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**The predictive ability of loan loss provisions in banks within EU following IFRS
- The effect of country specific factors**

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Abstract

In recent years, an increased attention has been devoted to banks' loan loss provisions and actual losses. The incurred loss model under IFRS (IAS 39) has been criticized for leading to less timely loan loss recognition. In this study we compare the predictive ability of loan loss provisions between different countries following IFRS. IFRS was developed with the purpose of harmonizing accounting standards across countries, despite this the existence of country differences have been observed in previous studies (Manganaries, Beccalli & Dimitropoulos, 2017). We interpret country specific differences by observing countries legal origin, culture, level of enforcement and level of earnings management. We find that the predictive ability of loan loss provisions in banks varies between different countries within Europe, where the factors representing the clusters can be identified as explanatory variables. Following the financial crisis, the model's late loss recognition has been pointed out as one of the reasons as to why the financial crisis occurred. For that reason we also examine if the predictive ability of loan loss provisions differs between countries, and if this changes during the financial crisis compared the period before and after. We conclude that there are changes in the predictive ability during the financial crisis, indicating that the quality of accounting changes depending on the state of the economy. Our results have implications for users of the financial information and should thereby be considered by standard setters. This will primarily be important when implementing the new standard, IFRS 9, to avoid country specific differences and increase harmonization among countries.

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1. Introduction

In the aftermath of the recent financial crisis politicians, standard-setters and economist have called for a regulatory intervention. A worldwide debate has been initiated as a result of the crisis, creating significant pressure to restructure the regulation of the world's financial markets (Bushman & Landsman, 2010). The role of banks' loan loss provisions (LLP) and its effect on timely loss recognition and income smoothing constitutes an important part of the debate (Curcio, Dyer, Gallo & Gianfrancesco, 2014). Loan loss provisions are a dominant accrual account in banks' financial statements and accounting decisions made in regards to LLP has a significant influence on banks' reported earnings. Consequently, the accounting for credit losses has received a lot of attention in the past years (Gebhardt & Novotny-Farkas, 2011).

International Accounting Standard (IAS) 39 *Financial Instruments: Recognition and measurements* regulates the accounting for loan losses. The standard applies an 'incurred loss model', which was developed with the purpose of decreasing earnings management observed under local GAAP (IASB, 2014). The model has been criticized and received a lot of attention for exacerbating the financial crisis by not reporting loan losses in a timely matter. Critics argue that the model postpones the recognition of loan losses until the borrower defaults resulting in higher earnings during economic booms and lower earnings during economic downturns (Marton & Runesson 2017; Gebhardt & Novotny-Farkas). The discussions and criticism revolving the current regulation and specifically the incurred loss model for credit loss accounting has resulted in a new standard. The new standard International Financial Reporting standard (IFRS) 9 *Financial Instruments* introduced by The International Accounting Standard Board (IASB) will be mandatory in January 2018.

The adoption of IFRS in the European Union brought expectations of standardized accounting policies and practices, however, as demonstrated by Nobes (2006, 2013), there are still possibilities for differences in accounting behaviour under IFRS across countries. In addition to this, the incurred loss model in IAS 39 is criticised to decrease the quality of the financial information by leading to engaging in earnings management by postponing the recognition of loan losses (IASB, 2014; Marton & Runesson 2017). Consequently, European authorities actively work towards harmonization of the standard and a fairly large amount of empirical literature has examined the banks' reported LLP and the standards ability to reflect the economic reality (Nobes, 2013; Gebhardt & Novotny-Farkas, 2011). The combination of these findings has encouraged the investigation whether countries' ability to predict actual losses through loan loss provisions differ. The increased attention on credit losses that evolved during the financial crisis adds an additional aspect to this research area, whether this event had an affect on the countries' predictability of actual losses.

In this study we investigate the accounting of loan loss provisions through a sample of 107 publicly traded banks in the European Union (EU), Norway, Iceland and Lichtenstein. All observed banks follow IFRS and thus applies IAS 39 when assessing the allocation of loan loss provisions. We investigate banks' predictability of credit losses (i.e. charge-offs) with a focus on country specific differences. More specifically, we examine if factors attributable to a specific country or region can explain differences in the level of LLP reported. Based on the fact that countries were affected by the crisis to a different extent (Schick, 2013), we broaden our research by investigating differences in the predictability of credit losses between countries over time and under the influence from the state of the economy.

While the observed banks in this study is following the same accounting standard they are still influenced by reporting incentives. That is, institutional factors and market factors in firms' home countries create managerial incentives that have an impact on the application of the standard (Leuz, 2006). This study seeks to capture these country-specific factors by testing the predictability of actual losses dependent on four different country divisions previously used in the literature.

These divisions will also be investigated with a focus on the years 2008-2011 to evaluate if the factors represented by the divisions explain potential changes in predictability during the financial crisis. The first and second division primarily reflect country-specific factors from a historic perspective, that is, factors such as law tradition, rule of law and social norms that derives from a country's national roots (La Porta, Lopez-de-Silanes, Shleifer & Vishny, 1998; Licht, Goldschmidt & Schwartz, 2007). Division three and four is primarily motivated by the supervision and regulation of countries' capital market, where differences in factors such as audit requirements and investor protection are captured (Barth, Caprio & Levine, 2006; Leuz, Nanda & Wysocki, 2003).

Our study is based on primarily two prior studies investigating the research area of credit losses in banks. A recent published research paper by Marton and Runesson (2017) investigate the predictive ability of LLP with respect to actual losses under IFRS and local GAAP within the EU and Switzerland. The study finds that loan loss provisions under IFRS predict future credit losses to a lesser extent compared to high-judgment standard local GAAP. The authors argue that the result may be explained by the private information that is being reflected in the financial reports under local GAAP, and the reduction of provisions timeliness with the incurred loss model (IAS 39, paragraph 58). The study also highlights the impact of preparer incentives (i.e earnings management) and enforcement as important variables that may interact with the effect of the accounting standard. In a similar study, Gebhardt and Novotny-Farkas (2011) find that subsequent the introduction of IAS 39 and the incurred loss model the income-smoothing behavior in European banks was significantly reduced. Their result suggests an improvement in accounting quality, however the result varies significantly across supervisory regimes. In addition to this, the study provide evidence showing that loan losses was recognized in a less timely manner, that is, the markets are informed about deteriorations in asset quality with a delay. Even though IAS 39 managed to limit management's opportunistic discretion, the study questions whether the restrictive accounting rules are desirable in the light of the global financial crisis (Gebhardt & Novotny-Farkas, 2011).

We hypothesize and find that the ability of LLP to predict actual losses differs between countries within Europe following IFRS. By testing the effect of different country divisions reflecting various factors, an estimation of what variables that have an impact on countries' predictability of actual losses has been provided. The result can be interpreted as an indication that the quality of financial reporting differs between countries, where the differences can be explained by legal origin, culture, level of enforcement and earnings management. Overall, the observations show that some of the countries' accounting behaviour is in line with previous literature observing country differences in other research fields. This finding highlights the difficulties of developing a harmonized accounting behaviour under the existent of country specific influences. We also hypothesize and find that country specific factors in general have various effects on the predictability of actual losses during the financial crisis.

Our main reason to focus on credit losses lies in the previous reasoning and is similar to most empirical literature investigating loan loss provisions. First, The allocation of LLP in banks is subject for a substantial amount of self-determination. Second, high levels of leverage in the banking sector make the banks sensitive to volatility in asset values and thus the level of LLP. Consequently, this has an important effect on banks' stability where credit losses are identified as one of the primary causes behind bank failures, especially during the recent financial crisis (Fonseca & González, 2008; Gebhardt & Novotny-Farkas, 2011). By investigating this specific field with a clear focus on country specific differences as well as focusing on the financial crisis we extend prior literature on credit losses. We contribute with a new area within accounting research for loan loss provisions under IFRS and to the literature on international differences in firms' financial reporting.

Our approach with a focus on countries' predictability of actual losses through loan loss provisions is, to our knowledge, uninvestigated by empirical literature. The findings of this study contribute to

the current debate about accounting for loan losses. In accordance with the result showing that the predictability differs between the observed clusters, and that some clusters predict in lesser extent during the financial crisis, our findings are relevant for standard setters and bank regulators. Our conclusions also provide a deeper understanding of reported credit losses that is useful for financial analysts.

The remainder of this paper is structured as follows. In section 2 we describe the accounting rules for loan loss provisioning their application, which are provided by both IFRS and the Basel Committee on Banking Supervision. The development of the hypotheses is presented in section 3. In section 4, the methodology is presented including the variables, the statistical models and the sample selection. The result is presented in section 5, followed by a concluding discussion in section 6.

2. Regulation and accounting for loan loss provisions

IFRS was developed by the International Accounting Standards Board (IASB) with the main purpose to harmonize financial accounting standards across different countries (Crawford, Lont, & Scott, 2014). The globalization of international financial markets is one of the driving forces behind the call for a common accounting language and harmonized financial reporting (Ball, 2006). In 2005 the European Union mandated all companies with listed shares on securities exchange in the EU to prepare their consolidated accounts in accordance with IFRS (Nelson, 2003). Accounting standards ability to provide financial statements of high quality has been subject for much research (Ball & Shivakumar, 2005). An important consideration and a frequently discussed topic is the level of judgment that is allowed for in the preparation of the financial statements. A high level of judgment in the standard could open up for banks to pursue earnings management (Bouvatier, Lepitit & Strobel 2014; Ball, 2006). IFRS as well as pre-existing local GAAP are characterized by its principle-based approach within the standards. Even though IAS 39 allows for less judgement, a certain degree of judgment is naturally involved in the assessment of expected loan losses (Marton & Runesson, 2017). In addition to this, timeliness of loss recognition is an essential attribute of accounting quality, and represents the speed of which adverse economic events are being reflected in the financial statements (Ball & Shivakumar, 2005).

IAS 39 applies a so-called incurred loss model that requires recognition of credit losses once evidence can support the occurrence of a trigger event (IAS 39). Bank managers estimate losses due to defaults at each balance sheet date. To what extent expected loan losses are allowed to be recognised is specified in IAS 39 (Gebhardt & Novotny-Farkas, 2011). A non-exclusive list of trigger events with guiding indicators of impairment is provided in IAS 39 paragraph 59. Based on these guidelines companies may only recognize losses that arise from past events and current circumstances. Expected events influencing credit losses should thereby not be considered under IAS 39. The recognition occurs through the loan loss provision accrual account, which is classified as an expense in the income statement (IAS 39).

Loan loss provisions are disciplined by both international banking regulations and accounting authorities (Curcio et al., 2014). National bank regulators in the EU have to follow the rules of EU Capital Adequacy Directives, which are based on Basel Committee on Banking Supervision's (BCBS) recommendations for capital requirements. BCBS's main purpose is to enhance financial stability by strengthen regulation, supervision and practices of banks worldwide (BIS, 2016). The Basel frameworks (I,II) have established capital requirements for banks' exposure to the market, credit and operational risks (Drenovak, Rankovic, Ivanovic & Jelic, 2017). This has limited banks ability to use LLP for capital management (Bouvatier, Lepetit & Strobel, 2014). In 2010, as a response to the financial crisis, Basel III was introduced with the aim of a more resilient banking system. The main focus of Basel III is to improve risk management and governance as well as strengthen banks' transparency and disclosures (BIS, 2011).

One of the main purposes of a more restrictive standard (IAS 39), with a prerequisite of a trigger event, is to avoid companies of engaging in earnings management. A well functioning financial market supported by financial reports that properly reflect the economic reality is essential for an efficient economy and long-term financial stability. To carefully evaluate credit losses and managerial incentives is of high importance to avoid bank failures. In current regulation, economic conditions such as rising house prices and interest rates do rarely fulfil the prerequisite of a trigger event that is required to recognize an impairment. As a result the standard delays the recognition of credit losses that later is exposed, then with a higher default rate and risk of distress (Mishkin, 1999; Gebhardt & Novotny-Farkas, 2011).

The new standard for financial instrument, IFRS 9, will be mandatory in January 2018. The financial Accounting Standards Board (FASB) has simultaneously introduced a similar standard that will be

effective in the year of 2020 (FASB, 2016). The delayed recognition of credit losses on loans and financial instruments during the financial crisis identified weaknesses in the existing accounting standard (IASB, 2014). The incurred loss model is claimed to result in an undue delay in the recognition of expected credit losses, which consequently exacerbated the crisis in 2008 (Hashim, Li & O'Honlon, 2016). In IFRS 9, IASB introduces a new single, forward-looking 'expected-loss' impairment model, which will replace the current impairment model. The new model will require entities to account for expected credit losses when the financial instruments are first recognised. It will also require recognition of full lifetime expected losses on a more timely basis (IASB, 2014), which is anticipated to lead to earlier recognition of credit losses under IFRS 9 than under IAS 39 (Hashim, Weijia & O'Hanlon 2016). The new standard contains of more judgment and is more based on management estimates than the current incurred loss model (IASB, 2014). With the new model, the measurements of expected credit losses are required to be based on supportable and reasonable information including historical, current and forecasted information. The model is also accompanied by higher requirements of qualitative and quantitative disclosures to further explain the basis of expected credit losses calculations and changes in perceived credit risks (IASB, Project Summary, 2014). Accordingly, the user of the financial statement will be provided with more timely and useful information (IASB, 2014).

3. Hypotheses development

Country-specific factors

Results from prior research show that there are still possibilities for different accounting behaviour across countries even after the adoption of IFRS (Nobes, 2006; 2013). The availability of options within the standards opens up for judgement, which reduces consistent use. The reason why accounting standards and practices vary across countries has been investigated extensively by prior international accounting literature. The explanatory factors have in general terms been related to institutions and the relationships between countries (Nobes & Parker, 2006). Previous research shows that both the level of investor protection and the legal system may have an effect on the application of IFRS. In addition to this, enforcement mechanisms as well as the entities' reporting incentives have been observed to have an impact. (Ball, Robin & Wu, 2003; Barth, Caprio & Levine, 2008). The firms reporting incentives are shaped by a number of different institutional factors such as taxation system, legal system and financing systems of countries (Nobes, 2006).

