.305%), a power source manufacturer and service provider. On a
proportionate scale the changes in risk reporting quantity lie between -3,876% and +8,293%.

For risk reporting coverage, the results are more divided. Ten companies show an increase in coverage while 14 show a decrease. This measure shows how balanced the amount of disclosure is over the five different risk topics. A decrease in coverage can therefore be interpreted as a focus shift in risk reporting: the amount of total disclosure does not have to decrease but the firm starts disclosing extensively on one or several topics that make the distribution of risk information uneven. On a proportionate level one can observe notable changes in coverage. Three firms are particularly prominent: Huhtamäki Oyj (-30,738%), Kemira Oyj (-42,446%), a chemical industry group, and Konecranes Oyj (+56,759%). Huhtamäki Oyj showed the largest decrease in quantity and also the second largest decrease in coverage. Konecranes Oyj on the other hand showed both the largest increase in quantity and coverage.

5.2 Data

This study will mainly be using primary data from annual reports from year 2007 and 2009. The data can be classified as panel data. Quantity and Coverage data is gathered and calculated manually which means that it is primary data. Leverage and firm size is also calculated by hand using information from annual reports. Leverage is calculated as total debt divided by total equity and firm size calculated as the logarithm of sales. Beta is calculated by hand using data from Yahoo Finance in the form of adjusted closes and market indexes.

Years 2007 and 2009 are the years under scrutiny in this study. 2007 is selected because it represents the time before the crisis. In addition, it is after the new risk disclosure standard was introduced which means that there is no such factor creating a difference in disclosure requirements between the two research years. Year 2009 is chosen because it is the year when the Finnish GDP reached its lowest point and when multiple companies in our sample mentioned the financial crisis as a prominent risk in their annual reports.

The data on risk disclosure will be hand collected from these annual reports. Data for other variables will be retrieved from the Thomson Reuters Datastream database and the Orbis database. The data from these databases are then either used as it is or used in calculations to get the wanted ratio or other outcome. Matching pairs of disclosure of
the 25 sample firms before and after the financial crisis, and before and after the financial crises, improves the sample design. It makes it possible to control the results so that they will not be driven by for example the effects of the economic environment or other potentially omitted factors not attributable to the financial reporting system (Miihkinen, 2012).

The data on risk disclosure are collected from two sources in annual reports from 2007 and 2009. The sources are the operating and financial review sections (OFR) and the note to the financial statements that is describing financial risks. In most examined annual reports, companies reported very little on financial risk in the OFR section of the annual report and referred to the financial risk note in the financial statements instead. Because of this distribution of risk categories in Finnish annual statements, it was decided that the risk note in the financial statement would be included as well to provide an equal representation of risk categories.

5.3 Descriptive statistics

In this section of the paper the variables of the study will be looked into and analyzed in more detail. As discussed earlier in the paper, there are several reporting incentives that might affect the quality of firm risk disclosure. These incentives together with the quality dimensions for risk disclosures can be seen in the table below.
Table 2: Variable definitions (Miihkinen, 2012)

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Coverage</th>
<th>Fin_crisis</th>
<th>Size</th>
<th>P/B</th>
<th>ROA</th>
<th>F-listing</th>
<th>Leverage</th>
<th>Beta</th>
<th>InsOwn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ln (total number of risk disclosure words)</td>
<td>Inverse of the Herfindahl index value divided by the number of risk topics.</td>
<td>An indicator variable for the financial crisis. Indicator variable=0 for year 2007 before the crisis and indicator variable=1 in 2009 during the financial crisis.</td>
<td>The natural logarithm of net sales in million euros. Net sales data is retrieved from the Orbis database.</td>
<td>Price-to-book ratio. The ratio represents year-end market capitalization to total common equity and was retrieved from Thomson Reuters Datastream.</td>
<td>Return on asset ratio. It is calculated as net income divided by total assets. Data retrieved from Orbis.</td>
<td>Indicator variable=1, if the firm is listed on the New York Stock Exchange, otherwise=0</td>
<td>The financial leverage of the firm computed as 1-(common equity/total assets). Data was retrieved from firm’s annual reports.</td>
<td>The beta of the company. It is computed from the weekly adjusted close and market index returns for fiscal years 2007 and 2009 respectively. MSCI Europe is used as a market index, we assume that European financial markets are fully integrated. The data was retrieved from Yahoo Finance.</td>
<td>The percentage of shares owned by firm insiders. Data retrieved from firm’s annual reports.</td>
</tr>
</tbody>
</table>

Table 3 below reports the descriptive statistics of the variables for fiscal years 2007 and 2009. This includes the mean, median, standard deviation plus minimum and maximum values. Paired samples tests are used with t-tests and Wilcoxon tests to determine whether the change in values between the two sample years is significant for each variable (excluding the financial crisis dummy). The variables presented are the quality indicators together with the reporting incentives.
Quantity and Coverage have mean and median statistics fairly close to each other in both of the observed years. This suggests that the variables are distributed symmetrically. The increase in Quantity is shown to be significant for both the mean and the median. Coverage did not show any significant results.

The standard deviation is higher for both Quantity and Coverage in year 2009. Simultaneously, the minimum values are lower for both quality indicators in 2009. The maximum value for Quantity is remarkably higher in 2009, while being slightly lower for Coverage compared to its maximum value in 2007. These observations indicate that there are greater variations within the sample in 2009 compared to year 2007. In regards of Quantity, one of the companies in the sample started reporting less in year 2009 while one increased the amount of risk disclosures to a higher level than the maximum risk reporting in 2007. The maximum and minimum scores for Coverage are both lower in year 2009 which means that the spread of disclosure over risk topics was more evenly distributed in year 2007.

In line with the first hypothesis, the results in Table 3 demonstrates that there has been a significant increase in risk disclosure Quantity in 2009 compared to 2007. This would mean that there has been an improvement in risk disclosure quality after the financial crisis, when not taking into account the possible impact of the reporting incentives that will be included in the regressions later on. In contract to the hypothesis, Coverage has not been affected significantly after the financial crisis. In fact, Coverage has deteriorated in year 2009 compared to year 2007.
Table 3: Descriptive statistics

Descriptive statistics of the variables (n=24)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Std. Deviation</th>
<th>Min</th>
<th>Max</th>
<th>t-test (sig.)</th>
<th>2007</th>
<th>2009</th>
<th>Wilcoxon (sig.)</th>
<th>2007</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disclosure quality indicators:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity</td>
<td>7.607</td>
<td>7.810</td>
<td>0.000</td>
<td>7.536</td>
<td>7.907</td>
<td>0.000</td>
<td></td>
<td></td>
<td>**</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Coverage</td>
<td>0.537</td>
<td>0.531</td>
<td>0.000</td>
<td>0.537</td>
<td>0.538</td>
<td>0.000</td>
<td></td>
<td></td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Reporting incentives:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>22.272</td>
<td>22.072</td>
<td>0.055</td>
<td>22.221</td>
<td>22.130</td>
<td>0.018</td>
<td></td>
<td></td>
<td>**</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Leverage</td>
<td>0.593</td>
<td>0.590</td>
<td>0.000</td>
<td>0.623</td>
<td>0.570</td>
<td>0.000</td>
<td></td>
<td></td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>P/B</td>
<td>2.933</td>
<td>1.344</td>
<td>0.000</td>
<td>2.560</td>
<td>1.040</td>
<td>0.000</td>
<td></td>
<td></td>
<td>**</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>ROA</td>
<td>7.224</td>
<td>5.129</td>
<td>0.000</td>
<td>7.120</td>
<td>4.315</td>
<td>0.000</td>
<td></td>
<td></td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Beta</td>
<td>0.430</td>
<td>0.849</td>
<td>0.001</td>
<td>0.450</td>
<td>0.935</td>
<td>0.002</td>
<td></td>
<td></td>
<td>**</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>F_listing</td>
<td>0.250</td>
<td>0.250</td>
<td>0.000</td>
<td>0.442</td>
<td>0.442</td>
<td>0.000</td>
<td></td>
<td></td>
<td>0.000</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Insider own</td>
<td>2.253%</td>
<td>2.913%</td>
<td>0.191</td>
<td>0.000%</td>
<td>0.155%</td>
<td>0.000</td>
<td></td>
<td></td>
<td>0.000</td>
<td>0.000</td>
<td>23.07%</td>
</tr>
</tbody>
</table>

See Table 2 for variable definitions. This table provides a summary of the mean, median, standard deviation, and minimum and maximum values for all the variables. In addition, the p-values for the t-test and Wilcoxon test for paired samples are reported in the table. P-values significant at 1% or better are marked with ***, those at 5% or better are marked with ** and p-values significant at 10% are marked with *. Significances are calculated with a two-tailed test. The number of observations is 24 for both years. The disclosure data is hand collected from the 2007 and 2009 annual reports of the firms. The other variables are measured at fiscal year end.
Concerning reporting incentives, significant changes have taken place for Size, P/B, Beta and Insider ownership (only median). The change in P/B from year 2007 to 2009 was significant on a 1% level both in the tests for mean and median. For Beta, the change for the mean was significant on a 1% level while being significant on a 5% level for the median. Size was significant on a 10% level concerning the mean and on a 5% level for the median. Interestingly, the change in median for Insider ownership was significant on a 1% level while the mean did not show any significant results.

The descriptive statistics show that the changes in Leverage and ROA are non-significant. For F_listing it is not possible to do a paired t-test or a Wilcoxon’s test since the values are the same for both years 2007 and 2009. The mean for insider ownership is not significant either.

