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The quality of liquidity risk disclosure by European banks

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Abstract

The recent financial crisis resulted in attention to the risk that banks take, and the disclosure of those risks. Specifically the importance of liquidity risk to the proper functioning of the banking sector became evident. Changes in the liquidity and funding of a banks, directly impacts future financial stability and economic growth, and therefore the disclosure of liquidity risk is important for the decision making of several stakeholders such as investors and regulators. This research investigates the disclosure of liquidity risk of 30 European banks within 6 countries, and looks at how liquidity risk disclosure can be measured and how it can be explained. To measure the disclosure of liquidity risk, this research constructed a framework based on the qualitative characteristics of the IASB (2010) and operationalized the framework. To investigate the factors that explain the disclosure of liquidity risk by banks, several internal and external factors are investigated and hypotheses are formed. The incentives for risk disclosure are discussed and the quantity of risk disclosure, the institutional and regulatory environment, corporate governance, bank reputation, bank size and risk of a bank are given as possible determinant of liquidity risk disclosure. By using the framework constructed in this paper, content analysis enabled the researcher to measure the liquidity risk disclosure quality of the 30 European banks. These risk disclosure quality scores are used to investigate the relation between quality and the internal and external factors. This investigation resulted in several findings. A significant positive relation between the quality and quantity of liquidity risk disclosure is found, and a relation between the size of a bank and the disclosure quality of liquidity risk is found. Also it is found that the country in which a bank is situated, partly influences the liquidity risk disclosure quality.

Contents

1. Introduction

The recent global credit crisis caused concerns about the health of financial institutions and led to government support for banks and even failure of several banks (Ivashina & Scharfstein, 2010). This turmoil resulted in an increased attention to banks, the risk they take, their risk management and bank risk disclosure around the world. Together with pressure from various stakeholder groups such as society and investors, the call to improve transparency in the post credit crisis area triggered regulatory reforms and action from governments and regulatory bodies (Dobler, Lajili & Zéghal, 2011; Abraham & Shrives, 2014). Government and regulatory bodies believe it is in the interest of the society that banks deliver high quality risk disclosure, and therefore have a widespread desire to improve the risk reporting quality of firms (Ryan, 2012).

Risk reporting is part of the non-financial communication of companies toward stakeholders. Non-financial communication is not only important to clarify or validate the communicated financial information, but can also be used for gaining insight in the future prospects of performance and sustainability, the value generating drivers of a company, and the ability of managers to manage effectively and efficiently (Beretta & Bozzolan, 2004; Robb, Single & Zarzeski, 2001). The disclosure of risk information enables investors and other stakeholders to make this assessment (Linsley & Shrives, 2005). Due to the risk taking nature of a bank, it is expected that it discloses relevant risk-related information to its stakeholders (Linsley & Shrives, 2005). Especially since the recent financial crisis, the legitimacy of banks is questioned by stakeholders and regulators, and high risk reporting quality can help banks to maintain or improve their legitimacy (Oliveira, Rodrigues & Craig, 2011).

Banks face several risks, of these risk, financial instruments are the largest risk factors that a bank faces (BIS, 1997). Of these financial instrument risks, liquidity risk is placed under renewed emphasis in recent years (BIS, 2013). All firms, and particular financial institutions such as banks, require borrowed funds to carry out their operations, from paying their short-term obligations to investing in the long term. An inability to acquire these funds (within a reasonable time-frame), can result in a great risk (Lopez, 2008). This risk came apparent during the aftermath of the recent financial crisis. Prior to the crisis, asset markets were buoyant and funding was readily available at low cost. The rapid reversal in market conditions illustrated how quickly liquidity can evaporate, and that illiquidity can last for an extended period of time. The banking system came under severe stress, which necessitated central bank action to support both the functioning of money markets and, in some cases, individual institutions (Bindseil, 2013). In the "Liquidity phase" of the financial crisis, many banks, despite of the adequate capital levels, still experienced difficulties because liquidity was not managed in a prudent manner. These difficulties gave prominence to the importance of liquidity to the proper functioning of the banking sector (BIS, 2013b). The disclosure of liquidity risk is important because changes in the liquidity and funding of a banks, directly impact future

financial stability and economic growth, and therefore disclosure of those risks is important for the decision making of stakeholders (Jiménez et al., 2014).

In Europe, regulatory bodies have considerable influence on the reporting of risk by European banks. The International Accounting Standards Board with the IFRS 7 and the Basel committee on banking supervision with their Basel accords are the most influential (Dobler, Lajili & Zégal, 2011). IFRS and Pillar 3 of the Basel III framework require banks to disclose liquidity risk information, but both standards do not specify the details of the disclosure, and therefore leave management with a substantial degree of discretion in reporting the exact content of the risk disclosure (Bischof & Daske, 2013). This leeway approach results in a wide variety of risk disclosure practices among banks in Europe, resulting in different risk disclosure quality, with different determinants (Bischof, 2009; Bischof & Daske, 2013; Khlif & Hussainey, 2016)

These different determinants of the quality of risk reporting and the lack of transparency in risk reporting has also attracted attention in the academic literature. (Dobler, Lajili & Zéghal, 2011; Khlif & Hussainey 2016; Oliveira, Rodrigues & Craig, 2011). Within this extant research a difference between risk disclosure of non-financial and financial firms can be made, of which the latter is very limited (Van Oorschot, 2010). Most of the studies investigate firm specific mechanical factors that influence the risk reporting quality of a banks within a country, factors such as firm size, profitability and riskiness of a bank (Linsley, Shrives & Crumpton, 2006; Linsley & Shrives, 2006; Rahman et al., 2013). Others focus on the external effects of risk reporting such as regulation, supervision, and bank governance (Miihiken, 2012). But most of the risk disclosure studies focus only on firms in one or two countries, and only few studies investigate the risk disclosure across several countries: Dobler, Lajili & Zéghal (2011) make a multi-country investigation of risk disclosure by manufacturing sector, Barakat & Hussainley (2013) look at the operational risk disclosure of banks from 20 EU countries, and Bischof (2009) looks at the effect of IFRS 7 on the risk disclosure by European banks. But what limits these studies, is that they use a measurement method that mostly measures the amount of risk disclosure, and not the actual quality of the risk disclosure. Consensus about how disclosure quality can be measured is still not achieved within the risk disclosure literature (Beretta and Bozzolan, 2004; Botosan, 2004; Van Oorschot, 2010). Beattie et al. (2004) state that accounting researchers have increasingly focused their efforts on investigating disclosure and that there is an urgent need to develop disclosure metrics to facilitate research of quality. Also, none of the extant studies focusses on liquidity risk disclosure, in despite of the importance of liquidity risk (Bindseil, 2013; BIS, 2013b; Jiménez et al., 2014). To address these gaps in the literature, this study aims to conduct a detailed international analysis of liquidity risk disclosure by banks in the European Union by creating a framework based on content analysis that measures actual liquidity risk disclosure quality. In this study the following research question is answered:

How can liquidity risk disclosure quality in the annual reports of European banks be measured and explained?

In order to answer the research question and achieve the research goal, (1) prior literature, bank risk regulation and other relevant background information is assessed to gain an understanding about (liquidity) risk disclosure, (2) hypotheses that explain the determinants of liquidity risk disclosure are formulated, (3) a framework based on previous literature and the IASB (2010) framework of financial information quality is constructed to measure the quality of liquidity risk disclosure, and (4) a methodology is selected and analysis is performed to explore the determinants of liquidity risk disclosure.

This study relies more on a detailed analysis than previous research. It explores the annual report of 30 European banks in six different countries. This study also goes beyond extant risk disclosure research in several ways. Firstly it investigates multi-country risk disclosure, which makes it more comprehensive and a multi-country analysis gives insight in institutional determinants of risk disclosure. Secondly this study constructs a risk disclosure quality framework with a focus on the qualitative characteristics of information as stated by the IASB (2010) to measure the quality of risk disclosure. With the framework, this study does better measure quality than most extant risk disclosure research, because it does not look at quantity, but at quality aspects of information (Botosan, 2004; IASB, 2010).

By conducting this research several contributions are made to the existing literature. Firstly it extents the understanding of risk disclosure quality, because it looks at multiple countries and combines firms specific and external determinants. Secondly it focusses on financial institutions, and more specifically banks. The existing literature is mainly focused on risk disclosure by non-financial firms, and the literature on risk disclosure by financial institution is limited (Barakat & Hussainey, 2013; Van Oorschot, 2010; Beretta & Bozzolan, 2004). By investigating the liquidity risk disclosure by banks, a greater understanding and more insights can be obtained. Thirdly it creates a new framework for measuring disclosure quality, this framework better measures quality and can be used by other researchers to investigate risk. Lastly this research provides a sound basis for future research.

Furthermore this study does not only provides a scientific contribution, it also contributes to the practice. Firstly by giving insight in the determinant of risk disclosure, it can help users of the financial information (stakeholders) to gain an understanding of risk disclosure quality. This understanding enables stakeholders to make better decisions based on risk disclosure by banks. Secondly the research helps regulatory and banking supervisors. By providing insight in the determinants of risk disclosure quality and the institutional influences of risk disclosure, it can guide regulators and bank supervisors in making regulation to improve and harmonize risk disclosure quality. Lastly it enables managers, audit committees,

auditors and other parties involved with the quality of risk disclosure, to engage in substantive conversations about the quality of risk disclosure.

The paper is constructed as follows: The next chapter looks at the risk disclosure background and prior literature to gain an understanding of (liquidity) risk disclosure. The concept of risk and risk management is explored and several theories are used to explain the incentives for risk reporting. Also the ways to communicate risk and differences in risk reporting are explained. After that, the risk of banks, and specifically liquidity risk, is explained. The chapter ends with an overview of prior literature of non-financial risk disclosure and bank risk disclosure. The third chapter explores the regulation that influences risk reporting by banks, and first addresses the development of the regulation, and ends with the implications of the regulation for banks. In the fourth chapter the framework for measuring risk disclosure quality is constructed and explained. In the fifth chapter several hypotheses are formulated that possibly can explain the risk disclosure quality of banks. In the sixth chapter the methodology, analysis and sample selection is presented and in the seventh, eighth and ninth chapter the results are presented, discussed, and a conclusion is made.

2. Background and prior literature

2.1 Background

2.1.1 Risk definition

Before performing a study on the disclosure on risk, it is important to first define what risk is. In everyday language risk is mostly seen as negative, the Oxford English Dictionary [1] defines risk as: "(Exposure to) the possibility of loss, injury, or other adverse or unwelcome circumstance; a chance or situation involving such a possibility". This view is in contrast with the view of modern economists, who see risk not only as a danger that is attributed to the influence of the environment, but as an uncertainty that results from possible outcomes of a decision made between alternatives (Luhmann, 1993). From this point of view risk does not solely focus on the negative outcome (a danger), but incorporates both the positive and negative outcome of events in which uncertainty of outcomes plays a large role (Linsley & shrives, 2006). The ICAEW shares this view and defines risk as: "Uncertainty as to the amount of benefits" which "includes both potential for gain and exposure to loss" (ICAEW, 1998, p5). Internal and external factors give rise to the amount of uncertainty, which make it hard to forecast the outcome of alternative decisions (Cabedo & Tirado, 2004). Risk has the ability to potentially affect the future firm performance and can for example be driven by the market, regulation and/or politics, but also finance, business process, and personnel (Dobler, 2008).

[1] Oxford English Dictionary, (2016). Risk, n."... Oxford University Press.

2.1.2 Risk management process and relevance of risk disclosure

To maximize the shareholders wealth, and act in the interest of stakeholders, management of risks is essential. Risk management aims to maximize profitability while at the same time reducing the probability of financial failure (Solomon et al., 2000; Miihkinen, 2012). Financial and non-financial firms manage their risk exposures extensively and have come up with risk management processes and systems in their internal control systems to observe, and to reduce or diminish the risks that they face (Power, 2009). Risk management contiguously aims at identifying firm risk factors, analyzing and evaluating their potential impact on future outcomes, and helps indicate the distribution of the risk handling (Dobler, 2008). Amran et al. define risk management as "The methods and processes used by organizations to manage risks (or seize opportunities) related to the achievement of their objectives" (Amran et al., 2009, p.40).

The process of risk management also did not get unnoticed by regulators. The Committee of Sponsoring Organizations of the Treadway Commission (COSO) developed an framework for firms to effectively identify, assess, and manage risk, called: Enterprise Risk Management - Integrated Framework (2004). They define Enterprise Risk Management (ERM) as: "A process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives" (COSO, 2004, p.2).

But not only the implementation of firm-wide risk management system is enough; the communication about the risks a company faces, and how management deals with these risks is important (Beretta & Bozzolan, 2004). By disclosing information, investors understand the risk a company takes to create value, and through the communication of risk information investors have the ability to effectively deal with the risk diversification in their portfolios (Beretta & Bozzolan, 2004). Risk disclosure also enables stakeholders to manage their risk positions (Linsley & Shrives, 2005). Linsley and shrives (2005) give in their study a broad definition of risk disclosure, they speak of the disclosure of risk when the reader is informed of: "Any opportunity or prospect, or of any hazard, danger, harm, threat or exposure, that has already impacted upon the company or may impact upon the company in the future or of the management of any such opportunity, prospect, hazard, harm, threat or exposure" (p.389).

2.1.3 Incentives for disclosing risk information

Stakeholder and agency theory

In the early adoption of the agency theory, it was primarily concerned with the relationship between shareholders and managers as principal and agent respectively (Hill & Jones, 1992). But recently the theory is also used from a more broader stakeholder perspective, this perspective is also used in this study. Freeman (1984) defines stakeholders as: "any group or individual who can affect or is affected by the achievement

of the organization's objectives"(p. 53). From this perspective, the stakeholders of a bank in this study are investors, regulators, the general public and other stakeholders that are in any way, effected by a bank's operations.

Agency theory explains the relation between the agent and the principal. The principal engages with the agent to perform services on their behalf, which involves delegation of some decision making authority to the agent (Ross, 1973). Due to the internal nature of the risk management process, it can be assumed that a bank's manager (the agent), holds more information about the risk a firm faces, how the firms deals with these risk, and what the potential impact on the firm performance is, than outside stakeholders (the principal) (Dobler, 2008). This information asymmetry causes a risk for the stakeholders because the stakeholders do not know if the manager is acting in his interest and is disclosing all risk information needed to make an good decision (Hill & Jones, 1992; Healy & Palepu, 2001).

To limit the divergence of the principals interest and the information asymmetry, appropriate incentives for the agent can be established in the form of contracts that provide incentives for full disclosure of information (Healy & Palepu, 2001). Another potential solution to the information problem is regulation that requires managers to disclosure risk information towards stakeholders. Lastly because of the information problem, there is a demand for information intermediaries that engage in private information to uncover managers' superior information (Healy & Palepu, 2001). Despite of these economic and institutional factors in the form of contracts, regulation and information intermediaries, the market is not perfect and risk information asymmetry is not completely eliminated. In the hypotheses development, the influence of these economic and institutional factors on liquidity risk disclosure is elaborated.

Proprietary cost theory

The Proprietary cost theory looks at the costs and benefits of the disclosure of risk. Linsley and Shrives (2005) define proprietary information as: "Commercially sensitive information which if placed in the public domain can then put a company at a competitive disadvantage" (p. 212). Because of proprietary information, banks' managers may be uncertain about their standpoint regarding the disclosure of risk. Banks most likely have a detailed risk management system, but managers may be reluctant in disclosing risk information that they think is commercially of politically sensitive (Abraham & Shrives, 2014; Marshall & Weetman, 2007). This reluctant behavior is caused by the idea that the risk information that is disclosed may be used by outside parties in ways that are harmful to the objectives of the bank (Cormier et al., 2005). The result of this "proprietary cost" is a possible difference between the information that internal risk management produces and the information that a bank is willing to disclose towards stakeholders. This consideration is two sided: On one side, if a bank does not disclose enough information about risk and their risk management, the stakeholders can perceive the system as weak or non-existent. On the other side, if a

bank is to transparent about their risk and risk management, and reflect how they manage their risks, then managers may feel they will incur proprietary costs (Abraham & Shrives, 2014). Cormier et al. (2005) summarizes the proprietary cost choice for managers as: "Hence, in choosing a disclosure strategy, managers have to trade off the benefits from expanded disclosure against the costs of disclosing potentially damaging information. Prior evidence in financial reporting does suggest that information costs are a critical determinant of corporate financial disclosure decisions."(p.9).

Legitimacy theory

Disclosure may not always be a purely economic decision, particularly when social and political factors also need to be considered (Abraham & Shrives, 2014). The legitimacy theory looks at disclosure from a social perspective and argues that firms have an incentive to disclose information, otherwise they will be penalized by society if they do not operate in a manner consistent with societal expectations (Brown & Deegan, 1998). Suchman (1995) examined the strategies for gaining, maintaining, and repairing legitimacy and defines legitimacy as: "A generalized perception or assumption that the actions on an entity are desirable, proper, op appropriate within some socially constructed system of norms, values, beliefs and definitions" (p.574). Cho & Patten (2007) state that some industries have a greater exposure to the public and social pressure than others, and they find that firms within those industries have a higher disclosure of non-financial information than other firms in low pressure industries.

The banking industry is part of the financial industry and is, especially after the financial crisis, under heavy pressure of regulators (Bischof, 2009), and under close examination by investors and other stakeholders (Khlif &Hussainey, 2016). The influence of stakeholders is perceived as crucial for the surviving of a bank, especially because banks are broadly visible to stakeholders and are subject to high levels of scrutiny by them (Oliveira, Rodrigues & Craig, 2011; Dowling & Pfeffer, 1975). Firms that want to gain or maintain their legitimacy, have an incentive to communicate toward stakeholders, including financial report disclosures, such as risk reporting, to influence societal perceptions (Cho & Patten, 2007). Oliveira, Rodrigues & Craig (2011) argue in their study about banks, that the disclosure of risk can improve the legitimacy of bank. With disclosing risk information, banks reduce information asymmetries between them and stakeholders, reinforce the confidence between them, and attract more deposits. They argue that a bank legitimacy is enhanced by risk reporting in two ways: Fulfilling the institutional pressure and managing stakeholder perceptions.

2.1.4 Presentation of risk

Disclosure of information is an important mean for management to communicate firm performance and governance to stakeholders (Healy & Palepu, 2001). Risk information can be communicated to stakeholders trough different channels and means. Firms can disclose information outside the regulated environment, for example in the form of press releases, or content on their website. By communicating in this way, regulation does not determine the content of the disclosed information. Another way of risk information disclosure toward stakeholders is information disclosed from outside the organization by information intermediaries such as financial analysts and the financial press (Healy & Palepu, 2001). Organizations can also communicate risk information in the form of mandatory regulated disclosure, for example annual reports. Annual reports are extensively studied and are seen as the "Chief mean of conveying useful information for rational investment, credit and other decisions over the years" (Amran et al., 2008, p.39). Beretta and Bozzolan (2004) argued that annual reports still offer information in addition to financial statements. Information in an annual report explains accounting figures, sketched, presents perspectives and validates quantitative measures contained in the financial statements. Also Beretta and Bozzolan (2004) argue that the disclosure level in annual reports is positively correlated with the amount of corporate disclosure communicated to the market and stakeholders using other channels. For this reason this study focusses on the risk disclosure within annual reports.

2.1.5 Differences within Risk Disclosure

In this study we focus on the annual report. As described above the annual report is a regulated document, meaning that regulation mandates what aspects have to be disclosed, in the case of this study this is the IFRS. But management has also the choice to disclose more than is necessary, this gives rise to the difference between mandatory and voluntary disclosure of risk information. Mandatory risk disclosure is the risk information that a firm is required by rules and law to disclose. Voluntary disclosure is not prescribed, and is defined by Meek, Roberts and Gray (1995) as: "disclosures in excess of requirements" that "represent free choices on the part of company managements to provide accounting and other information deemed relevant to the decision needs of users of their annual reports"(p. 555). By providing voluntary risk disclosure a company can improve the communication towards stakeholders.

Also the distinction between verifiable and non-verifiable risk information is important. Verifiable risk information can be disclosed verified or not. Examples of verifiable risk information are disclosure on risk factors and risk management systems, including the description of the risk response of the firm when appropriate. Non-verifiable risk information can only be disclosed non-verified, for example risk forecast is not verifiable due to its predictive nature (Dobler, 2008).

2.1.6 Risk for banks

Within the risk literature commonly a difference is made between the disclosure of financial and non-financial firms (Beretta & Bozzolan, 2004, Linsley & Shrives, 2006; Khlif, & Hussainey, 2016). For this reason most studies differentiate between the companies, or disregard financial companies in their sample (Berretta & Bozzolan, 2004). This distinction can be explained by the deviant risk disclosure of financial and non-financial firms. Lopes and Rodrigues (2007) argue that the reporting strategy within sectors is the same because firms want to disclose the similar information as their direct competitors to avoid a negative appreciation by the market. This implies that the nature of the financial sector causes a difference with other sectors. Khlif, and Hussainey (2016) argue that the risk reporting in the financial industry is different because it is a highly regulated sector, which influences the risk reporting directly. Lastly Linsley and Shrives (2006) argue that financial firms are risk management entities and therefore make different types of risk disclosures that are needed to examined differently as disclosures by non-financial firms. The risks to which banks are exposed and the techniques that banks use to identify, measure, monitor and control those risks are important to communicate toward stakeholders, because they use the information in their assessment of a bank (BIS, 2001)

But banks are, just as non-financial companies, also subject to non-financial risks. The Basel committee on banking supervision states in their paper "Core Principles for Effective Banking Supervision" (BIS, 1997) that a bank faces the following risks: Credit risk, Country and transfer risk, Market risk, Interest rate risk, Liquidity risk, operational risk, Legal risk and reputational risk. Because this study focusses on Liquidity risk, this type of risk will be further elaborated in the next section.