Legal origin

Previous studies by La Porta et al. (1998; 1999) show that certain institutional structures encourage different behaviour. The laws within Europe differ primarily between two broad traditions: the common law and the civil law. The common law is English in origin and the civil law derives from Roman law. There are only three major families within the civil tradition, which the modern commercial law originate from: French, German and Scandinavian. According to La Porta et al. (1998) the law, as well as the law enforcement, differ significantly.

Studies show that Scandinavian and German-civil-law countries have the best quality of law enforcement. In contrary, law enforcement is weakest in the French-civil-law countries. The different categories have been used in previous studies as explanatory variables for legal environments. The quality of accounting has also been observed where Scandinavian has the best quality followed by common-law countries and German-civil-law countries. Similar to law enforcement, countries with French-civil-law have the weakest quality of accounting. Marton and Runesson (2015) identified an additional category including Eastern Europe to complement the variables developed by La Porta et al. (1998).

Evidence from previous research show that earnings management is dependent on the country's legal system. Leuz et al. (2003) provide analysis arguing that that managers have incentives to acquire private control benefits, however, the managers' ability to pursue such activities is limited by legal systems protecting the stakeholders. Consequently, earnings management decreases in countries with strong legal protection. The study conducts tests on clusters closely parallel to La Porta et al.'s (1997) and found that earnings management is negatively associated with the quality of investor protection rights and legal enforcement. The study also show that earnings management is the highest in code-law countries with low levels of enforcement (e.g. Italy and France) to be compared with to common law countries with strong enforcement, which have the lowest levels of earnings management (e.g. United Kingdom and Ireland) (Leuz et al., 2003). In addition to this, the level of earnings management has showed to be lower in countries with large and highly developed equity markets. Extensive disclosure requirements are associated with lower level of earnings management (Burgstahler, Hail & Leuz, 2006).

Culture

History has proven that culturally diverse views on the rule of law existed already in the antiques. Since then the rule of law has been highlighted as an important mean to establish social order. The literature of today focuses on social institutions that promotes and strongly influences the economic development. Primarily three institutions, or so called "norms governance", has been in focus, namely: the rule of law, absence of corruption and democratic accountability. The rule of law limits people to only use power in ways allowed by formal legal rules. Opposite to this, the social norm corruption accepts the use of authority for private gain. Democratic accountability obligates holders of power to be transparent in their decisions (Licht et al., 2007). The study by Licht et al. (2007) seeks to find social informal institutions of governance and their roots in the national culture. By doing this, the study found that cultural factors have a significant influence on governance and can predict national differences. In addition to this, numerous factors included in the culture sphere has been proven by previous literature to affect governance such as economic factors, historical events and legal institutions (Bowels, 1998). By looking at the variation of governance and considering cultural regions, Licht et al. (2007) found that both English-speaking and West European regions score significantly higher levels of governance in each category (rule of law, non-corruption, democratic accountability) than the majority of the observed regions, including Eastern Europe. This suggests that the compliance with norms governance is significantly higher in English speaking and Western Europe compared to Eastern Europe.

Enforcement

The literature suggests that stricter enforcement mitigates the influence of firm-specific incentives and thus increase the accounting quality (Brown, Preiato & Tarca, 2014; Fronseca & González, 2008). Strict implementation of accounting standards ensures that the purpose of the standard is carefully fulfilled, where compliance with the standard further depends on efficient enforcement (Marton & Runesson 2017; Gebhard et al., 2011). Brown et al. (2014) considers enforcement activities by regulators to promote the importance of compliance with the accounting standards. The study seeks to capture country differences in the environment where auditors perform and their role and activities in national enforcement bodies. The following elements provided by the European Commission (2000) was used in the study by Brown et al. (2014) in determining a proxy for accounting enforcement for each country; clear standards, timely interpretation, implementation guidance, high quality statutory audit, coordinated enforcement by security market supervisors and effective sanctions. Audit and accounting enforcement activities has an important function in the process of improving the quality of financial information communicated to the market. The study found that the developed accounting and audit enforcement proxy has explanatory power for country differences in financial transparency, market development and earnings management (Ibid). The level of income has also proved to have an impact on the quality of enforcement, which is observed to increase with a higher level of income (La Porta et al., 1998). Countries' predominant social and political views on the importance of a regulator also influences to what extent a private sector or a government is involved in enforcement and supervision of accounting information (Brown et al., 2014).

Further research by Barth et al. (2006) constructed enforcement indexes in order to evaluate differences between countries. The study considers three separate inclusions deemed to have a significant impact on the level of enforcement in a country. The first variable indicates the level of official power vested in banking supervision. The second variable takes a value based on the strictness of banking supervision and the last variable measures the audit requirements for banks as well as government supervision of audits. The indexes have later been used in the study by Marton and Runesson (2017). They highlight a focus on both capital market enforcement and banking supervision, which are assumed to have an positive direct or indirect effect on the implementation of the accounting standards and thus the quality of information (Marton & Runesson, 2017; Barth et al., 2006). In addition to this, concerns have been raised by

Carvajal and Elliot (2009) in regards to countries' lack of enforcement. According to the study non-compliance risk the credibility of the system and is dependent on disciplinary actions.

Earnings management

Previous research in the field of accounting show evidence of earnings management using loan loss provisions (Pérez, Salas-Fumás & Saurina, 2008) and observe differences between countries in their behaviour (Leuz et al., 2003). The financial market is characterised by asymmetric information i.e. managers are often better informed about the firm's investment opportunities and financial position than outsiders, such as creditors and common shareholders. There is a possibility that the managers will make decisions in self-interest, which in the context of credit losses could lead to exaggerated LLP at times when income is high and understated when income is low (Fernandez de Lis, Martinez Pages & Saurina, 2001; Rajan, 1994). The agency theory provides an analytical framework to understand the impact of accounting standards on such opportunistic behaviour (Jensen & Meckling, 1976; Russel, 2015). Following the adoption of IFRS in the EU, research show that the accounting quality decreases where the metric of accounting quality has been the magnitude and extent of earnings management (Ahmed, Neel & Wang, 2013). Prior study by Leuz et al. (2003), examine differences in earnings management across 31 countries applying IFRS. The study show that there are differences in the extent of earnings management between the observed countries and this depends on different factors. Factors such as the country's investor protection and the size of the stock market affect the level of earnings management. High investor protection and a large stock market lead to lower levels of earnings management. The result in Leuz et al. (2003) also show that legal enforcement is negatively associated with earnings management, meaning that if the legal enforcement is higher the level of earnings management is lower. Further research by Pérez et al. (2008) on Spanish banks provide evidence that loan loss provisions are used to smooth earnings by increasing their loan loss provision in economic upturns and decreasing them in downturns.

Factors such as legal origin, culture, level of enforcement and level of earnings management has been identified as influencers on different behaviour between countries. The occurrence of accounting differences between countries within Europe is confirmed by prior research. This leads to the expectation that differences in LLP predictive ability depending on country specific factors will be observable. On this basis, we investigate if the ability of loan loss provisions to predict actual loan losses differs between countries by dividing Europe into four different constellations previously mentioned in the section above. The following hypothesis has been formulated:

H1. *The ability of loan loss provisions to predict actual losses differs between countries within Europe following IFRS.*

Financial crisis

The banking industry is not only interesting for its important function of channelling funds and enabling firms and individuals to realize investment opportunities, but also for its role during the financial crisis (Kousenidis, Ladas & Negakis, 2013; Mishkin, 1999). The financial crisis led to the failure of a large number of banking institutions and the sector's declining position had a substantial impact on the economic system in many aspects (Dolar, 2016). In the aftermath of the financial crisis IAS 39 has been criticized for its restrictive impairment rules. Critics argue that the failure to signal private information results is reduced timeliness of loan loss provisions, which exacerbates the procyclicality in bank's earnings (Gebhardt & Novotny-Farkas, 2011; BIS, 2011).

Although the crisis hit the economy globally, the level of impact on each country varied. The strong interlinkages between the financial markets within Europe quickly made the financial crisis apparent in all member countries. Most countries experienced an ordinary recession, while others suffered extraordinary shocks (Schick, 2013; Gros & Alcidi, 2010). Schick (2013) demonstrates the impact of the financial crisis in OECD countries by investigating how financial balances fared before and during the crisis. The study show that there are significant variations to what extent countries had financial deficits, thus suggesting that the impact of the financial crisis varied between countries. By measuring the deterioration through the years during 2008-2011 most countries experienced a drop in fiscal balance and substantial differences between countries was found. By observing the financial crisis effect on each country a conclusion can be drawn that countries within English legal origin was the most heavily impacted by the crisis. In addition to this, the majority of the countries within the French legal origin was affected by the financial crisis to a large extent. On the other hand, the countries within Scandinavian legal origin were the least impacted by the financial crisis (Schick, 2013). The study by Cimini (2015) takes another approach by investigating the financial crisis and its effect on earnings management. By conducting a comparison between European countries' abnormal accruals, the study conclude that the majority of the observed countries experience a decrease of misrepresentation of financial information, i.e. earnings management, after the burst of the financial crisis. According to Fernandez de Lis et al. (2001) and Rajan (1994) management is affected by the current state of the economy and face pressure from the market to report similar profits during economic growth as competitors. This encourages bank managers to take short-term actions such as loosening the credit policy, which increases the number of problem loans. This can be connected to the phenomena of management engaging in smoothing behaviour (Fama & Jensen, 1983; Lambert, 1984).

The consequences of a financial crisis, i.e. economic slow down, solvency uncertainties, liquidity shortage, add pressure on to firms to increase the quality of accounting in an effort to regain investors' confidence in the banking industry (Kousenidis et al., 2013; Flannery, Kwan & Nimalendran, 2013). The changes in banks' accounting behaviour before and during the crisis in response to investors' reactions are investigated by Manganaries et al. (2017) and Gebhardt and Novotny-Farkas (2011). Manganaries et al. (2017) find evidence of changes in financial reporting practices by investigating the level of conservatism and timeliness in banks' reporting of loan losses and impairments. They observe that following the outbreak of the financial crisis banks report loan losses in a more timely and conservative matter. A similar study by Gebhardt and Novotny-Farkas (2011) identifies a reduction of conservatism prior the financial crisis, which strengthens the possibility of changes in accounting triggered by financial instability. The same study provides evidence showing that supervisory regimes have an impact on the level of income smoothing in banks. Banks under supervisory regimes exhibits a higher level of income smoothing during good times, which further indicates that the state of the economy and country-specific differences have an impact on the quality of accounting (Gebhardt & Novotny-Farkas 2011). The evidence provided by the two studies is motivated by banks' attempt to increase the level of transparency after the burst of the financial crisis (Manganaries et al., 2017). Rajan (1994) provides an additional aspect to the dilemma and argues that less income smoothing occurs during economic downturns since market participants forgive poor performance when an entire sector has been hit

by a systematic shock. Consequently, incitements to increase earnings and engage in earnings management are not as evident during economic busts as it is under economic booms.

Prior literature provides evidence stating that the European countries following IFRS was affected by the financial crisis to a different extent (Schick, 2013). In addition to this, accounting research show that the quality of accounting is affected by the state of the economy, where timeliness of loan loss provisions increases and earnings management decreases during financial crises. The observations made in previous literature leads to the expectation that the predictability of actual losses will increase during the financial crisis, which develop the following hypothesis:

H2. *The ability of loan loss provisions to predict actual losses differs between countries in the EU following IFRS, and a higher predictability is more pronounced during the financial crisis.*

4. Methodology

The primary objective of this research is to detect country specific differences in regards to the predictability of actual credit losses, as well as investigate the predictability taking the state of the economy into account. In order to do this we use the Benchmark model originally proposed by Altamuro and Betty (2010) to statistically test our stated hypothesis. The model is further introduced in the succeeding section.

Variables and statistical models

To test our hypotheses, a number of variables are specified. We will begin by expounding the Benchmark model in the first section. The second section describes the actual models that are used in this study to test the hypotheses.

The Benchmark model

We use the Benchmark model proposed by Altamuro and Beatty (2010) to measure the ability of LLP to predict actual losses. The choice of model is based on previous studies by Altamuro and Beatty (2010) and Marton and Runesson (2017) using the same model.

$$GCO_{i,t+s} = \alpha_0 + \alpha_1 LLP_{i,t} + \alpha_j Control_{yi,t} + \varepsilon_{i,t+s} \ \forall \ s = 1,2,3 \ \text{(Benchmark model)}$$

The dependent variable is gross charge-offs (GCO), i.e. actual credit losses estimated in the financial statements for bank i in period $t + s$. LLP is our main independent variable and constitutes provisions for credit losses, as estimated in the financial statements, for bank i in period t. GCO and LLP are scaled by net total assets and multiplied by 100. In previous studies a one-period (year) delay between GCO and LLP has been used, which we also apply in the statistical tests. The argument for applying the one-period delay is based on the underlying assumption that late recognition of credit losses leads to exacerbation of procyclicality in the banking system. This assumption derives from the standard's incurred loss model and is further confirmed by Beatty and Liao (2011). Their study on banks show that late recognition of credit losses have a real economic effect and late recognition leads to more procyclical lending practices by banks. Altamuro and Beatty (2010) provides underlying assumptions indicating that it is better to make provisions one year ahead than not making them at all, in which the case would be if losses were recognized in the same period as they are confirmed. Marton and Runesson (2017) extended the model by Atamurro and Beatty (2010) by including up to four time periods ahead instead of only one. The results from the study show a positive association between LLP and GCO that is consistent across the first three time periods. The GCO do not significantly reflect the current LLP in four periods ahead. Based on Marton and Runesson's (2017) results, we will only include up to three time periods in our model.

Both gross charge-offs and changes in non-performing loans have been used as the measurement of dependent variable in the literature of loan loss provisions. Similar to Marton and Runesson (2017) we choose gross charge-offs as the dependent variable based on the fact that the level of non-performing loans is partially determined by national banking regulation. This regulation varies between countries in EU (Barth et al., 2006), which make gross charge-offs a better dependent variable to avoid that the dependent variable is affected by not observed effects.