Table 4: Descriptive statistics for firm-level regression variables (n=48)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>25th percentile</th>
<th>Median</th>
<th>75th percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity</td>
<td>7.709</td>
<td>0.546</td>
<td>7.241</td>
<td>7.761</td>
<td>8.107</td>
</tr>
<tr>
<td>Coverage</td>
<td>0.534</td>
<td>0.147</td>
<td>0.413</td>
<td>0.538</td>
<td>0.661</td>
</tr>
<tr>
<td>Fin_crisis</td>
<td>0.500</td>
<td>0.505</td>
<td>0.000</td>
<td>0.500</td>
<td>1.000</td>
</tr>
<tr>
<td>Size</td>
<td>22.172</td>
<td>1.002</td>
<td>21.286</td>
<td>22.213</td>
<td>22.900</td>
</tr>
<tr>
<td>Leverage</td>
<td>0.592</td>
<td>0.131</td>
<td>0.515</td>
<td>0.609</td>
<td>0.678</td>
</tr>
<tr>
<td>P/B</td>
<td>2.139</td>
<td>1.409</td>
<td>1.025</td>
<td>1.740</td>
<td>2.972</td>
</tr>
<tr>
<td>ROA</td>
<td>6.177</td>
<td>6.464</td>
<td>2.503</td>
<td>5.028</td>
<td>9.098</td>
</tr>
<tr>
<td>Beta</td>
<td>0.640</td>
<td>0.475</td>
<td>0.291</td>
<td>0.705</td>
<td>1.028</td>
</tr>
<tr>
<td>F_listing</td>
<td>0.250</td>
<td>0.438</td>
<td>0.000</td>
<td>0.000</td>
<td>0.750</td>
</tr>
<tr>
<td>Insider own</td>
<td>2.580%</td>
<td>6.229%</td>
<td>0.040%</td>
<td>0.110%</td>
<td>1.250%</td>
</tr>
</tbody>
</table>

Table 4 combines years 2007 and 2009, hence n=48. In this table we can observe the mean, median and standard deviation for the whole sample. The dummy variable for the financial crisis is also included. The scores for the 25th and 75th percentile have also

---

5 Reporting incentives have been subject to certain changes after the occurrence of the financial crisis. The sample firm are smaller in terms of sales, their growth expectations are lower, and they are subject to higher market risk and have a higher level of insider ownership in year 2009.
been included in the table to illustrate how the sample is distributed. The 25th percentile means that 25% of the sample are at or below the score in the table. The 75th percentile then again shows a score for which 25% of the sample are higher.
6 EMPIRICAL RESULTS

This chapter provides analysis of the main tests of the study and results from the main regressions and correlation tables. In the first subchapter a correlation matrix of the quality indicators, the financial crisis dummy and the control variables (referred to as reporting incentives in this study) is presented. In the second subchapter the financial crisis’ effect on risk disclosure quality is evaluated through separate regressions for Quantity and Coverage that are summarized in tables together with diagnostic statistics.

6.1 Correlation analysis

Table 5 in this section provides the correlation coefficients between the disclosure quality indicators Quantity and Coverage, the financial crisis dummy and the independent variables. The matrix combines the variables for years 2007 and 2009, hence n=48. For variable definitions, see Table 2.

A correlation analysis is done in order to measure the degree of linear association between two variables (Brooks, 2008). If two variables are correlated it means that movements in the two variables on average are related to the extent determined by the correlation coefficient. The correlation conducted in this study is called Pearson’s correlation defined as the covariance of the variables in the sample divided by the product of the sample’s standard deviations.

As seen in the table below, Quantity correlates positively and significantly with Coverage and Size. These results would suggest that larger firms disclose more information which is in line with previous studies (Eng & Mak, 2003; Miihkinen, 2012). A significant negative correlation can also be observed between Quantity, InsOwn and Price_book. These results indicate that higher insider ownership and higher P/B ratios can be associated with lower quantity of risk disclosures. The results on insider ownership are consistent with Eng & Mak (2003). Results on P/B is though not in line with previous research which can be interpreted as that companies behave differently during the crisis. Normally excess growth, which is a high P/B ratio, goes hand in hand with high levels of disclosure (Hyytinen & Pajarinen, 2002) but our results indicate that companies have an opposite behavior during the crisis.
Coverage only has a significant correlation with Quantity. The correlations between Coverage and the other variables lie between -0.097 and 0.151. All of these are relatively low and close to zero. This means that movements in Coverage are not followed by automatic change in some other variables and that Coverage therefore is not correlated with any other variables than Quantity.

The dummy variable Fin_crisis was also included in the correlation matrix. The results show significant negative correlation with the variable Price_book. This correlation is the strongest in the whole correlation matrix and can be interpreted as that the P/B will decrease during the financial crisis year. This was indeed the case during the financial crisis. We noted that this correlation is very strong, which might indicate that there is a multicollinearity problem. After careful evaluation it was concluded, that since the correlation is less than 0.7 it can still be applied in this study (Cooke, 1989).

Fin_crisis also shows a positive significant correlation with Beta. Beta measures the volatility or systematic risk and constitutes a quite unknown field of research in connection with risk disclosure. The interpretation of this correlation would be that companies had higher Beta’s during the financial crisis year, which also is consistent with reality.

Table 5: Correlation matrix (n=48)

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Coverage</th>
<th>Fin_crisis</th>
<th>Size</th>
<th>ROA</th>
<th>F_listing</th>
<th>Leverage</th>
<th>InsOwn</th>
<th>Price_book</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity</td>
<td>1,000</td>
<td>.360*</td>
<td>.199</td>
<td>.366</td>
<td>-.162</td>
<td>.194</td>
<td>.175</td>
<td>-.332*</td>
<td>-.350*</td>
</tr>
<tr>
<td>Coverage</td>
<td>.360*</td>
<td>1,000</td>
<td>-.024</td>
<td>-.064</td>
<td>.075</td>
<td>-.097</td>
<td>.151</td>
<td>.002</td>
<td>.146</td>
</tr>
<tr>
<td>Fin_crisis</td>
<td>.199</td>
<td>-.024</td>
<td>1,000</td>
<td>-.096</td>
<td>-.128</td>
<td>0,000</td>
<td>-.066</td>
<td>.125</td>
<td>-.659*</td>
</tr>
<tr>
<td>Size</td>
<td>.366*</td>
<td>-.064</td>
<td>-.096</td>
<td>1,000</td>
<td>.022</td>
<td>.247</td>
<td>-.105</td>
<td>-.366*</td>
<td>-.007</td>
</tr>
<tr>
<td>ROA</td>
<td>-.162</td>
<td>.075</td>
<td>-.128</td>
<td>.022</td>
<td>1,000</td>
<td>-.200</td>
<td>-.240</td>
<td>.114</td>
<td>.452*</td>
</tr>
<tr>
<td>F_listing</td>
<td>.194</td>
<td>-.097</td>
<td>0,000</td>
<td>.247</td>
<td>-.200</td>
<td>1,000</td>
<td>.076</td>
<td>-.209</td>
<td>.052</td>
</tr>
<tr>
<td>Leverage</td>
<td>.175</td>
<td>.151</td>
<td>-.066</td>
<td>-.105</td>
<td>-.240</td>
<td>.076</td>
<td>1,000</td>
<td>.101</td>
<td>.020</td>
</tr>
<tr>
<td>InsOwn</td>
<td>-.332*</td>
<td>.002</td>
<td>.125</td>
<td>-.366*</td>
<td>.114</td>
<td>-.209</td>
<td>.101</td>
<td>1,000</td>
<td>.041</td>
</tr>
<tr>
<td>Price_book</td>
<td>-.350*</td>
<td>.146</td>
<td>-.659*</td>
<td>-.007</td>
<td>.452*</td>
<td>.052</td>
<td>.020</td>
<td>.041</td>
<td>1,000</td>
</tr>
<tr>
<td>Beta</td>
<td>.217</td>
<td>.074</td>
<td>.439*</td>
<td>.087</td>
<td>-.040</td>
<td>.132</td>
<td>.186</td>
<td>-.027</td>
<td>1,000</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
Other significant correlations can be observed between the variables Size and InsOwn, ROA and Price_book and Beta and Price_book. The interpretation of these would be that an increase in size can be associated with a lower degree of insider ownership because of the negative correlation. A positive correlation between ROA and P/B illustrates that higher return on assets often can be connected with a higher price-to-book ratio. Finally, the negative correlation between Beta and P/B tells that a higher Beta often can be associated with a lower P/B.

There are two variables that do not have any significant correlations with any other variables. These are F_listing and Leverage. They do not have any correlation coefficients that are high enough to be statistically significant.

6.2 The financial crisis’ impact on risk disclosure quality

In this section the results for the main tests of the study, the regression analysis, are presented. Regressions are performed separately for the indicator variables Quantity and Coverage. A dummy variable for the financial crisis together with independent variables are also included in the regressions. To better illustrate the effect of separate variables the regressions were performed as a so called staircase, which means that more variables were added at every step.

Table 6 on page 61 shows the regression results for the quality indicator Quantity. Table 7 on page 63 shows the results for Coverage. To see how different variables affect the regression results different models have been included in the table. Variables that have been proven to have an impact on risk disclosure quality in previous studies are placed highest in the table; these are size, leverage and P/B.

Quantity and the financial crisis

We start with analyzing the quality indicator Quantity which regression results are presented in Table 6 below. In regards of F-values, the overall findings show that all regressions are statistically significant on a 5% level or better. Adjusted R-squares are at a range from 9.5% to 23.5%. Model d) in the regression table has the highest adjusted R-square and is therefore the most describing model in Table 6.

---

6 For comparison, it can be mentioned that in Mihkinen (2012) the adjusted R-squares ranged from 10.8% to 33.1%. Beretta & Bozzolan’s (2004) quality model had an adjusted R-square of 14.4% and Abraham & Cox’s (2007) overall risk disclosure model had an adjusted R-square of 42.0%.
Contrary to hypothesis H1, the financial crisis is shown not to have a significant impact on risk reporting quantity. This applies to all regression models shown in Table 6. Fin_crisis is closest to being significant in Model b) that included Size and Leverage as other independent variables but does not reach a level of significance even at a 10% level. When more independent variables are added to the regressions, the significance of Fin_crisis becomes very low.