2.1.7 Liquidity risk

In this research we focus on liquidity risk. The Basel Committee on Banking supervision defines liquidity risk as a "risk that arises from the inability of a bank to accommodate decreases in liabilities or to fund increases in assets. When a bank has inadequate liquidity, it cannot obtain sufficient funds, either by increasing liabilities or by converting assets promptly, at a reasonable cost, thereby affecting profitability. In extreme cases, insufficient liquidity can lead to the insolvency of a bank." (BIS, 1997, p21-22). Nikolau (2009) and Decker (2000) make distinction between Funding liquidity risk and Market liquidity risk. Funding liquidity is the ability of banks to make agreed upon payments in a timely fashion and that banks are able to raise funding in short notice (Nikolau, 2009). The risk of funding liquidity is the possibility that a bank is unable to immediately settle it obligations. In simple words, if the bank does not have enough liquidity to pay what is demanded at a given moment (Nikolau, 2009). This risk is therefore dependent on the availability of liquidity sources. Because funding liquidity risk is the most important risk of the two for banks, it is important to know what the liquidity sources of a bank are, to understand what the potential risks are. Firstly a bank can obtain liquidity from depositors, this are people who entrust their money to the

bank. Secondly a bank can obtain liquidity from the market. For example by selling assets, securitization, and loan syndication. Thirdly a bank can obtain liquidity from the interbank liquidity, which means that a bank borrows from other banks. Lastly a bank can get funding from the central bank (Nikolau, 2009). Market liquidity is the ability of a bank to trade an asset at short notice at low costs and with little impact on its price. Market liquidity risk relates to the inability of trading at a fair price and with immediacy (Nikolau, 2009).

2.2 Prior literature

2.2.1 Development of risk disclosure

The literature on annual reports is extensively and dates way back, but studies about voluntary disclosure in annual reports have risen in the last 30-35 years (Linsley and Shrives, 2005). Only recently, in the past years, the subject of risk and risk management has been of great interest and is actively examined (Power, 2004; Amran et. al., 2008). The first call for better risk reporting came from the Institute of Chartered Accountants in England and Wales (ICAEW) in 1998, with the publication of a discussion paper named "Financial Reporting of Risk – Proposals for a statement of Business Risk". This discussion paper explores the issue of risk reporting and argues that companies should voluntary disclose risk in their annual reports in a separate statement. Risk information was reported by some companies due to accounting standards, but those disclosures only provided information in discrete areas (Linsley and Shrives, 2006).

2.2.2 General risk disclosure literature

Literature of risk disclosure mainly consist of studies about the usefulness of risk reporting and studies that investigate the firm specific and external factors that have influence on the reporting of risk.

Studies about usefulness of risk reporting

Extant research is interested in the usefulness of risk disclosures by companies. Cabedo and Tirado (2004) perform a literature study and make a clear distinction between financial and non-financial risks communicated in the annual report. They argue that high quality disclosure of risk information is required because accounting information issued by firms is not always wholly adequate when used for decision making purposes and when it is used for the process of forecasting. If risk are more quantified by companies, the measure of the risk can be incorporated in the annual report and this would benefit the information available for the user's decision making process. Dobler (2008) uses a literature review to analyze risk reporting incentives and their relation to regulation. He argues that the informativeness of risk reporting should not be overestimated, not even in a regulated environment, because managers have different, not always good incentives for the disclosure of risk information. Abraham and Cox (2007) investigate the relation between risk information disclosure in annual reports and ownership, governance and listing

characteristics. Their study found a negative relationship between institutional share ownership and risk disclosure, meaning that institutional investors have the preference for firms with lower level of risk disclosure. Also a relation between corporate governance and risk reporting is found. Solomon et al. (2000) investigate the attitude of investors toward risk disclosure and their portfolio investment decisions. In their paper they find that investors do not always favor a regulated environment for risk disclosure, but they do find that investors have preference for increased risk reporting, and that it helps them in making investment decisions.

Studies about firms specifics and risk reporting

Linsley and Shrives (2006) explore risk disclosures with a sample of 79 UK company annual reports using a content analysis. They look at firm specifics and find an association between the number of risk disclosures and company size. The relation between the number of risk disclosures and the amount of risk that a company is subject to is only partially found. Amran et. al. (2008) provide an understanding of risk disclosure practices in Malaysia. They use stakeholder theory and show that company size is in relation with the amount of risk disclosure. Also they find that the nature of the industry is also a determinant of the amount of risk disclosure. Dobler, Lajili and Zeghal (2011) investigate the annual reports of US, Canadian and German manufacturing companies and look at the influence of size, leverage and amount of risk that the companies are subject to, on risk disclosure. In their study they find that size of a company and the amount of risk explain risk disclosure quality. Also they find a negative relation between leverage and risk disclosure quality in German companies, they argue that this relation is caused by the debt financing environment in Germany.

Studies about external influence on risk reporting

Combes-Thuélin, Henneron and Touron (2006) look at the compliance of three French companies to mandatory risk regulations. They find that there is a lack of harmonization and that companies are bound by different rules concerning risk disclosure due to the lack of consensus between different pieces of legislation. Miihkinen (2012) investigates the impact of national disclosure standards on the quality of risk disclosure by examining the annual report of companies. He finds that increased regulation causes an increase in quantity of risk disclosure with more extensive and comprehensive information. But he also finds that increased regulation does not increase the disclosure of quantitative risk disclosure information.

2.2.3 Bank risk disclosure literature

Within the risk reporting literature, a focus is placed on risk reporting of financial organizations, and specifically banks.

Studies about usefulness of bank risk reporting

Baumann and Nier (2004) look at risk reporting by banks from the view of the usefulness of information. They investigate the benefits that risk reporting provides to investors and the bank itself. They conclude that risk disclosure is useful for investors, banks and supervisors, but that the relative usefulness of items in the risk disclosure is hard to assess. They therefore argue that the banks, investors and supervisors need to carefully weigh the benefits with the costs when deciding how much information to disclose.

Studies about bank specifics and risk reporting

Linsley, Shrives and Crumpton (2006) look at the association between bank size and profitability, and the level of risk disclosure by UK and Canadian banks. They find no association between level of risk disclosure and profitability, but association between level of risk disclosure and bank size is found. Barakat and Hussainey (2013) investigated the relation between the corporate governance and ownership structure, and the quality of the bank's risk disclosure of European bank. They find that good corporate governance and a concentrated ownership have a positive association with the quality of the disclosure of risk by banks. Oliveira, Rodrigues and Craig (2011) look at the reputation and stakeholder approach of banks and conclude that they are in relation with the risk reporting practices of a bank.

Studies about external influence on bank risk reporting

Besides firm specifics, some researchers also look at external factors that are associated with the risk reporting of banks. Linsley, and Shrives (2005) look at bank risk disclosure practices and the requirements set by regulators. They examine requirements set by the Basel Committee to discuss the potential effects on the risk reporting practice, and if these regulations provide stakeholders with understandable and relevant information about the risk of a bank. Bischof (2009) looks at the implementation of the new IFRS 7 regulation for risk disclosure and the effect it has on the quality of risk disclosure by banks. His finding suggest that not only the content of new regulations influences the disclosure of risk, but also the enforcement of the standard increases the disclosure quality. According to Bischof, harmonization of the regulations and the enforcement of these regulations can be the solution to a higher quality of risk disclosure. Bischof also found that the implementation of IFRS 7 caused the extent of risk disclosure to shift from market risk to credit risk.

3. Regulation on bank risk reporting

3.1 Development of bank risk disclosure regulation in Europe

At the moment there are two sources that regulate the liquidity risk disclosures as part of the total risk disclosures of financial instruments of European banks. First one is the IFRS, and specifically IFRS 7 prescribes the requirements for risk disclosure by banks. All large European bank are mandatory to report in the IFRS as adopted by the EU, all banks in the sample fall under this criteria. Secondly the legislative implementation of Pillar 3 of the Basel II framework regulates risk disclosure at country level (Bischof & Daske, 2013).

The regulation regarding risk disclosure arose from the call for greater transparency of risk discloser by banks from several institutions. As mentioned earlier, the ICEAW initiated the risk disclose debate with their discussion paper (1998), but the Basel Committee on Banking supervision was the first to issue papers specifically about the disclosure of bank risk information (Linsley, Shrives & Crumpton, 2006). In their paper "Enhancing Bank Transparency" (BIS, 1998), the Basel Committee elaborates that information about risk management is a key factor for stakeholders to assess the future performance, condition of a bank, and the effectiveness of management. Also regulators benefit by better risk disclosure of banks because it can assist them in monitoring for impending problems, which enables them to take earlier action (Linsley, Shrives & Crumpton, 2006). For these reasons the Basel Committee calls for the disclosure of risk by banks and states: "Market participants and supervisors need qualitative and quantitative information about [a banks] risk exposures, including its strategies for managing risk and the effectiveness of those strategies" (BIS, 1998, p.21). In 1999 the Basel Committee issued "A new capital adequacy framework" (BIS, 1999), known as the Basel II accord. This framework consist of three pillars of which the 3rd pillar recommends the disclosure of bank risks. The final Basel III framework was published in 2004 and the Basel committee aims to, among other things, strengthen the banks' transparency and disclosures with this framework (BIS, 2004). Since the implementation of the third accord, the Basel committee continuously tries to enhance the banking regulatory framework by issuing consultative documents, additions, and monitoring the impact of the Basel III accord. Aside from proposed frameworks, the Basel Committee also published studies that examine the disclosure of risk by banks. During the development of the frameworks there were three studies that assessed the disclose of risk by banks (BIS, 1999; 2001). An overview of these results, made by Linsley, Shrives and Crumpton (2006) in their study, can be seen in Appendix I.

The International Accounting Standards Board (IASB) is the independent standard-setting body that is responsible for the development and publication of the International Financial Reporting Standards (IFRS). The current standard for risk disclosure is a result of a long project of the IASB regarding the disclosures of financial instruments, of which liquidity risk disclosure is part of. This project would

replace the then existing IAS 30, a standard for the disclosures of risk reporting by banks. This standard prescribed appropriate presentation and disclosure standards for banks (IASPlus, 2016; Bischof, 2009). But in 2002, due to the extensive risk disclosure debate, the IASB changed the direction of the project. The project became more broadly oriented, and focused on the disclosure of "Qualitative information about risk exposures arising from financial instruments, quantitative data based on management's risk management system, and minimum disclosures about credit risk, liquidity risk, and market risk (including interest rate risk)"(IASPlus, 2016). The project has now finished and resulted in IFRS 7: Financial Instruments: Disclosures and Capital Disclosures, which became effective of January 1, 2007 (IASB, 2010; Gebhardt & Novotny-Farkas, 2010). IFRS 7 has a higher required level of disclosure than previous standards, and is not a bank specific regulation as IAS 30, but applies to all entities that use financial instruments, making it especially relevant for banks (Bischof, 2009).

3.2 Enforcement of regulation: IFRS 7 and Pillar 3

There are two possibilities for enforcement of IFRS disclosures by national banking supervisors (Bischof, 2009). The first possibility is a non-interventionist approach, in which the national banking authority does not further restrict the disclosure choices by banks, but let banks interpret the standards at firm level. In this approach the national banking authority accept every financial statement in conformity with the general objectives of the IFRS, even if this means that the disclosure of national banks are heterogeneous. This approach is more principles based (Bischof, 2009). The second approach is the interventionist approach, which is more rules based. In this approach the banking supervisors want to achieve a uniform accounting practice within a country. This is achieved by providing detailed guidance on how IFRS should be interpreted within the boundaries of the IFRS principles (Bischof, 2009). Banking supervisors are free to determine the guidance within the boundaries of IFRS, and are not required to determine the rules based on the regulation set out by the Basel committee (Third pillar). But, in determining these rules, supervisors often make use by the guidance set out by the Basel committee (Van Oorschot, 2010).

3.3 Regulation on liquidity risk reporting

IFRS 7 has in their reporting standards specific regulations for the disclosure of liquidity risk. These regulations are not very concise and leave a bank with much room for interpretation. An overview of the IFRS regulation regarding liquidity risk constructed by Van Oorschot (2010), can be seen in appendix II. Next to IFRS7, the Basel committee of Banking Supervision also published standards regarding liquidity risk. These publications are mainly about how banks can measure and manage their liquidity risk. For example: in recent years the Basel Committee introduced the Liquidity coverage ratio (LCR) and the Net stable funding ratio (NSFR). The LCR is a measure that promotes the short term resilience of the liquidity

risk profile of banks by ensuring that they have sufficient High quality liquid assets to survive a significant stress scenario lasting 30 calendar days. This ratio helps bank manage their liquidity and gives supervisors an overview of the liquidity risk their banks face (BIS, 2013a). As of January 1 2015, the LCR is effective under Basel III standards. The NSFR is a requirement designed to limit funding risk arising from maturity mismatches between bank assets and liabilities. It will require banks to maintain a stable funding profile in relation to the composition of their assets and off-balance sheet activities. According to the Basel committee the NSFR "limits overreliance on short-term wholesale funding, encourages better assessment of funding risk across all on- and off-balance sheet items, and promotes funding stability." (BIS, 2014, p2). The NSFR will be fully implemented in 2019.

4. Framework for analyzing risk disclosure quality

4.1 Developing the framework

The main research question can be split into two parts, how liquidity risk disclosure can be measured, and how liquidity risk disclosure can be explained. To answer the question of how liquidity risk disclosure can be measured, in this section a framework is constructed. In constructing this framework it is essential that the measure used for the disclosure quality of risk, truly reflects the underlying quality of risk information disclosed in the annual reports. To do this, first an understanding of "information quality" is established, and the factors that possibly can measure this quality are explored. Secondly the framework is operationalized to enable the use of it as a measurement 'tool'. Lastly the determination of the disclosure score is explained and limitations of the framework are discussed.

4.2 Disclosure quality

In recent literature about risk disclosure, it is evident that assessing the quality of risk disclosure is challenging (Beretta & Bozzolan, 2004; Botosan, 2004; Beattie, McInnes & Fearnley, 2004). In the literature no consensus has been found about the measures of disclosure quality. Also little evidence exists in the literature that directly examines what stakeholders experience as 'quality of information' that is provided to them (Botosan, 2004; Van Oorschot, 2010). Consequently only a approach of appropriate measures can be made. Because of these limitations, it is important that a Framework for measuring risk disclosure quality is grounded by a well-supported and convincing discussion about the characteristics of information that define the risk disclosure quality (Botosan, 2004). For this reason the qualitative characteristics of information quality as stated by IASB (2010) framework are chosen to construct the quality framework.

The International Accounting standards board (IASB) and the Financial Accounting Standards Board (FASB) produced frameworks which give guidance about the generally accepted notions of

information quality disclosed in annual reports (IASB, 2010; FASB, 1980). The IASB (2010) "Conceptual Framework for Financial Reporting" defines the qualitative characteristics of useful disclosed information as "useful to users in making decisions about the reporting entity on the basis of information in its financial report" (IASB, 2010, p16.). In this definition the focus is given on the decision usefulness of information as representation of information quality. Due to the context specificity of the term useful, it is important to consider the question: relevant to whom? (Botosan, 2004). In this study we see investors as the main target group for the risk disclosure in the annual report, but also other stakeholders as mentioned earlier are seen as relevant in constructing the framework.

4.3 Quantity vs Quality

4.3.1 Quantity as proxy for disclosure quality

There are different approaches to measure the disclosure quality in annual reports. Several risk reporting studies use a quantitative method in the form of sentence or page counting to measure the disclosure quality of risk. Those studies argue that quantity is a proxy for quality. Bischof (2009) uses the number of pages that are associated with the disclosure of risk categories as measure for risk disclosure quality in his content analysis of annual reports of banks. Other researchers use the number of risk sentences as measure for risk disclosure quality (Abraham and Cox, 2007; Amran et al., 2008). A major limitation of these quantitative proxies is that it does not look at the contents of the risk information, and consequently does not capture how useful the risk information in the annual report is to its users. Counting of word/sentences only measures the quantity of the disclosures and not quality. Even if the quantity of information disclosed influences the quality of information, an assessment on disclosure quality cannot be based purely on this risk association (Beattie, MCInnes & Fearnley, 2004). To solve this problem several researchers use, next to the quantity, also semantic properties to better capture the quality of risk disclosure information.

4.3.2 Complementing quantity

Different from studies that only record disclosure quantity, Beretta and Bozzolan (2004) suggest that the quantity of risk disclosure is not a satisfactory proxy for the quality, but that other properties of information are also relevant. They argue that is not only important how much risk information is disclosed, but also what is disclosed and how. They propose a framework that uses a quantitative measure in the form of word counting, and complement it with qualitative characteristics which aim to also measure the richness of the information that is counted. Complementary dimensions such as the content of information (monetary/non-monetary), the economic sign of information (Good/bad news), the type of measure used to quantify the expected impacts (past/future news), and the managerial approach to risk management are used to differentiate between different risk disclosure sentences (Linsley & Shrives; 2006, Linsley, Shrives & Crompton, 2006).

Nevertheless, this approach also is criticized, Botosan (2004) argues that the suggested framework is no different from other frameworks because it still relies on a quantitative measure, namely on the count of disclosure items. Regardless of how the measure is formulated, the outcome of the measure is still a weighted count of risk sentences. Even though Beretta and Bozzolan (2004) added sematic characteristics, their framework relies on the maintained hypotheses that quantity and quality of disclosure are positively related (Botosan, 2004). Botosan (2004) proposes the use of the IASB quality framework to measure the quality of information, but does not provide a general measure to use this framework is assessing disclosure quality due to several limitations: It is difficult to define what information quality is, the framework is most likely context specific, and even if the framework is constructed, it is challenging to employ the procedure in an empirical setting because of the lack of information, the need for researcher judgement, or prohibitive cost (Botosan, 2004). Other limitations of the Beretta and Bozzolan (2004) framework are that by using sentences to code disclosure, the writing style of management can influence the disclosure score (Abraham & Cox, 2007). Also the coding has to been done manually and that method is very time consuming due to the multiple classifications (Van Oorschot, 2010).

4.3.3 Disclosure index

As an alternative to measure disclosure quantity in the form of word or sentence counting, and/or weighing the sentences, several extant risk disclosure studies use a disclosure index (Rahman et al., 2013; Barakat & Hussainley, 2013; Van Oorschot, 2010). Those studies do not relate the amount of word, sentences or pages to measure quality, but assume that the amount of disclosure on specified risk topics, or qualitative characteristics is a proxy for disclosure quality. Often a simple binary coding scheme is used whereby the presence or absence of an item is documented (Beattie, McInnes & Fearnley, 2004). Barakat & Hussainley (2013) use a disclosure index with 14 items with 56 sub-items that are checked on their presence. Van Oorschot (2010) uses an binary coding index to measure the risk disclosure quantity and quality of financial instruments of German banks. She uses a combination of a qualitative index based on the mandatory IFRS 7 disclosures, and an index constructed out of qualitative characteristics based on the IASB qualitative characteristics as mentioned by Botosan (2004). The advantage of this approach is that it is not reliable on counting of sentences, and therefore not a reflection of disclosure quantity, or influenced by the writing style of management. Also the framework is only partly context specific because it focusses on risk disclosure of financial instruments and is based on worldwide adopted accounting standards and an accepted framework of information quality. A disadvantage of this framework is that the qualitative index is based on the compliance with mandatory IFRS 7 reporting, which means that if a bank discloses all requirements of IFRS 7, than the bank has an 100% quantity score. This results in the measurement of compliance It mainly uses specific items that banks can disclose in their financial instruments risk disclosure, for example: “Disclosure of the expected future impact of the financial crisis on the bank and

its results" (Van Oorschot, 2010, appendix B). Also Van Oorschot only codes with yes/no answers. This approach limits the scope of the measurement because of its specific and dichotomous nature. An example of an item that is limited by this measure is: "Use of tables and graphs to support the text" (Van Oorschot, 2010, appendix B). By only giving yes/no answers the amount of tables in not reflected in the measure, only the presence of a minimum of one table is measured.

Beest, Braam and Boelens (2009) also use an disclosure index to construct a framework for the analysis of risk disclosure, but construct a more comprehensive framework including all qualitative characteristics as defined by the IASB. They argue that their framework uses a measurement tool that is valid and reliable approach to assess the quality of financial reports. Their framework is not used for the analysis of only risk disclosure, but for complete annual reports. Opposite to Van Oorschot (2010), Beest, Braam and Boelens (2009) use a 5 point rating scale to assess the score on the items. By using this scale the researchers can more accurately measure the disclosure quality. An example of their operationalization is presented in appendix III.

4.4 Risk disclosure indexes in this study

In this section, the framework that is used to analyze the annual reports is presented. The framework is constructed in this research and is based on the qualitative characteristics as presented by the IASB and is influenced by several extant researches such as the work of Beest, Braam and Boelens (2009). Van Oorschot uses a clear distinction between quantity and quality of disclosure with the two indexes, but due to the limitation mentioned earlier, this study only focusses on the quality of the risk disclosure to measure quality. In appendix XII can be seen on which research the operationalization of the framework is based.