The variable α_jControl are representing *n* number of controls used in the regression tests. These will be included to avoid the risk that the controls have an effect on the results. Based on previous studies the following control variables are known to affect the size of LLP in banks and will thus be used in this study; the logarithm of total assets as a proxy for the size of the bank and the total loan over total assets as a proxy for the bank's risk profile. Operating income over total assets as a proxy for banks' profitability will also be used (Marton & Runesson, 2017; Pérez et al., 2008) The argument for controlling for the size of the bank is based on the fact that larger banks have greater resources and it is relatively less costly for a large bank than for a small bank to have advanced system and internal expertise to account for credit losses. The expectations on larger banks' ability to produce high-quality estimates for loan losses are thereby higher. Based on this, larger banks are more likely to report LLP that accurately predicts actual credit losses. The control for profitability measured through operating income scaled by lagged total asset is based on the argument that profitability affects banks' incentives (Marton & Runesson, 2017). Where more profitable banks tend to have more incentives to exaggerate their LLP. Loan/TA is a measure of banks' risk profile and is the ratio of total loans to total assets at the end of year t. The more loans the bank makes to the corporate or the retail sector, the higher the risk tolerance of the bank managers (Pérez et al., 2008).

Test of hypothesis 1

To examine if the predictability of actual losses differs between countries we add the variable Country Division$_{k,t}$ to the Benchmark model, which represent four different country divisions for *k* based on previous literature. Within these divisions all the observed countries are clustered based on different assumptions. The first division is based on La Porta et al. (1998) and Marton and Runesson (2015) where the observed countries are clustered based on their legal origin. This generates five different clusters: Eastern, English, French, German and Scandinavian origin. The second division is based on the country's culture where the countries are divided based on the three different cultures: Eastern Europe, English speaking and Western Europe by Licht et al. (2007). The third division is based on the country's level of enforcement provided by Brown et al. (2014) and Barth et al. (2006). The two studies takes a different approach, where Brown et al. (2014) investigates enforcement of accounting standards in no specific industry while Barth et al. (2006) focus on banks. The division is based on whether the country's level of enforcement is high or low, which is determined by the mean level of aggregated enforcement. The fourth and final division is referred to the level of earnings management in the country provided by Leuz et al. (2003), and supplemented by Barth et al., (2006). Leuz et al. (2003) investigates earnings management in no specific industry and Barth et al. (2006) focus on banks. The observed countries are divided into two different groups based on the mean of the aggregated level of earnings management. All the country divisions are presented in Table 1.

Table 1

Country divisions.

Panel A: Country divisions for test of hypothesises				
Country	Legal origin	Culture	Enforcement	Earnings management
Austria	German	WE	High	High
Belgium	French	WE	High	High
Bulgaria	Eastern	EE	High	Low
Croatia	Eastern	EE	Low	High
Cyprus	French	WE	Low	High
Denmark	Scandinavia	WE	High	Low
Finland	Scandinavia	WE	Low	Low
France	French	WE	Low	Low
Germany	German	WE	High	High
Greece	French	WE	High	High
Hungary	Eastern	EE	Low	Low
Ireland	English	ES	Low	Low
Italy	French	WE	Low	High
Liechtenstein	German	WE	High	Low
Lithuania	Eastern	EE	Low	High
Malta	French	WE	High	Low
Netherlands	French	WE	Low	Low
Norway	Scandinavia	WE	High	Low
Poland	Eastern	WW	Low	High
Portugal	French	WE	High	High
Romania	Eastern	EE	Low	High
Slovakia	Eastern	EE	Low	Low
Spain	French	WE	High	High
Sweden	Scandinavia	WE	High	Low
United Kingdom	English	ES	High	Low
Panel B: Breakdown by proportion of observation by country division				
Legal origin		Culture		
German	12%	WE		79%
French	28%	EE		8%
Eastern	8%	ES		11%
Scandinavia	40%			
English	11%			

This table describes the clusters within the four different country divisions.

The different clusters are dummy variables indicating whether the country is included in the cluster or not, i.e. the variables takes the value of '1' if the country is included in the cluster and '0' if it is not. The division based on the country's level of enforcement takes the value of '1' for the countries with high level of enforcement. The dummy variable earnings management takes the value of '1' for countries with low earnings management and a value of '0' for high earnings management. The motivation for coding countries with high enforcement and low earnings management as '1' is based on expectations of their positive effect on the predictability of actual losses. The division based on the country's legal origin and the culture consist of more than two clusters, whereby one will be used as a reference cluster in the regression tests. The results will thereby show whether or not the observed cluster differs from the predetermined reference cluster. In order to test the predictability of GCO with respect to the effect of the countries' legal origin, Scandinavian origin was chosen as the reference group. This is based on previous literature stating that countries' within Scandinavian origin have one of the highest levels of law enforcement, which could affect the use of loan loss provisions. When testing if the countries differ depending on the country's culture, Eastern European culture was chosen as the reference group. This is to investigate whether previous literature, which suggests that Eastern Europe differs from both Western European culture and that English speaking culture, is applicable to our study.

To examine the effect of the different divisions on the ability of LLP to predict GCO in subsequent periods a two-way interaction variable between LLP and each cluster are created, $LLP_{i,t} \times$ Country Division$_{k,t}$. These interaction variables indicates whether the clusters' loan loss provisions differ from the reference cluster, or the other cluster as in the test of the level of enforcement and earnings management. To be able to test the predictive ability of LLP under the different divisions, a total of twelve different regression tests are carried out covering the three different time periods of GCO.

The below regression model was used to test hypothesis 1:

$$GCO_{i,t+s} = \alpha_0 + \alpha_1 LLP_{i,t} + \alpha_2 Country\ Division_{k,t} + \alpha_3 LLP_{i,t} \times Country\ Division_{k,t} + \alpha_j Control_{yi,t} + \varepsilon_{i,t+s} \ \forall\ s = 1,2,3\ \text{(model 1)}$$

The variables GCO, LLP, 'Country division' and $\alpha_j Control_{yi,t}$ are defined in the section above. The expectation for the coefficients of interest in the first test differs depending on the legal origin when compared to Scandinavian legal origin. German origin is expected to have coefficients that are slightly significantly positive, which would indicate that the countries' within the German origin predicts actual losses in similar extent as Scandinavian. French, English and Eastern legal origin are all expected to predict actual losses in a lesser extent compared to Scandinavian legal origin. The coefficients considering the effect of the country's' culture is expected to be significantly positive for English speaking and Western Europe compared to Eastern Europe. For the regression test based on the countries' level of enforcement the expectations is a significantly positive coefficient. The expectations for the last regression test based on the countries' level of earnings management is significantly positive, meaning that lower level of earnings management would lead to better predictability.

Test of hypothesis 2

When examining the effect of the financial crisis in 2008-2011 and testing the ability of LLP to predict GCO in subsequent periods the variable Financial Crisis$_{i,z}$ will be added, z represent the period during the financial crisis in the years of 2008-2011. The Financial Crisis variable is an indicator variable taking value of '1' if the observation is during the crisis in 2008-2011 and takes the value of '0' if it is observed in any other year before and after the crisis. The test will include a three-way interaction variable between LLP, the different clusters and the crisis period. This is to examine if there is an observable difference between the predictability in the different clusters, within the different divisions, during the financial crisis in 2008-2011. The three-way interaction variable will thus be the variable of interest in the tests for hypothesis 2. Contrary to hypothesis 1, the tests in hypothesis 2 will be carried out without reference variable. Consequently, each cluster will be compared to all the other clusters within the same division i.e. no enunciation will be made of the effect of the specific cluster compared to one of the other clusters.

The three-way interaction variable is difficult to interpret since the raw coefficient does not reveal how the three variables relate to each other (Marton & Runesson, 2017). To provide a deeper understanding of the underlying structure within the three-way interaction the study applies the function Process in IBM SPSS provided by Hayes (2013) for all the tests in hypothesis 2. The Process function, with the application of model 3 specifies the effect of LLP on GCO at the different values of crisis and cluster, and thus clarifies what drives the results.

The below regression model will be used to test hypothesis 2:

$$GCO_{i,t+s} = \alpha_0 + \alpha_1 LLP_{i,t} + \alpha_2 Country\ Division_{k,t} + \alpha_3 LLP_{i,t} \times Country\ Division_{k,t}$$
$$+ \alpha_4 Financial\ Crisis_{i,t} + \alpha_5\ LLP_{i,t} \times Financial\ Crisis_{i,z}$$
$$+ \alpha_6 Country\ Division_{k,t} \times Financial\ Crisis_{i,z}$$
$$+ \alpha_7 LLP_{i,t} \times Country\ Division_{k,t} \times Financial\ Crisis_{i,z} + \alpha_j Control_{yi,t}$$
$$+ \varepsilon_{i,t+s} \ \forall\ s\ = 1,2,3\ (model\ 2)$$

All the variables GCO, LLP, 'Country division' and $\Sigma Control_y$ are defined in the section above and in Table 2. The expectations for the coefficient of interest, the three-way interaction $LLP_{i,t} \times$ Financial $Crisis_{i,z} \times$ Country $Division_{k,t}$ are in line with our expectations for hypothesis 1. In addition to this we expect an increase in all the observed clusters' predictability during the financial crisis.

Table 2
Variable description

Variable	Description
Main:	
GCO	Actual losses written-of by the bank, scaled by total assets multiplied with 100. *SNL Variable: Charge-offs Bal Sht Lns*
LLP	Provision for possible losses on loans, scaled by total assets and multiplied with 100. *SNL variable: Provision for loan losses*
Crisis 2008-2011	A indicator variable representing time during the financial crisis, 2008-2011. The cluster is an indicator variable taking the value "1" for the years included in the period during the financial crisis and a value of "0" for the years not included in the period during the financial crisis.
Country Divisions:	
Legal origin	A division including the following five clusters: Eastern, English, French, German and Scandinavian. The division is based different legal origins provided by La Porta et al. (1998) and Marton and Runesson (2015). Each cluster contains of an indicator value taking a value "1" if the country is included in the specific legal origin and a value of "0" otherwise.
Culture	A division including the following three clusters: Weastern European culture (WE), English speaking culture (ES) and Eastern European culture (EE). The division is provided by Licht et al. (2007) and is based on three institutions: The rule of law, non-corruption and democratic accountability. Each cluster contains of an indicator value taking a value "1" if the country is included in the specific culture and a value of "0" otherwise.
Enforcement	A indicator variable representing the division for enforcement. The division is provided by Barth et al. (2006) and is based on three inclusions: level of official power, strictness of banking supervision and audit requirements for banks. The cluster takes the value of "1" if the country have a high level of enforcement and a value of "0" if the country have a low level of enforcement.
Earnings management	A indicator variable representing the division for earnings management. The division is provided by Leuz, Nanda and Wysocki (2003) and is based on an aggregated earningsmanagement score that is calculated by adding measures of earnings smoothin and earnings discretion. The cluster takes the value of "1" if the country have a low level of earnings management and a value of "0" if the country have a high level of earnings management.
Controls:	
Loans/TA	Loans, net of loan-loss reserves, as a percent of total assets. *SNL Variable: Net loans/ Assets (%)*
OP	Total operating income scaled by total assets (a proxy for profitability) *SNL Variable: Operating Income*
TA	Natural logarithm of total assets (a proxy for size) *SNL variable: Total Assets*

All the main variables in the study is provided by this table. The Interaction variables, the year indicators and the country variables included in the study will not be presented in this table.

Additional considerations

Based on previous studies within the same field, interaction terms are used to examine the relation between LLP, GCO and the other variable. When the model includes the interactions between two different variables, the interpretation of the regression coefficients of the base variables is less meaningful. This is due to the fact that a unit-change in the independent variables is no longer represented unconditionally by the coefficients (Marton & Runesson, 2017). Based on the number of observations included in each cluster, both Eastern legal origin and Eastern European culture is underrepresented (Table 1, Panel B). This should be considered when interpreting the results for the Eastern countries. In addition to this, considerations should be taken to the differences in years of the references, which the divisions for level of enforcement and level of earnings management are based on. Some changes may have occurred over time. A heteroskedasticity-consistent estimator of the coefficients in the regression tests is applied to fulfil the assumption of the OLS regression model and to provide statistical correct results (Hayes & Cai, 2007). The study has not observed the banks' reversals and will thereby not included those in the tests or the discussion. This is based on the argument that the study is observing the ability of LLP to predict actual losses, which is not affected by the reversals. Previous studies have shown different proxies for managerial

incentives to manage provisions and factors known to affect the actual losses, these are included in the different models as controls to avoid unobserved heterogeneity. The variable TA is expressed in monetary amounts and is converted to euros if the country has reported in another exchange rate other than euro. A time-invariant exchange rate is used (see Appendix 2). All independent continuous variables in the study are winsorized at the 1st and 99th, which is to avoid the result being driven by extreme observations. This applies to LLP, Loans/TA, OP and TA.

Sample selection and data

The sample consists of all banks in the EU listed on a stock exchange and that was covered by the database SNL Financials, provided by S&P Global Market Intelligence, during the observed period 2005-2015. Three additional countries have been included in the sample due to their commitment of following EU Accounting Directives: Iceland, Liechtenstein and Norway (Deloitte, 2017). To ensure the quality of the original data provided by SNL random samples of data was compared to the reported values in the banks' annual reports. The original data was complemented with manual collection due to missing data or faulty observations, especially with the gross charge-off and loan loss provision variable. Overall, the LLP variable was difficult to retrieve since the SNL database in most cases collected the net post and the annual reports did not always report the gross post. This led to a substantial amount of manual collection. Following the manual collection, observations that did not fulfil the requirements of our main variables LLP, GCO and total assets (TA) were excluded from the sample. The sample size was also reduced due to financial reports not available in English or a Nordic language. Our study is further reliant on available observations of GCO for a period of three and four consecutive years. With this data we will be able to test the predictive ability of LLP with respect to GCO in three succeeding time periods. Period one includes all the GCO variables that are used in the model to predict actual losses one year ahead. Period two and three is constructed with the same logic and includes the GCO variables used to predict two and three years ahead.