These findings provide evidence of that the financial crisis has not had a significant effect on risk reporting when comparing years 2007 and 2009. In Table 1 on page 48 we could observe an increase in quantity of risk disclosure among 22 of 24 firms, but after conducting the regression analysis we find this increase to be insignificant. This increase cannot unambiguously be addressed to the financial crisis since it is unknown which changes in risk reporting would have occurred without the financial crisis taking place. The regression results also indicate that the increase in risk disclosures can be derived from other factors than the financial crisis.

Previous studies have not been able to document uniform results for the effect of the financial crisis on risk disclosure quality. The results of from the regressions with Quantity as a dependent variable are highly comparable to the study conducted in Canada by Maingot et al. (2012). Their results also showed a small increase in risk reporting quantity but their results were not significant. Similar findings were also documented by Probohudono et al. (2013) in their study of key South-East Asian countries. They found that risk disclosure quantity stayed relatively consistent during the financial crisis.

The question that remains unanswered is why the financial crisis did not then have a significant impact on risk disclosure for companies listed on the OMXH 25 index in Finland. Previous research has widely documented that financial instability and uncertainty highly goes hand in hand with companies increasing transparency and giving out more information to their shareholders. Risk reporting is a small part of an annual report after all. There is a strong possibility that companies have focused on delivering other qualitative information than risk disclosures.

The Finnish reporting environment was subject to a new standard that came into effect in 2006. Miihkinen (2012) found that this standard had had a significant improving effect on risk disclosures by Finnish companies. It might be that after the introduction of the standard the quality of risk disclosures was very high, and that an additional
improvement due to the financial crisis would have been almost impossible. The new standard gave clear guidelines on how to report risks and many companies took this standard to practice after its introduction. This means that companies had recently put a lot of thought and effort into their risk reporting and therefore it might not have been a first priority for companies to improve the risk reporting even further because of its already high quality.

A company’s reporting is never subject to only one external factor, such as the financial crisis. This study takes into account some reporting incentives which are factors coming from both inside the company and from the outside markets. The impact of these other factors seems to have been stronger than the financial crisis in this study. Risk disclosure quality is simply more affected by firm size, leverage and P/B since these are significant in Table 6. This confirms hypothesis H2, since risk disclosure quantity (and therefore quality) has been significantly affected by size, leverage and P/B.

Many companies communicate risk in different kinds of charts, figures and images. These illustrative risk descriptions do not include a lot of words but might be more informative for the reader and in that sense improve the quality (usefulness) for the shareholders. This kind of quality is very difficult to quantify and is therefore not taken into account by the quality indicators used in this study.
Regression analysis for different variable combinations with quality indicator Quantity (n=48)

Model a)  
Model b)  
Model c)  
Model d)  
Model e)  
Model f)  
Model g) (complete model)

<table>
<thead>
<tr>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>3.781</td>
<td><strong>0.031</strong></td>
<td>3.274</td>
<td><strong>0.055</strong></td>
<td>4.228</td>
<td><strong>0.014</strong></td>
<td>4.040</td>
<td><strong>0.018</strong></td>
<td>4.182</td>
<td><strong>0.017</strong></td>
<td>4.441</td>
</tr>
<tr>
<td>Fin_crisis</td>
<td>0.237</td>
<td>0.122</td>
<td>0.24</td>
<td>0.108</td>
<td>0.014</td>
<td>0.936</td>
<td>-0.018</td>
<td>0.918</td>
<td>-0.056</td>
<td>0.775</td>
<td>-0.068</td>
</tr>
<tr>
<td>Size</td>
<td>0.172</td>
<td><strong>0.029</strong></td>
<td>0.165</td>
<td><strong>0.030</strong></td>
<td>0.144</td>
<td><strong>0.050</strong></td>
<td>0.145</td>
<td><strong>0.047</strong></td>
<td>0.139</td>
<td><strong>0.062</strong></td>
<td>0.128</td>
</tr>
<tr>
<td>Leverage</td>
<td>1.106</td>
<td>*<strong>0.056</strong></td>
<td>0.995</td>
<td><em><strong>0.072</strong></em></td>
<td>1.276</td>
<td><strong>0.032</strong></td>
<td>1.203</td>
<td><em><strong>0.053</strong></em></td>
<td>1.160</td>
<td><strong>0.068</strong></td>
<td>1.240</td>
</tr>
<tr>
<td>P/B</td>
<td>-0.139</td>
<td><strong>0.028</strong></td>
<td>-0.183</td>
<td><strong>0.012</strong></td>
<td>-0.186</td>
<td><strong>0.012</strong></td>
<td>-0.194</td>
<td><strong>0.012</strong></td>
<td>-0.172</td>
<td><strong>0.030</strong></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>0.018</td>
<td>0.197</td>
<td>0.018</td>
<td>0.198</td>
<td>0.019</td>
<td>0.185</td>
<td>0.018</td>
<td>0.197</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beta</td>
<td>0.078</td>
<td>0.66</td>
<td>0.077</td>
<td>0.667</td>
<td>0.089</td>
<td>0.622</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F_listing</td>
<td>0.081</td>
<td>0.655</td>
<td>0.088</td>
<td>0.627</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>InsOwn</td>
<td>-1.21</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See Table 2 for variable definitions. P-values significant at 1% or better are marked with ***, those at 5% or better are marked with ** and p-values significant at 10% are marked with *. The quality indicator “Quantity” is computed from the OFR’s and notes on risk in firms’ annual reports. Two-tailed tests are applied since the direction is not predicted in this study.

Table 6: Regression analysis for dependent variable Quantity
Coverage and the financial crisis

In this section the impact of the financial crisis on the quality indicator Coverage is discussed. The F-values for Coverage are between 13.6% and 37.9%. None of these are significant. All values for adjusted R-squares are negative and lie between -3.5% and -12.7%. This indicates that all regression models have poor predictability.

The regression analysis shows that the financial crisis was not a significant factor in describing the coverage of risk disclosures. This means that the change in the balance of how much companies reported on each risk topic was insignificant. To our knowledge, there are no studies examining the impact of the financial crisis on coverage particularly, since the focus has been on quantity and the semantic properties of risk disclosures.

Coverage measures how well balanced risk disclosures are distributed over the five different risk topics (operational risk, strategic risk, financial risk, damage risk and risk management). The fact that Coverage was not significant in any of the regression results means that the financial crisis did not have a significant impact on how risk information was distributed over the five risk topics after the crisis. It would be expected that companies would start reporting more on financial risks to maintain confidence after the financial crisis and with that lead to more unbalanced risk reporting. The results from the regressions show that this reasoning is not necessary true. Since the results were not significant some companies might have disclosed more financial risks and other did not. The measure we use for Coverage does not take into account the changes in the separate risk categories which is why we can only conclude that the balance in the risk disclosures, and thereby the quality, was not affected by the financial crisis.

In Table 1 on page 48 large variations in Coverage could be observed. The average change in disclosure calculated as a total for all firms was only -0.771% despite the large variations. It is a possibility that the large variations were evened out in the regression and therefore gave insignificant results for the impact of the financial crisis. Surprisingly, none of the independent variables in the regressions were significant either. This will be discussed further in chapter 6.3.
Regression analysis for different variable combinations with quality indicator Coverage (n=48)

<table>
<thead>
<tr>
<th>Model</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model a</td>
<td>0.843</td>
<td>0.090*</td>
<td>0.845</td>
<td>0.097*</td>
<td>0.765</td>
<td>0.148</td>
<td>0.740</td>
<td>0.166</td>
<td>0.799</td>
<td>0.146</td>
<td>0.690</td>
<td>0.236</td>
<td>0.676</td>
<td>0.244</td>
</tr>
<tr>
<td>Model b</td>
<td>Fin_crisis</td>
<td>-0.009</td>
<td>0.843</td>
<td>-0.009</td>
<td>0.844</td>
<td>0.010</td>
<td>0.848</td>
<td>0.006</td>
<td>0.910</td>
<td>-0.009</td>
<td>0.879</td>
<td>-0.004</td>
<td>0.946</td>
<td>0.009</td>
</tr>
<tr>
<td>Model c</td>
<td>Size</td>
<td>-0.014</td>
<td>0.531</td>
<td>-0.014</td>
<td>0.537</td>
<td>-0.012</td>
<td>0.598</td>
<td>-0.012</td>
<td>0.605</td>
<td>-0.014</td>
<td>0.545</td>
<td>-0.010</td>
<td>0.696</td>
<td>-0.010</td>
</tr>
<tr>
<td>Model d</td>
<td>Leverage</td>
<td>-0.005</td>
<td>0.979</td>
<td>0.005</td>
<td>0.977</td>
<td>0.042</td>
<td>0.824</td>
<td>0.011</td>
<td>0.953</td>
<td>0.030</td>
<td>0.881</td>
<td>0.060</td>
<td>0.765</td>
<td></td>
</tr>
<tr>
<td>Model e</td>
<td>P/B</td>
<td>0.012</td>
<td>0.548</td>
<td>0.006</td>
<td>0.789</td>
<td>0.005</td>
<td>0.827</td>
<td>0.008</td>
<td>0.726</td>
<td>0.016</td>
<td>0.506</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model f</td>
<td>ROA</td>
<td>0.002</td>
<td>0.596</td>
<td>0.002</td>
<td>0.591</td>
<td>0.002</td>
<td>0.664</td>
<td>0.002</td>
<td>0.693</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model g</td>
<td>Beta</td>
<td>0.032</td>
<td>0.568</td>
<td>0.033</td>
<td>0.565</td>
<td>0.037</td>
<td>0.515</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model h</td>
<td>F_listing</td>
<td>-0.034</td>
<td>0.555</td>
<td>-0.031</td>
<td>0.585</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model i</td>
<td>InsOwn</td>
<td>-0.450</td>
<td>0.256</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model j</td>
<td>Std. Error</td>
<td>0.149</td>
<td>0.151</td>
<td>0.152</td>
<td>0.153</td>
<td>0.154</td>
<td>0.15494</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.009</td>
<td>0.009</td>
<td>0.018</td>
<td>0.024</td>
<td>0.032</td>
<td>0.041</td>
<td>0.072</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj. R²</td>
<td>-0.035</td>
<td>-0.058</td>
<td>-0.074</td>
<td>-0.092</td>
<td>-0.110</td>
<td>-0.127</td>
<td>-0.118</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-Value</td>
<td>0.208 (0.813)</td>
<td>0.136 (.938)</td>
<td>0.192 (.941)</td>
<td>0.208 (.957)</td>
<td>0.226 (.966)</td>
<td>0.241 (.972)</td>
<td>0.379 (.925)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. Of obs</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See Table 2 for variable definitions. P-values significant at 1% or better are marked with ***, those at 5% or better are marked with ** and p-values significant at 10% are marked with *.