4.4.1 The Quality index

According to the IASB (2010) framework information is useful when it is: "Relevant and faithfully represents what it purports to represent" and the IASB states that "The usefulness of financial information is enhanced if it is comparable, verifiable, timely and understandable"(IASB, 2010, p.16). According to the IASB, relevance and faithful representation are the fundamental characteristics of information quality, and the other characteristics are enhancing and improve the decision usefulness when the fundamental characteristics are established (Beest, Braam & Boelens, 2009; IASB, 2010). These qualitative characteristics and enhancements, will be used to ex ante operationalize a qualitative disclosure index based on decision usefulness as stated by the IASB (2010). With this operationalization, the index aims to assess the quality of different dimensions of information simultaneously to determine the decision usefulness of disclosed information (Beest, Braam & Boelens, 2009). The operationalization will be made specific for the disclosure of liquidity risk to better measure the risk disclosure quality. Also this framework does not use a yes/no scale, but uses more points to rate the item scores. The framework of Beest, Braam and Boelens

(2009) is meant for the analysis of complete annual reports, therefore only parts of their framework in combination with extant research is used as guidance for the framework that is constructed in this research. The next section will present the different items in the framework derived from the IASB framework and will explain how the different qualitative characteristics can be measured to assess liquidity risk disclosure quality.

4.4.2 Relevance of information

Relevant information is defined as information that is capable "of making a difference in the decisions made by users"(IASB, 2010, p.17). Information is capable of making a difference in decision making if it has a predictive value and/or a confirming value, this implicates that it not necessarily has to be new information. In the past, several researchers have operationalized predictive value as the ability of past earnings to predict future earnings (Francis et al., 2004; Schipper & Vincent, 2003; Beest, Braam & Boelens, 2009). The IASB gives a comparable definition: "Financial information has predictive value if it can be used as an input to processes employed by users to predict future outcomes" (p. 17).

The disclosure of forward looking statements allows user to predict the future outcomes (Beretta & Bozzolan, 2004). Forward looking statements usually describe the expectations of management for the future year(s) of the company. This information is relevant for users of the information because management has access to (more) inside information to produce a forecast about the future that is not available to other stakeholders (Beest, Braam & Boelens, 2009; Bartov & Mohanram, 2004). Also according to Aljififri and Hussainey (2007), forward looking information helps investors in their investment decision-making process. For this reason the measure for predictive value is formulated:

R1: Management provides forward looking statements about liquidity risk

Next to the predictive value, confirmative value also contributes to the relevance. Information has confirmatory value if it "provides feedback about (confirms or changes) previous evaluations" (IASB, 2010, p17). By telling about the past, feedback enables users and other stakeholders to confirm or correct prior expectations (Jonas & Blanchet, 2000). In other words, confirmative information "allows investors to understand how management's past actions and decisions have affected the company's current financial position and results" (Jonas & Blanchet, 2000, p.360). In the content analysis, feedback on events is also seen as feedback (e.g. the reason how and why events affected risk). By giving confirmative information, it is more useful for the users of the information, for this reason the following measure is formulated:

R2: Management provides feedback as to how various market events and significant events affected liquidity risk

4.4.3 Faithfulness of information

The second fundamental qualitative characteristic is faithful representation. Next to relevance, disclosed information must also faithfully represent the phenomena that it purports to represent (IASB, 2010). The IASB (2010) speaks of perfect faithful information when a depiction has three characteristics: complete, neutral and free from error. These characteristics will be presented respectively.

Complete depiction

The IASB speaks of a complete depiction when: "all information necessary for a user to understand the phenomenon is being depicted, including all necessary descriptions and explanations." (IASB, 2010 p.18). This complete depiction can also include explanation of significant facts about the quality and nature of risk, factors and circumstances that might affect the quality and nature, and the process that is used to depict the disclosure. In risk disclosures there is a difference made between the actual risk and the way management manages the risk. Therefore the following two measures are formulated to assess complete depiction:

F1: Management provides descriptions and explanations about liquidity risk.
F2: Management provides descriptions and explanations about liquidity risk management

Neutral depiction

To faithfully disclose risk information, it is important that a firm does not manipulate information, for example by emphasizing good new and de-emphasizing bad news, to increase the probability that the information that is disclosed is received favorably or unfavorably by users of the information (IASB, 2010). The IASB (2010) therefore defines a neutral depiction as "Without bias in the selection or presentation of financial information" (IASB, 2010, p18). According to Jonas and Blanchet (2000) neutrality means that information is disclosed with objectivity and balance. With objectivity and balance is meant that information must be presented in an objective way, without purely focusing on the positive events without disclosing negative events; the presentation must be in balance. Linsley, shrives and Cumpton (2006) argue that if the reader is unaware if information is withheld, for example withholding bad news, they cannot know if they can draw valid conclusions out of that information regarding the risk position of a bank, and thus faithfully represent the risks of a bank. Out of the information above, the following measure is formulated:

F3: To what extent does the bank highlight the positive events as well as the negative events about liquidity risk.

Free from error

Information is free from error if "there are no errors or omissions in the description of the phenomenon, and the process used to produce the reported information has been selected and applied with no errors in the process." (IASB, 2010). With this the IASB does not mean that all information necessarily has to be perfect accurate in all aspects, but the disclosure of an estimate is faithful when the disclosed estimate is "described clearly and accurately as being an estimate, the nature and limitations of the estimating process are explained, and no errors have been made in selecting and applying an appropriate process for developing the estimate." (IASB, 2010, p. 18). The disclosure of risk, and especially about future statements is partly an estimate. According to Maines and Wahlen (2006) it is important for firms to provide disclosures that make their estimates, and the underlying economic assumptions on which they are based, transparent to external stakeholders. Because most users of the risk information have no access to information to see if the disclosed information about risk is free from error, a measure is constructed that looks at the ability for the user to check whether the estimates that are presented are free from error:

F4: Estimates are described clearly, and accurately as being an estimate and valid arguments are provided to support the decisions for the estimates and assumptions about liquidity risk.

4.4.4 Comparability, verifiability, timeliness and understandability of information

The IASB states that the usefulness of risk information can be enhanced by several qualitative characteristics namely; comparability, verifiability, timeliness and understandability of risk information are the qualitative characteristics that enhance the usefulness of information that is disclosed (IASB, 2010). These characteristics will be represented respectively.

Comparability

The first enhancing qualitative characteristic is comparability. According to the IASB comparability enables users of financial information to:" identify and understand similarities in, and differences among, items" (IASB, 21010, p.20). Users must choose between alternatives in making decisions, for example sell or hold a share of a bank, or on which bank to deposit money. For this reason information is more useful for making a decision if it can be compared with similar information about other banks and information about the same bank, but in another period (IASB, 2010). Users must be able to build continuous risk pictures, and one aspect of this depiction is that information enables users to make asses the relative risk profile of banks over different years (Linsley & Shrives, 2005). For this reason the following measure is formulated:

C1: To what extent is liquidity risk compared with the liquidity risk of other period(s)

As mentioned before, to enhance comparability, users also need to be able to compare the risk profile of banks within the same country and across banks in different countries (Linsley & Shrives, 2005; IASB, 2010). Comparability should not be confused with uniformity or consistency, but information is comparable if it is prepared in a way that facilitates informed comparisons with other companies (Jonas and Blanchet, 2000). If a bank discloses their risk information in a well-structured and ordered way that facilitates comparison between companies, users are able to make more informed decisions (Beest, Braam and Boelens, 2009). In the case of risk disclosure, information about a type of risk is not always centered in one place within the annual report, but sometimes is scattered throughout the report. Presenting information centralized, facilitates the comparability between different companies. Also if the information is well structured, it can be more easily compared. The following measure is formulated to assess the comparability between banks:

C2: Presentation of liquidity risk is well-structured and centralized in one part of the annual report.

Next to comparison between different years and different companies, the way the information is presented can improve the comparison by users. Beest, Braam and Boelens (2009) argue that ratios and index numbers are useful when comparing the risk of firms. Ratios and index numbers are useful because they enable the user of the information to better compare the numbers with other banks. Therefore the following measure is formulated:

C3: Management provides index numbers and ratios in the liquidity risk disclosure.

Verifiability

The IASB (2010) states that verifiable means that different independent observers with knowledge of the subject, could reach consensus, but not necessarily complete agreement, that a depiction is a faithful representation (IASB, 2010). Verifiability "helps assure users that information faithfully represents the economic phenomena it purports to represent" (IASB, 2010, p.20). In their framework the IASB (2010) differentiates between direct and indirect verification. With direct verification the IASB means that an amount, or other representation, is verified through a direct observation, for example counting cash. User of financial statements are mostly not able to make this direct estimation because the information necessary to verify the depiction, is not available for them (Healy & Palepu, 2001). An auditor can serve as an

intermediary in verifying this information by issuing an opinion in an auditor's report. This report show that auditors are (partly) in agreement with the assertions and information that management provided in the annual report. According to Maines and Wahlen (2006) an auditor report is important to perceive the information that is disclosed as reliable and faithful (Beest, Braam and Boelens, 2009). For this reason the following measure is formulated:

V1: The information that is presented is audited.

By an indirect verification, the IASB (2010) means that the amount or other representation is verified by checking the inputs of a model formula or other technique and recalculating the outputs using the same methodology (IASB, 2010). Unfortunately it is almost impossible for the user to verify explanations, or forward looking information until a future period, without knowing how the information is derived. Therefore to help user to determine if the information a bank discloses is useful, it is necessary to disclose the "underlying assumptions, the methods of compiling the information and other factors and circumstances that support the information."(IASB, 2010, p.21). By disclosing these assumptions, methods and other factors, the information can thus better be verified. The following measure is formulated to look at this aspect:

V2: Assumptions, the methods of compiling the liquidity risk and other factors and circumstances that support the information are described.

Timeliness

The Basel committee has recognized that risk information has a limited shelf life and can quickly become outdated and therefore has to be released in a timely manner (Linsley & Shrives, 2005). The IASB describes timeliness as: "Having information available to decision-makers in time to be capable of influencing their decisions. Generally, the older the information is the less useful it is." (IASB, 2008, p21). For this reason we use the time it takes to report the risk information. Because this study investigates annual reports, this qualitative characteristic is limited to yearly publication and the following measure is used:

T1: Time between year-end and the auditors signature on the audit report.

Understandability

The last enhancing qualitative characteristic of information is understandability. According to the IASB (2010) information is more understandable if the disclosure is: "Classifying, characterizing and presenting

information clearly and concisely" (IASB, 2010, p21). According to Jonas and Blanchet (2000), graphs and tables help to understand the information better because it clarifies relationships and makes the information more concise (Beest, Braam & Boelens, 2009). For this reason the following measure is formulated:

U1: Graphs and tables are used in the disclosure of liquidity risk.

Only the presentation of graphs and tables is not enough; some tables and graphs are complex and are not easy to be presented in an understandable manner. Excluding the information form the risk disclosure would make the risk disclosure easier to understand, but the disclosures would be incomplete and potentially misleading (IASB, 2010). The increasing complexity of risk makes it difficult for users of financial information to appreciate it on its own without clear, accompanying explanations of that information (Beretta & Bozzolan, 2004). For the information to be understandable, management must also provide explanation of the graphs and tables that are disclosed. Therefore the following measure is constructed:

U2: Tables and graphs are explained and enable the user to understand the phenomenon being depicted.

Risk disclosures are usually prepared for users who have a reasonable knowledge of business and economic activities, but even the most knowledgeable people sometimes need to seek the help of an advisor to understand the information that is disclosed about complex phenomena (IASB, 2010). If management uses words and sentences that are hard to understand, financial jargon and difficult terms for example, the content of the information will likely also to be hard to understand. If technical jargon and difficult terms are unavoidable, explanations of the jargon and terms that are used help to improve the understandability of the information, by for example including an explanation in a glossary (Beest, braam & Boelens, 2009). To measure this the following measure is formulated:

U3: In the disclosure the use jargon is limited and the language used is understandable.

4.5 Operationalization of framework

After constructing the measures that can be used to asses disclosure quality in the previous section, an operationalization in the form of a coding scheme (quality index) is made to measure the quality of risk disclosure of the annual reports. The operationalization consist of the 15 items that are mentioned above and mainly uses a four point scale to assess the score for each item. How the scoring is performed is explained in section 4.6. An overview of the Quality index and the operationalization can be found in

Appendix XII. In the overview the items are presented, the underlying theoretical concept and the literature on which the operationalization is based upon is depicted.

4.6 Risk disclosure score

After constructing the quality items and the operationalization (the index), it enables the researcher to analyze annual reports using content analysis. The methodology for analysis of the annual reports is described in chapter 6.1. To give the risk disclosure quality score a quantitative value, a score has to be derived from the operationalization (index). This calculation is presented in this section.

The quality index uses a multiple point score measure and has a minimum of 15 points and a maximum of 60 given to each bank. Each item is scored separately and most items have only a 4 point scale with 4 options (1, 2, 3 and 4 points), only two item are scored different:

U1 (Understandability)

This measure is based on the amount of graphs presented in the liquidity risk disclosure. Because this amount can be large (in the sample ranging from 1 to 19), a four point scale limits the measure by categorizing the amount of graphs in only four options. Therefore there is chosen to use a 7 point scale.

T1 (timeliness)

This measure is based on the amount of days between January the 1st 2016 and the date the auditor has signed the auditor report. Because this measure has many possibilities, categorizing the amount of days in a four point scale limits the measure. Therefore it is chosen to calculate the score for measure T1 as follows:

$$\text{Score T1} = 4 - 2^{*} (\text{Ln}(\#\text{ days A}) - \text{Ln}(\text{ Minimum}))$$

Ln (# of days) = The natural logarithm of the amount of days of bank A

Ln(Minimum) = Natural logarithm of the number of days of the bank with the least amount of days in the sample.

This scoring gives the bank with the least amount of days a measure score of 4 and has a lower score if the amounts of days are higher than the minimum.

Total Quality score

After calculating the separate items, the total risk disclosure quality can be calculated. The total quality of liquidity risk disclosure is calculated using the following formula:

$$\text{DSQUA}_{\text{A}} = \frac{1}{MAXSQ - 15} \sum_{t=1}^{n} SQUA_{\text{A}-15}$$

$DSQUA_A$ = Disclosure score of quality of disclosure index of a bank
MAXSQ = Maximum quality disclosure index score
$SQUA_A$ = Score quality disclosure index of bank A

The disclosure scores can be calculated by dividing the sum of scores that a bank has attained for the index for each item, and dividing this with the maximum score that a bank can attain. There is an adjustment made for the minimum of 15 points. This results in a score between 0 and 1 for the Disclosure quality of liquidity risk.

For example: The annual report of bank A is coded using the operationalization presented in appendix IX. The bank scores a total of 45 points for all the items combined. The total risk disclosure quality score of bank A then can be calculated as follows:

$$DSQUA_A = \frac{1}{60 - 15}\ (45 - 15) = \frac{30}{45} = \ 0{,}667$$

4.7 limitations of the framework

Although the framework is constructed using a widely accepted framework for the quality of information (IASB, 2010), it still has several limitations. The first limitation is the context specificity. Because the framework is operationalized with the focus on risk and in particular liquidity risk, it needs small adjustments to be used for other disclosures about risk and other information. The second limitation is that the framework is constructed ex ante, this is beneficial to get an objective index, but could cause that the index does not fit perfectly to the disclosures of liquidity risk and/or misses important aspects. To deal with this limitation, the framework is tested on disclosures of banks that are not within the sample, and necessary adjustment are made. Thirdly, the use of this framework, and specifically the content analysis, is very time consuming, this limits the sample size. The last limitation is also the largest; the framework is dependent on the subjectivity of the researcher. The quality index has measurements that cannot all be assessed with complete objectivity because some are dependent on judgement of the researcher.

5. Hypotheses development

In order to answer the second part of the research question: how can liquidity risk disclosure of European banks be explained, several hypotheses are developed based on extant literature, and theories about the incentives for the disclosure of risk. Because of the limited extant bank risk disclosure literature, the hypotheses are also based on extant research of general bank disclosure literature.

5.1 Quantity vs. Quality

Extant research mostly uses the quantity of risk disclosure as a proxy for the quality of risk disclosure (Beretta and Bozzolan, 2004; Van Oorschot, 2010), but no clear explanation for this relation has been given (Botosan, 2004; Miihkinen, 2012). Beretta and Bozzolan (2004) argue that the quantity of disclosure is not a satisfactory proxy for risk disclosure quality, and Botosan (2004) argues that measuring quality cannot be based on quantity. This research provides an alternative way of measuring disclosure quality, focusing on decision usefulness and not quantity. Therefore it is interesting and contributes to extant research, to examine if quantity and quality of risk disclosure are correlated. If there is an relationship between the quality measured in this study and the quantity of risk disclosure then we would expect a positive relationship. Therefore the following hypothesis is formulated:

H1: There is an positive relation between risk disclosure quantity and risk disclosure quality.

5.2 Institutional and regulatory environment

Banks are strongly affected by the regulatory environment, which is not yet fully integrated across Europe. According to Barakat and Hussainey (2013) banking supervisors that promptly take corrective actions and are independent of political influence and influence from banking industry itself, can serve as effective outside monitors and influential stakeholders to motivate bank management to provide risk disclosures of higher quality. Bischof (2009) finds in his study about bank risk disclosure that the implementation of IFRS 7 had a positive effect on bank risk disclosure. Deriving on the difference between interventionists and non-interventionists approaches of enforcements, he concludes that not only accounting standards (IFRS 7) are important for the risk disclosure quality, but also the enforcement of that standard by the national supervisory authorities have influence on the reporting quality. These finding implicate that the local regulatory environment influences the risk disclosure quality, therefore we formulate the following hypothesis:

H2: There is a difference between the risk disclosure quality of the sample countries.

5.3 Corporate governance

The limited transparency of the operations of banks towards stakeholders, increases the demand for corporate governance mechanisms that reduce agency problems (Beyer et al., 2010). Pressure from the mechanisms can influence the disclosure decision by management in several ways. Eng & Mak (2003) argue in their paper that when shares are held by substantial shareholders (5% of more shares), less monitoring of managers is needed due to the lower information asymmetry between the managers and shareholders. This means when there are concentrated owners, the incentive for disclosure is less, resulting

in a negative relation between ownership concentration and risk disclosure quality. From a proprietary cost perspective, concentrated ownership allows banks to limit their disclosure towards the public and other stakeholders. This incentive exists because a bank can prevent the disclosure of proprietary information to competitors, and therefore to avoid unwanted political or social scrutiny that is disadvantageous to large owners (Fan & Wong, 2002). This possibly results in an expected negative relation between concentrated ownership and risk disclosure quality. Following out of the literature the following hypothesis is formulated:

H3a: There is a negative relation between ownership concentration and risk disclosure quality

Banks are highly leveraged institutions that are in the business of facilitating leverage for others (BIS, 2014). Leverage is used in many studies as an proxy for disclosure quality and the findings show mixed result (Ahn & Lee, 2004). Based on stakeholder theory, Amran et al. (2008) argue that in order to provide justification and explanation for what is happening in the company, management is expected to disclose more risk information. On the other hand, Dobler, Lajili and Zéghal (2011), in their investigation of manufacturing firms, argue that firms that are heavy reliant on debt financing, and thus have a higher leverage ratio, have a lower disclosure of risk. They believe that the reason for this negative relation is that banks play the role of insiders that can access internal information and are inclined to conceal firm risk exposure to outsiders to protect private control benefits. Because evidence is mixed, the following hypothesis is formulated:

H3b: There is an association between leverage and risk disclosure quality

5.4 Bank reputation

Because of a banks public visibility and the importance of banks for the stability of the financial system, banks disclose risk information to build a good reputation with their stakeholders (Oliveira, Rodrigues and Craig, 2011). According to the legitimacy theory banks should take measures to ensure that their (risk) activities and reputation are acceptable to their stakeholders (Singh & Point, 2009). Sánchez-Ballesta & Lloréns (2010) state that due to the information asymmetries between managers and stakeholders, banks use disclosure to possibly build a reputation and gain the confidence of their stakeholders. Therefore higher levels of risk disclosure will enhance or sustain a bank's reputation, and banks that seek legitimacy are expected to disclose more risk information (Oliveira, Rodrigues & Craig, 2011). In prior literature the reputation of a firm is commonly represented by company age, depositor confidence and the ability of

management to handle risk (Oliveira, Rodrigues and Craig, 2011; Sánchez-Ballesta & Lloréns, 2010; Fombrun & Van Riel, 1997). For this reason the following hypotheses are formulated:

H4a: There is a positive relation between company age and risk disclosure quality
H4b: There is a positive relation between depositor confidence and risk disclosure quality
H4c: There is a positive relation between risk management ability and risk disclosure quality

5.5 Bank size

Prior risk disclosure studies have found that there is a positive relationship between the size of a firm and the risk disclosure quality (Beattie et al., 2004; Linsley, Shrives & Crumpton, 2006; Oliveira, Rodrigues & Craig, 2011; Rahman et al., 2013; Linsley & Shrives, 2006; Amran et al., 2008). This positive relation can be expected for several reasons. Firstly according to stakeholder and agency theory a larger firm is in more need for external funds and therefore there are more potential conflicts between the firm and its stakeholders (Inchausti, 1997). Also, because large firms tend to be more complex and have more operations, the risk levels of these companies are likely to be higher, resulting in a higher information asymmetry between management and stakeholders (Khlif & Hussainey, 2016). The disclosure of risk information can reduce these agency costs and lower the information asymmetry between stakeholders and the managers. Secondly the legitimacy theory also explains the positive relation between firm size and risk disclosure quality. Oliveira, Rodrigues and Craig (2011) state that larger firms tend to be more visible toward crucial stakeholders because they tend to be more complex. Since most relevant stakeholders are unable to participate in managing the risk of a bank, risk information enables them in evaluating potential litigation risk and potential reputation damages. This results in a larger social and political pressure for banks to disclose risk related information towards their stakeholders to meet their expectations and to signal its legitimacy. Thirdly the proprietary cost theory argues that larger banks may have larger economies of scale in developing risk management, monitoring risk and disclosing risk toward stakeholders, since they have more resources to afford disclosure production costs compared to smaller companies (Khlif & Hussainey, 2016; Deumes & Knechel, 2008). Given the empirical evidence and theory the following hypothesis is formulated.