When evaluating the final data sample we observe that our sample is skewed towards countries with larger amount of banks, primarily in Denmark and Norway (Table 3). Opposite to this some countries are represented by only one bank namely, Finland and Lithuania, Netherlands and Slovakia. SNL Financials constitutes our preferred source, however annual reports were the primary source during the manual collection. The annual reports was either found on the banks' respective homepage or provided by the database Orbis, developed by Bureau van Dijk. The disposition of the financial data and the richness of details varied significantly between the countries. However, the main variables LLP and GCO were commonly found under a note specifying the bank's uncollectable loans. Similar to Dobler et al. (2011), in order to ensure reproducibility a substantial overlap was conducted between the annual reports that was coded manually by the two authors.

Table 3
Sample composition.

(1) Total number of banks in each country provided by SNL
(2) Final number with of banks in each country after review and manual data collection
(3) Total number of observed GCO and LLP in each country provided by SNL
(4) Final number of observed GCO and LLP in each country aftter review and manual data collection
(5) Percentage of total number of observations

Country	No. of banks provided by SNL (1)	Final no. of unique banks (2)	Obs. with data available from SNL (3)	Final no. of observations (4)	Percentage of tot. no. of observations (5)
Austria	5	4	102	88	4%
Belgium	2	2	38	44	2%
Bulgaria	3	3	39	62	3%
Croatia	5	3	62	4	0%
Cyprus	2	2	39	42	2%
Czech Republic					
Denmark	19	16	325	352	16%
Estonia					
Finland	2	1	20	18	1%
France	18	4	222	88	4%
Germany	10	6	174	132	6%
Greece	5	4	87	88	4%
Hungary	2	2	22	44	2%
Iceland					
Ireland	3	2	66	44	2%
Italy	15	8	154	175	8%
Latvia					
Liechtenstein	2	2	40	40	2%
Lithuania	1	1	4	22	1%
Luxemburg					
Malta	3	2	31	44	2%
Netherlands	1	1	4	20	1%
Norway	22	19	433	419	19%
Poland	6	2	66	44	2%
Portugal	2	2	42	42	2%
Romania	2	1	32	22	1%
Slovakia	1	1	13	13	1%
Slovenia					
Spain	8	4	117	64	3%
Sweden	4	4	77	88	4%
United Kingdom	12	11	192	204	9%
Total	**155**	**107**	**2401**	**2203**	**100%**

This table describes the sample composition by country.

During the observed timespan the financial sector, including commercial banks, was subject to a period of global financial turmoil. Two major crises, namely the financial crisis and the sovereign debt crisis initiated in 2010 brought significant consequences to the European financial sector with the level of impact varying between the countries (Noeth & Sengupta, 2012). The observed time period is chosen with the intent of reflecting the impact of the two crises in the sample. Similar to Manganaris et al. (2017) the observed years 2005-2015 are divided into two distinctive sub-periods. The following division is made; 2008-2011 represents the period during the crises. The time period 2005-2007 and 2012-2015 represents the period before and after the crises. There is no unanimous agreement as to when the crisis begun, however it was not until 2008 that the crisis was fully extended to the European banks, which was indicated by IASB's prompt modification of IAS 39 and IFRS 7 in July the same year (Fiechter, 2011). The year 2008 will thereby mark the beginning of the crisis in our study.

Descriptive statistics

Descriptive statistics of the variables LLP and GCO as well as the control variables are provided in Table 4. The average LLP takes a value of 0.63% of total asset and the GCO takes an average value of 0.37%. Both the average for LLP and GCO can according to the literature be considered as

reasonable, which strengthens the validity of our observations (Marton & Runesson, 2017). The control variables in the study take the following average values. The banks' loans scaled by total assets constitutes on average approximately 60% of total assets, which thereby is an essential post in the banks' balance sheet. The total operating income divided by total assets, i.e return on assets, takes a value of 3,4% on average. The average amount of total assets amount to €1,3 billions (=$e^{7,197}$).

Table 4
Variable summary statistics.

	n=965			
	Mean	Std. Deviation	Minimum	Maximum
LLP	0,632	0,771367	0	4,75
GCO	0,366	0,59911	0	5,3
Loan/TA	0,603	0,176804	0	0,89
OP	0,034	0,021304	0	0,12
Ta	7,197	1,165376	5,122	9,313

This table shows descriptive statistics for the variables. For a description of the variables, see Table 2.

The statistics are broken down by each country's average LLP and GCO per year (see Appendix 1). Observations show that the total averages of LLP and GCO for all countries have fluctuated over the years. Before the financial crisis the total average was lower than during and after the financial crisis. The lowest average of reported loan loss provisions and gross charge-offs is observed in 2007 right before the financial crisis. The highest average of LLP is observed in 2009 and the highest gross charge-offs is observed in the years after the financial crisis. This is consistent with the expected outcome when taking the effect of the financial crisis and incurred loss model into account, which demonstrate occurrence of less timely loan losses. In order to get a view of the descriptive differences between the countries, the various mean for each legal origin division are calculated. The Eastern legal origin has the highest levels of both LLP and GCO during all periods. Contrary to Eastern, Germany reported the lowest average of both loan losses and actual credit losses (see Appendix 1). Untabulated result show that countries within Germany origin on average makes 2,4 times larger LLP than their reported losses during 2005-2015, which is the largest average difference of all legal origins. This can be compared to English origin, which on average makes 1,4 times larger LLP than GCO.

The correlations between the different variables are presented in Table 5. The correlation between LLP and GCO is positively correlated and significant at the 0,01 level, which indicates that the base model works as anticipated. The table show that the correlation decreases for each observed time period of GCO. In the third period the correlation is weaker, which potentially could be explained by the difficulties predicting actual losses three periods ahead. Overall, nearly all the clusters within the different country divisions are significant. However, the coefficients are relatively low (Table 5, Panel B). This indicates that the correlation is not driving the results. Panel A of Table 5 show the correlations for the different country clusters. Of all the observed clusters within legal origin, Scandinavian legal origin and French legal origin have the highest negative correlation. When observing the culture division, Western Europe is strongly negative correlated with both English speaking and Eastern Europe. The correlation high enforcement and low earnings management is significantly positive, which indicates high enforcement is associated with low earnings management. However, the coefficient is lower than expected, which could be related to the differences in years of the references. Table 5, Panel C show the correlation between all the observed periods of gross charge-offs. High positive correlations are shown for all the coefficients, indicating the level of GCO do not considerably changes from one year to next.

Table 5

Correlations.

Panel A: Spearman correlations between independent variables.

	LLP	German	Eastern	English	French	Scandinavia	ES Culture	WE Culture	EE Culture	Enforce	Earnings	Crisis	Loan/TA	OP	Ta
LLP	1	-0,02	,226**	0,002	,077*	-,199**	0,002	-,176**	,226**	-0,052	-,257**	,157**	0,024	,446**	-,103**
German		1	-,134**	-,133**	-,219**	-,266**	-,133**	,204**	-,134**	,200**	-,336**	0,001	-,115**	-,118**	,119**
Eastern			1	-,141**	-,231**	-,281**	-,141**	-,658**	1,000**	-,404**	-,125**	-0,004	-,081*	,354**	-,293**
English				1	-,229**	-,279**	1,000**	-,653**	-,141**	,223**	,291**	0,001	-,131**	-,068*	,275**
French					1	-,457**	-,229**	,351**	-,231**	-,402**	-,525**	0,001	-,131**	-0,043	,319**
Scandinavia						1	-,279**	,427**	-,281**	,401**	,581**	0,001	,374**	-0,06	-,392**
ES Culture							1	-,653**	-,141**	,223**	,291**	0,001	-,131**	-,068*	,275**
WE Culture								1	-,658**	,140**	-,126**	0,003	,160**	-,225**	0,023
EE Culture									1	-,404**	-,125**	-0,004	-,081*	,354**	-,293**
Enforce										1	,299**	-0,007	,273**	-,164**	-0,02
Earnings											1	0	0,033	-,106**	-,225**
Crisis												1	0,055	-0,014	-0,013
Loan/TA													1	0,025	-,339**
OP														1	-,477**
Ta															1

Panel B: Spearman correlations between dependent and independent variables.

	LLP	German	Eastern	English	French	Scandinavia	ES Culture	WE Culture	EE Culture	Enforce	Earnings	Crisis	Loan/TA	OP	Ta
GCO_{t+1}	,522**	-,163**	,087**	,159**	-0,046	-0,01	,159**	-,187**	,087**	,195**	0,007	,094**	0,056	,321**	-0,051
CGO_{t+2}	,498**	-,162**	,082*	,157**	-0,051	-0,003	,157**	-,182**	,082*	,194**	0,015	,109**	,073*	,327**	-0,056
CGO_{t3}	,432**	-,172**	,101**	,154**	-0,068	0,01	,154**	-,194**	,101**	,193**	0,029	,096**	,104**	,369**	-,079*

Panel C: Spearman correlations between dependent variables.

	CGOT2	CGOT3
GCO_{t+1}	,796**	,707**
CGO_{t+2}		,795**
CGO_{t3}		

This table shows correlations between the variables. **, and * denote p-values of 0.01 and 0.05 (two-tailed)

5. Results

The results from the Benchmark model show that there are positive association between LLP and GCO, and this is consistent over all observed time periods. This indicates that the model gives the expected results, which is consistent with the results of Marton and Runesson (2017). The coefficients are stable over time, however a slight increase can be identified in GCO_{t+2}, indicating that the ability to predict GCO is slightly better two periods ahead. The control variables that was chosen based on previous literature show, in contrary to expectation, not to be significantly associated with GCO in all periods. The total assets and the operating income variables are significant and associated with GCO in period one and three respectively. The adjusted R-squared shows the fit of the model and takes a value between 18% and 24% over the time periods. This result is consistent with similar studies within the same research field indicating an adequate model (Marton & Runesson, 2017).

Table 6

Test of Benchmark model.

Regression results of the Benchmark model, which tests the ability of loan loss provisions to predict gross charge-offs: $GCO_{i,t+s} = \alpha_0 + \alpha_1 LLP_{i,t} + \alpha_j Control_{yi,t} + {}_{\varepsilon i,t+s} \ \forall \ s = 1,2,3.$

Variable: GCO_{t+s}	Predicted sign	t+1	t+2	t+3
LLP	+	0,348*** (14,839)	0,416*** (15,332)	0,357*** (10,937)
Loan/TA		0,005 (0,048)	-0,003 (-0,030)	0,144 (1,092)
OP		0,779 (0,815)	0,467 (0,457)	2,698** (2,297)
TA		-0,033* (-1,835)	-0,041 (-2,104)	-0,032 (-1,409)
Intercept		0,357** (1,976)	0,416** (2,141)	0,259 (1,146)
adj. R-sq		0,217	0,244	0,184
N		965	863	760

This table shows the Benchmark model adapted by Altamuro and Beatty (2010). Results for all observed periods of GCO (actual GCO t + s) are presented in the table. For definition of the variables, see Table 2.

Hypothesis 1

The results from hypothesis 1 are shown in Table 7, 8, 9 and 10 where regression tests has been carried out on the four different groups of clusters. When interpreting the results of the regression tests, the main focus will be on the interaction variables. The two-way regression can be explained in terms of slopes. The interaction coefficient is the differences in slopes and the calculated effect (see Panel B) is the actual slope of the line. The coefficient of the interaction variable represent the difference between the effect of LLP and the effect of each cluster within the country divisions i.e. the difference-in-differences estimator (Barth & Israeli, 2013). If the coefficient for the interaction variable is significant, a difference between the specific cluster and the reference group can be confirmed. The sign of coefficient gives an indication of the direction of the difference between the cluster and the reference group i.e. if the cluster is predicting better than the reference group. The raw variable for each cluster indicates the GCO level for the specific cluster, and the LLP variable gives the GCO level for the reference group. In addition to this, calculations of the association between LLP and GCO have been conducted in order to interpret the total effect of the cluster. The sum of the coefficient for each cluster and the interaction variable (cluster + (cluster × LLP) is compared to the LLP variable, which shows the effect of the cluster compared to the effect of the reference group (see Barth & Israeli, 2013).

Legal origin

Table 7 show the results testing the predictability of GCO including the countries' legal origin. As mentioned in section 4, the test uses Scandinavian legal origin as a reference group, with which the other legal origins are compared to. The coefficients of the interaction variable are negative and significant for French in all the observed time periods. Significantly negative coefficients can also be observed for English legal origin one period ahead and three periods ahead for Eastern legal origin. This indicates that LLP have lower predictive ability with respect to GCO in those clusters, i.e. French, English and Eastern origin compared to the reference group.

The total effect of each specific cluster is presented in Table 7, Panel B, and calculated as the sum of the coefficient and the interaction variable. In period one the coefficient showing the association between LLP and GCO given the French legal origin is -0,164 (= 0,107 - 0,271, at t+1). The raw coefficient for the LLP variable is strongly positive and significant, and should in this regression test be interpreted as the effect of the Scandinavian legal origin. When comparing the coefficients, all the clusters are predicting actual losses to a lesser extent compared to Scandinavian legal origin (e.g. French compared with Scandinavian -0,164 < 0,507, at t+1). This is also consistent with the conclusion for the interaction variable. In addition to this, the observed difference between French legal origin and Scandinavian legal origin is consistent with the analysis presented in Table 5, showing a high significantly negative correlation. The result for French legal origin confirm our expectations based on previous literature stating that French legal origin have lower levels of law enforcement and accounting quality (Leuz et al. 2003; La Porta et al. 1998), and thus predicts actual losses to a lesser extent compared to Scandinavian legal origin.

Similar to French legal origin, English legal origin predicts actual losses to a lesser extent compared to Scandinavian legal origin (English compared with Scandinavian, 0,019 > 0,507, at t+1). However, this is only observed in the first period, indicating that differences in predictability cannot be observed over time. In addition to this, a significant difference in accounting for loan losses cannot be observed between German legal origin and Scandinavian legal origin. This suggests that countries within Scandinavian and German legal origin have a similar accounting behaviour. All the interpretations are made with the assumption that a larger coefficient indicates higher predictive ability than a lower coefficient (at least in the 0 to 1 span) (see Marton & Runesson, 2017). Based on this, corresponding arguments motivates the interpretation of the negative coefficients. This result is line with our expectations based on previous literature stating that Scandinavian legal origin has the best quality of accounting (La Porta et al., 1997). Regarding the overall fit of the model the adjusted R-squared is improved compared to benchmark model. The adjusted R-squared show the proportion of variation of the dependent variable accounted for by the independent variables in the regression model increases by the added legal origin variable (Cortinhas & Black, 2012).