The quality indicator "Coverage" is computed from the OFR’s and notes on risk in firm’s annual reports. Two-tailed tests are applied since the direction is not predicted in this study.

Table 7: Regression analysis for dependent variable coverage
6.3 Reporting incentives and risk disclosure

Dobler et al. (2011) showed that reporting incentives play a significant role in risk reporting also in regulated risk disclosure environments. The incentives taken into account in this study can be observed in Table 6 and Table 7. In this section the reporting incentives will be discussed separately for Quantity and Coverage. In Table 6 one can observe several significant reporting incentives for Quantity, which means that Hypothesis 2 is valid for Quantity.

Coverage showed no significant independent variables in the regression analysis. Therefore Hypothesis 2 does not apply to Coverage. Control tests will be performed as separate regressions for years 2007 and 2009 without the financial crisis dummy. Through this method possible disturbance caused by the great variance in the sample is eliminated and possible significant variables can be observed.

6.3.1 Quantity and reporting incentives

Size is significantly and positively associated with risk disclosure quantity in the five first regression models (Model a) to e)). In Model f) and in the full model the significance of Size is over 10% and therefore no longer significant. This means that larger firms focus on giving out more risk information in their annual reports. These results are consistent with previous literature that also documents a positive relation between larger firms and increased risk disclosure (Linsley & Shrives, 2006; Miihkinen, 2012). Large firms usually have strong financial resources and can cover disclosure costs voluntarily (Marshall & Weetman, 2002). It is also expected that larger firms might suffer more from political costs which gives them increased incentives to give out more information in their annual reports and to respond quickly to risk disclosure standards and requirements (Watts & Zimmermann, 1978).

In contradistinction to Miihkinen’s (2012) study the Leverage (capital structure) is positively associated with risk disclosure quantity in this study. Furthermore, Leverage is also significant in all regression models. Normally companies that are heavily indebted are reluctant to be transparent concerning their risks since high leverage increases the risk of financial default. Our results imply that this is not the case under financial crisis circumstances. This could be interpreted as that companies want to be more transparent during the financial crisis, possibly to raise trust and confidence among investors.
The last significant variable in the regression table with Quantity as a dependent variable is P/B. In contrast to Miihkinen’s (2012) study, the P/B’s in this study have negative coefficients. During financially “normal” times, where no financial crisis is present, companies with good growth potential (high P/B ratio) usually provide large amounts of risk information that also is evenly distributed over several risk topics. Miihkinen (2012) therefore drew the conclusion that investors have higher expectations on companies with high P/B ratios. The result from our regressions indicates the opposite, which is that companies with higher P/B ratios would provide less risk disclosure information. This does not have to mean that companies with high P/B would have reduced their risk reporting, the more likely explanation is that companies with lower P/B would have increased their risk reporting during the financial crisis year. For companies with poor growth prospects enhanced reporting on risks could increase transparency and awareness, which in its turn could raise confidence both among investors and in the markets.

The variables not showing any significant results were ROA, Beta, foreign listing and insider ownership. Interestingly, both ROA, beta and foreign listing were significant in Miihkinens’ (2012) study. Previous studies have shown both a positive relationship between ROA and disclosure levels and results showing the opposite. In this study ROA did not have a significant impact on quantity. Foreign listing is often associated with high quality disclosure (Cooke, 1989). For foreign listing it is most likely that the disclosure levels were high already before the crisis so that the quantity was no longer significantly affected. The systematic risk (beta) did not have a significant impact on the quantity either: a vast amount of the sample companies had higher betas in 2009 but similar to the financial crisis variable this was not significant either. Other independent variables had a stronger impact on the quantity, and thereby also the quality of firm risk disclosures.

6.3.2 Coverage and reporting incentives

As mentioned in the previous subchapter, no independent variables were significant in the regression analysis with Coverage as a dependent variable. The statistical power among the results from the regressions for Coverage was weak and the results differed from the ones by Miihkinen (2012). This can be a result of several different factors.

Some structural changes seem to have changed within risk disclosures when comparing the years 2007 and 2009. This conclusion can be drawn from the fact that companies
on average score lower on Coverage in 2009. One explanation to this phenomenon could be that investors no longer request risk information that is balanced over risk topics and that companies have listened to this request. The presupposition is after all that companies want to report such information that investors find useful and that increases trust between the two parties.

When comparing the Coverage scores from year 2007 and 2009 one can observe great variation within the sample (see Table 1 on page 48). The variation between the scores lie between -42.446% and +56.759%. Because of this large variation the coefficient of determination is low and the sample suffers from poor predictability. It might be that because of the large structural changes within risk reporting the model used in this study is no longer suitable for this purpose.

The sample used in the regressions is relatively small. It might be that the sample would have benefitted from being larger in order to get more evenly distributed results. In addition to the small sample size the regressions also include a relatively high amount of control variables that might have an impact on the end result. On the other hand none of the regressions for Coverage were even close to being significant so the amount of control variables did not have a remarkable harmful effect. It is possible though that the small sample size could have a harmful effect on the statistical power of the tests and make it hard to generalize the results.

The variance in the Coverage scores for companies do tell that companies change their disclosures from year to year and therefore most likely put a lot of effort on producing risk disclosures. It is possible that companies are in fact very responsive to outer changes and disclosure needs which causes the variance and makes Coverage unrelated to reporting incentives and the financial crisis. Disclosure costs money and delivering disclosures that are not perceived as high quality and do not give any added value to shareholders might be left out for the benefit of disclosures of more value to the end users.

When Miihkinen (2012) conducted his study including risk disclosure Coverage regressions together with reporting incentives it was right after the release of the new risk disclosure standard. His results show that companies took the standard to practice and made sure to report more evenly over different risk topics. In that study firm size, ROA, P/B and foreign listing were all significant.
It is possible that after the financial crisis, and further away in time from the release of the new standard, companies have started to look differently on the distribution of risk information over risk categories. The change may also have started from shareholder’s changed preferences concerning risk disclosure contents, and that an even distribution over topics is no longer feasible. There is so much information out there for investors to access but investors are only able to take in a certain amount of information. It is possible that preferences are going towards a reporting environment where only the most essential information is disclosed and that the more concise and efficient the information is the higher the quality it has in the eyes of the shareholders.

In order to eliminate possible disturbance caused by the great variance in the sample regressions will be conducted separately for Coverage for years 2007 and 2009, without the financial crisis dummy. This allows for analysis of possible significant independent variables. The tables for these control regressions can be found in Appendix 3 on page 99-100.

**Control regressions for Coverage**

None of the control variables in the regressions for Coverage were significant. Coverage is measured the same way as Miihkinen (2012) did and in that study some of the control variables were significant for Coverage in addition to being significant for Quantity. The variables that were significant in Miihkinen’s (2012) study were size, ROA, P/B and foreign listing. When years 2007 and 2009 are examined together with a regression analysis it might be that variance in the sample caused disturbance and therefore leads to results that are not significant. In order to avoid this kind of disturbance we decided to perform control regressions separately for both years 2007 and 2009 while excluding the financial crisis dummy. This additional test wants to determine whether some of the control variables are significant when they do not suffer from potential disturbance from great variance or the financial crisis dummy.

As discussed earlier in this study, the sample has a great variance in the scores for Coverage. The greatest increase in Coverage from year 2007 to 2009 was +56.759% while the greatest decrease was -42.446%. No obvious pattern could be detected for the changes in Coverage either since about half of the sample companies experienced an increase in Coverage when the other half showed a decrease. The average change in Coverage was a decrease of -0.771% from year 2007 to 2009 which means that the balance of risk disclosures over risk topics has suffered slightly after the financial crisis.
The control regressions were performed as a staircase based on the same models as the main regressions. In practice this means that more variables are added at every step with a total of seven control variables (Size, Leverage, P/B, ROA, Beta, F_listing and InsOwn). The financial crisis dummy was left out from the regressions since no difference between the years is examined. There is one table for year 2007 and one for year 2009. In these regressions n=24 because only one year’s observations are included. The tables for the control regressions can be found in Appendix 3 on page 99-100.

When looking at the control regression results we see that the F-values in year 2007 lie between 19.5% and 86.3% and none of them are significant. In 2009 they lie between 0.1% and 51.4% with no significant values there either. The adjusted R squares in 2007 are all on the negative side ranging from -5.1% to -27.6%. In 2009 they are also negative ranging from -4.5% to -19.4%. This tells us that all regression models have poor predictability. The P-values for all control variables for both year 2007 and 2009 are all far from being significant. Despite the regressions being performed separately for both years the results are not significant for Coverage.

One possible reason behind the non-significant results is the small sample size. The sample is even smaller in the control regressions (n=24) which might cause disturbance in the results. The small sample is also combined with a relatively high amount of control variables which might also cause problems in the results.