H5: There is a positive relation between bank size and risk disclosure quality

5.6 Banks risk

According to Linsley, Shrives and Crumpton (2006) banks that have higher levels of risk, have a greater incentive to demonstrate that they are actively monitoring and managing those risk. Arguing with the

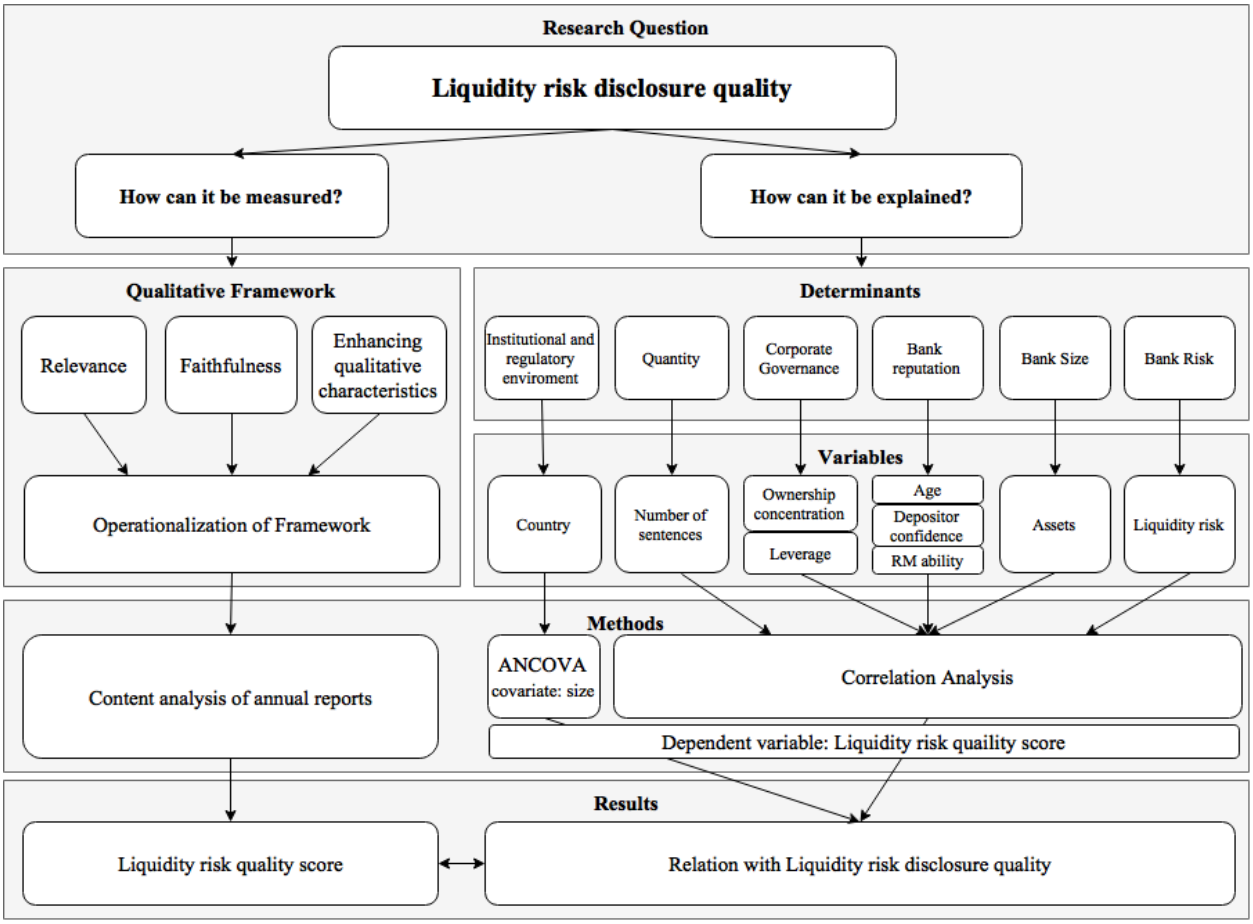
legitimacy theory, the disclosure of risk information can ensure that a bank is not penalized excessively by the stakeholders. Because there is expected that a higher amount of risk will give an incentive to banks to disclose liquidity risk, the following hypothesis is formulated:

H6 There is a positive relation between banks liquidity risk and risk disclosure quality

6. Methodology

As mentioned before, the research question has two parts, the first part concerns the question of how liquidity risk disclosure can be measured, and the second part how the liquidity risk disclosure can be explained. The methodology for how the quality can be measured is explained in section 6.1 and the methodology for how risk disclosure can be explained is given in section 6.2. An overview of the research framework is presented in figure 1. After the presentation of methods, the data sample and variables selected for the analysis are presented in section 6.3 and 6.4 respectively.

Figure 1: Research framework for answering the research question.



6.1 Method for measuring risk disclosure quality – Content analysis

To measure the liquidity risk disclosure score, content analysis is used as method. Content analysis is frequently selected as a disclosure categorization and measurement tool (Linsley & Shrives, 2006), and is commonly used in extant risk disclosure studies for examining the disclosure quality and/or quantity (Linsley & Shrives, 2006; Abraham & Cox, 2007; Amran et al., 2008; Dobler, Lajili & Zeghal, 2011; Miihkinen, 2012; Abraham & Shrives, 2014; Linsley, Shrives & Crumpton, 2006; Bischof, 2007; Oliveira, Rodrigues & Craig, 2011; Barakat & Hussainley, 2013). In appendix XIV an overview is given of other studies and the methods used by those other risk disclosure studies. For this study content analysis is also used as method for gathering data about the risk disclosure quality in the annual report of the sample banks.

Content analysis is a widely used qualitative research technique (Hsieh & Shannon, 2005), and is defined by Krippendorff, (2004) as: "a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use." (p.18). With this definition Krippendorff mentions three important things. Firstly he refers to a research technique. Content analysis can be used as a technique to provide new insights, increase the understanding of particular phenomena, or inform practical actions (Krippendorff, 2004). In this study the quality of risk disclosure in annual reports is investigated, annual reports are large documents, with not only disclosure about risk, but also other, for this study, non-relevant data. Content analysis as a technique, enables the researcher to get insight in the annual report, and abduct the risk disclosure quality score from the annual reports. Secondly Krippendorf states that content analysis enables a researcher to make replicable inferences, which is the most important form of reliability. Replicable means that researchers working at different points in time and under different circumstances should get the same results when using the same technique on the same data (Krippendorff, 2004). For analyzing an annual report replicability is important; measuring disclosure quality is considerably exposed to subjectivity because quality of disclosure implies that the information it is useful in making decisions for the users of the information (Botosan, 2004; IASB, 2010). It is thus important who reads the information, and that quality can be perceived differently by different users, including the researcher. This is a limitation of the research method, however by using a well-structured framework for the analysis with clear coding scheme, insight in how quality is measured is given and replicability can be achieved (Beattie et al., 2004). Lastly Krippendorf mentions in his definition that content analysis enables researchers to make valid inferences from texts. Content analysis is open for careful scrutiny and the resulting claims can be justified with independently available evidence (Krippenhoff, 2004). A limitation of using content analysis as research methodology is that it is fairly intensive and thus limits the sample size.

6.2 Method for explaining risk disclosure - data analytics

To test the hypotheses regarding the explanation of liquidity risk disclosure quality, the data that is collected must be analyzed. Before that can be done, the method of analysis must be determined. Although extant research mainly uses a multiple regression analysis (with dummy coding for categorical variables) to test the relation between disclosure quality and all independent variables (Miihkinen, 2011; Dobler, Lajili & Zeghal, 2011; Amran et al., 2008), in this research there is multicollinearity between several variables and not all variables are normally distributed. This makes the use of a multiple regression analysis to test all variables in one model not possible (Field, 2009). See appendix XV and appendix VII for testing the of normality and the multicollinearity analysis respectively. For these reasons the method of testing the relationship between each variable and disclosure quality is determined separately.

6.2.1 Hypothesis 1: Quality of disclosure vs Quantity of disclosure

The first hypothesis about Quality vs. Quantity regards a correlation between two continuous variables that are measured in different units. To understand this relation, a Pearson's Product-Moment correlation can be used, in short a Pearson's correlation. This correlation measures the strength and direction of the association of two variables. The Pearson correlation is also used in comparable research to test the correlation between independent variables and disclosure quality (Linsley & Shrives, 2006; Van Oorschot, 2010; Abraham & Cox, 2008). To apply a Pearson's correlation, the following assumptions must be checked. 1. The variables must be continuous, 2. there must be a linear relationship between the two variables, 3. there should be no significant outliers and 4. the variables must be normally distributed (Field, 2009). In appendix IV these assumptions are tested using a scatterplot, the Shapiro-Wilk test and normal Q-Q plots. From the testing of the assumptions all four are confirmed (except a single outliner which is still included in the sample due to limited expected impact on the Pearson's correlation). Because the assumptions are confirmed there is chosen to test the correlation by using a Pearson's correlation test, in the section 7.2 Results of the execution of the Pearson's correlation test is presented.

6.2.2 Hypothesis 2: Institutional and regulatory environment

The second hypothesis regards the influence of the country in which the banks are situated on the quality of liquidity risk disclosure. In this case the analysis is between two different sort of variables, respectively a nominal variable (Country) and a ratio (Quality score). Also countries could have characteristics that can affect the results of a test. From the analysis of hypothesis 3-6, a significant correlation between the size of a bank and the liquidity risk disclosure quality is found. Because the average size of banks is not the same for all countries, the results have to be adjusted for this influence, see appendix X for sample descriptive of each country. The ANOVA, also known as the analysis of variance, can be used to determine if there are

significant differences between two or more independent groups (in this case the countries), on a dependent variable (Quality score). The ANOVA is basically a multiple regression equation that uses dummy variables to code group membership, it is a special case of regression (Field, 2009). To control for a third variable which can possibly affect the result, in this case size, a variant of the ANOVA test can be used: The ANCOVA. The ANCOVA uses a third variable that is called the "covariate" (Field, 2009). The ANCOVA is different for an ANOVA because it does not look for differences in the group means, but it looks for differences in adjusted means (for example adjusted by size of a bank). This enables the ANCOVA to control for a third variable, which can possibly affect the result (Field, 2009). Extant research shows no related case in which these sort of variables are tested, only the use of a multiple regression analysis including all variables in which categorical variables are incorporated as dummies. ANCOVA and regression both use the same underlying models and therefore are similar (Field, 2009). A regression analysis investigates if a category has as effect on a dependable category, differently the ANCOVA test if the effect is significantly different for each categories. Because we want to investigate if there is a difference between the risk disclosure quality of the sample countries, and not if a country has effect on the disclosure quality, the ANCOVA variant of a regression is preferred above the normal (multiple) regression.

To check if the data can be analyzed by using an one-way ANCOVA, nine assumptions are required to give a valid result (Field, 2009). The nine assumptions are as follows:

1. Dependent variable and covariate variable are measured on continuous scale and are normally distributed.
2. Homogeneity of variance.
3. Independence of observations.
4. The residuals are normally distributed for each category of the independent variable.
5. Independence of covariate and treatment effect. This means that the covariate should not be different across the groups in the analysis.
6. Homogeneity of regression slopes.

In appendix V the assumptions are tested and after the removal of 3 banks out of the sample, all assumptions are confirmed. Motivation of the removal of 3 sample banks is also given in appendix V. Because the assumptions are confirmed, the ANCOVA test is used for the testing of hypothesis 2, the results of the execution of the test are presented in section 7.2.

6.2.3 Hypotheses 3-6

Hypotheses 3-6 also look at the relationship between two variable as stated in hypothesis 1, and therefore also a correlation is used comparable to extant research (Linsley & Shrives, 2006; Van Oorschot, 2010; Abraham & Cox, 2008). To determine the method for testing, the characteristics of variables used in the hypotheses are inspected using the Shapiro-Wilk test and the Normal Q-Q plots. Also the relation between the variables and the quality of liquidity risk disclosure is inspected by looking at the scatterplots. When inspecting the scatterplots, outliers were detected. In appendix XV the outputs of SPSS used for the inspection are presented and the procedures used for this inspection are the same as used with hypothesis 1 (appendix IV).

Based on the results of this inspection, the methods of testing the hypothesis are selected. The variables AGE, CONFIDENCE, SIZE and LIQRISK are all ratio's, normally distributed and show a linear relationship with the liquidity risk quality score (QSCORE). Because we only want test the direction, strength and significance of the relationship between each of these variables and QSCORE, the Pearson's correlation is the most fitting method to test the corresponding hypotheses (Field, 2009; Linsley & Shrives, 2006; Van Oorschot, 2010; Abraham & Cox, 2008). For explanation of the Pearson's correlation see paragraph 6.2.1. The variables comply to all the assumptions necessary to perform the Pearson's correlation (for overview of assumptions see appendix IV). Because all hypotheses are directional, a one-tailed correlation is chosen, and in each separate test, the significant outliners are removed from the sample.

The variables OWNCON, LEVERAGE and RMABILITY are not normally distributed and therefore a Pearson's correlation would not give valid test results (Field, 2009). To test the relation of the variables with QSCORE, the Spearman's correlation coefficient is chosen, also known as the Spearman's rho. This correlation examines the same relation, but is different from Pearson's because it can be used to analyze data that has violated parametric assumptions such as non-normally distributed data (Field, 2009). The assumptions of which the data has to comply to, are the same as with Pearson's correlation, except of the normally distribution. For the variables that have a directional hypothesis (OWNCON and RMABILITY) a one-tailed correlation is chose, because the hypothesis regarding the variable LEVERAGE has no direction, there is chosen for a two-tailed test.

An overview of the characteristics of the variables used in the hypotheses and the chosen test is presented in table 1.

Table 1: Overview of characteristics of variables and the methods selected.

Variable	Type of measure	Directional hypothesis ?	Normal distributed?	Linear relationship with QSCORE?	Chosen test	One- or two-tailed?	Outliers?
LN SENTC	Ratio	Yes	yes	yes	Pearson's correlation	One	No
COUNTRY	Nominal	No	n.a	n.a.	ANCOVA	n.a.	No
OWNCON	Ratio	Yes	No	No	Spearman's correlation	One	No
LEVERAGE	Ratio	No	No	Yes	Spearman's correlation	Two	No
LNAGE	Ratio	Yes	Yes	Yes	Pearson's correlation	One	2
CONFIDENCE	Ratio	Yes	Yes	Yes	Pearson's correlation	One	2
RMABILITY	Ratio	Yes	No	Yes	Spearman's correlation	One	3
LNSIZE	Ratio	Yes	Yes	Yes	Pearson's correlation	One	No
LIQRISK	Ratio	Yes	Yes	Yes	Pearson's correlation	One	1

6.3 Sample selection

To get representative result in this study, the sample of banks is selected carefully. Bankscope is used for the initial selection of banks. This research investigates the risk disclosure of European banks, therefore the first step was to eliminate all non-European banks. Subsequently several selections were made to ensure the sample is not too heterogeneous for the investigation of the proposed hypotheses. Banks that are not primarily engaged in retail (commercial banks) are taken out of the sample (e.g. investment banks, broker firms, clearing banks, and investment trusts are not included in the sample), because differences in the disclosure of liquidity risk would be primarily caused by fundamental differences in the business model, and not the characteristics that are investigated in this study (Bischof, 2007). Banks that are not required to adopt IFRS in their annual report were also eliminated out of the sample because IFRS has a severe impact on the disclosure of liquidity risk and this would considerably affect the disclosure quality using this specific framework. Lastly banks that did not have annual reports in English were removed from the sample. The criteria used resulted in a selection of 590 banks.

Due to the limitation of content analysis, not all 590 bank could be included in the sample, therefore out of the selection 30 banks were chosen. The 30 banks were selected on basis of size, parent (only parent banks are selected) and country. To make the sample representable as possible, the largest banks were chosen to get the best possible indication of banks in Europe. Also banks that aren't subsidiaries of other banks are selected, this to limit the influence of the reporting strategy/institutional pressures from the parents, and subsidiary banks mostly fall under the conciliated reporting of the parent, which means there

is no separate annual report to investigate. Lastly a selection on country is made to give a broad view of the European banking industry. These countries are selected on the size of the banks (countries that have large banks are preferred) and the countries are selected on institutional location to get a representable sample throughout Europe. An overview of the selected countries is presented in table 2, an overview of the total sample with banks per country and the source is presented in appendix VIII, sample descriptive per variable and per country are presented in appendix IX and X.

Table 2: Countries within the sample

Counties	Number in sample	Year of annual reports
Germany (DE)	5	2015
Italy (IT)	5	2015
Spain (ES)	5	2015
France (FR)	5	2015
Denmark (DK)	5	2015
England (GB)	5	2015

To get the most recent indication of liquidity risk, the annual reports of the year 2015 are extracted from the company's website. The parts that contain information about the liquidity risk, or liquidity risk management, are analyzed according to the disclosure coding scheme presented in appendix XII.

6.4 Variables

To achieve representable results, variables are chosen that most accurately represent the measures chosen in the hypothesis. In this section the variables chosen are presented and explained per hypothesis. An overview of all variables is given in table 3.

The dependent variable

In this research the quality of liquidity risk disclosure is used as the dependent variable and is based on the content analysis of the annual report. How this variable is calculated is presented in section 4.6.

Hypothesis 1: Quantity vs. Quality

To test this hypothesis, the count of sentences is used as proxy for Quantity. The choice of this measure is based on the dominant measure used in extant research (Botosan, 2004; Beretta and Bozzolan, 2004; Abraham and Cox, 2007; Amran et al., 2008). By the use of an online sentence counting tool (Textmechanic, 2016), the sentences regarding liquidity risk in the annual report are counted. The text in tables and graphs is not included in this measure and relevant text is selected during the coding of the annual reports. In order to prevent heteroscedasticity, the natural logarithm of the count of sentences is used as variable.

Hypothesis 2: Institutional and regulatory environment

To test this hypothesis, the country is which the bank is situated is used. By using the country code given by Bankscope and transforming the codes into numbers (DE=1, DK=2, ES=3, FR=4, GB=5, IT=6) a nominal scale is created that can be analyzed by using SPSS.

Hypothesis 3a and b: Corporate governance

H3a: for ownership concentration the Herfindahl index of ownership concentration is used as variable. This index is an indicator of the amount of ownership between the shareholders (Demsetz and Lehn, 1985). In this research the index calculated by taking the sum of the squares of the % of the 5 largest shareholders. The formula used is as follows:

$$\text{OWNCON} = \sum_{i=1}^{n} s_i^2$$

In this formula OWNCON is the variable for ownership concentration, s_i is the % of shares owned by a shareholder in company i, and n is the amount of shareholders (in this case 5). The % of shares for the 5 largest shareholders are extracted from Bankscope.

H3b: For the measure of leverage, the variable leverage ratio is used. This ratio is calculated by dividing the total debt with total Equity. The data is extracted from Bankscope.

H4a, b and c: Reputation

For the measurement of Reputation, the variables are based on the research of Oliveira, Rodrigues and Craig (2011). The following hypotheses are measured with the following variables:

H4a: For measuring the age of a company, the amount of years since the foundation of the bank are calculated, as seen form 2015. The data is collected by hand using the bank's company sites. In order to prevent heteroscedasticity, the natural logarithm of the years is used as variable.

H4b: Confidence of depositors is measured by using the variable of Total deposits/total Assets at 31/12/2015. Data is retrieved from Bankscope.

H4c: The ability of the bank to manage their risk is measured by using the variable of tier 1 capital ratio. Data is retrieved from Bankscope.

Hypothesis 5: Bank size

The size of a bank is measured by the total assets of the bank (linsley and Shrives, 2006; Van Oorschot 2010). In order to prevent heteroscedasticity, the natural logarithm of the total assets is used as variable.

Hypothesis 6: Liquidity risk.

The variable of current ratio is used as proxy for amount of Liquidity risk. The current ratio is calculated by dividing Liquid assets by Depts & short term funding. The higher value of liquidity ratio makes bank more liquid and less vulnerable to failure (Shen et al., 2009). Data is retrieved from Bankscope as stated on 31 December 2015.