Table 7

Test of hypothesis 1.

Panel A: Regression results of Model 1, which test the effect of different clusters on the ability of loan loss provisions to predict gross charge-offs : $GCO_{i,t+s} = \alpha_0 + \alpha_1 LLP_{i,t} + \alpha_2 Country\ Division_{k,t} + \alpha_3 LLP_{i,t} \times Country\ division_{k,t} + \alpha_j Control_{yi,t} + \varepsilon_{i,t+s} \forall s = 1,2,3.$

Variable: GCO_{t+s}	Predicted sign	t+1	t+2	t+3
LLP x German origin	+	-0,085 (-0,643)	-0,148 (-1,003)	-0,217 (-1,449)
LLP x Eastern origin	−	-0,206 (-1,229)	-0,172 (-0,817)	-0,402* (-1,795)
LLP x English origin	−	-0,294** (-2,417)	-0,177 (-0,955)	0,051 (0,222)
LLP x French origin	−	-0,271** (-2,364)	-0,292** (-2,496)	-0,306** (-2,138)
LLP		0,507*** (5,595)	0,547*** (5,121)	0,506*** (3,903)
German origin		-0,029 (-0,626)	-0,012 (-0,228)	0,000 (-0,004)
Eastern origin		0,297* (1,803)	0,247 (1,266)	0,489** (2,237)
English origin		0,313*** (3,524)	0,228*** (2,884)	0,070 (0,700)
French origin		0,107** (2,126)	0,112** (2,172)	0,105* (1,662)
Loan/TA		,083 (1,088)	0,101 (1,063)	0,284** (2,492)
OP		-1,040 (-0,734)	-0,845 (-0,551)	1,960 (1,214)
TA		-0,026 (-1,130)	-0,030 (-1,178)	-0,010 (-0,368)
Intercept		0,229 (0,991)	0,245 (0,939)	-0,034 (-0,122)
adj. R-sq		0,257	0,275	0,236
N		965	863	760

Panel B: The effect of LLP dependent on the countries' legal origin

	t+1	t+2	t+3
German origin	-0,114	-0,16	-0,217
Eastern origin	0,091	0,075	0,087
English origin	0,019	0,051	0,019
French origin	-0,164	-0,180	-0,201

The table shows the regression results from Model 1 with the countries divided by their legal origin. All periods for GCO (actual GCO t+ s) is presented. For definition of the variables, see Table 2.

***, **, and * denote p-values of 0.01, 0.05, and 0.1 (two-tailed). Respectively t-values are shown in parentheses.

Culture

Table 8 show the results for the regression including the different variables of culture. The test is carried out with Eastern European culture as the reference variable. The regression test can only observe a significantly difference in LLP ability to predict GCO in period three for English speaking culture.

The positive interaction variable indicates that English speaking culture predict actual losses to a higher extent compared to Eastern European Culture. The observation of the association between LLP and GCO given English speaking culture compared to the effect of Eastern European culture reveals that English speaking culture predicts actual losses to a higher extent (ES compared with EE, 0,071 < 0,109, at t+3). This finding is in contrary to our expectations based on previous literature suggesting that Eastern Europe complies with norms governance to a lower extent compared to English speaking. Thereby, the observed result does not support the assumption that compliance with norms governance increases the accounting quality, i.e. rule of law, non-corruption and democratic accountability positively affects the predictability (Licht et al., 2007).

There are no observed differences in predictability of actual losses in one and two periods ahead for any of the observed cultures. The weak result indicates that the division based on the culture may not be identified as a country specific factor causing accounting differences between countries. Consequently, rule of law, democratic accountability and absence of corruption does not contribute to an increased predictability.

Table 8

Test of hypothesis 1.

Panel A: Regression results of Model 1, which test the effect of different clusters on the ability of loan loss provisions to predict gross charge-offs : $GCO_{i,t+s} = \alpha_0 + \alpha_1 LLP_{i,t} + \alpha_2 Country\ Division_{k,t} + \alpha_3 LLP_{i,t} \times Country\ division_{k,t} + \alpha_j Control_{yi,t} + _{\varepsilon i,t+s} \forall s = 1,2,3$.

Variable: GCO_{t+s}	Predicted sign	t+1	t+2	t+3
LLP x English speaking	+	-0,092 (0,526)	-0,010 (-0,041)	0,448* (1,700)
LLP x Western European	+	0,176 (0,503)	0,047 (0,246)	0,281 (1,408)
LLP		0,301** (2,141)	0,378** (2,109)	0,109 (0,601)
English speaking		0,060 (0,354)	0,025 (0,124)	-0,377* (-1,686)
Western european		-0,233 (-1,453)	-0,190 (-0,995)	-0,443** (-2,090)
Loan/TA		0,024 (0,358)	0,024 (0,263)	0,198* (1,824)
OP		-0,554 (-0,419)	-0,651 (-0,459)	1,876 (1,226)
TA		-0,047** (-2,252)	-0,052** (-2,339)	-0,035 (-1,477)
Intercept		0,665** (2,387)	0,671** (2,350)	0,667** (2,030)
adj. R-sq		0,239	0,259	0,223
N		965	863	760
Panel B: The effect of LLP dependent on the countries' culture				
		t+1	t+2	t+3
English speaking		-0,032	0,015	0,071
Western european		-0,057	-0,143	-0,162

The table shows the regression results from Model 1 with the countries divided by their culture. All periods for GCO (actual GCO t+ s) is presented. For definition of the variables, see Table 2.

***, **, and * denote p-values of 0.01, 0.05, and 0.1 (two-tailed). Respectively t-values are shown in parentheses.

Enforcement

The results from the regression model presented in Table 9 investigates the predictive ability of LLP with respect to GCO dependent on the countries' level of enforcement. The result show that the interaction coefficient is significantly positive one and two periods ahead. This indicates that the LLP predictive ability with respect to GCO is better in countries with higher enforcement compared low enforcement. The total effect of the countries' level of enforcement on the association between LLP and GCO show that countries with higher levels of enforcement predicts better (High compared with low, 0,244 > 0,125, at t+1), which also is shown by the interaction variable. When interpreting the effect of LLP on GCO dependent on the countries' level of enforcement in period two, the result show that countries with low enforcement predicts better (High compared with Low, 0,213 < 0,261, at t+2). The result for LLP effect one period ahead confirms our expectations. This is based on the argument that strict enforcement ensures high accounting quality, which provide the user with a proper reflection of the economic reality. However, the result for two periods ahead does not fulfil our expectations.

Table 9

Test of hypothesis 1.

Panel A: Regression results of Model 1, which test the effect of different clusters on the ability of loan loss provisions to predict gross charge-offs : $GCO_{i,t+s} = \alpha_0 + \alpha_1 LLP_{i,t} + \alpha_2 \text{Country Division}_{k,t} + \alpha_3 LLP_{i,t} \times \text{Country division}_{k,t} + \alpha_j \text{Control}_{yi,t} + \varepsilon_{i,t+s} \forall s = 1,2,3.$

Variable: GCO_{t+s}	Predicted sign	t+1	t+2	t+3
LLP x Enforcementment	+	0,367*** (4,669)	0,249** (2,472)	0,105 (0,701)
LLP		0,125*** (3,094)	0,261*** (4,422)	0,289** (2,372)
Enforcement		-0,123** (-2,020)	-0,036 (-0,630)	0,041 (0,483)
Loan/TA		-0,020 (-0,965)	-0,009 (-0,103)	0,127 (1,152)
OP		0,607 (0,561)	0,506 (0,414)	2,967* (1,869)
TA		-0,020 (-0,965)	-0,030 (-1,374)	-0,023 (-0,929)
Intercept		0,330 (1,488)	0,356 (1,483)	0,167 (0,574)
adj. R-sq		0,279	0,273	0,196
N		965	863	760
Panel B: The effect of LLP dependent on the countries' level of enforcement				
		t+1	t+2	t+3
Enforcement		0,244	0,213	0,146

The table shows the regression results from Model 1 with the countries divided by their level enforcement. All periods for GCO (actual GCO t+ s) is presented. For definition of the variables, see Table 2.

***, **, and * denote p-values of 0.01, 0.05, and 0.1 (two-tailed). Respectively t-values are shown in parentheses.

Earnings management

Table 10 show the regression result from the test conducted on the country division based on the level of earnings management. The result from the test show that the coefficient of the interaction variable is significantly positive in all observed time periods, indicating that the predictability of LLP with respect of GCO is higher when countries have a lower level of earnings management. The calculated effect of LLP on GCO dependent on the countries' level of earnings management show that countries with high levels of earnings management predicts better one and two periods ahead (Low compared with High, 0,327 < 0,340, at t+1). However, in period three countries with low levels of earnings management predicts actual losses better. The result from period one and two is contrary to our expectations and previous literature indicating that lower levels of earnings management leads to higher accounting quality (Ahmed et al., 2013), and thus suggesting higher predictability of actual losses. This result indicates that countries with higher earnings management does not use loan loss provisions as a tool in order to smooth income, at least in the short term.

Table 10

Test of hypothesis 1.

Panel A: Regression results of Model 1, which test the effect of different clusters on the ability of loan loss provisions to predict gross charge-offs : $GCO_{i,t+s} = \alpha_0 + \alpha_1 LLP_{i,t} + \alpha_2 \text{Country Division}_{k,t} + \alpha_3 LLP_{i,t} \times \text{Country division}_{k,t} + \alpha_j \text{Control}_{yi,t} + \varepsilon_{i,t+s} \; \forall \; s = 1,2,3.$

Variable: GCO_{t+s}	Predicted sign	t+1	t+2	t+3
LLP x Earnings managemer	+	0,253*** (2,845)	0,245** (2,389)	0,309*** (2,754)
LLP		0,340*** (6,675)	0,398*** (6,523)	0,327*** (4,743)
Earnings manag.		0,074** (1,975)	0,084** (2,107)	0,094 (2,013)
Loan/TA		0,076 (1,049)	0,074 (0,736)	0,239* (1,815)
OP		0,704 (0,633)	0,681 (0,544)	3,082*** (2,623)
TA		-0,015 (-0,684)	-0,021 (-0,905)	-0,010 (-0,410)
Intercept		0,417* (1,857)	0,480* (1,901)	0,242 (1,028)
adj. R-sq		0,246	0,268	0,214
N		965	863	760
Panel B: The effect of LLP dependent on the countries' level of earnings management				
		t+1	t+2	t+3
Earnings management		0,327	0,329	0,403

The table shows the regression results from Model 1 with the countries divided by their level of earnings management. All periods for GCO (actual GCO t+ s) is presented. For definition of the variables, see Table 2.

***, **, and * denote p-values of 0.01, 0.05, and 0.1 (two-tailed). Respectively t-values are shown in parentheses.

Concluding remarks for hypothesis 1

The regression tests carried out for model 1 show that there are differences in predictability between some of the observed countries. This indicates that previous research is applicable on our study and that differences exist between countries where legal origin, culture, enforcement and level of earnings management are identified as explanatory variables in some extent. However, some inconsistencies between the periods and the different tests have been identified. When looking at the test for legal origin, countries within Scandinavian legal origin have a high predictive ability while French legal origin have a low, which is consistent with previous literature. The result of the regression test including culture factors cannot explain differences in predictability to a larger extent. By considering the result for legal origin when interpreting the result for culture, the outcome is in line with what can be expected. Western European culture includes both French legal origin and Scandinavian legal origin, where the clusters referred to show the strongest observed difference.

The result for enforcement shows that countries with high enforcement predicts better on period ahead, which is in line with earlier research. In addition to this, when examine what countries that have high or low levels of enforcement a connection between the test with legal origin and enforcement can be made. When looking at the country divisions a pattern can be identified, where the majority of the countries within the Scandinavian legal origin have high levels of enforcement and many of countries within the French legal origin have low levels. The result considering the level of earnings management show that countries with low earnings management predict actual losses to a lesser extent in period one and two. This finding does not support previous literature and thus our expectations. By looking at what countries that have high levels of earnings management, many of them are in the French legal origin and can be connected to the conclusion that countries within the French legal origin predicts in a lesser extent.

Hypothesis 2

Financial Crisis

Our second hypothesis seeks to investigate whether banks' predictability of credit losses differs and tend to be higher during the financial crisis compared to the time period before and after. The test of hypothesis 2 has been carried out with a three-way interaction variable including loan loss provision, the period during the crisis and each cluster within all country divisions previously used in hypothesis 1. Compared to the tests of hypothesis 1, the three-way interaction regression tests has been conducted without an reference group. This means that specific cluster will be compared to all the other clusters within the country division. For example, countries within Scandinavian legal origin will be compared to all the countries within the other legal origins.

The Tables 11, 12, 13, 14, and 15 present the results of all tests including all variables. However, only the significant three-way interaction variables will be further interpreted in detail. The three-way interaction captures the effect of loan loss provision on GCO dependent on the financial crisis and the country division. When explaining the meaning of the interaction variable the size of the coefficients cannot be interpreted in a meaningful way, however the sign and the significance are of interest. A difficulty with three-way interactions is that it is complicated to interpret what variable that drives the result and how they are related (see Hayes, 2013; Marton & Runesson, 2017). Due to this more focus will be on the conditional effect of LLP on GCO given the observed cluster and the financial crisis period.