Another possible reason for Coverage not being a significant measure for risk disclosure quality nor significant in relation to the control variables is a remarkable structural change in risk reporting. Companies no longer focus on reporting evenly over the different topics, possibly due to changed preferences among their shareholders or maybe even financial reasons. They may also use charts and figures in order to illustrate certain risk categories and that kind of illustrative information is difficult to quantify.
7 SUMMARY AND CONCLUSIONS

This study examines if the quality of firm risk disclosures improved after the financial crisis. The Finnish Accounting Practice Board introduced a new risk disclosure standard in 2006 that gives detailed guidelines on how firms should assess significant risks and uncertainties in their operating and financial reviews. This regulatory change made Finland a forerunner in the field of corporate risk disclosures, and therefore the country offers a unique setting for the study. In addition, Finland was one of the countries that were most affected by the financial crisis which shows that studying the impact of the financial crisis on risk reporting is motivated.

In this study risk disclosure quality is examined with risk indicators developed by Beattie et al. (2004) and Beretta & Bozzolan (2004). We examine year 2007 and 2009 using a sample consisting of 24 companies from the OMXH25 index, which are the largest and most traded companies in Finland. The regression results showed that the quality of firm risk disclosure had not improved after the occurrence of the financial crisis neither for Quantity nor Coverage. These results are supporting the results by Maingot et al. (2012) who studied risk disclosure quality in Canada after the financial crisis.

Risk disclosures in combination with the financial crisis is an area of research that has gained very little attention this far. Therefore this study contributes to the risk disclosure literature, and to our knowledge it constitutes the first study conducted on the matter in a Finnish context.

7.1 Main findings

Quality is a very subjective feature that can be difficult to quantify. Previous research has developed different measures for quality that enables the quantification of quality in this study. The quality of risk disclosures is examined by using Quantity and Coverage as indicator variables.

When comparing the disclosure scores in 2007 and 2009 with a t-test in the table for descriptive statistics for Quantity the results showed a significant difference. The increase in Quantity was 2.672% on average from year 2007 to 2009 which was enough to reach significant results on a 1% level. This was when Quantity of risk disclosure was examined without the impact of any other variables. The same difference for Coverage
was not significant, and Coverage declined with on average of 0.771% from year 2007 to 2009. Coverage varied remarkably among the sample companies which indicate that a structural change has taken place in the risk reporting, possibly due to changed preferences from the users of the financial statements.

The first hypothesis wanted to find out whether the financial crisis had had a positive impact on risk disclosure quality. The quality indicators Quantity and Coverage were tested with linear regressions together with seven control variables (referred to as reporting incentives). Regression models were built up adding one variable at a time resulting in seven different regression models. The financial crisis dummy was not significant in any of these models for either Quantity or Coverage, and therefore we draw the conclusion that the financial crisis did not have a significant impact on risk disclosure quality. For Quantity, several other variables in the regressions were significant, which indicates that changes in these variables had a larger impact on risk disclosure quality than the financial crisis itself. When it comes to Coverage there seem to have occurred a structural change in the reporting, perhaps due to investors’ changed preferences. None of the control variables were significant for Coverage and additional tests were performed to find out why.

The second hypothesis concerned the impact of reporting incentives on risk disclosure quality. In accordance with previous studies we found that firm size has a significant impact on risk disclosure quality for Quantity. Larger companies often have more resources and incentives to disclose more risk information. When companies disclosure more they can increase investor confidence and strengthen their reputation in the market. In contrast to previous research our results indicated that companies with more financial leverage also disclose more information. This is most likely due to the firms’ willingness to improve their credibility and transparency in the markets and among investors. High leverage goes hand in hand with the threat of bankruptcy and liquidation. Firms do not in general want to be too transparent with their debt financing, but our results show that in financially challenging times this behavior turns into the opposite. Finally we also found that firms with poor growth prospects (lower P/B ratio) reported more during the financial crisis. This also has to do with transparent reporting: by being truthful about the situation of the company in their disclosures the firm can gain investors’ and the markets’ trust.

Despite an increase in the quantity if disclosures the expected major impact on large Finnish listed companies did not materialize under the impact of the financial crisis.
The observed minor changes cannot expressly be ascribed to the financial crisis since it is not known what kind of changes would have taken place without the financial crisis. In practice this means that if one would have read annual reports for companies in the OMXH25 index in year 2007 and 2009 looking for changes in the risks that these firms were facing one would not have been able to predict the decline in market values taking place at the same time.

7.2 Contribution

This study is contributing to the accounting literature by investigating a relatively unknown area of disclosures. The financial crisis has had a large impact on the reporting climate on several dimensions and this study contributes in finding that risk disclosures were not significantly affected by the crisis. It also added to previous literature by supporting the importance of several reporting incentives when determining the quality of risk disclosure.

This study has some similarities to Miihkinen’s (2012) study but is conducted in a different setting in the aftermath of the financial crises. The presence of the financial crisis brings a different approach to the topic. The results will show what drives risk disclosure quality and by comparing the results to Miihkinen’s (2012) we are able to determine whether the financial crisis has been an additional driver affecting risk disclosure quality. Based on reasoning in previous studies it would have been expected that the financial crisis would have had a significant impact.

The results from the study have practical implication for several standard setting instances such as FASB, IASB, SEC and national standard setters as well. Disclosures, and particularly risk disclosures, have gained more attention in the academic literature in the 2000’s. By mapping out which factors have the largest impact on risk disclosure quality these instances can develop their reporting standards in order to produce more informative, high quality risk disclosures in the future.

The Finnish legal system can roughly be categorized as civil law which means that the results are most suitable for comparison with countries with a similar judicial background. Existing literature has shown that Finnish companies disclose plenty of risk information which means that the results might not be comparable with countries with less focus on risk disclosures. Since the sample in the study consists of companies
in the OMXH25 index which represent the largest and most traded firms it would be
best to compare the results with the largest companies in other countries as well.

7.3 Limitations

One limitation in this study is the small sample size. A small sample combined with
plenty of control variables can potentially weaken the statistical power of the
regressions. It also means that the results might be difficult to generalize on companies
in general. There is almost no literature in the field of risk disclosure and the effect of
the financial crises which means that there are few points of reference both when it
comes to the methodology of the study and comparing the results. To our knowledge
this is the only study investigating risk disclosures and the financial crisis in Finland.

The data for this study was collected by hand. All data for the risk disclosure quantity
and coverage scores were gathered from primary sources (annual reports) and
classified according to the Finnish risk reporting standard. Even though the
classification was done using a standard as guidance, a lot of objectivity was involved
when classifying the risk disclosures into each risk dimension. There is also room for
mistakes when counting the words in the risk disclosures.

Most of firms risk disclosures are provided in the OFR section and in the notes to the
financial statements. Some risk disclosures might be discussed in other parts of the
annual reports and therefore not included in this study. Many companies also disclosed
risks in the form of pictures and charts which contain a low number of words but might
give more value to investors and therefore add a lot of quality to the reporting. In the
context of this study this kind of added quality is not possible to quantify.

Previous literature, such as Miihkinen (2012) built a composite measure for quality of
firm risk disclosure using quantity, coverage and the semantic properties of firm risk
disclosure. By including the semantic properties in this study, it might be that the
results would have been richer and more thorough. Since Coverage did not give any
significant results in the regression analysis it might be that a different measure for
quality would have been more suitable.
### 7.4 Suggestions on future research

The results from this study could constitute a foundation for future research in the field of firm risk disclosures and quality. Due to the small sample used in this study it would be motivated to examine a larger sample, such as all companies on OMX Helsinki. It would be interesting to see whether a large sample would give the same results for that the financial crisis, which was that the crisis was not a significant driver of risk disclosure quality. If using a larger sample it would also be possible to include more control variables and test whether other reporting incentives than the ones tested in this study could have an impact on risk disclosure quality.

Disclosure quality is closely related to what information is qualitative in the perspective of the end users. In the current state of research it is hard to specify which kind and what amount of information would be the most useful and of the highest quality. Therefore it would be interesting to investigate what risk disclosure quality actually means for investors and what kind of information they find useful. Studies in this field would be of great use to standard setters and also companies when they plan their future disclosures.

As discussed earlier in the study, Coverage did not show significant results in the regression analysis. It might be that that measure for disclosure quality is outdated and that it would be motivated to create a different measure that better would capture the current reporting environment. The field of risk disclosures is constantly changing and so should also the research methods.
8 SVENSK SAMMANFATTNING: VAD DRIVER KVALITETEN HOS FÖRETAGS RISKRAPPORTERING?

Introduktion
Företag tar risker för att skapa värde. Investerare skapar värde genom att fatta informerade beslut, och därför är det viktigt för dem att förstå och vara medvetna om dessa risker. Företagsledare är de som med största sannolikhet har mest information om företagets nuvarande situation och framtidsutsikter. Genom att förbättra informationsflödet mellan företaget och dess investerare kan man minska informationsasymmetri, förbättra relationen till investerare och skapa en positiv effekt på kvaliteten av bolagsstyrning inom företaget.


Den finansiella krisen slog till globalt med full styrka år 2008. Miljarder euro hade investerats i finansiella instrument världen över och en stor del av dessa investeringar hade gjorts av banker med internationell verksamhet. När räntorna sköt i höjden i USA år 2007 gick värdet på bostäderna abrupt ner, något som ledde till störningar i återbetalningen av huslån i USA. Detta ledde i sin tur till en märkbar värdeminskning för finansiella instrument i hela världen.

Den finansiella krisen har ökat intresset för riskrapportering och det har ifrågasatts ifall rapportering över lag var en delorsak till den finansiella krisen (Barth & Landsman, 2010). Diskussionen kring högkvalitativ, effektiv rapportering fick återigen uppmärksamhet och är ett ämnesområde som juridiska instanser jorden rundt aktivt arbetar med. Riskrapportering av hög kvalitet möjliggör välinformerade beslut av investerare baserade på transparent och rättvisande information. Utan dylik
information kan förtroendet på marknaden inte upprätthållas, något som konkretiserades under den finansiella krisen.