Table 3: Summary of variables used

Hypothesis	Variable	Definition	Measurement	Source
Dependent variable	QSCORE	Quality of liquidity risk disclosure	Scores derived from content analysis	Manual- Annual Report
H1	LN SENTC	Number of sentences regarding liquidity risk disclosure quantity	Count of sentences of liquidity risk disclosure	Manual - Annual Report
H2	COUNTRY	Country of a bank	DE=1, DK=2, ES=3, FR=4, GB=5, IT=6	Bankscope
H3a	OWNCON	Ownership concentration of a bank	Herfindahl index (sum of squares of % of total shares of the 5 largest shareholders) at 31 December 2015	Bankscope
H3b	LEVERAGE	Leverage ratio of a bank	Debt / Equity at 31 December 2015	Bankscope
H4a	AGE	Age of a bank	The natural logarithm of years since foundation of a bank, as calculated from 2016	Manual- Sites of the banks
H4b	CONFIDENCE	Depositor confidence of a bank	Total deposits/total assets at 31 December 2015	Bankscope
H4c	RMABILITY	Risk management ability of a bank	Tier 1 capital ratio at 31 December 2015	Bankscope
H5	SIZE	Size of a bank	Natural logarithm of Total assets at 31 December 2015	Bankscope
H6	LIQRISK	Liquidity risk	Current ratio: Liquid assets / Depts & short term funding at 31 December 2015	Bank scope

7. Results

7.1 Results of content analysis for liquidity risk disclosure quality

Applying the risk disclosure framework presented in chapter 4 on the annual report within the sample resulted in disclosures scores presented in appendix IX and XIII. In appendix IX all scores per bank per item are presented and the total disclosure score per bank is presented. In appendix XIII an overview of the result of the score per qualitative category is given (e.g. R1, R2, F1). In section 8.1 these results are discussed.

7.2 Results testing hypotheses

7.2.1 Hypothesis 1: Quality of disclosure vs. Quality of disclosure

To determine the relationship between the quality score obtained from the content analysis and the amount of liquidity risk sentences counted in the annual report, a Pearson's Correlation is used as describe in section 6.4.1. The assumptions regarding the Pearson's correlation have been covered in appendix III. Table 4 shows the output for the one-tailed Pearson's correlation of the variables QSCORE and SENTC.

Table 4 : Correlation of Quality vs. Quantity

Correlation of Quality (QSCORE) and Quantity (LNSENTC)		
		LNSENTC
QSCORE	Pearson Correlation	,757**
	Significance (1-tailed)	,000
	Sample size	30

**. Correlation is significant at the 0.01 level (1-tailed).

QSCORE is positively related to SENTC with a Pearson correlation coefficient of r = 0,757 and the significance value is lower than 0,001. This significance value indicates that if there is no relationship between the two variables, the probability of getting a correlation coefficient this big in a sample of 30 banks, is close to zero. Therefore we can assume that there is a positive relationship between the Quality score and the amount of sentences that is statistically significant (r = ,757, N = 30, p = 0,000).

7.2.2 Hypothesis 2: Institutional and regulatory environment

To determine the relationship between the quality of liquidity risk disclosure and the countries in which the bank are situated, a ANCOVA is used with the variable SIZE as the covariate. The assumptions regarding the ANCOVA have been covered in appendix V. To show what the effect is of adding a covariate to the ANOVA model, table 5 shows first A. the result of an ANOVA without the covariate (SIZE) and secondly shows B. the results of the ANCOVA with the covariate.

Table 5: A. ANOVA and B. ANCOVA results regarding relationship Qsize and COUNTRY

A. ANOVA-test

Dependent Variable: Risk disclosure quality (QSCORE)

Independent variable: Country (COUNTRY)

	Type III Sum of Squares	Degrees of freedom	Mean of Square	F-statistic	Significance
Corrected Model	,168[a]	5	,034	2,650	,052
COUNTRY	,168	5	,034	2,650	,052
Error	,267	21	,013		
Total sample	7,013	27 [b]			
Corrected Total	,435	26			

a. R Squared = ,387 (Adjusted R Squared = ,241)

b. Sample size is 27

B. ANCOVA-test

Dependent Variable: Risk disclosure quality (QSCORE)

Independent variable: Country (COUNTRY)

Covariate: Size of a bank (LNSIZE)

	Type III Sum of Squares	Degrees of freedom	Mean of Square	F- statistic	Significance
Corrected Model	,207[a]	6	,035	3,026	,029
LNSIZE	,039	1	,039	3,392	,080
COUNTRY	,124	5	,025	2,175	,098
Error	,228	20	,011		
Total	7,013	27 [b]			
Corrected Total	,435	26			

a. R Squared = ,476 (Adjusted R Squared = ,319)

b. Sample size is 27

Both table A and B inform about whether there is an overall statistically significant difference in the QSCORE between the different countries, only the ANCOVA result show this difference once the means have been adjusted for the size of the banks. Looking at the ANOVA table in the row COUNTRY, it can be seen that without the covariate the effect of COUNTRY is almost significant at 95% (p=0,052). Looking at the significance in the ANCOVA table, it can be seen that it has changed to a lower significance level (p=0,098). This implies that when the effect of size has been removed, the effect of country becomes less significant. Also the amount of variation accounted for by the model (SS_M) has increased from 0,168 to 0,207. But most importantly, the unexplained variance (SS_R) has been reduced from 0,267 to 0,228 by including the effect of bank size. With these result it can be concluded that adding the covariate in the

analysis provides for more reliable results. Also notable is that the covariate, SIZE, is not significantly related to the QSCORE (p=0,080). A possible reason why this is different as found in Hypothesis 5, could be the removal of banks GB1, GB2 and FR1 out of the sample and the grouping into countries. Because it is still expected that size influences the QSCORE and a more reliable model after including the covariance, SIZE is still used as a covariance.

Looking at the significance of the model (p=0,098) it can be concluded that the country in which a bank is situated has an effect on the liquidity risk disclosure score after controlling for the effect of the size of a bank, but not significantly at a level of 95%.

To look at the effect of each individual country on QSCORE, parameter estimates were selected during the ANCOVA. In short, parameters estimates are calculated by using a regression analysis and dummy coding the countries (Field, 2009). The output of these parameter estimates are presented in table 6. In this case the country IT (Italy) is used as the reference countries and the B values represent the difference of means between the country and the reference country (IT). As can be seen by the significance, the means of the countries DE (p=0,032), DK (p=0,038), ES (p=0,035) and GB (p=0,017) are significantly higher than country IT. GB (Great Britain) has the most positive influence on the QSCORE followed by ES, DE and DK. FR did not have a significant higher mean than Italy.

Table 6: Parameters estimates of the ANCOVA

Parameter Estimates of ANCOVA test

Dependent Variable: Disclosure quality (QSCORE)

Country	B	Standard Error	t-statistic	Significance (p)
Germany (DE)	,156	,068	2,305	,032
Denmark (DK)	,153	,069	2,218	,038
Spain (ES)	,157	,070	2,259	,035
France (FR)	,081	,076	1,071	,297
Great Britain (GB)	,219	,084	2,613	,017
Italy (IT)	0[a]	.	.	.

a. This parameter is zero because it is the reference country

7.2.3 Hypotheses 3-6

To test the hypotheses, Pearson's and Spearman's correlations are performed. For description of these two tests chosen see chapter 6.2.3. First for every single hypothesis the chosen correlations between QSCORE and the corresponding variable were performed separately. The output of these tests is presented in Appendix VII. Because it was suspected that some variables used in the hypothesis are correlated (for example age and size), a 1-sided Pearson correlation is performed for all variables at the same time. The

output of this correlation is presented in Appendix VI. Out of the correlation several variables found to be correlated, namely AGE with SIZE, LEVERAGE with LIQRISK, and CONFIDENCE with RMABILITY and LIQRISK. The correlation of these variables can influence the testing of the hypotheses. To perform a pure measure of the relationship between the variables and QSCORE, the influence of the correlating variables has to be taken into account. To control for this influence, partial correlations were performed. A partial correlation looks at the relationship between two variables when the effects of a third variable is held constant (Field, 2009). In other words, the partial correlation enables to look at a relationship when controlling for a third variable. The partial correlations are performed with the correlating variables, and the output of these correlations are presented in appendix VI. In table 7. An overview of the results of all the correlations is presented.

Table 7: overview of result hypotheses 3-6

Hypothesis	**Variable**	**Test**	**Variables exclude from Sample due to outliers**	**Correlation with QSCORE**	**Significance**	**With control in partial correlation?**
H3a Ownership concentration	OWNCON	Spearman 1-tailed	No	-0,030	0,437	No
H3b Leverage ratio	LEVERAGE	Spearman 2-tailed	No	-0,157	0,408	No
H4a Age of a bank	AGE	Pearson 1-tailed	ES1, FR5	0,217	0,129	SIZE
H4b Depositors confidence	CONFIDENCE	Pearson 1-tailed	ES1, IT 5	0,182	0,177	RMABILITY LIQRISK
H4c Risk management ability	RMABILITY	Spearman 1-tailed	ES1, IT5, DK2	0,123	0,262	CONFIDENCE
H5 Size of a bank	SIZE	Pearson 1-tailed	No	0,436	0,009	AGE
H6 Liquidity risk	LIQRISK	Pearson 1-tailed	ES1	0,238	0,107	CONFIDENCE

As can be seen, only hypothesis 6 with variable SIZE had a significant positive relationship with QSCORE at a significance level of 95% ($p = 0,009$). Hypothesis 6 with variable LIQRISK and hypothesis 4a with variable AGE are both also mentionable because they come close to a significance level of 90%.

8. Discussion of the results

8.1 Content analysis of liquidity risk disclosure

This study performed a content analysis to measure the liquidity risk disclosure score. Gaining insight into the liquidity risk disclosure is not an objective of the study, but the following result of the analysis came to the attention of the researcher. These result are discussed to gain an understanding of the quality of the current liquidity risk disclosure by European banks. The following discussion discusses the results presented in appendix XI that consist of the scores per qualitative characteristic.

Firstly the scores for the relevance (measures R1 and R2) of the risk disclosure are very low with an average of 1,68 out of possible 4 points. This low score is mainly caused by a very low score on the disclosure of forward looking statement. A reason for this abstention of forward looking statements could be because of the uncertainty associated with the future; it might be difficult to predict with accuracy (Aljifri and Hussainey, 2007). Also if management discloses forward looking statements, they possibly create expectation towards stakeholders. If the bank does not live up to those created expectations, they can be punished by stakeholders (Brown and Deegan, 1998; Field et al., 2005). Lastly the proprietary cost theory argues that forward looking information can possibly be useful to competitors and therefore might affect the bank's competitive position (Healy and Palepu, 2001; Abraham & Shrives, 2014). Also the score for the disclosure of feedback value is low. During the analysis of the annual report, it was noted that management was fairly reticent in publishing feedback, and if they published it, it was mainly neutral to positive feedback. From a principal agent theory perspective this is quite understandable, giving feedback on risk is voluntary, therefore a manager might have an incentive to emphasize to positive aspect, and/or ignore the negative feedback (Healy and Palepu, 2001). This tendency can also be seen in measure F3 (mean of 2,33, slightly below average), which is about highlighting positive information as well as negative information.

Secondly it was noted that banks put more effort in the disclosure of Risk management explanation (F2) than the explanation of Risk information (F1). The means are not very different (F1: 2,73 and F2: 2,90), but especially the amount of sentences dedicated to risk management in comparison to the disclosure of risk was noticeable during the analysis. A reason for this difference could be the mandatory IFRS7 regulation, which demands more disclosure about risk management than risk information (see appendix II for IFRS7 regulation). Also the fact that the scores are quite the same and the amount of sentences were noticeably different, implicates that the quantity of information and the quality is different. This could be an argument against Hypothesis 1: Quality vs. Quantity.

Thirdly it is notable that the disclosure of Assumptions, the methods of compiling the liquidity risk and other factors and circumstances that support the information (measure V2), is limited (mean of 2,07), and deviant between annual reports (Standard deviation of 0,94). A reason for this low result could be the

complexity of the calculations that are behind the liquidity risk disclosures, and that much information is derived from the rest of the annual report. Also after close examination this deviant result is attributable to large differences between countries (e.g. France and Great Britain with both a mean of 2,6 and Italy and Denmark with a mean of 1,4 and 1,6 respectively). This large deviation between countries is also noticed by the measures of understandability (U1 and U2). This could underwrite the arguments made in formulating Hypothesis 2 about the influence of the regulatory and institutional environment on the disclosure of risk information.

8.2 Discussion hypotheses

8.2.1 Hypothesis 1: Quality of disclosure vs Quantity of disclosure

The first hypothesis is formulated to examine the relationship between the quality and quantity of liquidity risk disclosure. The result of the Pearson correlation show that there is a strong significant positive relationship with a confidence interval of 99% ($r = 0,757$, $p = 0,001$). This result can be interpreted as if banks disclose more liquidity risk information in the form of sentences, the quality of the liquidity risk disclosure, as measured in this research, is also very likely to be higher. This finding confirms the assumptions of extant risk disclosure studies (Beretta & Bozzolan 2004; Abraham & Cox, 2007; Amran et al., 2008; Linsley & Shirves, 2006; Oliveira, Rodrigues and Craig, 2011) that quantity is a proxy for quality of risk disclosure, and delivers more evidence for how to assess the quality of risk disclosure (Beattie, McInnes & Fearnley, 2004). Although this finding encourages to use the measure of sentences as proxy for quality, it is still concerning to use a measure that simply see quantity as quality because quality is then measured with a lack of accuracy and aspects of information that are important are ignored (Beattie et al., 2004).

8.2.2 Hypothesis 2: Institutional and regulatory environment

The second hypothesis is formulated to examine the influence of the institutional and regulatory environment on the quality of liquidity risk disclosure. It was expected that the regulatory and institutional environment influences the disclosure quality. The results are twofold, the testing of influence of the country on all banks indicated a relationship that was not significant at a 95% confidence level ($p = 0,098$), but looking at the differences of the weighted means of the disclosures scores, there are significant differences found for the countries Germany, Denmark, Spain, the UK and Italy. Only the difference in the mean of France was not significant; it is likely that France caused the total significance to be above the 95% confidence interval. Out of these results can it be concluded that the hypothesis is partly confirmed and the most countries in which a bank is situated, and thus probably the institutional and regulatory environment, does have effect on the reporting quality.

The findings indicate that the risk disclosure quality is especially high in the UK, followed by Spain, Germany and Denmark. Italy has the lowest risk disclosure quality. A reason for these differences could be explained by the nature of enforcement and of legal institutions at national level. Bischof (2009) finds in his study that countries with a interventionist approach, also known as a rules based approach, regulation such as IFRS 7, has less effects on the disclosure of risk as in countries that have a non-interventionist approach. In his study he argues that Italy is a country that highly characterizes with a interventionist approach and the UK as a country with a non-interventionist approach. Therefore the finding that the UK has the most positive influence of risk disclosure quality and Italy the most negative, underwrite his findings. Because there is only looked at the influence of a country, and not specific characteristics of a country that possibly can influence risk disclosure quality, no significant conclusions can be made about which specific factors cause these differences between the countries.

8.2.3 Hypotheses 3 – 6

As can be seen in table 7 the testing of hypotheses H3a Ownership concentration, H3b Leverage ratio, H4b Depositors confidence and H4c Risk management ability, resulted in findings that mostly did found an influence, but were far from significant. Because these test results show that these factors do not significantly influence the quality of liquidity risk disclosure, it is clear that they do not explain the liquidity risk disclosure quality as is asked in the main research question. For this reason no further discussion will be dedicated to these hypotheses.

Hypothesis 4a Age of a bank

This hypothesis is formulated to investigate the relation between the age of a bank and the liquidity risk disclose quality. The expected outcome was a positive relation. In the first analysis this hypothesis seemed to be confirmed, but after controlling for the influence of size, the results showed a positive relation but not significance ($r = 0{,}217$, $p = 0{,}129$). These results are similar to the results obtained by Oliveira, Rodrigues and Craig (2011) and imply that age is more related to size than to the quality of liquidity risk disclosure.

Hypothesis 5 Size of a bank

Hypothesis 5 is formulated to investigate the relationship between the size of a bank and the liquidity risk disclosure quality. The hypothesis states that there is a positive relationship between the two factors. The results presented in table 7 show that there is an strong positive relation between the two factors with a confidence interval of more than 99% ($r = 0{,}436$, $p = 0{,}001$) when corrected with the variable age. This result confirms the hypothesis, and agrees with the findings of extant research that investigate the relation between size and disclosure quality (Linsley, Shrives & Crumpton, Linsley & Shrives, Amran et al., 2008; Rahman et al., 2013). Possible reasons for this relation are to be found in several theories. Firstly the stakeholder and agency theory argues that larger banks have a higher information asymmetry and are more

reliable on funding from external stakeholders, and therefore disclose more risk information (Khlif & Hussainey, 2016). Secondly the legitimacy theory argues that larger banks are more visible which leads to more pressure from outside to disclose high quality risk information (Oliveira, Rodrigues & Craig, 2011). Lastly the proprietary cost theory argues that a larger banks has the advantage of economies of scale, which allows them to provide higher disclosure quality because more funds are available (Khlif & Hussainey, 2016; Deumes & Knechel, 2008). Further research into these incentives could provide insight in this relationship.

Hypothesis 6 Liquidity risk

This hypothesis is formulated to investigate the relation between the amount of liquidity risk and the quality of liquidity risk disclosure. The expectation was that there would be a positive relation. The results showed a positive relationship, but with a significance with a confidence ratio of around 90%. ($r = 0{,}238$, $p = 0{,}107$). With this result a relationship is not proved, but there is a reason to believe that there is a relationship between the two measures. This relation could possibly be caused by the incentive of banks with a higher liquidity risk, to disclose higher quality of risk disclosure to reveal the ability to manage these risks. This result confirms the findings of Linsley, Shrives and Crumpton (2006), but does show a better significance than their results. It also could be argued that the current ratio may not be the most appropriate proxy for liquidity risk, and for example the Liquidity Coverage Ratio (LCR) would be better (which unfortunately is not disclosed by all banks yet). In table 8 a summary of all results is presented.

Table 8: Summary of research results

	Hypothesis	**Outcome**
1	There is an positive relation between risk disclosure quantity and risk disclosure quality	Strong positive related with significance of 0,001
2	The country in which a bank is situated influences the risk disclosure quality	Partly confirmed, Significant higher mean, except for France.
3a	There is a negative relation between ownership concentration and risk disclosure quality	Small negative, not significant
3b	There is an association between leverage and risk disclosure quality	Strong positive, no significant
4a	There is a positive relation between company age and risk disclosure quality	Positive, not significant
4b	There is a positive relation between depositor confidence and risk disclosure quality	Positive, not significant
4c	There is a positive relation between risk management ability and risk disclosure quality	Positive, not significant
5	There is a positive relation between bank size and risk disclosure quality	Strongly positive related with significance of 0,001
6	There is a positive relation between banks liquidity risk and risk disclosure quality	Positive, not significant

9. Conclusion, limitations and further research

9.1 Conclusion

In this thesis the risk disclosure quality is investigated and the following research question is asked:

How can liquidity risk disclosure quality in the annual reports of European banks be measured and explained?

This research question is two sided: How liquidity risk disclosure quality can be measured and how it can be explained. To answer how liquidity risk disclosure quality can be explained, several topics are investigated. First this thesis explored the background of risk disclosure. The definition of risk and risk disclosure is formulated and the relevance of risk disclosure is explained. Furthermore the incentives for management to disclose risk information are investigated. It is found that stakeholder agency theory, legitimacy theory and proprietary cost theory, all provide explanations for incentives to disclose risk information. To gain an understanding of which risks are relevant for bank and how risk can be presented, risk disclosure and liquidity risk are further examined. This examination found that the annual report are still seen as the main way of disclosing risk information, and that risk can be disclosed voluntary or mandatory. Also a distinction is made between verifiable an non-verifiable information. To finish the exploration of the background of risk information, an overview of literature regarding risk disclosure literature is presented. In this overview different extant research about risk disclosure and bank risk disclosure is identified and presented in a categorized manner. The categories that are identified within extant research are about the usefulness or risk information, research about bank specifics that determine the disclosure of risk information and research about the external influences that determine the (bank) risk reporting. To gain a further understanding of what influences the risk disclosure of banks from the outside, the third chapter investigates the regulations and institutions that affect (liquidity) risk disclosure. To do this, the development of bank risk regulation in Europe is explored, and the IFRS 7 and Pillar 3 regulation are found as main contributors. Also a distinction between a interventionist and a non-interventionist regulation approach is found. The chapter ends with regulation that focusses on liquidity risk to give insight on the pressures of the risk disclosure.

To answer the part of the research question about how liquidity risk disclosure can be measured, a framework is constructed to measure disclosure quality and presented in chapter 4. First an understanding of disclosure quality is achieved and the framework of the IASB is explored. To identify which method of measuring risk disclosure quality is most suited, a comparison between methods in extant risk disclosure research is made. The research methods that use quantity as measure of risk disclosure quality are identified, followed by research that complements this quantitative measure by adding semantic properties. However it is found that several studies argue that this is not the best way of measuring, and it is argued that a disclosure index is more suitable to measure disclosure quality due to their capability of truly measuring

quality and not only quantity. After exploring the extant research about how disclosure quality can be measured, the framework is constructed based on an index. The qualitative and enhancing characteristics of information, as identified by the IASB, are chosen to construct a framework that is based on the usefulness of information. The qualitative characteristics used are relevance and faithfulness, and the enhancing characteristics are comparability, verifiability, timeliness and understandability of information. Extant research on risk disclose still has no consensus on how quality can be measured best (Botosan, 2004; Beretta and Bozzolan, 2004; Van Oorschot, 2010). The proposed framework contributes to the discussion of how risk disclosure can be measured by using an operationalization of the IASB framework as a measure for risk disclosure quality. By measuring the usefulness of risk information, the framework focusses more on the user and the ability of risk information to help make decisions, this provides an alternative view to extant risk disclosure literature in measuring quality. Also the framework enables other researchers to measure quality in their risk disclosure studies.