Legal origin

As mentioned in previous section, when testing for differences in predictability during the financial crisis with respect to legal origin, the effect is compared to all the other legal origins. The French legal origin is consistently positive and significant, which means that there is evidence of a three-way interaction between LLP, French legal origin and the crisis period (Table 11, Panel A). This indicates that LLP predictive ability of GCO is positively affected by the French legal origin and the financial crisis. When interpreting the unique effect of the legal origin, the result show that French origin predicts better during the financial crisis compared to the period before and after, at all the periods. However, this is more pronounced in the second period (French during the crisis compared with before and after the crisis, 0,789 > 0,211, at t+2). In addition to this, by comparing the French to the other legal origins French predicts better during the financial crisis in all the periods (French during the crisis compared with the other legal origins during the crisis, 0,572 > 0,345, at t+1). Manganaries et al. (2017) and Kousenidis et al. (2013) argue that the conservatism and timeliness of financial reporting increases during times of financial distress. In addition to this, Shick (2013) observed that many countries within the French legal origin was heavily affected by the financial crisis. These findings by previous literature explain the increased predictability of actual losses during the financial crisis in countries within the French legal origin.

The second test within the legal origin captures the predictive ability of LLP with respect GCO under the financial crisis dependent on the English legal origin. Table 11 (Panel A) show that the three-way interaction variable is negatively significant in the first and second period. This indicates that LLP ability to predict GCO is lower in countries within English legal origin than within the other legal origins, and this difference is more pronounced in the years of the financial crisis. The underlying structure of the interaction variable show that countries within the English legal origin predicts actual losses to a considerably lesser extent, and this is during the financial crisis compared to the period before and after (English during the crisis compared with before and after the crisis, 0,101 < 0,661, at t+1). The unique effect of English legal origin is higher compared to the other legal origins in period one and two during the crisis (English during the crisis compared with the other legal origins during the crisis, 0,142 > 0,451, at t+2). Generally, previous research argues

that English legal origin should maintain a high level of accounting quality and law enforcement, and thus a high predictability of actual losses compared to other legal origins (La Porta et al., 1998). In addition to this, the English legal origin was substantially affected by the financial crisis (Schick, 2013). Based on the assumption that accounting quality should increase during financial turmoil, an observed increased predictability should thereby be identified in countries within the English legal origin (Manganaries et al., 2017; Kousenidis et al., 2013). Consequently, the results are partly in line with our expectations.

When observing the result for the Scandinavian legal origin, we do not find support that there are differences in predictability compared to the other legal origins during the financial crisis. This conclusion is not consistent with previous literature stating that Scandinavian countries have the highest accounting quality and should thereby have a distinguished predictability. This is expected to be sustained during a financial crisis. In addition to this, neither Eastern legal origin nor German legal origin supports the hypothesis that differences in predictability are observable between countries during the financial crisis. This may indicate that factors within the different legal origins do not affect accounting behaviour during the financial crisis.

Table 11

Test of hypothesis 2.

Panel A: Regression results of Model 2, which tests the effect of different clusters on the ability of loan loss provisions to predict gross charge-offs during the financial crisis: $GCO_{i,t+s} = \alpha_0 + \alpha_1 LLP_{i,t} + \alpha_2 Country\ Division_{k,t} + \alpha_3 LLP \times Country\ Division_{k,t} + \alpha_4 Financial\ Crisis_{i,t} + \alpha_5 LLP \times Financial\ Crisis_{i,z} + \alpha_6 Country\ Division \times Financial\ Crisis_{i,z} + \alpha_7 LLP \times Country\ Division \times Financial\ Crisis_{i,z} + \alpha_j Control_{yi,t} + \varepsilon_{i,t+s}\ \forall\ s = 1,2,3.$

	Predicted sign	French Legal Origin			Predicted sign	English Legal Origin			Predicted sign	Scandinavian Legal Origin		
		t+1	t+2	t+3		t+1	t+2	t+3		t+1	t+2	t+3
LLP x Legal Origin x Crisis 08-11	+	0,453** (2,404)	0,871** (2,504)	0,514* (1,763)	+	-0,549* (-1,375)	-1,155** (-2,246)	-0,535 (-0,605)	+	-0,212 (-0,964)	-0,206 (-0,754)	-0,172 (-0,462)
Legal Origin x Crisis 08-11		0,107* (1,742)	0,162* (1,773)	0,111 (1,198)		-0,199 (-1,333)	-0,244 (-1,514)	-0,197 (-0,829)		0,077 (1,063)	0,066 (0,787)	-0,070 (-0,599)
LLP x Legal Origin		-0,091 (-0,917)	-0,104 (-0,748)	-0,119* (-0,845)		0,062 (0,273)	0,322 (1,184)	0,419 (0,994)		0,201* (1,753)	0,178 (1,254)	0,244*** (1,266)
LLP x Crisis 08-11		0,027 (0,247)	-0,048 (-0,338)	-0,007 (-0,043)		-0,074 (-0,667)	-0,092 (-0,660)	-0,015 (-0,082)		-0,049 (-0,468)	-0,038 (-0,302)	0,055 (0,337)
LLP		0,390*** (6,683)	0,479*** (6,799)	0,389*** (4,729)		0,379*** (6,187)	0,466*** (6,165)	0,364*** (3,760)		0,354*** (6,455)	0,420*** (6,251)	0,355*** (4,070)
Legal Origin		-0,076** (-2,256)	-0,081* (-1,876)	-0,081* (-1,734)		0,232** (2,554)	0,252*** (2,779)	0,190 (1,576)		-0,003 (-0,050)	0,008 (0,142)	-0,002 (-0,022)
Crisis 08-11		-0,045 (-1,357)	-0,045 (-1,121)	-0,068 (-1,464)		-0,038 (-1,081)	-0,042 (-1,041)	-0,022 (-0,403)		-0,049 (-1,394)	-0,045 (-1,110)	-0,026 (-0,481)
Loan/TA		0,024 (0,306)	0,035 (0,385)	0,184 (1,574)		0,001 (0,020)	0,013 (0,137)	0,173 (1,478)		0,106 (1,383)	0,083 (0,771)	0,248** (2,026)
OP		0,060 (0,050)	-0,120 (-0,093)	2,296 (1,389)		-0,289 (-0,236)	-0,686 (-0,481)	2,394 (1,354)		0,450 (0,372)	0,318 (0,223)	0,420 (1,416)
TA		-0,023 (-1,087)	-0,029 (-1,365)	-0,021 (-0,824)		-0,051** (-2,304)	-0,054** (-2,334)	-0,044* (-1,710)		-0,030 (-1,100)	-0,036* (-1,250)	-0,029 (-0,903)
Intercept		0,527** (2,363)	0,595*** (2,598)	0,387 (1,350)		0,755*** (3,204)	0,799*** (3,103)	0,547* (1,878)		0,515** (1,953)	0,596** (2,010)	0,397 (1,228)
adj. R-sq		0,240	0,293	0,208		0,242	0,290	0,208		0,242	0,262	0,202
N		965	863	760		965	863	760		965	863	760

Panel B: Conditional effect of LLP on GCO dependent on Legal origin compared to other legal origins during the financial crisis 2008-2011

	French Legal Origin			English Legal Origin			Scandinavian Legal Origin		
	t+1	t+2	t+3	t+1	t+2	t+3	t+1	t+2	t+3
The effect of LLP on GCO in the specific legal origin during the financial crisis	0,572*** (5,504)	0,789** (2,572)	0,528** (2,434)	0,101** (1,978)	0,142*** (2,733)	0,501 (1,517)	0,372*** (3,036)	0,440*** (2,794)	0,483** (2,301)
The effect of LLP on GCO in the other legal origins during the financial crisis	0,345*** (2,909)	0,313*** (2,707)	0,329** (2,520)	0,366*** (3,903)	0,451*** (3,809)	0,339*** (2,834)	0,297*** (2,788)	0,375*** (2,801)	0,322** (2,343)
The effect of LLP on GCO in the specific legal origin not during the financial crisis	0,219*** (2,972)	0,211*** (5,617)	0,166*** (3,372)	0,661* (1,764)	1,258*** (2,587)	0,990 (1,244)	0,556*** (4,232)	0,610*** (3,562)	0,538** (2,005)
The effect of LLP on GCO in the other legal origins not during the financial crisis	0,445*** (4,755)	0,606*** (5,273)	0,481*** (3,200)	0,377*** (4,955)	0,411*** (4,464)	0,293** (2,216)	0,269*** (3,265)	0,338*** (4,088)	0,205* (1,918)

The table shows the regression results from Model 2. The table shows the result for the three-way interaction variable for LLP x Legal Origin x Financial Crisis 2008-2011. All periods for GCO (actual GCO t+ s) is presented. For definition of the variables, see Table 2. ***, **, and * denote p-values of 0.01, 0.05, and 0.1 (two-tailed). Respectively t-values are shown in parentheses.

Table 12

Test of hypothesis 2.

Panel A: Regression results of Model 2, which tests the effect of different clusters on the ability of loan loss provisions to predict gross charge-offs during the financial crisis: $GCO_{i,t+s} = \alpha_0 + \alpha_1 LLP_{i,t} + \alpha_2 \text{Country Division}_{k,t} + \alpha_3 LLP \times \text{Country Division}_{k,t} + \alpha_4 \text{Financial Crisis}_{i,t} + \alpha_5 LLP \times \text{Financial Crisis}_{i,z} + \alpha_6 \text{Country Division} \times \text{Financial Crisis}_{i,z} + \alpha_7 LLP \times \text{Country Division} \times \text{Financial Crisis}_{i,z} + \alpha_j \text{Control}_{yi,t} + \varepsilon_{i,t+s} \forall s = 1,2,3.$

	Predicted sign	German Legal Origin			Predicted sign	Eastern Legal Origin		
		t+1	t+2	t+3		t+1	t+2	t+3
LLP x Legal Origin x Crisis 08-11	+	-0,017 (-0,073)	-0,076 (-0,238)	-0,150 (-0,392)	+	0,054 (0,132)	0,422 (1,122)	0,343 (0,869)
Legal Origin x Crisis 08-11		0,002 (0,017)	-0,008 (-0,066)	-0,022 (-0,146)		-0,424*** (-2,350)	-0,359 (-1,750)	0,158 (0,541)
LLP x Legal Origin		0,049 (0,393)	-0,017 (-0,098)	-0,041 (-0,209)		-0,014 (-0,061)	-0,112 (-0,583)	-0,506** (-2,550)
LLP x Crisis 08-11		-0,061 (-0,615)	-0,066 (-1,103)	0,015 (0,204)		-0,030 (-0,290)	-0,060 (-0,517)	0,112 (0,673)
LLP		0,353*** (6,563)	0,420*** (12,803)	0,351*** (8,810)		0,348*** (6,248)	0,404*** (6,296)	0,377*** (4,280)
Legal Origin		-0,088** (-1,969)	-0,101 (-1,555)	-0,120 (-1,620)		0,135** (1,270)	0,199 (1,036)	0,279** (1,843)
Crisis 08-11		-0,035 (-1,405)	-0,034 (-0,892)	-0,017 (-0,368)		-0,039 (-1,082)	-0,050 (-1,176)	-0,017 (-0,308)
Loan/TA		-0,009 (-0,125)	-0,014 (-0,115)	0,129 (0,954)		0,056 (0,838)	0,038 (0,385)	0,185* (1,671)
OP		0,692 (0,628)	0,430 (0,411)	2,611** (2,158)		0,378 (0,293)	0,137 (0,093)	2,315 (1,464)
TA		-0,032 (-1,527)	-0,039** (-1,999)	-0,030 (-1,320)		-0,023 (-1,205)	-0,031 (-1,384)	-0,016 (-0,734)
Intercept		0,584*** (2,642)	0,665*** (3,341)	0,462** (1,993)		0,489** (2,391)	0,586** (2,355)	0,358 (1,403)
adj. R-sq		0,225	0,252	0,193		0,237	0,262	0,223
N		965	863	760		965	863	760

Panel B: Condition effect of LLP on GCO dependent on Legal origin compared to other legal origins during the financial crisis 2008-2011

	German Legal Origin			Eastern Legal Origin		
	t+1	t+2	t+3	t+1	t+2	t+3
The effect of LLP on GCO in the specific legal origin during the financial crisis	0,352*** (2,614)	0,333* (1,745)	0,259 (1,239)	0,347* (1,700)	0,476* (1,939)	0,127 (0,525)
The effect of LLP on GCO in the other legal origins during the financial crisis	0,313*** (3,827)	0,391*** (10,429)	0,371*** (8,979)	0,329*** (4,369)	0,358*** (4,400)	0,468*** (3,755)
The effect of LLP on GCO in the specific legal origin not during the financial crisis	0,428** (2,514)	0,466* (1,800)	0,376 (1,160)	0,328 (0,956)	0,161 (0,613)	-0,291 (-1,135)
The effect of LLP on GCO in the other legal origins not during the financial crisis	0,372*** (4,900)	0,448*** (11.407)	0,338*** (6,064)	0,364*** (4,817)	0,465*** (4,720)	0,394*** (2,820)

The table shows the regression results from Model 2. The table shows the result for the three-way interaction variable for LLP x Legal Origin x Financial Crisis 2008-2011. All periods for GCO (actual GCO t+ s) is presented. For definition of the variables, see Table 2. ***, **, and * denote p-values of 0.01, 0.05, and 0.1 (two-tailed). Respectively t-values are shown in parentheses.

Culture

Regression tests has been conducted with a three-way interaction variable in order to evaluate if countries within Western European culture, Eastern European culture or English speaking culture differs in their predictability during the financial crisis. Based on the structure of the test, the presented results for Eastern European culture and English speaking culture are the same as in the test for Eastern legal origin and English legal origin. The interpretation of the result for English Speaking culture in Table 13 show that the interaction variable is positively significant for period one and two. By looking at the culture's effect during the financial crisis the result show that the English Speaking culture predicts actual losses to a lesser extent for one and two periods ahead during the financial crisis compared to their predictability before 2008 and after 2011 (ES during the crisis compared with before and after the crisis, $0{,}101 < 0{,}661$, at t+1). In addition to this, the result show that the culture has a weaker effect on the predictability compared to the other cultures (ES compared with the other legal origins during the crisis $0{,}101 < 0{,}366$, at t+1). This means that countries within English Speaking culture predicts worse compared to the other cultures during the years of 2008-2011.

We do not find support that banks within either Western European culture or Eastern European culture predicts to a different extent during the financial crisis compared to the other clusters. The absence of significant findings indicates that culture, as an influencer on the predictability of credit losses may not explain differences across countries during the financial crisis. However, our result shows that norms governance may distinguish the countries within English speaking culture from the other cultures.