**Problembakgrund**

I Finland var kraven på riskrapportering väldigt vaga i början av 2000-talet och bokföringsnämnden identifierade ett behov av mer specifika riktlinjer för att företagen skulle kunna producera mer kvalitativ riskrapportering. Detta ledde till introduktionen av en ny standard år 2006. Den nya standarden var kort, enbart sex sidor, med konkreta exempel på hur företag borde rapportera risk i sina bokslut och med fem tydligt utmärkta riskkategorier. Syftet med detta var att erbjuda mer informativ information kring risker samt standardisera riskrappporteringen i allmänhet.


företag med högre systematisk risk även gav ut mer riskinformation. Detta tyder på att företagsledare kan vara motiverade att lugna sina investerare med att erbjuda kapitalmarknaden mer riskinformation.

Tidigare forskning stämmer överens med exemplen ovan och erbjuder inga enhetliga resultat. Vissa undersökningar antyder att den finansiella krisen inte har haft en signifikant inverkan på riskrapporteringen, andra antyder att rapporteringen har ökat och andra att den har minskat. Det finns med andra ord ett klart behov av mer forskning inom detta område för att se huruvida finanskrisen verkligen har haft en inverkan på riskrapporteringskvaliteten.

**Undersökningens syfte**

Syftet med denna undersökning är att ta reda på ifall kvaliteten på riskrapporteringen i finländska börsbolag i OMXH25-indexet påverkades av den finansiella krisen. För att ta reda på detta undersöks bokslut från år 2007, året före den finansiella krisen tog fart samt år 2009, året då Finlands ekonomi påverkades hårdast av krisen.

**Teori**


**Vad är riskhantering**


Förbättrad riskrapportering möjliggör att investerare kan ta sig an riskdiversifiering på ett mer effektivt sätt, något som även framkommer i modern portföljteori (Salomon et al., 2000). Investerare förväntas kräva information om de osystematiska risker som riktas mot företagen de investerat i för att bilda sig en helhetsuppfattning om

**Vad innebär riskrapportering**

I denna avhandling definieras riskrapportering som all den information företag rapporterar i sina bokslut som berör risk. Företagens riskrapportering beskriver de största riskerna och deras potentiella inverkan på företagets prestation (Miihkinen, 2012). Den framåtblickande informationen utgör ett redskap för externa investerare då de ska bygga upp ett estimat av företags framtida kassaflöden och information om icke-diversifieringsbar risk behövs då investerare räknar ut kapitalkostnader. Även historisk information om hur företag har behandlat risker förut kan vara ytterst användbart för externa intressenter (Miihkinen, 2012).

Företag kan rapportera risker i olika delar av bokslutet: i förvaltningsrapporten, i separata riskrapporteringssektioner, i noterna till sin finansiella information samt i sin bolagsstyrningsrapport (Martikainen et al., 2015). Internationellt sett så finns det otaliga ramverk för hur riskrapportering borde presenteras och ingen gemensam standard existerar (Beasley et al., 2005). Författarna bakom de olika ramverken brukar poängtera vikten av att företag självt får avgöra hur sort av rapportering som passar dem och deras behov (COSO, 2004).

**Hur kan man definiera riskrapporteringskvalitet?**


**Finansiella krisen år 2008**

Fenomenet som mest allmänt benämns som finanskrisen år 2008 slog till hårt mot de globala marknaderna och hade långtgående följder som man kan se spår av än idag. Obalanserade valutamarknader, lättssinnig monetärpolitik (i synnerhet i USA), finansiella innovationer, ofullständig lagstiftning, bristfällig övervakning och finansiella institutioners brister i riskhantering var alla orsaker som bidrog till krisen (Jokivuolle, 2010).

Finland var ett av de länder som drabbades hårdast av den finansiella krisen mätt i minskning av landets produktion. Detta kan delvis förklaras av det ekonomiska uppsving som skedde i Finland före krisen då tecken på ojämna utveckling av ekonomin började komma fram (Freystätter & Mattila, 2011). Externa ekonomiska störningar lamslog den finländska ekonomin vilket snabbt syntes som en 8 % minskning i BNP år 2009 (Statistikcentralen). De största drivkrafterna bakom det ekonomiska uppsvinget, exporten och privata investeringar, var även de områden som drabbades av den största minskningen under krisen (Freystätter & Mattila, 2011).

**Litteraturöversikt**

I detta kapitel presenteras tidigare forskning under två huvudrubriker. Dessa är reglering av riskrapportering i förhållande till riskrapporteringskvalitet samt den finansiella krisen i förhållande till riskrapporteringskvalitet. I slutet av kapitlet presenteras avhandlingens hypotes.

**Reglering av riskrapportering och riskrapporteringskvalitet**

Forskare har visat ett ökat intresse för riskrapportering under de senaste åren (Solomon et al., 2000; Miihkinen, 2012). Det ökade intresset till trots är detta fortfarande ett av de minst undersökta områdena inom företagens rapportering samtidigt som det är ett av de mest tvetydiga områdena. I synnerhet kvaliteten på riskrapportering behöver undersökas mer för att få en full förståelse för dess natur.


**Riskrapportering och den finansiella krisen**

Finska företag uppmärksammade den finansiella krisen i ett tidigt skede och många av dem nämnde finanskrisen som en av de mest väsentliga riskerna i sina bokslut år 2009. Då kvaliteten på riskrapportering är ett outforskat ämnesområde är finanskrisens inverkan på riskrapportering ännu mindre undersökt. Vissa föregångare såsom Italien och Kanada har dock redan uppmärksammat denna lucka i litteraturen.


**Hypotes**

H1: Den finansiella krisen har haft en inverkan på riskrapporteringens kvalitet.

**Undersökningens design**

Denna undersökning är hypotesdriven och försöker således finna ett samband mellan de undersökta åren och riskrapporteringskvaliteten. Primär- och sekundärdatal samlas in från bokslut och databaser. Detta analyseras sedan genom statistiska metoder i enlighet med kvalitativa undersökningsmetoder.

**Ett ramverk för riskrapportering**

Syftet med denna studie är att klargöra huruvida den finansiella krisen har haft en inverkan på kvaliteten hos riskrapporteringen. Detta problemområde inkluderar också aspekten kring vilka kontrollvariabler som kan ha haft en inverkan på kvaliteten och hur stark denna inverkan är. Även om Bokföringsnämnden gav klara riktlinjer för
riskrapportering i sin standard från år 2006 finns det ändå företagsspecifika faktorer som kan ha haft en inverkan på kvaliteten.


Riskrapportering ses i denna studie som all den information som företag rapporterar i sina bokslut i förvaltningsrapporten och noterna. Informationen som klassificeras som riskinformation är sådan som beskriver huvudsakliga risker och eventuellt deras förväntade ekonomiska inverkan på företagets framtida prestation (Miihkinen et al., 2012). De fem riskkategorierna som bokföringsnämnden nämnt (finansiell risk, operationell risk, strategisk risk, skaderisk och riskhantering) utgör grunden för detta ramverk.

Denna studie görs i form av en hypotesbaserad kvantitativ studie. Orsaken bakom den kvantitativa metoden är att studien använder sig av numeriska data och statistisk analys för att nå en slutsats. I kontrast till kvalitativa undersökningar kommer denna studie också att pröva en hypotes och avgöra huruvida hypotesen håller eller inte.

**Riskrapporteringskvalitet i empiriska indikatorer**

Tidigare forskning har tagit upp olika metoder och mått för att mäta kvaliteten på riskrapportering. Många av dessa studier visar en positiv korrelation mellan kvantitet och kvalitet (Botosan, 2004; Abraham & Cox, 2007). Det är dock viktigt att notera att det finns en hel del konceptuella svårigheter med att mäta riskrapporteringskvalitet på grund av dess subjektiva natur. För att ta sig an riskrapporteringskvalitet på ett ändamålsenligt sätt och nå resultat som är tillförlitliga, kompletta och giltiga kan man använda sig av existerande kvalitetsindikatorer från tidigare forskning.

**Riskrapporteringskvantitet**

Det första måttet på riskrapportering representeras av antalet ord om risk som företaget rapporterar. Data sammanställdes för hand ur företagens bokslut som fanns på nätet och är således primärdatal. Boksluten för år 2007 och 2009 laddades ner för varje företag som var med i undersökningen. Efter detta kopierades riskrapporteringen i förvaltningsberättelsen samt i noten för finansiella risker in i ett gemensamt
Den empiriska indikatorn för riskrapporteringskvantitet är:

Kvantitet = ln(totala antalet riskrapporteringsord)

Genom att använda logaritmen istället för det obehandlade antalet ord får man en mer symmetrisk distribution (Martikainen et al., 2015). Om ett bolag rapporterar 500 ord om risk kan vi räkna ut rapporteringsvärdet enligt följande:

Rapporteringsvärdet = Kvantitet = ln(500) = 6,21.

Omfattningen av riskrapportering


I den här studien mäter Herfindahls index (H) koncentrationen av företagsrapportering över de olika riskkategorierna. De fem riskkategorierna är tagna direkt från Bokföringsnämndens standard. Den empiriska indikatorn för riskrapporteringsomfattning är:

Omfattning = [(1/H)/antalet riskkategorier]

Detta mätt beskriver hur balanserat de huvudsakliga riskkategorierna har rapporterats i bokslutet och hur jämnt riskrapporteringen har fördelats över riskkategorierna. För att investerare ska förstå hela riskprofilen för företaget kan det vara användbart att ha tillgång till balanserad riskinformation (Martikainen et al., 2015).

För att illustrera detta presenteras Kone Oyj riskinformation från år 2009:

Operationell risk: 111 ord
Strategisk risk: 102 ord
Finansiell risk: 708 ord
Skaderisk: 33 ord
Riskhantering: 93 ord

Herfindahls index = H = \((111/1047)^2 + (102/1047)^2 + (708/1047)^2 + (33/1047)^2 + (93/1047)^2\) = 0,487

Omfattningsvärde = Omfattning = \((1/0,487)/5 = 0,411\)

**Regressionsmodellen**


Den linjära regressionen nedan kommer att utföras på de två kvalitetsindikatorerna kvantitet och omfattning. Detta är också denna studies huvudsakliga test:

\[
Kvalitetsindikator_{it} = b_0 + b_s Finanskrisen_{it} + \sum r b_r Rapporteringsincentiv_{it} + e_{it}
\]

Finanskrisen är I denna ekvation en dummyvariabel som betecknas med 0 för år 2007 och 1 för år 2009. \(e\) representerar regressionsresidualen, indexet \(i\) hänför sig till företaget och \(t\) hänför sig till året som undersöks. Rapporteringsincentiven i denna studie är oberoende variabler som har visats ha en effekt på riskrapporteringen. Dessa variabler är bolagets storlek, ROA, börslistning utomlands, finansiell hävstång (leverage), utländskt ägande, internt ägande och P/B-tal (Price-To-Book ratio).