After exploring how risk disclosure can be measured, hypotheses for how liquidity risk disclosure can be explained are formulated, and the content analysis is performed on the annual report of the sample banks. By coding the annual report of 30 sample banks, the liquidity risk disclosure quality score per bank was determined. Bankscope and the websites of the banks were used to gather the data for other variables and the resulting dataset was analyzed by using SPSS.

In the testing of the hypotheses, a positive relation between risk disclosure quality, as measured by the framework constructed in this thesis, and the quantitative measure is found. This relationship is under discussion in the literature and no consensus has been found of what actually determines this relationship between quality and quantity. For example Botosan (2004) finds that there is no relation between the quality and quantity of risk disclosure and argues that quality cannot be measured by a simple proxy of quantity because quality of disclosure is intrinsically complex. On the other hand Van Oorschot (2010) does find a positive relation between to two alternatives. The positive relation found in this research contributes to the existing discussion by providing more insight in this relationship.

The relationship between the institutional and regulatory influences and disclosure quality is also examined. By finding a relationship between the country in which a bank is situated and the disclosure quality, insights are given in the external influences on risk reporting by banks. Also this finding contributes to the debate of harmonization of standards across Europe (Bischof, 2007). The influence of the country on quality of risk disclosure, indicates that there is a need for more consistent application of standards and this can help regulators and other standard setters in determining how to set regulation.

The finding of the relationship between size and disclosure quality is in line with extant research. What makes this finding more valuable, is that in investigates the quality throughout whole Europe. Most studies investigate this relationship within one or two countries, by providing a broader sample this research

gives a better reflection of how disclosure quality can be explained and provides more evidence for the relationship between quality and size. Also this research focusses of liquidity risk, this subject of risk is limitedly investigated and is extra relevant due to the latest developments in the financial sector and regulation. By providing insight in how bank disclose liquidity risk, researchers and policy makers can better understand this disclosure and use the research in developing new regulation and standards.

9.2 Limitations

The largest limitation of this research is the subjectivity of the researcher in determining the risk disclosure quality. Because several measures in the proposed framework demand limited subjectivity, the result are less objective than for example the counting of sentences. However, quality of risk disclosure is a complex subject, that cannot be easily measured in objective terms (Botosan, 2004). The usefulness of risk information is not perceived the same by all users, and the quality depends on the decisions a user wants to make. By using the widely accepted framework of the IASB, an approach of the usefulness of information can be achieved, but it is still dependable on subjectivity of the reader. Another limitation of this study is the relative small sample size due to the intensity of content analysis. By only taking a small sample size the result of this research are less representable and less generalizable for other risk disclosure studies.

9.3 further research

This research provides a basis for future research to explore how liquidity risk disclosure can be measured and explained, but future research is needed to get more support of the results. The framework that is constructed is based on a framework by the IASB, which is a widely accepted framework, but more research is necessary to investigate what users truly experience as useful information. By examining this aspect, a greater understanding of what disclosure quality really is can be achieved. This research can contribute to developing a better measure for disclosure quality. The framework also presented how quality of risk disclosure can be measured, and this measure is compared to a quantitative measure. The findings suggest that the two measures are related, but research has to be done to investigate what causes this relationship. Also in this research a framework that measures risk disclosure quality is constructed, but further research is still necessary to examine the relationship between different measures and to finding how to best measure disclosure quality. Also, in this research the influence of the country on the quality of liquidity risk disclosure is found, but the specific factors that drive this influence are not explored. Future research could further investigate this relationship, and which institutional, regulatory and national factors influence risk disclosure quality. By examining this, it can be more clear which external influences actually determine the risk disclosure of banks. Furthermore this research only looks at liquidity risk disclosure in one moment in time. Due to the increased focus on liquidity risk and the efforts of regulatory bodies such as the IASB and the Basel committee, it would be interesting how the disclosure quality of liquidity risk evolved over the

years. Especially with the implementation of new regulations this is interesting. Also it is notable that this study uses a small sample in testing it's hypotheses, a further examination of the hypotheses with a larger sample would provide more evidence.

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Appendix

Appendix I: Summary of Basel Committee 1999, 2000 and 2001 public disclosure surveys.

Created by Linsley, Shrives and Crumpton (2006, p271)

Disclosure categories	*Number of questions within the disclosure category*	*Percentage of 'yes' responses measured against 'no' responses*		
		2001 Survey (%)	*2000 Survey (%)*	*1999 Survey (%)*
1. Capital structure	14	82	78	73
2. Capital adequacy	7	55	48	46
3. Market risk internal modeling	16	68	66	64
4. Internal and external ratings	4	46	35	32
5. Credit risk modelling	5	33	33	32
6. Securitisation activities	8	45	36	29
7. Credit risk	13	61	56	55
8. Credit derivatives and other credit enhancements	6	34	25	24
9. Derivatives	9	62	56	58
10. Geographic and business line diversification	10	65	63	65
11. Accounting and presentation policies	7	84	84	82
12. Other risks	5	84	74	62
	104			

Appendix II: IFRS 7 Liquidity risk

Created by Van Oorschot (2010, p85)

Liquidity risk

Item	*Disclosure requirement*	*Source*
36	Exposure to risk and how they arise	IFRS 7.33a IFRS 7.IG15
37	Objectives, policies and processes for managing the risk and the methods used to measure the risk	IFRS 7.33b IFRS 7.IG15
37a	• Objectives, policies and processes for managing the risk	
37b	• Methods used to measure the risk	
38	Changes in exposure to risk, measurement of risk, and objectives, policies and processes to manage the risk from the previous period	IFRS 7.33c IFRS 7.IG17
38a	• Disclosure of changes	
38b	• Explanation for changes	
39	Maturity analysis for financial liabilities that show the remaining contractual maturities	IFRS 7.39a

Appendix III: Operationalization of Beest, Braam and Boelens (2009)

Relevance				
Question no.	**Question**	**Operationalization**	**Concept**	**Literature**
R1	To what extent does the presence of the forward-looking statement help forming expectations and predictions concerning the future of the company?	1 = No forward-looking information 2 = Forward-looking information not an apart subsection 3 = Apart subsection 4 = Extensive predictions 5 = Extensive predictions useful for making expectation	Predictive value	e.g. McDaniel *et al.*, 2002; Jonas and Blanchet, 2000; Bartov and Mohanram, 2004
R2	To what extent does the presence of non-financial information in terms of business opportunities and risks complement the financial information?	1 = No non-financial information 2 = Little non-financial information, no useful for forming expectations 3 = Useful non-financial information 4 = Useful non-financial information, helpful for developing expectations 5 = Non-financial information presents additional information which helps developing expectations	Predictive value	e.g. Jonas and Blanchet, 2000; Nichols and Wahlen, 2004
R3	To what extent does the company use fair value instead of historical cost	1 = Only HC 2 = Most HC 3 = Balance FV/HC 4 = Most FV 5 = Only FV	Predictive value	e.g. Schipper and Vincent, 2003; McDaniel *et al.*, 2002; Barth *et al.*, 2001; Schipper, 2003
R4	To what extent do the reported results provide feedback to users of the annual report as to how various market events and significant transactions affected the company?	1 = No feedback 2 = Little feedback on the past 3 = Feedback is present 4 = Feedback helps understanding how events and transactions influenced the company 5 = Comprehensive feedback	Confirmatory value	e.g. Jonas and Blanchet, 2000

Example of the measures used to operationalize the fundamental and enhancing qualitative characteristic. Constructed by Beest, Braam & Boelens (2009, appendix A)

Appendix IV Assumptions pearson's correlation test Quality vs. Quantity

Assumption 1: Continuous variables

Variable Qscore is a score that can range from 0 to 1 which can be measured along a continuum and has a numerical value. With these characteristics the variable can be classified as an interval which is a continuous variable.

Variable LN Sentences is a score that is based on the natural logarithm of the counting of sentences in the annual report. This variable can be measured along a continuum and has a numerical value and does not have a 0 point. . With these characteristics the variable can be classified as an interval which is a continuous variable

Assumption 2: Linear relationship

Goal: Determine of the relationship between the two variables is Linear

Procedures:
To test this assumption a scatterplot between the two measures is created using SPSS (See below). To determine the linearity of the relationship the plot is inspected and a line is drawn to depict the linearity.

Conclusion:
The relationship displayed shows characteristics of a linear relationship and with that the linearity is determined

Assumption 3: No significant Outliers

Goal: Detect significant outliers

Procedures:
Check the scatterplot for single data points that do not follow the usual pattern. One outlier is found and circled. Due to the extent of the outlier it is expected that the outliner does not significantly influence the result of the Pearson's correlation test, although the test is sensitive for outliners. Therefore it is chosen to still include the outliner in the sample.

Conclusion:
One outlier is found, but still included in the sample because of the expected limited impact on the correlation test.

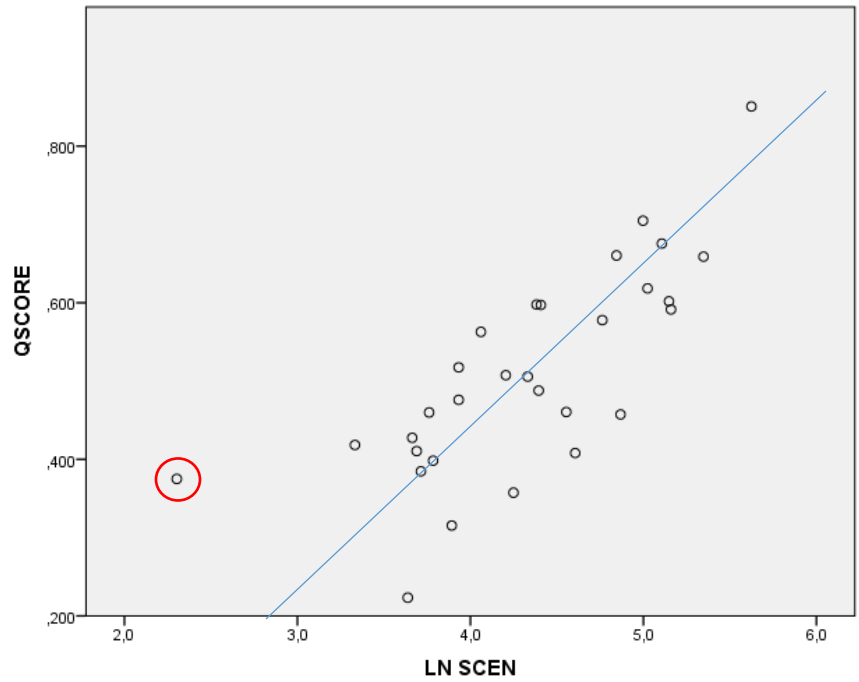
Assumption 4: Approximately normally distributed
Goal: Determine if measures are normally distributed

Procedures:
Test of normality using Shapiro-Wilk test and the Normal Q-Q plots with a confidence interval of 95% using SPSS. The output is presented below.

Conclusion:
Qscore and LN sentences have a significance level of respectively 0,908 and 0,395. These are both above the limit of 0,05. With that is can be determined that the variables are normally distributed.

The QQ plots both show data close to the diagonal line. With this it can be determined that the variables are normally distributed.

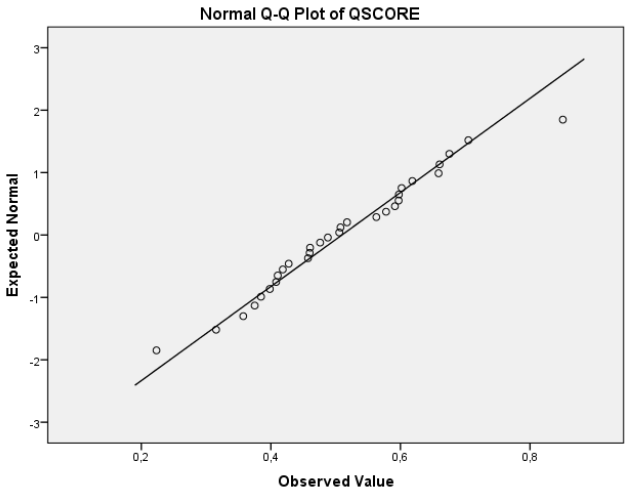
Scatterplot Qscores and LN sentences

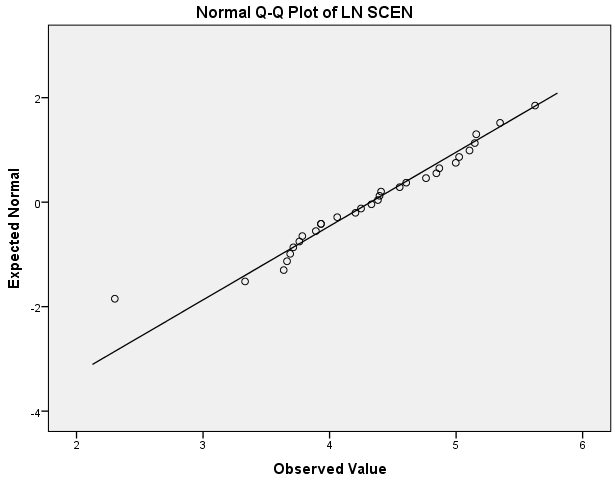


Tests of Normality

	Shapiro-Wilk		
	Statistic	df	Sig.
QSCORE	,983	30	,908
SENTC	,964	30	,395

Normal Q-Q plots for both variables





Appendix V: assumption ANCOVA

1. **Dependent variable and covariate variable are measured on continuous scale and are normally distributed**.

Both are on a continuous scale and normally distributed (see appendix XV)

2. **Homogeneity of variance is required**

Levene's test for homogeneity of variances is used to test this assumption. This resulted in the following output (with the new dataset constructed in assumption 6):

Levene's Test of Equality of Error Variances[a]

Dependent Variable: QSCORE

F	df1	df2	Sig.
2,053	5	21	,112

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + LNSIZE + COUNTRY

Because the significance is not significant(> 0,05), p= 0,112, there can be concluded that there is homogeneity of variances (Field, 2009).

3. **The independent variable consists of two or more categorical independent groups.**

The variable COUNTRY consists of 6 categories that are independent.

4. **Independence of observations**

Every bank is measured only once and the groups are made of different banks, so no dependence between different groups is present. Also there is independence within each group because the occurrence of one observation provides no information about the occurrence of another observation, they are unrelated.

5. **The residuals should be normally distributed for each category of the independent variable**

To test if the residuals are normally distributed, the unstandardized residuals are saved in the dataset and a Shapiro-Wilk test is performed. The output of this test is as follows(with the new dataset constructed in assumption 6):

Tests of Normality

	Shapiro-Wilk		
	Statistic	df	Sig.
Residual for QSCORE	,969	27	,586

Because the significance (p=0,531) is >0,05 there can be concluded that the residuals are normally distributed (Field, 2009).

6. **Independence of covariate and treatment effect. This means that the covariate should not be different across the groups in the analysis**.

To test this assumption a ANOVA with SIZE(covariate) as the outcome and COUNTRY(groups) as the predictor is performed and main effects are compared with a Boneferroni confidence interval adjustment. This results in the following output:

Tests of Between-Subjects Effects

Dependent Variable: LNSIZE

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	19,350[a]	5	3,870	3,481	,017
Intercept	4937,222	1	4937,222	4440,639	,000
COUNTRY	19,350	5	3,870	3,481	,017
Error	26,684	24	1,112		
Total	4983,256	30			
Corrected Total	46,034	29			

a. R Squared = ,420 (Adjusted R Squared = ,300)

As can be seen the significance of the effect is <0,05, which means that it is significant and that the mean of level of SIZE is not roughly equal across the countries. This results indicates that it is not appropriate to use SIZE as a covariate (Miller and Chapman, 2001).

To make the ANCOVA test possible and reliable, the largest banks that influenced the mean level of size the most, are removed from the sample. This to lower the differences of mean size between the countries. After excluding the following banks: FR1, GB1 and GB2, the output with the same configurations has the following output:

Tests of Between-Subjects Effects

Dependent Variable: LNSIZE

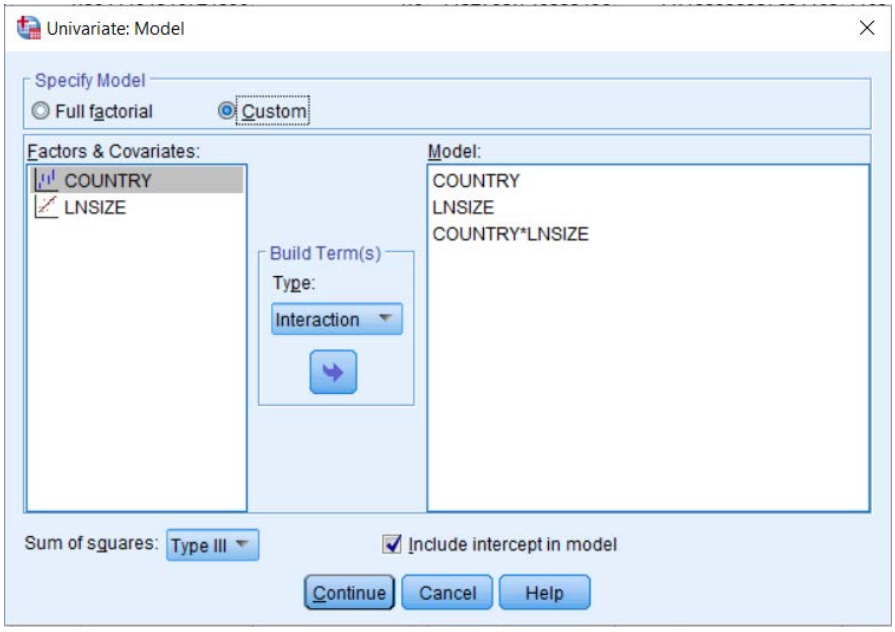
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13,179[a]	5	2,636	2,179	,095
Intercept	4239,394	1	4239,394	3505,221	,000
COUNTRY	13,179	5	2,636	2,179	,095
Error	25,398	21	1,209		
Total	4369,003	27			
Corrected Total	38,577	26			

a. R Squared = ,342 (Adjusted R Squared = ,185)

In this output the main effect is not significant (p=0,095), and therefore it is appropriate to use SIZE as covariate in the analysis with the removal of the banks FR1, GB1 and GB2 (Field, 2009).