Table 13
Test of hypothesis 2.

Panel A: Regression results of Model 2, which tests the effect of different clusters on the ability of loan loss provisions to predict gross charge-offs during the financial crisis: $GCO_{i,t+s} = \alpha_0 + \alpha_1 LLP_{i,t} + \alpha_2\,\text{Country Division}_{k,t} + \alpha_3 LLP\times\text{Country Division}_{k,t} + \alpha_4\,\text{Financial Crisis}_{i,t} + \alpha_5 LLP\times\text{Financial Crisis}_{i,z} + \alpha_6\text{Country Division}\times\text{Financial Crisis}_{i,z} + \alpha_7 LLP\times\text{Country Division}\times\text{Financial Crisis}_{i,z} + \alpha_j\text{Control}_{yi,t} + \varepsilon_{i,t+s}\;\forall\,s = 1,2,3.$

	Predicted sign	Western European Culture			Predicted sign	English Speaking Culture			Predicted sign	Eastern European Culture		
		t+1	t+2	t+3		t+1	t+2	t+3		t+1	t+2	t+3
LLP x Culture x Crisis 08-11	+	0,245 (0,771)	0,278 (0,808)	0,128 (0,290)	+	-0,549* (-1,375)	-1,155** (-2,246)	-0,535 (-0,605)	+	0,054 (0,132)	0,422 (1,122)	0,343 (0,869)
Culture x Crisis 08-11		0,293*** (3,016)	0,230** (2,122)	-0,044 (-0,287)		-0,199 (-1,333)	-0,244 (-1,514)	-0,197 (-0,829)		-0,424*** (-2,350)	-0,359 (-1,750)	0,158 (0,541)
LLP x Culture		0,031 (0,180)	-0,061 (-0,356)	0,120 (0,571)		0,062 (0,273)	0,322 (1,184)	0,419 (0,994)		-0,014 (-0,061)	-0,112 (-0,583)	-0,506** (-2,550)
LLP x Crisis 08-11		0,011 (0,094)	-0,028 (-0,215)	0,079 (0,451)		-0,074 (-0,667)	-0,092 (-0,660)	-0,015 (-0,082)		-0,030 (-0,290)	-0,060 (-0,517)	0,112 (0,673)
LLP		0,381*** (6,111)	0,443*** (6,122)	0,374*** (3,911)		0,379*** (6,187)	0,466*** (6,165)	0,364*** (3,760)		0,348*** (6,248)	0,404*** (6,296)	0,377*** (4,280)
Culture		-0,193*** (-2,851)	-0,173** (-2,502)	-0,207** (-2,367)		0,232** (2,554)	0,252*** (2,779)	0,190 (1,576)		0,135** (1,270)	0,199 (1,036)	0,279** (1,843)
Crisis 08-11		-0,022 (-0,637)	-0,025 (-0,645)	-0,009 (-0,166)		-0,038 (-1,081)	-0,042 (-1,041)	-0,022 (-0,403)		-0,039 (-1,082)	-0,050 (-1,176)	-0,017 (-0,308)
Loan/TA		0,025 (0,364)	0,026 (0,276)	0,173 (1,493)		0,001 (0,020)	0,013 (0,137)	0,173 (1,478)		0,056 (0,838)	0,038 (0,385)	0,185* (1,671)
OP		-0,738 (-0,523)	-0,892 (-0,542)	1,160 (0,603)		-0,289 (-0,236)	-0,686 (-0,481)	2,394 (1,354)		0,378 (0,293)	0,137 (0,093)	2,315 (1,464)
TA		-0,044* (-1,901)	-0,049** (-2,037)	-0,045 (-1,643)		-0,051** (-2,304)	-0,054** (-2,334)	-0,044* (-1,710)		-0,023 (-1,205)	-0,031 (-1,384)	-0,016 (-0,734)
Intercept		0,697*** (2,909)	0,758*** (2,838)	0,596** (1,978)		0,755*** (3,204)	0,799*** (3,103)	0,547* (1,878)		0,489** (2,391)	0,586** (2,355)	0,358 (1,403)
adj. R-sq		0,254	0,271	0,205		0,242	0,290	0,208		0,237	0,262	0,223
N		965	863	760		965	863	760		965	863	760

Panel B: Condition effect of LLP on GCO dependent one specific culture compared to the other cultures during the financial crisis 2008-2011

	Western European Culture			English Speaking Culture			Eastern European Culture		
	t+1	t+2	t+3	t+1	t+2	t+3	t+1	t+2	t+3
The effect of LLP on GCO in the specific culture during the financial crisis	0,427*** (4,222)	0,448*** (3,945)	0,452*** (3,121)	0,101 (1,202)	0,142* (1,675)	0,501*** (5,306)	0,347* (1,700)	0,476* (1,939)	0,127 (0,525)
The effect of LLP on GCO in the other cultures during the financial crisis	0,250* (1,821)	0,357** (2,129)	0,271 (1,559)	0,366*** (9,273)	0,451*** (11,256)	0,339*** (7,512)	0,329*** (4,369)	0,358*** (4,400)	0,468*** (3,755)
The effect of LLP on GCO in the specific culture not during the financial crisis	0,361*** (4,703)	0,414*** (4,131)	0,345** (2,384)	0,661*** (4,494)	1,258*** (8,141)	0,990*** (4,765)	0,328 (0,956)	0,161 (0,613)	-0,291 (-1,135)
The effect of LLP on GCO in the other cultures not during the financial crisis	0,430* (1,688)	0,601** (2,338)	0,291 (0,834)	0,377*** (12,464)	0,411*** (10,525)	0,293*** (5,195)	0,364*** (4,817)	0,465*** (4,720)	0,394*** (2,820)

The table shows the regression results from Model 2. The table shows the result for the three-way interaction variable for LLP x Culture x Financial Crisis 2008-2011. All periods for GCO (actual GCO t+ s) is presented. For definition of the variables, see Table 2. ***, **, and * denote p-values of 0.01, 0.05, and 0.1 (two-tailed). Respectively t-values are shown in parentheses.

Enforcement

The test for the third division is made with regards to the predictability during the financial crisis given the countries' level of enforcement (Table 14). The result show no support that level of enforcement have an effect on the predictability during the financial crisis. This result is not in line with our expectations that banks experiences increased pressure to report transparent financial information, i.e. high quality accounting. This should potentially be more observable in high enforcement countries, with a pronounced pressure to follow the restrictions.

Table 14

Test of hypothesis 2.

Panel A: Regression results of Model 2, which tests the effect of different clusters on the ability of loan loss provisions to predict gross charge-offs during the financial crisis: $GCO_{i,t+s} = \alpha_0 + \alpha_1 LLP_{i,t} + \alpha_2$ Country Division$_{k,t}$ + $\alpha_3 LLP \times$ Country Division$_{k,t}$ + α_4 Financial Crisis$_{i,t}$ + $\alpha_5 LLP \times$ Financial Crisis$_{i,z}$ + α_6 Country Division$\times$Financial Crisis$_{i,z}$ + $\alpha_7 LLP \times$ Country Division $\times$ Financial Crisis$_{i,z}$ + α_j Control$_{yi,t}$ + $_{\varepsilon i,t+s}$ $\forall$ s = 1,2,3.

	Predicted sign	Level of Enforcement		
		t+1	t+2	t+3
LLP x Enforcement x Crisis 08-11	+	-0,070 (-0,408)	0,095 (0,469)	0,027 (0,110)
Enforcement x Crisis 08-11		0,064 (0,909)	0,130 (1,587)	-0,010 (-0,100)
LLP x Enforcement		0,299*** (3,355)	0,264** (2,567)	0,360*** (3,061)
LLP x Crisis 08-11		-0,103 (-0,973)	-0,071 (-0,551)	0,058 (0,386)
LLP		0,371*** (6,534)	0,421*** (6,086)	0,325*** (4,062)
Enforcement		0,169*** (4,033)	0,156*** (3,481)	0,152*** (2,943)
Crisis 08-11		-0,048 (-1,392)	-0,038 (-0,958)	-0,006 (-0,133)
Loan/TA		-0,019 (-0,263)	-0,081 (0,205)	0,153 (1,560)
OP		1,255 (1,123)	1,142 (0,882)	3,591** (2,191)
TA		-0,023 (-1,131)	-0,031 (-1,403)	-0,021 (-0,847)
Intercept		0,514** (2,410)	0,588** (2,468)	0,343 (1,310)
adj. R-sq		0,271	0,284	0,222
N		965	863	760

Panel B:Condition effect of LLP on GCO with high enforcement compared to other legal origins during the financial crisis 2008-2011

	t+1	t+2	t+3
The effect of LLP on GCO in countries with high enforcement during the financial crisis	0,376*** (3,620)	0,464*** (3,598)	0,450*** (3,280)
The effect of LLP on GCO in countries with low enforcement during the financial crisis	0,118** (2,015)	0,148*** (2,684)	0,078* (1,650)
The effect of LLP on GCO in countries with high enforcement not during the financial crisis	0,496*** (5,208)	0,510*** (4,361)	0,386*** (2,633)
The effect of LLP on GCO in countries with low enforcement not during the financial crisis	0,169* (1,956)	0,289*** (2,956)	0,039 (0,289)

The table shows the regression results from Model 2. The table shows the result for the three-way interaction variable for LLP x level of Enforcement x Financial Crisis 2008-2011. All periods for GCO (actual GCO t+ s) is presented. For definition of the variables, see Table 2.

***, **, and * denote p-values of 0.01, 0.05, and 0.1 (two-tailed). Respectively t-values are shown in parentheses.

Earnings management

The last test captures the effect of earnings management on the predictability of actual losses during the financial crisis. Table 15 show that the interaction variable is significantly positive in period one, which means that there is evidence of a three-way interaction between LLP, low earnings management and the crisis period. The underlying structure of the interaction variable show that LLP have a higher ability to predict GCO one period ahead in countries with low earnings management compared to countries with high earnings management during the financial crisis
(Low compared with high during the crisis, 0,335 > 0,264, at t+1). The result is in line with our expectations based on the assumption that countries with lower earnings management have better accounting quality, and thereby predicts better. However, the conditional effect show that the predictability of actual losses is lower during the financials crisis compared to the years before and after the crisis (Low during crisis compared with before and after the crisis, 0,335 < 0,564, at t+1), which is not in line with our expectations.

Table 15
Test of hypothesis 2.

Panel A: Regression results of Model 2, which tests the effect of different clusters on the ability of loan loss provisions to predict gross charge-offs during the financial crisis: $GCO_{i,t+s} = \alpha_0 + \alpha_1 LLP_{i,t} + \alpha_2$ Country Division$_{k,t}$ + $\alpha_3 LLP \times$ Country Division$_{k,t}$ + α_4 Financial Crisis$_{i,t}$ + $\alpha_5 LLP \times$ Financial Crisis$_{i,z}$ + α_6 Country Division$\times$Financial Crisis$_{i,z}$ + $\alpha_7 LLP \times$Country Division$\times$Financial Crisis$_{i,z}$ + α_jControl$_{yi,t}$ + $_{\varepsilon i,t+s}$ $\forall$ s = 1,2,3.

	Predicted sign	Level of Earnings management		
		t+1	t+2	t+3
LLP x Earnings management x Crisis 08-11	+	0,334* (-1,680)	-0,110 (-0,528)	-0,086 (-0,340)
Earnings management x Crisis 08-11		-0,052 (-0,762)	-0,054 (-0,704)	-0,061 (-0,618)
LLP x Earnings management		0,270*** (2,731)	0,297*** (2,834)	0,335*** (2,706)
LLP x Crisis 08-11		-0,102 (-0,979)	-0,141 (-1,234)	-0,051 (-0,349)
LLP		0,369*** (6,514)	0,421*** (6,586)	0,344*** (4,383)
Earnings management		0,091** (2,227)	0,100** (2,300)	0,102* (1,909)
Crisis 08-11		-0,067* (-1,744)	-0,056 (-1,271)	-0,032 (-0,559)
Loan/TA		0,094 (1,356)	0,093 (0,912)	0,242** (1,984)
OP		0,240 (0,210)	0,557 (0,408)	2,931* (1,721)
TA		-0,014 (-0,630)	-0,018 (-0,765)	-0,009 (-0,347)
Intercept		0,424* (1,886)	0,462* (1,783)	0,250 (0,836)
R-sq		0,263	0,277	0,216
N		965	863	760

Panel B:Condition effect of LLP on GCO with low earnings management compared to other legal origins during the financial crisis 2008-2011

	t+1	t+2	t+3
The effect of LLP on GCO in countries with low earnings management origin during the financial crisis	0,335*** (3,612)	0,434*** (3,691)	0,432*** (3,255)
The effect of LLP on GCO in countries with high earnings management during the financial crisis	0,264** (2,134)	0,197** (2,305)	0,138** (2,155)
The effect of LLP on GCO in countries with low earnings management not during the financial crisis	0,564*** (4,753)	0,617*** (4,485)	0,515*** (2,594)
The effect of LLP on GCO in countries with high earnings management not during the financial crisis	0,158*** (2,754)	0,271*** (4,068)	0,136** (2,305)

The table shows the regression results from Model 2. The table shows the result for the three-way interaction variable for LLP x Earnings management x Financial crisis 2008-2011. All periods for GCO (actual GCO t+ s) is presented. For definition of the variables, see Table 2.

***, **, and * denote p-values of 0.01, 0.05, and 0.1 (two-tailed). Respectively t-values are shown in parentheses.

Concluding remarks for hypothesis 2

Overall, the results of the regression test of hypothesis 2 show that the predictability during the financial crisis varies between the different country clusters. When interpreting the results for all the tests, a conclusion can be drawn that there is a limited amount of support within the different tests to substantiate that banks tend to predict better during the financial crisis. When comparing the tests of legal origins English predicts actual losses to a lesser extent and French predicts to a higher extent during the financial crisis than the time before and after. The result shows that during the financial crisis, countries with low level of earnings management predicts better one period ahead. This can be supported by the fact that a decrease of earnings management has been observed during the financial crisis by previous literature (Cimini, 2015).