**Sampel, data och deskriptiv statistik**

I detta kapitel diskuteras studiens sampel mer i detalj i samband med egenskaper och begränsningar hos samplet. Datainsamlingen beskrivs mer i detalj eftersom denna studie mest använder sig av primärdata.

**Sampel**

Sampel som undersöks i denna studie består av stora finska bolag listade på OMXH 25 indexet på Helsingfors börs. Företagen som är med i detta index utsätts för de största kraven på rapportering på grund av deras aktiva roll på aktiemarknaden, i synnerhet när det kommer till att reducera informationsasymmetrin mellan företaget och dess intressenter (Martikainen et al, 2015). Utöver detta är företagen i OMXH 25 även de mest internationella i Finland i och med att ett flertal är listade även utomlands.

den egentliga avhandlingen. Medeltalet för ökningen i riskrapporteringskvantitet ligger på 2,672%, vilket är jämförbart med Maingot et al:s (2012) studie från Kanada, där ökningen låg på 3,6 %. Vad gäller omfattning så minskade omfattningen i medeltal med −0,771 %.

Tabellen visar att riskrapporteringskvantiteten har ökat för 22 företag av 24. Företagen i vilka det skett en minskning är Huhtamäki Oyj (-3,876 %) och Tieto Oyj (-0,196 %). Företagen med den största proportionella ökningen i riskrapporteringskvantitet är Konecranes Oyj (+8,293 %), Orion (+7,935 %) och Wärtsilä (+8,305 %). På en skala ligger då förändringen i riskrapporteringskvantitet mellan -3,876 % och +8,293 % proportionellt mätt.

Resultaten för omfattningen av riskrapporteringen är mer splittrade. Tio företag visar en ökning medan 14 visar en minskning i omfattning. Proportionellt mätt kan man observera stora förändringar i omfattning. Tre bolag är iögonfallande: Huhtamäki Oyj (-30,738 %), Kemira OYJ (-42,446 %) och Konecranes Oyj (+56,759 %).

**Data**


Riskrapporteringsdata fås från två olika delar i bokslutet. Den första är förvaltningsrapporten där en allmän risköverblick oftast presenteras och den andra är i noterna till den finansiella informationen där finansiella risker i regel har en egen not.

**Empiriska resultat**

Detta kapitel erbjuder en analys av undersökningens huvudvariabler samt resultat från regressioner och en korrelationsmatris. I det första stycket presenteras resultaten från en korrelationmatris gjord med alla undersökningsvariabler. I det andra och tredje stycket bedöms den finansiella krisens inverkan på riskrapporteringen med grund i två regressionstabeller tillsammans med deskriptiv statistik.

**Korrelationsanalys**

I korrelationsanalysen framkom att Kvantitet korrelerar positivt och signifikant med Omfattning och Storlek. Dessa resultat tyder på att större företag skulle ge ut mer information och att företag som rapporterar mer också har mer diskussion över alla riskyper. En signifikant negativ korrelation kan observeras mellan Kvantitet, internt ägande och P/B. Dessa resultat tyder på att högre internt ägande och högre P/B-tal kan förknippas med lägre rapporteringskvalitet. Variabeln Omfattning har enbart en signifikant korrelation med Kvantitet.

Det fanns också signifikanta korrelationer mellan de oberoende variablerna. Dummyvariabeln för finansiella krisen hade en signifikant negativ korrelation med P/B. Detta kan tolkas som att P/B-talen sjönk under året för den finansiella krisen, vilket mycket riktigt även var fallet. Den finansiella krisen korrelerar också signifikant och positivt med Beta. Tolkningen av detta är att företag hade högre Beta under den finansiella krisen vilket även det överensstämmer med verkligheten.


**Finanskrisens inverkan på riskrapporteringskvalitet**

I detta avsnitt presenteras resultaten från avhandlingens huvudsakliga tester, dvs. regressionerna. Två separata regressionstabeller för kvalitetsindikatorerna Kvantitet och Omfattning finns på s.61 och s.63 i den egentliga avhandlingen. Regressionerna gjordes separat för Kvantitet och Omfattning och båda regressionerna inkluderade även dummyvariabeln för finanskrisen och de oberoende variablerna. För att bättre se effekten av enskilda oberoende variabler gjordes regressionerna som en trappa, dvs. fler variabler lades till vid varje steg.
Kvantitet och finanskrisen

Jag börjar med att diskutera resultaten för kvalitetsindikatorn Kvantitet. Vad gäller F-värden visar de allmänna resultaten att alla regressioner är statistiskt signifikanta på en 5 % -nivå eller bättre. De justerade $R^2$ ligger mellan 9,5 % och 23,5 %. Modell d) i regressionstabellen har det högsta justerade $R^2$-värdet och är därför den modell som har bäst förklaringsgrad.

Tidigare studier har inte kunnat dokumentera ett enhetligt resultat för hur den finansiella krisen har inverkat på riskrapporteringen. Regressionerna visar att finanskrisen inte har haft en signifikant inverkan på riskrapporteringens kvalitet. Detta är i enlighet med bl.a. den kanadensiska undersökningen av Maingot et al. (2012). I tabellen på s.48 kunde jag observera att det fanns procentuella och absoluta förändringar i riskrapporteringskvaliteten, och i och med denna regressionsanalys kan man konstatera att förändringarna inte är signifikanta.


rapportera mindre. Detta behöver inte betyda att företag med högt P/B skulle minska på sin rapportering utan mer sannolikt är att företag med lågt P/B har börjat rapportera mer om risker. För företag med sämre tillväxtutsikter kan nämligen riklig rapportering öka transparensen och med det både marknadens och investerarnas förtröende.

Omfattning och finanskrisen
I detta stycke diskuteras finanskrisens omfattning på kvalitetsindikatorn Omfattning. Fvärdena för Omfattning ligger mellan 13,6 % och 37,9 %. Ingen av dessa är signifikant. Alla justerade R^2-värden är negativa och ligger mellan -3,5 % och -12,7 %. Detta tyder på att alla regressionsmodeller har en låg förklaringsgrad.

Regressionsanalysen visar att den finansiella krisen inte har varit en signifikant faktor för att förklara omfattningen av riskrapporteringen. I tabellen med procentuella och absoluta förändringar på s.48 kunde man observera stora enskilda förändringar i Omfattning för företagen. I medeltal hade omfattningen dock bara förändrats med -0,771 %. Överraskande nog var ingen av de oberoende variablerna i modellen heller signifikanta.


En annan orsak till att Omfattning inte är signifikant är att det kan ha skett såpass stora strukturella förändringar i riskrapporteringen att modellen som använts i denna studie inte längre är användbar. I den engelskspråkiga avhandlingen kommer kontrollregressioner för Omfattning att göras med år 2007 och 2009 var för sig utan dummyvariabel för finanskrisen. Med denna kontroll elimineras störningarna som orsakats av de stora variationerna i samplet, och eventuella signifikanta variabler kan iakttas. Detta diskuteras mer i den egentliga avhandlingen.

Sammanfattning och resultat
I denna studie undersöks huruvida kvaliteten på företags riskrapportering i bokslut har förbättrats efter den finansiella krisen. Bokföringsnämnden i Finland introducerade en ny standard för riskrapportering år 2006 med tydliga riktlinjer för hur risker borde
rapporteras i bokslut. Denna förändring i lagstiftningen gjorde Finland till en av föregångarna i riskrapportering och således erbjuder Finland en unik miljö för studier kring riskrapportering. Finland var dessutom ett av de länder som drabbades hårdast av finanskrisen vilket gör att det är relevant att studera hur finanskrisen har inverkat på rapporteringskvaliteten.


I enlighet med tidigare studier fann vi att företagsstorleken har en signifikant betydelse för riskrapporteringskvaliteten. Större företag har ofta mer resurser och incitament att ge ut mer riskinformation. I motsats till tidigare forskning tydde våra resultat på att företag med kraftigare finansiell hävstång även ger ut mer riskinformation. Detta beror antagligen på företagens vilja att förbättra sin trovärdighet på marknaden och bland investerare. Slutligen fann vi även att företag med sämre tillväxtutsikter (lägre P/B) rapporterade mer under den finansiella krisen. Detta kan tolkas som att företagen med sin rapportering ville vara transparenta gällande sin situation och således få investerares förtroende.

Denna studie bidrar till redovisningslitteraturen genom att undersöka ett förhållandevis okänt område inom rapportering och visa att finanskrisen inte har haft en signifikant inverkan på riskrapporteringens kvalitet. Utöver detta bidrar jag också med resultat om i hur viktig roll incitament för rapportering är då man definierar kvaliteten på riskrapportering. Dessa resultat kan tillämpas praktiskt av olika juridiska instanser såsom FASB, IASB, SEC och nationella lagstadgande institutioner. Genom att se vilka faktorer som inverkar på riskrapporteringskvaliteten kan dessa instanser utveckla sina lagar och rekommendationer för att i framtiden kunna ge upphov till mer informativ riskrapportering av hög kvalitet.
Analysen och resultaten från denna studie baserar sig på ett litet sampel av de mest omsatta företagen i Finland. Det begränsade antalet företag i undersökningen gör undersökningen utsatt för falsk positiv-problematiken så att man således skulle misslyckas med att upptäcka en närvarande effekt i studien. Ett förslag på fortsatt forskning skulle därför vara att göra samma studie i en större utsträckning, exempelvis med alla företag på Helsingforsbörsen.