7. Homogeneity of regression slopes

To test the assumption of homogeneity of regression slopes a customized model is used when running the ANCOVA. This customized model includes the interaction between SIZE (covariate) and COUNTRY (independent variable). The input of this model is as follows:



The output of running the ANCOVA with this model is as follows:

Tests of Between-Subjects Effects

Dependent Variable: QSCORE

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	,239[a]	11	,022	1,668	,176
Intercept	,004	1	,004	,302	,591
COUNTRY	,033	5	,007	,501	,771
SIZE	,024	1	,024	1,821	,197
COUNTRY * SIZE	,032	5	,006	,496	,775
Error	,196	15	,013		
Total	7,013	27			
Corrected Total	,435	26			

a. R Squared = ,550 (Adjusted R Squared = ,220)

As can be seen the significance value (p=0,775) of the covariate by outcome interaction (COUNTRYxSIZE) is not significant(p>0,05). This means that the assumption of homogeneity of the regression slopes can be confirmed (Field, 2009)

Appendix VI: Results correlations hypothesis 3-6 Without control variables

Correlations

			QSCORE	OWNCONC
Spearman's rho	QSCORE	Correlation Coefficient	1,000	-,030
		Sig. (1-tailed)	.	,437
		N	30	30
	OWNCONC	Correlation Coefficient	-,030	1,000
		Sig. (1-tailed)	,437	.
		N	30	30

Correlations

			QSCORE	LEVERAGE
Spearman's rho	QSCORE	Correlation Coefficient	1,000	-,157
		Sig. (2-tailed)	.	,408
		N	30	30
	LEVERAGE	Correlation Coefficient	-,157	1,000
		Sig. (2-tailed)	,408	.
		N	30	30

Correlations

		QSCORE	CONFIDENCE
QSCORE	Pearson Correlation	1	,157
	Sig. (1-tailed)		,213
	N	28	28
CONFIDENCE	Pearson Correlation	,157	1
	Sig. (1-tailed)	,213	
	N	28	28

Correlations

			QSCORE	RMABILITY
Spearman's rho	QSCORE	Correlation Coefficient	1,000	,174
		Sig. (1-tailed)	.	,193
		N	27	27
	RMABILITY	Correlation Coefficient	,174	1,000
		Sig. (1-tailed)	,193	.
		N	27	27

Correlations

		QSCORE	LNSIZE
QSCORE	Pearson Correlation	1	,509**
	Sig. (1-tailed)		,002
	N	30	30
SIZE	Pearson Correlation	,509**	1
	Sig. (1-tailed)	,002	
	N	30	30

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations

		QSCORE	LIQRISK
QSCORE	Pearson Correlation	1	,097
	Sig. (1-tailed)		,308
	N	29	29
LIQRISK	Pearson Correlation	,097	1
	Sig. (1-tailed)	,308	
	N	29	29

Appendix VII: H3-6 partial correlations

Correlations

		QSCORE	OWN CONC	LEVERAGE	LNAGE	CONFIDENCE	RMABILITY	LNSIZE	LIQRISK
QSCORE	Pearson Correlation	1	-,044	-,122	,359*	,187	-,187	,509**	,041
	Sig. (1-tailed)		,409	,260	,026	,161	,161	,002	,415
	N	30	30	30	30	30	30	30	30
OWNCONC	Pearson Correlation	-,044	1	-,157	-,214	-,116	,027	-,126	,023
	Sig. (1-tailed)	,409		,203	,128	,271	,443	,253	,453
	N	30	30	30	30	30	30	30	30
LEVERAGE	Pearson Correlation	-,122	-,157	1	-,021	-,172	-,065	-,373*	-,440**
	Sig. (1-tailed)	,260	,203		,457	,182	,367	,021	,008
	N	30	30	30	30	30	30	30	30
AGE	Pearson Correlation	,359*	-,214	-,021	1	,004	,051	,363*	,180
	Sig. (1-tailed)	,026	,128	,457		,492	,395	,024	,171
	N	30	30	30	30	30	30	30	30
CONFIDENCE	Pearson Correlation	,187	-,116	-,172	,004	1	-,407*	,108	-,493**
	Sig. (1-tailed)	,161	,271	,182	,492		,013	,285	,003
	N	30	30	30	30	30	30	30	30
RMABILITY	Pearson Correlation	-,187	,027	-,065	,051	-,407*	1	-,303	,204
	Sig. (1-tailed)	,161	,443	,367	,395	,013		,052	,140
	N	30	30	30	30	30	30	30	30
SIZE	Pearson Correlation	,509**	-,126	-,373*	,363*	,108	-,303	1	,279
	Sig. (1-tailed)	,002	,253	,021	,024	,285	,052		,068
	N	30	30	30	30	30	30	30	30
LIQRISK	Pearson Correlation	,041	,023	-,440**	,180	-,493**	,204	,279	1
	Sig. (1-tailed)	,415	,453	,008	,171	,003	,140	,068	
	N	30	30	30	30	30	30	30	30

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Correlations

Control Variables			QSCORE	LNAGE
SIZE	QSCORE	Correlation	1,000	,217
		Significance (1-tailed)	.	,129
		df	0	27
	AGE	Correlation	,217	1,000
		Significance (1-tailed)	,129	.
		df	27	0

Correlations

Control Variables			QSCORE	LNSIZE
AGE	QSCORE	Correlation	1,000	,436
		Significance (1-tailed)	.	,009
		df	0	27
	SIZE	Correlation	,436	1,000
		Significance (1-tailed)	,009	.
		df	27	0

Correlations

Control Variables			QSCORE	CONFIDENCE
RMABILITY& LIQRISK	QSCORE	Correlation	1,000	,182
		Significance (1-tailed)	.	,177
		df	0	26
	CONFIDENCE	Correlation	,182	1,000
		Significance (1-tailed)	,177	.
		df	26	0

Control Variables			QSCORE	LIQRISK
CONFIDENCE	QSCORE	Correlation	1,000	,156
		Significance (1-tailed)	.	,210
		df	0	27
	LIQRISK	Correlation	,156	1,000
		Significance (1-tailed)	,210	.
		df	27	0

Correlations

Control Variables			QSCORE	RMABILITY
CONFIDENCE	QSCORE	Correlation	1,000	-,124
		Significance (1-tailed)	.	,261
		df	0	27
	RMABILITY	Correlation	-,124	1,000
		Significance (1-tailed)	,261	.
		df	27	0

Appendix VIII Banks within scope (annual reports of 2015)

Code	name of bank	Retreived from
DE1	Deutsche Bank AG	https://www.db.com/ir/en/download/Deutsche_Bank_Annual_Report_2015.pdf
DE2	Commerzbank AG	https://www.commerzbank.com/media/en/aktionaere/haupt/2016_5/geschaeftsbericht_2015.pdf
DE3	Deutsche Postbank AG	https://www.postbank.com/postbank/docs/PBGB2015_E.pdf
DE4	Deutsche Bank Privat- und Geschaftskunden AG	https://annualreport.deutsche-bank.com/2015/ar/deutsche-bank-group/facts-and-figures.html
DE5	KfW Ipex-Bank Gmbh	https://www.kfw.de/PDF/Download-Center/Finanzpublikationen/PDF-Dokumente-Berichte-etc./1_Geschäftsberichte/Geschäftsbericht-2015-2.pdf
DK1	Danske Bank A/S	https://www.danskebank.com/en-uk/ir/Documents/2015/Q4/annualreport2015.pdf
DK2	Nykredit Realkredit A/S	https://www.nykredit.com/aboutnykredit/ressourcer/dokumenter/pdf/_stock_exchange_2016/realkredit/nykredit-realkredit-group-annual-report-2015-110216.pdf
DK3	Nordea Bank Danmark Group-Nordea Bank Danmark A/S	https://www.nordea.com/Images/33-102776/2015-12-31_Annual-Report-2015-Nordea-Bank-Danmark_EN.pdf
DK4	Jyske Bank A/S (Group)	https://investor.jyskebank.com/wps/wcm/connect/9a8465d8-360d-4f9a-bcff-5e4979ccdf25/Annual+Report+2015.pdf?MOD=AJPERES&CACHEID=9a8465d8-360d-4f9a-bcff-5e4979ccdf25
DK5	Sydbank A/S	http://www.sydbank.de/inc/pdf/sydbankcom/financial_reports/annual_report_2015.pdf
ES1	Banco Santander SA	http://www.santander.com/csgs/StaticBS?blobcol=urldata&blobheadername1=content-type&blobheadername2=Content-Disposition&blobheadername3=appID&blobheadervalue1=application%2Fpdf&blobheadervalue2=inline%3Bfilename%3D219%5C432%5CInforme+Anual+ENG+ACCE.pdf&blobheadervalue3=santander.wc.CFWCSancomQP01&blobkey=id&blobtable=MungoBlobs&blobwhere=1278719603992&ssbinary=true
ES2	Banco Bilbao Vizcaya Argentaria SA	http://shareholdersandinvestors.bbva.com/TLBB/fbinir/mult/AnnualReport2015_tcm927-569151.pdf
ES3	Caixabank, S.A.	https://www.caixabank.com/deployedfiles/caixabank/Estaticos/PDFs/Informacion_accionistas_inversores/MEMGRUPCAIXABANKWEBING.pdf
ES4	Banco de Sabadell SA	https://www.grupbancsabadell.com/memoria2015/pdf/en/complete-annual-report.pdf
ES5	Bankia, SA	http://www.bankia.com/recursos/doc/corporativo/20121001/ingles74659/annual-report-consolidated-financial-statements-2015.pdf

FR1	BNP Paribas	https://invest.bnpparibas.com/sites/default/files/documents/ddr2015eng.pdf
FR2	Société Générale SA	https://www.societegenerale.com/sites/default/files/ddr-2016-depot-amf-11032016-uk.pdf
FR3	Credit Agricole Corporate and Investment Bank SA-Credit Agricole CIB	http://www.credit-agricole.com/en/content/download/317006/5048670/version/4/file/DDR+2015+VA+Vdef+pour+mise+en+ligne.pdf
FR4	Natixis SA	https://www.natixis.com/natixis/upload/docs/application/pdf/2016-04/nati_drf2015_en.pdf
FR5	Banque Fédérative du Crédit Mutuel	http://www.bfcm.creditmutuel.fr/en/bfcm/pdf/CM11_Group_2015_Registration_Document.pdf
GB1	Barclays Bank Plc	https://www.home.barclays/content/dam/barclayspublic/docs/InvestorRelations/AnnualReports/AR2015/Barclays_PLC_Annual_Report_%202015.pdf
GB2	Lloyds Bank Plc	http://www.lloydsbankinggroup.com/globalassets/documents/investors/2015/2015_lbg_annual_report_v3.pdf
GB3	Royal Bank of Scotland Plc (The)	http://www.investors.rbs.com/~/media/Files/R/RBS-IR/results-center/annual-report-2015.pdf
GB4	HSBC Bank plc	http://www.hsbc.com/~/media/hsbc-com/investorrelationsassets/hsbc-results/2015/annual-results/hsbc-bank-plc/hsbc-bank-plc-annual-report-and-accounts-2015.pdf
GB5	Standard Chartered Bank	https://www.sc.com/en/resources/global-en/pdf/annual_reports/annual_report_2015_full_report.pdf
IT1	UniCredit SpA	https://www.unicreditgroup.eu/content/dam/unicreditgroup-eu/documents/en/investors/financial-reports/2015/4Q15/UniCredit-SpA-2015-Reports-and-Accounts.pdf
IT2	Intesa Sanpaolo	http://www.group.intesasanpaolo.com/scriptIsir0/si09/contentData/view/content-ref?id=CNT-05-0000000450EBF
IT3	Banca Monte dei Paschi di Siena SpA-Gruppo Monte dei Paschi di Siena	http://english.mps.it/investors/investor-relations/financial%20reports/Financial%20reports/2015/CONSOLIDATED%20ANNUAL%20REPORT%202015.pdf
IT4	Mediobanca SpA-MEDIOBANCA - Banca di Credito Finanziario Società per Azioni	https://www.mediobanca.com/static/upload/bil/bilancio-30.6.15_def-eng-per-sito.pdf
IT5	Banca Mediolanum SpA	https://www.mediolanum.com/pdf_corp/Mediolanum_Annual_Report_2014.pdf

Appendix IX: Sample Descriptive per variable

Variable	Description	Sample size	Mean	Standard deviation
QSCORE	Risk disclosure quality score	30	0,510	0,13
LNSENTC	Ln(Amount of sentences)	30	4,323	0,71
COUNTRY	Country in which a bank is situated	30	n.a.	n.a.
OWNCONC	Ownership concentration of a bank	30	0,293	0,32
LEVERAGE	Leverage of a bank	30	6,044	2,31
LNAGE	Age of a bank	30	4,199	1,28
CONFIDENCE	Depositors confidence in a bank	30	0,387	0,17
RMABILITY	Riskmanagement ability of a bank	30	14,248	2,49
LNSIZE	Ln(Size of a bank)	30	12,829	1,26
LIQRISK	Liquidity risk of a bank	30	42,133	21,97

Appendix X: Sample descriptive per country

Variable		Germany	Denmark	Spain	France	Great Britain	Italy
QSCORE	Mean	0,516	0,484	0,543	0,506	0,652	0,356
	STD	0,083	0,114	0,189	0,054	0,053	0,093
LNSENTC	Mean	4,521	3,751	4,443	4,293	4,871	4,062
	STD	0,658	1,040	0,787	0,237	0,489	0,513
OWNCONC	Mean	0,832	0,138	0,187	0,459	0,100	0,045
	STD	0,235	0,176	0,226	0,165	0,163	0,070
LEVERAGE	Mean	6,025	5,705	6,867	4,519	5,893	7,253
	STD	4,397	1,328	0,676	0,920	0,897	3,096
LNAGE	Mean	4,098	3,781	3,725	4,648	5,169	3,774
	STD	0,922	0,803	1,766	1,372	0,793	1,602
CONFIDENCE	Mean	0,434	0,290	0,524	0,250	0,463	0,361
	STD	0,283	0,180	0,064	0,116	0,069	0,101
RMABILITY	Mean	13,952	17,320	12,590	13,340	14,420	13,958
	STD	1,874	2,161	0,900	1,242	2,607	3,306
LNSIZE	Mean	12,383	11,642	13,060	13,682	13,918	12,287
	STD	1,529	1,164	0,823	0,665	0,347	1,318
LIQRISK	Mean	36,471	44,128	15,740	67,500	45,304	43,656
	STD	27,053	12,405	11,119	16,339	5,546	21,344

Appendix XI: Results of content analysis, per bank, per measure.

	R1	R2	F1	F2	F3	F4	C1	C2	C3	V1	V2	T1	U1	U2	U3	Tot score
DE1	2	3	4	3	3	3	3	3	3	2	2	61	3,5	3	2	0,602
DE2	1	1	3	2	3	3	3	2	2	2	1	53	2,5	3	2	0,408
DE3	1	1	3	3	2	2	2	2	2	4	4	55	2,5	4	3	0,518
DE4	2	2	3	4	4	3	3	3	2	2	2	61	4	3	3	0,591
DE5	2	3	2	2	3	2	3	2	2	4	2	74	1,5	2	3	0,460
DK1	1	2	2	3	3	3	3	3	3	4	2	32	2	3	4	0,597
DK2	1	1	2	2	2	3	2	3	2	3	1	41	2,5	2	2	0,375
DK3	1	2	3	2	2	3	2	3	2	2	2	39	1	1	4	0,411
DK4	2	3	3	4	3	3	3	3	3	3	2	54	3	3	2	0,618
DK5	1	2	2	2	2	3	1	3	3	4	1	54	3	2	2	0,418
ES1	4	4	4	4	3	3	4	4	4	2	3	43	4	4	3	0,851
ES2	1	2	1	3	2	3	2	3	1	3	1	33	2,5	2	2	0,385
ES3	1	1	2	3	2	3	3	4	2	4	2	56	3	2	3	0,506
ES4	1	3	3	4	3	3	2	4	2	3	2	30	2	3	2	0,578
ES5	1	1	2	3	1	3	3	2	1	4	2	40	1,5	2	3	0,398
FR1	1	2	2	3	1	3	3	4	3	3	4	67	3,5	3	4	0,598
FR2	1	2	2	3	1	3	3	4	2	3	3	65	2,5	2	3	0,488
FR3	1	2	2	3	2	3	2	4	2	2	3	73	1,5	3	3	0,460
FR4	1	1	3	3	2	3	3	4	2	3	1	69	3,5	3	3	0,507
FR5	2	3	3	3	3	3	3	2	3	3	2	109	1	2	2	0,476
GB1	2	2	4	4	3	3	3	3	3	3	3	59	4	2	3	0,659
GB2	2	3	4	3	2	3	3	3	4	3	3	57	4	4	3	0,705
GB3	2	3	3	3	2	3	3	4	4	3	2	57	4	3	3	0,660
GB4	2	2	4	3	3	3	2	3	4	3	4	52	3,5	4	2	0,676
GB5	1	2	4	2	2	3	3	4	3	3	1	54	3,5	3	3	0,563
IT1	1	1	4	4	2	3	1	4	2	4	1	61	2	1	3	0,457
IT2	1	1	3	2	2	3	1	4	2	3	2	61	1,5	1	2	0,357
IT3	1	1	3	2	2	2	3	3	1	4	1	74	1	1	2	0,315
IT4	1	2	1	3	4	3	4	4	2	2	1	93	2,5	1	2	0,427
IT5	1	1	2	2	1	3	1	3	1	3	2	62	2,5	1	2	0,223

Appendix XII: Coding scheme and operationalization of framework

Qualitative characteristic	Score		Concept	Literature
Relevance				
R1: Management provides forward looking statements about liquidity risk	1	No forward looking information	Predictive value	Beest, Braam & Boelens, 2009; Bartov & Mohanram, 2004; Aljififri and Hussainey 2007
	2	Limited forward looking information		
	3	forward information is given		
	4	Extensive forward looking information (e.g. with quantitative information)		
R2: Management provides feedback as to how various market events and other significant events affected liquidity risk	1	No feedback	Confirmative value	Jonas & Blanchet, 2000; Beest, Braam & Boelens, 2009
	2	Little feedback on the past/only mentioning of events		
	3	Feedback is present		
	4	Comprehensive feedback		
Faithfulness				
F1: Management provides descriptions and explanations about liquidity risk.	1	No description or explanation or only definition	Complete depection	IASB, 2010
	2	Little description and explanation		
	3	Description and explanation		
	4	Detailed description and explanation (e.g. significant facts about the quality and nature of liquidity risk and circumstances that affect liquidity risk)		
F2: Management provides descriptions and explanations about liquidity risk management	1	No description or explanation or only definition	Complete depection	IASB, 2010
	2	Little description and explanation		
	3	Description and explanation		
	4	Detailed description and explanation (e.g. significant facts about the quality and nature of liquidity risk management and circumstances that affect liquidity risk management		
F3: To what extent does the bank highlight the positive events as well as the negative events about liquidity risk.	1	No description of events (positive and negative)	Neutral depiction	Beest, Braam & Boelens, 2009; Jonas & Blanchet, 2000; Linsley Shrives & Crumpton, 2006
	2	Emphasize on positive events		
	3	Emphasize on positive events, but negative events are mentioned; no negative event occurred		
	4	Positive and negative events balanced		

F4: Estimates are described clearly, and accurately as being an estimate and valid arguments are provided to support the decisions for the estimates and assumptions about liquidity risk.	1 2 3 4	No explanation General explanation Specific explanation of estimations/no estimations Comprehensive argumentation (e.g. formula's, limitations etc. are explained)	Free from error	IASB, 2010; Maines and Wahlen, 2006
Comparability				
C1: To what extent is liquidity risk compared with the liquidity risk of other period(s)	1 2 3 4	No comparison partly 1 year (>50%) 1 year 2 or more years	Period comparison	IASB, 2010; Linsley & Shrives, 2005
C2: Presentation of liquidity risk is well-structured and centralized in one part of the annual report.	1 2 3 4	Decentralized disclosure/unstructured presentation Centralized in different sections in annual report Centralized in section but unstructured Centralized and structured	Across companies comparison	Beest, Braam and Boelens, 2009; Linsley & Shrives, 2005; Jonas and Blachet, 2000
C3: Management provides index numbers and ratios in the liquidity risk disclosure	1 2 3 4	0 ratio/index numbers 1 ratio/index numbers 2 or 3 ratio/index numbers 4 or more ratio/index numbers		Beest, Braam and Boelens, 2009
Verifiability				
V1: Information that is presented is audited	1 2 3 4	Risk disclosures not audited Risk disclosures reviewed (wholly or partly) Risk disclosures are partly audited Disclosed that that all liquidity risk disclosures are audited	Direct verification	Healy & Palepu, 2001; Maines and Wahlen; Beest, Braam and Boelens, 2009
V2: Assumptions, the methods of compiling the liquidity risk and other factors and circumstances that support the information are described.	1 2 3 4	No description Limited description Explanation of methods of compiling credit risk Detailed explanation of methods and other factors and circumstances	Indirect verification	IASB, 2010
Timeliness				
T1: Time between year-end and the auditors signature on the audit report.		Amount of days between the auditor's signature and January 1st 2015	Timeliness	Linsley & Shrives, 2005; Beest,

				Braam & Boelens, 2009
Understandability				
U1: Graphs and tables are used in the disclosure of liquidity risk	1 1,5 2 2,5 3 3,5 4	0 or 1 graphs and tables 2 graphs and tables 3 graphs and tables 4 or 5 graphs and tables 6 or 7 graphs and tables 8 or 9 graphs and tables 10 or more graphs and tables	Depiction	Beest, Braam & Boelens, 2009; Jonas and Blanchet, 2000
U2: Tables, graphs and financial information is explained and enable the user to understand the phenomenon being depicted	1 2 3 4	No explanation Limited explanation, hard to understand Graph, tables and assumptions are explained Everything that might be difficult to understand is explained	Explanation	Beretta & Bozzolan, 2004; IASB, 2010
U3: In the disclosure difficult terms and jargon is explained/understandable	1 2 3 4	No explanation Jargon and difficult language is explained Limited Jargon and difficult language, or well explained No Jargon and difficult language or excellent explanation	Language	Beest, braam & Boelens, 2009; IASB, 2010

Appendix XIII: Overview of results content analysis per qualitative measure

Qualitative characteristics	Items	Mean	Std. Dev.	Std. Dev. Mean per Country	Minimum	Median	Maximum
Relevance							
R1		1,40	0,67	0,46	1	1	4
R2		1,97	0,85	0,41	1	2	4
	Total score	1,68	0,76		1	1,5	4
Faithful representation							
F1		2,73	0,91	0,55	1	3	4
F2		2,90	0,71	0,30	2	3	4
F3		2,33	0,80	0,39	1	2	4
F4		2,90	0,31	0,17	2	3	3
	Total score	2,72	0,68		1,50	2,75	3,75
Comparability							
C1		2,57	0,82	0,37	1	3	4
C2		3,24	0,74	0,46	2	3	4
C3		2,40	0,89	0,68	1	2	4
	Total score	2,74	0,82		1,33	2,67	4
Validity							
V1		3,03	0,72	0,19	2	3	4
V2		2,07	0,94	0,50	1	2	4
	Total score	2,55	0,83		1,50	2,50	4
Timeliness							
T1		2,76	0,58	0,51	0,20	2,7	4
	Total score	2,76	0,58		1,42	2,72	4
Understandability							
U1		2,63	0,98	0,65	1	2,5	4
U2		2,43	0,97	0,78	1	2	4
U3		2,67	0,66	0,27	2	3	4
	Total score	2,58	0,87		1,33	2,5	4

Appendix XIV: Overview of literature and research methods

Category	Author	year	results	sample	risk scope	Explanatory variables	Metho-dology	Framework
banks	Linsley, Shrives and Crumpton	2006	-No relation between risk disclosure and both profitability and level of risk - positive relation between risk disclosure and both bank size and risk definitions - bias toward disclosing past rather than future risk information	annual reports of 9 Canadian and 9 UK banks in the year 2001	All risk disclosures in categories	Country, bank size, profitability, level of risk, quantity of definitions and quantity risk disclosure	Content analysis	Quantitative: Number of sentences Semantic properties: Monetary/non-monetary, Good/bad news, past/future news and definitions Difference is made between risks.
banks	Bischof	2009	Due to the implementation of IFRS7 the disclosure quality has increases in financial statements and risk reports, but the focus of disclosures has shifted form market risk exposures to credit risk exposures. - Difference in effect f implementation due to enforcement of the standard	Financial statements and management review in annual reports of 171 banks from 28 European countries in the period 2006-2007	Risk disclosed in financial statements and management review	Time, national supervisory activities,	content analysis	Quantitative - Page number as proxy for disclosure quality
banks	Van Oorschot	2010	- correlation between risk disclosure quantity and Quality found - No relation between bank size, profitability and risk disclosure - Increase of disclosure over period 2005-2008	Annual report of 8 German banks in the period 2005-2008	Disclosure of risk from financial instruments (Market, Credit, Liquidity risks and other disclosures)	Quality of risk disclosure, quantity of risk disclosure, bank size, profitability, time	Content analysis	Combination of Qualitative characteristics (disclosure index based on IFRS 7) and Qualitative characteristics based on compliance to framework of the IASB and Basel committee)

banks	Oliveira, Rodrigues and Craig	2011	- stakeholder monitoring and corporation reputation explain the risk reporting practices - Risk reporting enhances the legitimacy of bank for two reasons: - managing the reputation of the company form a stakeholder perspective and - fulfilling the institutional pressure to assure market effectiveness	Annual reports of 111 Portuguese commercial banks in the year 2006	Voluntary risk disclosures in the annual report of operational risk, capital structure and adequacy matters	Bank size, Company listing, company age, depositor confidence level, risk management ability	Content analysis	Quantitate disclosure index based on sentences Semantic properties: Economic sign (monetary and non-monetary) and type of measure (past/future)
banks	Barakat and Hussainley	2013	Banks with a higher proportion of outside board directors, lower executive ownership, concentrated outside non-governmental ownership, and more active audit committee, and operating under regulations promoting bank competition have a higher risk disclosure quality. - influence of supervisors ont the quality of disclosure depends on the ownership structure of the bank	85 banks from 20 EU member states in the years 2008, 2009 and 2010	operational risk disclosure	Regulation and supervision, bank level governance, stock return volatility and bank stability	Content analysis	Quantitative - Disclosure index of 14 items with 56 sub-items (Qualitative, quantitative and forward looking information and graphs)
banks	Rahman, Kighir, Oyefeso & Salam	2013	above average compliance with risk disclosure categories - size and foreign subsidiaries are positive related with risk disclosure	Annual reports of 20 Islamic banks in the period 2008-2010	Risk disclosed in risk section of annual reports	Size, multiple listings, number of subsidiaries, external credit rating	content analysis	Yes/no Disclosure index based on IFSB checklist
banks	Lindé & Valestrand	2015	Credit risk is most dominant in the disclosure by banks. - The disclosure was most transparent in the last year	Five European banks in the years 2010 to 2013	All risk disclosures in annual reports	Case study - disclosure over multiple years	Content analysis	Quantitative by counting sentences: Number of sentences Semantic properties: Monetary/non-monetary,

								Good/bad news, past/future news. Difference is made between risks.
general	Linsley and Shrives	2006	association between the number of risk disclosures and company size. The relation between the number of risk disclosures and the amount of risk that a company is subject to is only partially found.	Annual reports of 79 non-financial UK companies in the year 2000	All risk disclosed in annual reports	Company size, level of risk	Content analysis	Quantitative by counting sentences: Number of sentences Semantic properties: Monetary/non-monetary, Good/bad news, past/future news. Difference is made between risks.
general	Abraham and Cox	2007	corporate risk reporting is negatively related to share ownership by long term institutions - number of and type of board directors are positively related with risk disclosure	annual reports of 71 non-financial firms from the UK in the year 2000	Overall risk disclosure in annual reports	Number of dependent/independent board directors, corporate ownership, dual listing,	Content analysis	Quantitative by counting risk disclosure sentences
general	Amran, Manaf Rosli Bin, & Che Haat Mohd Hassan	2008	Less risk disclosure in Malaysian countries than UK companies (compared to results Linsley and Shrives, 2006) - Size is positive related to risk disclosure quantity	100 annual reports of Malaysian non-financial companies in the year 2005	All risk disclosure in annual report	Product diversification, geographical diversification, size, industry and leverage	Content analysis	Quantitative by counting risk disclosure sentences, categorizing in risk type
general	Deumes	2008		90 prospectuses of Dutch firms in the years 2007-2000			Content analysis	

general	Dobler, Lajili, Zeghal	2011	Risk disclosure is most prevalent in management reports, concentrates on financial risk categories, and comprises little quantitative and forward looking disclosure. - US firms dominate in risk disclosure quantity, followed by Germany. - Size and amount of risk explain risk disclosure quality - Germany negative relation between risk disclosure and leverage due to debt financing in Germany	160 annual reports form U.S., Canadian, UK and German manufacturing companies in 2005	Comprehensive corporate risk disclosures	country comparing son, quantitative and qualitative disclosures, forward/past looking information,	Content analysis	Quantitative by counting risk disclosure sentences, semantic properties: Location of risk disclosure, Nature of reference to risk, type of information, time frame, risk category
general	Miihkinen	2012	impact of national disclosure standard of risk disclosure quality - increase in quantity with more extensive and comprehensive information - no increase in quantitative disclosures -	annual reports of 99 listed Finnish firms in the years 2005 and 2006	Overall risk disclosure in annual reports	Risk disclosure standards	Content analysis	Quantitative word counting with qualitative aspects (coverage, depth, outlook information, composite quality)
general	Abraham and Shrives	2014	- company managers prefer providing disclosures that are symbolic rather than substantive - this behavior is explained by institutional factors and propetiary costs	Annual reports of 4 food producer companies from the UK in the years 2002-2007	Develops a model for assessing the quality of all risk disclosures	general and specific significant events,	Content analysis	Quantitative - Automated software - risk factor resemblance

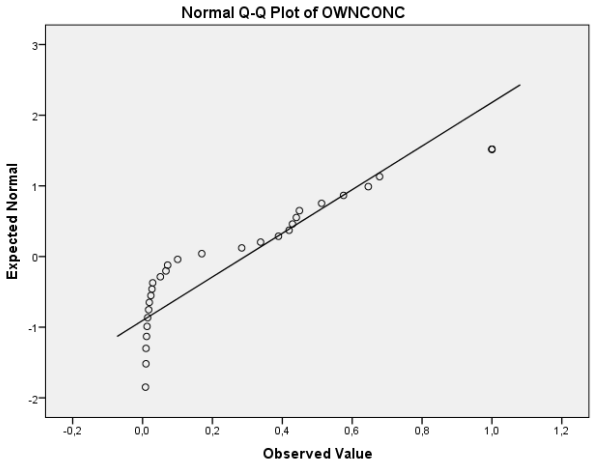
Appendix XV: Variables: Test of normality, linearity and scatterplots for detecting outliners.

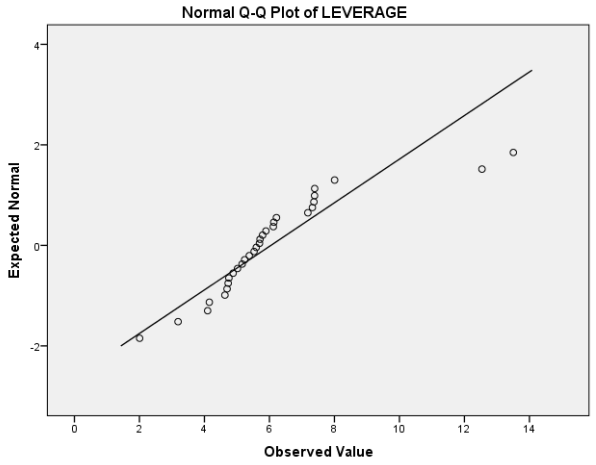
Tests of Normality

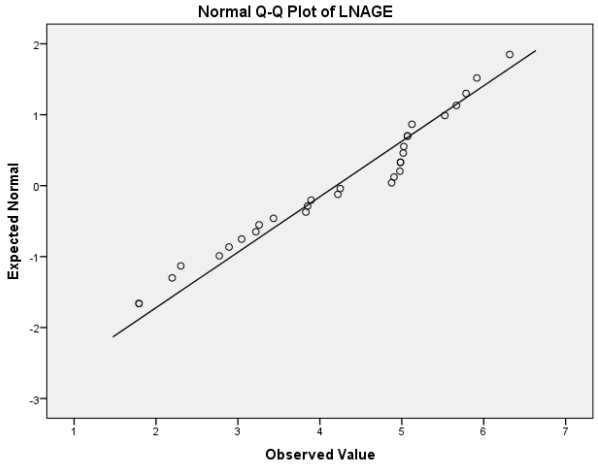
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
OWNCONC	,224	30	,000	,818	30	,000
LEVERAGE	,204	30	,003	,824	30	,000
LNAGE	,201	30	,003	,941	30	,098
CONFIDENCE	,121	30	,200*	,966	30	,443
RMABILITY	,158	30	,054	,917	30	,023
LNSIZE	,148	30	,094	,942	30	,106
LIQRISK	,082	30	,200*	,968	30	,488

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction



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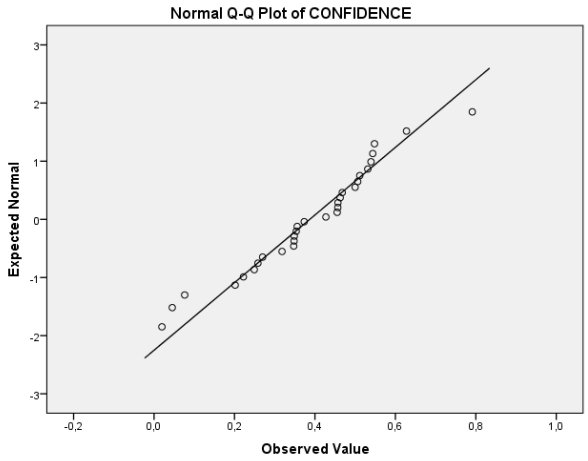
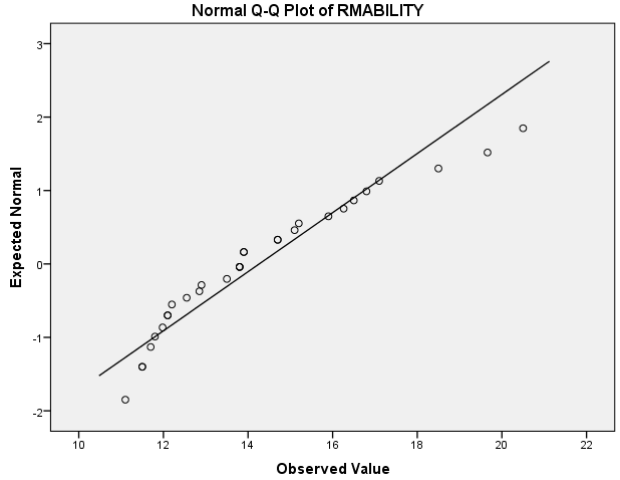
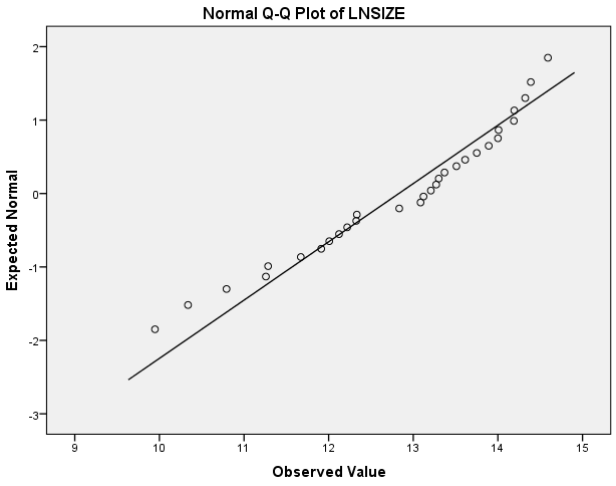
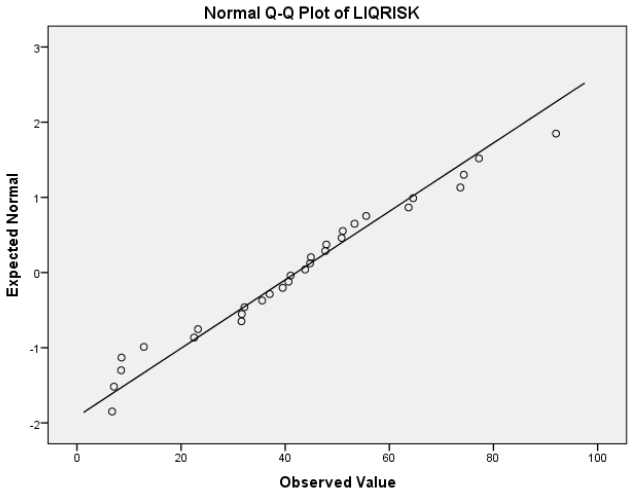
Expected Normal
Observed Value

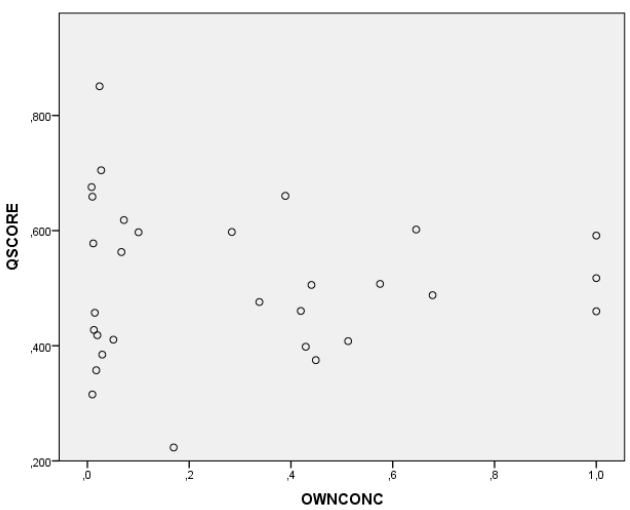

Normal Q-Q Plot of CONFIDENCE
Expected Normal
Observed Value

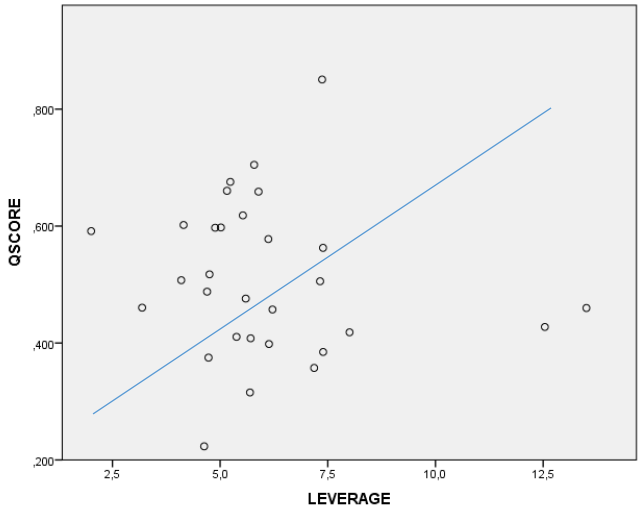

Normal Q-Q Plot of RMABILITY
Expected Normal
Observed Value

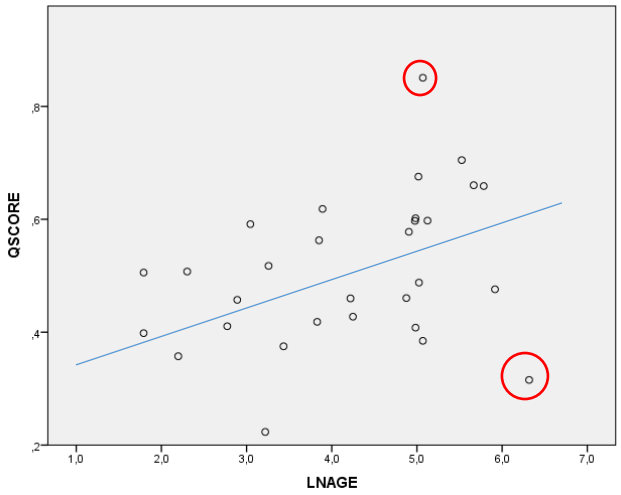

Normal Q-Q Plot of LNSIZE
Expected Normal
Observed Value

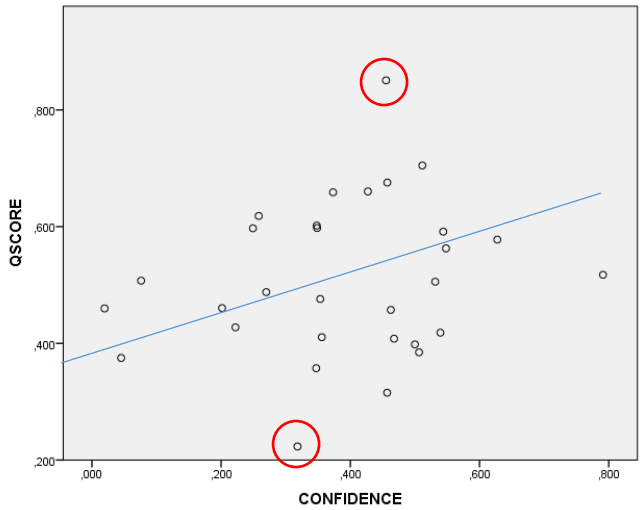

Normal Q-Q Plot of LIQRISK
Expected Normal
Observed Value

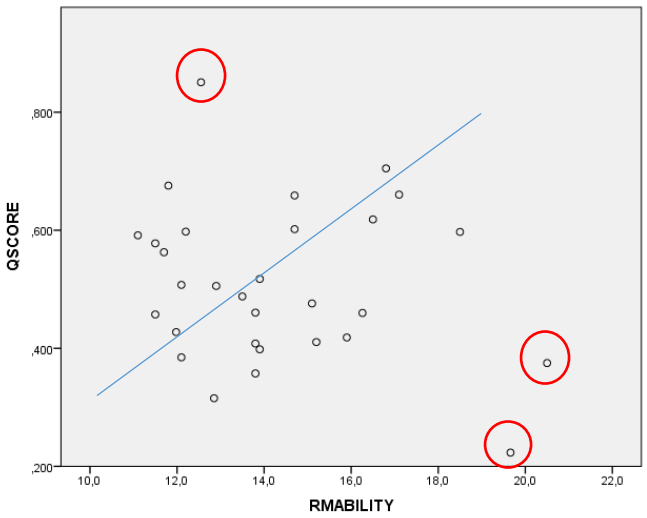
Scatterplots of variables.







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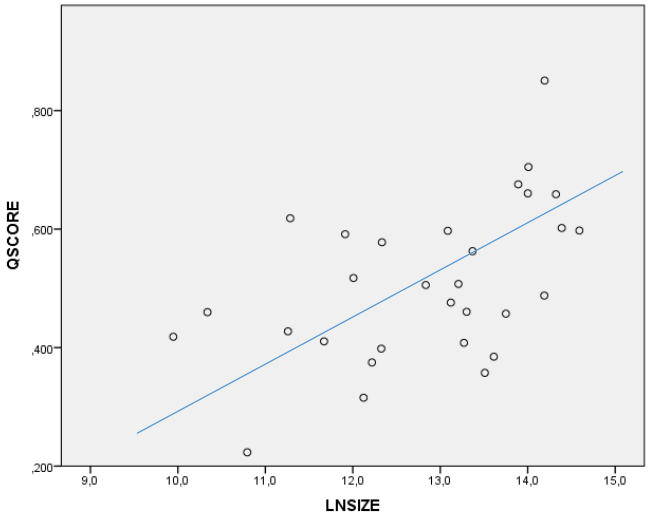
RMABILITY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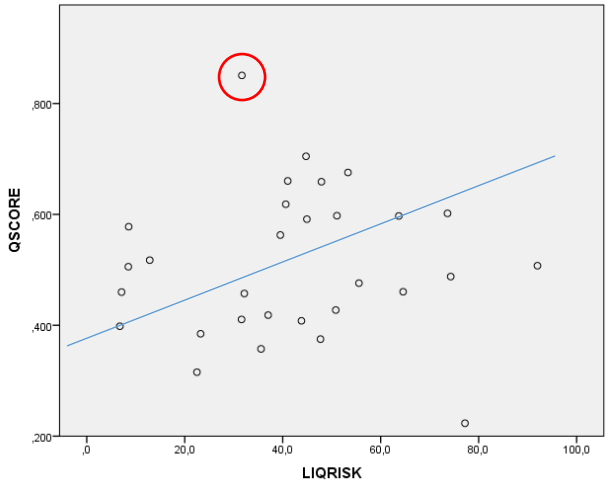
LNSIZE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