I Finland råder en regelbaserad redovisningstradition, och således är resultaten jämförbara med länder med liknande juridisk bas. Existerande litteratur har dock visat att finska bolag rapporterar rikligt om risk vilket gör att resultaten inte garanterat är tillämpliga i länder med mindre rapportering. En utmaning med s.k. berättande bokslutsinformation är att det är svårt att bedöma dess användbarhet för investerare. Ett annat förslag på fortsatt forskning kunde därför vara vad riskrapporteringskvalitet innebär för investerare och hurudan information de skulle finna användbar.
REFERENCES


Tilastokeskus http://tilastokeskus.fi/tup/suoluk/suoluk_kansantalous_en.html


APPENDIX 1: A RISK DISCLOSURE FRAMEWORK

In this appendix the main topics and subtopics from the detailed Finnish risk disclosure standard are summarized. The standard was introduced in 2006 in order to standardize risk reporting and provide more detailed guidelines in how companies should structure their risk reviews. As mentioned in the thesis the risk disclosure standard included five different areas of risk: strategic risks, operational risks, financial risks, damage risks and risk management. The categories below give insight in how the risk disclosure data was categorized when calculating the scores for Quantity and Coverage. A similar classification is used by Miihkinen (2012).

1. Strategic risks

Market competition
Market areas
Position in the production chain
Dependence on customers
Dependence on suppliers
Changes in customer preferences
Technological development
Regulatory changes
Political changes
Mergers and acquisitions

2. Operational risks

Dependence on the know-how of the personnel
Uncommon business fluctuations in demand
Interruptions in the delivery chain
Price fluctuations of the factors of production
Patents and other industrial property rights
Information technology risks

3. Financial risks

Interest rate
Exchange rate
Liquidity
Credit

4. Damage risks

Insurances
Significant legal actions

5. Risk management

Risk management policy
Risk management organization
APPENDIX 2: RISK DISCLOSURE EXAMPLES

The classification of the risk disclosure information is in a crucial role in this study. We use a broad definition of risk when classifying the sentences in this study. The rule of thumb is that sentences are identified as risk disclosures when they contain knowledge that informs the reader about opportunities, prospects, hazards, danger, harm, threats or exposure. This information should either have had an impact on the company or will have an impact on the company in the future. Risk disclosures need to be specifically stated and not just implied in order to classify as risk disclosure.

This appendix explains the process in detail with risk information from the Finnish annual report from Kone in year 2009. Sentences for each of the five risk categories are picked out to illustrate the classification process.

Risk management: Näitä rahoitusriskejä hallitaan osana KONEen kokonaisriskien hallintaa. KONEen rahoitusyksikkö hoitaa keskitetysti konsernin rahoitusriskien hallinnan hallitukseen erottamien rahoituspoliikikin mukaisesti. Rahoituspoliikia perustuu hallituksen määrittelemiin riskienhallinnan päätteeksi. -> 24 risk words

Operational risk: KONEen liiketoiminnat ovat riippuvaisia hankintakanavien, tuotantolaitosten, logistiikka- ja käytettävien IT-järjestelmien toimintavarmuudesta ja luotettavuudesta. Näitä riskejä hallitaan analysoimalla ja paranemalla prosessien häiriönsijaintakyvyyttä ja lisäämällä valmiuksia siirtää kriittisten komponenttien valmistus hankinnan voimin. -> 39 risk words

Strategic risk: Maailmanlaajuinen talouskasvun hidastuminen tai taantuminen uudelleen lyhyen kasvuskauden jälkeen voi vaikuttaa KONEen uusien laitteiden ja modernisointilaajennusten vähentymiseen. Merkittävä osuus KONEen liikevaihdoista muodostuu huoltoliiketoiminnasta, joissa voidaan vähenemään altis taloudellisen laskusuhdanteen vaikutuksesta, mutta joka vaativat runsaasti henkilöstöä. -> 45 risk words

Financial risk: KONE toimii kansainvälisesti ja sen liiketoimintaan liittyy valuuttakurssivaihdetulosta aiheutuvia riskejä, eli transaktio- ja translaatioriskejä. Transaktiokysymykset syntyvät ostojen ja myyntien rahavirroista. Translaatioiskit syntyvät ulkomaisten tyytyväisyyden tulostuksesta ja tase-erien muuntamisesta euroiksi. -> 30 risk words

Damage risk: KONEella on lisäksi globaali omaisuus- ja keskeytysvakuutusohjelma. Jos talous heikenee uudelleen, se voi vaikuttaa KONEen asiakkaiden maksukykyyn ja - aikatauluun sekä johtaa luottotappioihin. -> 21 risk words
Control regression analysis for different variable combinations with quality indicator Coverage (n=24)

<table>
<thead>
<tr>
<th>No.</th>
<th>OLS</th>
<th>R²</th>
<th>Adj. R²</th>
<th>F-Value</th>
<th>No. Of obs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24</td>
</tr>
</tbody>
</table>

See Table 2 for variable definitions. P-values significant at 1% or better are marked with ***, those at 5% or better are marked with ** and p-values significant at 10% are marked with *. Two-tailed tests are applied since the direction is not predicted in this study.

The quality indicator "Coverage" is computed from the OFR's and notes on risk in firm's annual reports. Two-tailed tests are applied since the direction is not predicted in this study.

Model g): + + + + +  + + +

Model 3: CONTROL REGRESSIONS FOR COVERAGE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
<th>Coeff</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1.02</td>
<td>0.192</td>
<td>1.01</td>
<td>0.192</td>
<td>1.02</td>
<td>0.192</td>
<td>1.01</td>
<td>0.192</td>
<td>1.02</td>
<td>0.192</td>
<td>1.01</td>
<td>0.192</td>
<td>1.02</td>
<td>0.192</td>
<td>1.01</td>
<td>0.192</td>
<td>1.02</td>
<td>0.192</td>
</tr>
<tr>
<td>Size</td>
<td>-0.50</td>
<td>0.027</td>
<td>-0.51</td>
<td>0.027</td>
<td>-0.50</td>
<td>0.027</td>
<td>-0.51</td>
<td>0.027</td>
<td>-0.50</td>
<td>0.027</td>
<td>-0.51</td>
<td>0.027</td>
<td>-0.50</td>
<td>0.027</td>
<td>-0.51</td>
<td>0.027</td>
<td>-0.50</td>
<td>0.027</td>
</tr>
<tr>
<td>P/B</td>
<td>-0.03</td>
<td>0.764</td>
<td>-0.03</td>
<td>0.764</td>
<td>-0.03</td>
<td>0.764</td>
<td>-0.03</td>
<td>0.764</td>
<td>-0.03</td>
<td>0.764</td>
<td>-0.03</td>
<td>0.764</td>
<td>-0.03</td>
<td>0.764</td>
<td>-0.03</td>
<td>0.764</td>
<td>-0.03</td>
<td>0.764</td>
</tr>
<tr>
<td>ROA</td>
<td>1.00</td>
<td>0.051</td>
<td>1.01</td>
<td>0.051</td>
<td>1.00</td>
<td>0.051</td>
<td>1.01</td>
<td>0.051</td>
<td>1.00</td>
<td>0.051</td>
<td>1.01</td>
<td>0.051</td>
<td>1.00</td>
<td>0.051</td>
<td>1.01</td>
<td>0.051</td>
<td>1.00</td>
<td>0.051</td>
</tr>
<tr>
<td>Beta</td>
<td>-0.04</td>
<td>0.430</td>
<td>-0.04</td>
<td>0.430</td>
<td>-0.04</td>
<td>0.430</td>
<td>-0.04</td>
<td>0.430</td>
<td>-0.04</td>
<td>0.430</td>
<td>-0.04</td>
<td>0.430</td>
<td>-0.04</td>
<td>0.430</td>
<td>-0.04</td>
<td>0.430</td>
<td>-0.04</td>
<td>0.430</td>
</tr>
<tr>
<td>F_listing</td>
<td>-0.98</td>
<td>0.363</td>
<td>-0.97</td>
<td>0.363</td>
<td>-0.98</td>
<td>0.363</td>
<td>-0.97</td>
<td>0.363</td>
<td>-0.98</td>
<td>0.363</td>
<td>-0.97</td>
<td>0.363</td>
<td>-0.98</td>
<td>0.363</td>
<td>-0.97</td>
<td>0.363</td>
<td>-0.98</td>
<td>0.363</td>
</tr>
<tr>
<td>InsOwn</td>
<td>0.93</td>
<td>0.344</td>
<td>0.93</td>
<td>0.344</td>
<td>0.93</td>
<td>0.344</td>
<td>0.93</td>
<td>0.344</td>
<td>0.93</td>
<td>0.344</td>
<td>0.93</td>
<td>0.344</td>
<td>0.93</td>
<td>0.344</td>
<td>0.93</td>
<td>0.344</td>
<td>0.93</td>
<td>0.344</td>
</tr>
</tbody>
</table>

R² and Adj. R²: 0.038, 0.040, 0.041, 0.058, 0.058, 0.064, 0.112

See Table 2 for variable definitions. P-values significant at 1% or better are marked with ***, those at 5% or better are marked with ** and p-values significant at 10% are marked with *.
Control regression analysis for different variable combinations with quality indicator Coverage (n=24)

2009

Model a) ... annual reports. Two-tailed tests are applied since the direction is not predicted in this study.

<table>
<thead>
<tr>
<th>Model g)</th>
<th>+</th>
<th>+</th>
<th>+</th>
<th>+</th>
<th>+</th>
<th>+</th>
<th>+</th>
<th>+</th>
</tr>
</thead>
</table>

See Table 2 for variable definitions. P-values significant at 1% or better are marked with ***, those at 5% or better are marked with ** and p-values significant at 10% are marked with *.

The quality indicator "Coverage" is computed from the OFR's and notes on risk in firm's annual reports.