Robustness test

The test for hypothesis 1 and 2 was first carried out by including interaction variables for LLP and controls. By doing this, the two-way interaction tests and, especially, the three way interaction tests included a great number of interactions variables, which may create substantial multicollinearity. Due to the overlapping of LLP in many variables the test have been performed without including the interaction variables with LLP and controls. This is to avoid multicollinearity and potential instability in the coefficients. However, the tests including the country divisions for legal origin and culture in hypothesis 1 still includes several interaction variables.

As shown in Table 3, 19% of the total amount of observations in this study is represented by Norway. To investigate the potential influence that Norway may have on the results, additional regressions are carried out with Norway excluded in all the divisions. The test verifies that the country does not have an substantial impact on our results. This is concluded by comparing the observed adjusted R-squared and t-values to the original results.

6. Concluding discussion

This study investigates if the ability of loan loss provisions to predict actual losses differs between countries with respect to their legal origin, culture, level of enforcement and earnings management. The study also reflects the period of economic turmoil during the financial crisis and its impact on the countries predictability. We hypothesized and found that, on average, the clusters within the different country divisions predict actual losses to a different extent during all the observed years. The tests carried out in hypothesis 1 fulfil most of our expectations and show that findings in previous research are applicable on our study. This indicates that differences exist between countries where legal origin, culture, enforcement and level of earnings management are identified as explanatory variables for the predictability of actual losses.

When comparing the different clusters, countries within Scandinavian legal origin have a high predictive ability while French legal origin have a low ability to predict actual losses. Our results confirm the fact that countries within French-civil-law have the weakest quality of accounting. The regression test observing the effect of enforcement on the predictability of actual losses provide evidence that countries with high enforcement predict better in the short term and this changes over time. This can be connected with how the incurred loss model is developed. That is, the model entails later recognition of credit losses due to the fact that evidence of a triggered event has to be identified (IAS 39). This means that once the triggered event is confirmed, the actual losses will be recognized with a short time interval. The model does not allow for banks to include expected losses in their loan loss provisions. Thereby, the predictability of actual losses is expected to be better in the short term. This can be connected to the argument that high enforcement countries follow the standard more carefully, which our result confirms. Our findings show that countries with high earnings management predicts better. This result is in contrary to our expectations that countries with low earnings management should maintain a high level of accounting quality. However, this observation indicates that loan loss provisions are not used as a tool for earnings management. If LLP where to be used in order to smooth income, incentives would prevent loan loss provisions from reflecting the actual losses i.e. the LLP predictive ability would decrease. In addition to this, the outcome can be explained by the division based on Leuz et al. (2003), which does not specifically observe earnings management in banks.

By providing an insight of the countries predictability during the financial crisis a time perspective is given through hypothesis 2. The results from the regression tests partly confirms hypothesis 2. This support our expectations that countries predict actual losses to a different extent during the financial crisis compared to the years before 2008 and after 2011, where countries within French legal origin, English speaking culture and earnings management show significant differences. One of the more divergent results from the regression model including the financial crisis is that Scandinavia legal origin does not show significant differences in predictability of actual losses. This compared to the other legal origins as well as during the time period before and after the financial crisis. Previous literature suggests that predictability should increase due to the added pressure from investors to increase transparency during the crisis (Kousenidis et al., 2013). This argument in addition to our result from hypothesis 1, a significant increase in LLP predictive ability would have been expected to be observed in the countries within Scandinavia.

English speaking countries predict actual losses to a lesser extent during the financial crisis. Incentives for exaggerating the loan loss provisions is motivated by the fact that poor performance is forgiven during times of financial distress, when the majority of the banking sector also admits to weak results (Rajan, 2994). Although the English countries was affected by the crisis in higher extent compared to the other European countries (Schick, 2013), the result do not identify an increase in predictability. This fact indicates that the English countries did not face the same pressure to increase its quality of accounting compared to other countries, as suggested by Kousenidis et al. (2013). Overall, the tests for culture in hypothesis 1 and 2 show weak results with

few significant differences. The observation that cultural factors cannot be identified as essential explanatory variables might not be surprisingly. This reasoning can be derived to the fact that all of the countries in our sample are within the European Union. The European Union is an economic and political union within Europe, which potentially could have a harmonizing effect on the culture differences. This may be an explanation for the absence of differences in predictability between the clusters.

Previous research has studied whether there is a difference in predictability before and after the adoption of IFRS. The regulation for loan losses in former regulation local GAAP were more judgement-based compared to IAS 39 and evidence show that the predictability was higher. Due to the better predictability during the local GAAP, the expectation on IFRS 9 is that the predictability will increase compared to IAS 39 (Marton & Runesson, 2017). Our study indicates that there is an existing problem with differences in predictability between countries under the more objective standard IAS 39. Thereby the question still remains whether the higher level of judgement in IFRS 9 will further increase the differences between countries and potentially regenerate the previous problem of increased earnings management, as under local GAAP.

In closing, consistent with our hypotheses there are partly significant differences between countries and the application of the standard IAS 39. This study is based on country divisions that have been developed by previous literature, which does not consider potential changes in behaviour during abnormal economic conditions. Based on this conclusion, it may not be surprising that the result do not show as apparent differences as previous literature implies. Specific country patterns and tendencies such as earnings management behaviour could be changed by the influence of economic turmoil and thereby eliminate country differences. Consequently, the identification of explanatory variables affecting the predictability of actual losses may be more difficult to achieve while considering the financial crisis, especially considering the fact that countries are affected by crises to a different extent. Our study in addition to previous research proves that the idea of a more common accounting language and harmonized financial reporting has not completely been achieved. The results of this study are of importance and should thereby be considered by standard setters. By reviewing the implementation of the current standard, especially when introducing IFRS 9, standard setters could avoid country specific factors affecting the accounting and thereby achieve more homogeneous accounting reports across countries.

In this study several limitations has been observed. Some considerations should be taken to the limited sample size and the unbalanced representation of countries, where the number of observations occasionally differs significantly between countries. When observing the countries within the divisions Legal Origin and Culture in table 1, the clusters are similar to a large extent. This is reflected in the result and could be seen as a limitation. Furthermore, other variables not controlled for in the study could have an effect on country differences. The divisions chosen in this study is a selection. There may be other divisions interesting to further investigate and potentially identify country differences affecting the predictability of loan losses. The validity of this study is strengthened by the results being consistent with previous literature, which show that country specific differences exist even after the adoption of IFRS (Nobes, 2006;2013).

Further Research

Despite the usefulness of this work for both regulators and users of financial information, future research could complement our findings by adding different variables or other country divisions. For instance, further research could include ownership structure to investigate if banks with dispersed ownership predict in a certain way compared to banks with concentrated ownership. In addition to this, with a new standard being mandatory in January 2018 it is highly interesting to observe if differences will occur with the new expected loss model in IFRS 9. By observing if banks' predictability improves under IFRS 9 the question will be answered if more judgement-based standard can increase the accounting quality.

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Appendix

Appendix 1
Descriptive statistics.

Total average LLP/TA and GCO/TA divided into each observed country and year.

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Tot. Average
Austria	LLP	0,428	0,513	0,460	0,560	0,980	0,718	0,598	0,595	0,653	0,838		0,634
	GCO		0,095	0,063	0,075	0,168	0,180	0,158	0,208	0,248	0,265	0,333	0,179
Belgium	LLP	0,010	0,035	0,040	0,340	0,395	0,285	0,300	0,250	0,405	0,130		0,219
	GCO		0,205	0,140	0,135	0,200	0,070	0,130	0,220	0,140	0,145	0,100	0,149
Bulgaria	LLP	0,990	0,640	0,667	0,753	1,737	1,793	1,833	0,800	0,607	1,333		1,115
	GCO		0,615	0,357	0,583	0,313	1,270	2,017	0,533	2,137	1,263	1,520	1,061
Croatia	LLP		0,160	0,447	0,427	1,067	1,437	0,523	0,163	1,073	0,720		0,669
	GCO		0,020		0,020	0,020		0,730	0,690	0,623	0,917	1,963	0,623
Cyprus	LLP	0,735	0,415	0,170	0,300	0,445	0,525	0,895	0,695	2,345	2,105		0,863
	GCO		0,020	0,200	0,165	0,100	0,215	0,395	0,225	0,115	0,045	0,855	0,234
Denmark	LLP	0,216	0,383	0,270	0,822	1,453	1,157	1,250	1,543	1,390	1,354		0,984
	GCO		0,152	0,116	0,310	0,566	0,771	0,717	0,759	0,896	0,835	0,793	0,591
Finland	LLP			0,010	0,010	0,290	0,120	0,090	0,060	0,168	0,020		0,096
	GCO		0,020	0,090	0,020	0,090	0,050	0,040	0,050	0,030	0,115	0,060	0,057
France	LLP	0,080	0,058	0,098	0,213	0,373	0,173	0,175	0,173	0,168	0,138		0,165
	GCO		0,065	0,075	0,053	0,120	0,123	0,113	0,155	0,093	0,115	0,115	0,103
Germany	LLP	0,498	0,402	0,308	0,477	0,650	0,492	0,443	0,415	0,488	0,380		0,455
	GCO		0,130	0,146	0,192	0,287	0,330	0,347	0,275	0,257	0,303	0,308	0,257
Greece	LLP	0,855	0,550	0,418	0,675	0,880	1,078	1,620	2,110	1,615	1,888		1,169
	GCO		0,503	0,498	0,380	0,503	0,480	0,473	1,113	0,188	0,433	0,370	0,494
Hungary	LLP	0,320	0,390	0,570	0,945	1,915	2,000	2,965	2,055	2,310	2,940		1,641
	GCO		0,045	0,035	0,055	0,070	0,130	0,390	0,505	0,405	0,345	0,400	0,238
Ireland	LLP	0,075	0,065	0,055	0,555	2,625	2,700	2,910	1,580	1,445	0,295		1,231
	GCO		0,045	0,030	0,055	0,145	0,400	0,495	0,515	0,890	2,795	3,020	0,839
Italy	LLP	0,281	0,281	0,281	0,438	0,560	0,476	0,513	0,951	1,375	1,558		0,671
	GCO		0,049	0,049	0,084	0,150	0,128	0,120	0,080	0,148	0,130	0,159	0,110
Liechtenstein	LLP	0,110	0,025	0,025	0,005	0,150	0,110	0,160	0,140	0,070	0,025		0,082
	GCO		0,010	0,040	0,073	0,005	0,035	0,065	0,060	0,295	0,155	0,030	0,077
Lithuania	LLP	0,110	0,050	0,280	0,370	2,200	1,960	0,400	0,960	0,820	1,060		0,821
	GCO		0,040	0,010	0,180	0,710	0,330	0,030	0,240	0,260	1,130	1,420	0,435
Malta	LLP	0,500	0,130	0,130	0,170	0,290	0,275	0,145	0,290	0,500	1,955		0,439
	GCO		0,135	0,220	0,080	0,215	0,100	0,375	0,090	0,040	0,140	1,455	0,285
Netherlands	LLP		0,010	0,100	0,100	0,260	0,140	0,130	0,180	0,210	0,160		0,143
	GCO		0,060	0,070	0,050	0,100	0,090	0,100	0,140	0,150	0,180	0,200	0,114
Norway	LLP	0,136	0,078	0,071	0,293	0,252	0,215	0,191	0,162	0,173	0,135		0,171
	GCO		0,153	0,129	0,097	0,191	0,199	0,188	0,162	0,193	0,174	0,090	0,158
Poland	LLP	1,065	0,940	0,820	0,990	1,675	0,520	0,510	0,875	1,100	0,985		0,948
	GCO		0,425	0,190	0,305	0,240	0,300	0,370	0,300	0,500	0,430	0,355	0,342
Portugal	LLP	0,150	0,310	0,400	0,565	0,705	0,670	1,050	0,950	1,145	1,895		0,784
	GCO		0,700	0,480	0,245	0,200	0,445	0,285	1,045	1,165	1,125	1,505	0,720
Romania	LLP	0,490	0,480	0,810	0,890	2,500	2,940	1,220	1,280	1,290	1,840		1,374
	GCO		0,470	0,020	0,020	0,070	0,020	0,290	0,290	0,530	2,270	1,640	0,562
Slovakia	LLP			0,090	3,950	0,550	0,190	0,730	0,690	0,630	0,680		0,939
	GCO				0,390	1,210	1,240				5,150		1,998
Spain	LLP	0,343	0,330	0,340	0,633	1,050	0,840	0,670	2,140	0,920	0,782		0,805
	GCO		0,200	0,290	0,453	0,753	0,717	0,786	0,762	0,856	0,860	0,728	0,641
Sweden	LLP	0,058	0,058	0,050	0,113	0,438	0,150	0,083	0,078	0,075	0,083		0,118
	GCO		0,043	0,043	0,055	0,128	0,145	0,170	0,145	0,140	0,103	0,083	0,105
United Kingdom	LLP	0,305	0,435	0,354	0,399	0,758	0,585	0,439	0,521	0,486	0,257		0,454
	GCO		0,319	0,295	0,275	0,449	0,445	0,408	0,424	0,387	0,379	0,405	0,379
Min	LLP	0,010	0,010	0,010	0,005	0,150	0,110	0,083	0,060	0,070	0,020		0,082
	GCO		0,010	0,010	0,020	0,005	0,020	0,030	0,050	0,030	0,045	0,030	0,057
Max	LLP	1,065	0,940	0,820	3,950	2,625	2,940	2,965	2,140	2,345	2,940		1,641
	GCO		0,700	0,498	0,583	1,210	1,270	2,017	1,113	2,137	5,150	3,020	1,998
Tot. Average	LLP	0,369	0,293	0,290	0,600	0,968	0,862	0,794	0,786	0,858	0,942		0,680
	GCO		0,188	0,156	0,174	0,280	0,342	0,383	0,374	0,445	0,792	0,746	0,430

This table show the total average of loan loss provisions scaled by total asset and gross charge-offs scaled by total asset in each observed country and year.

Appendix 2
Exchange rates.

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Norway	0,125	0,122	0,126	0,103	0,12	0,128	0,129	0,136	0,12	0,111	0,104
Lithuania	0,290	0,290	0,290	0,290	0,290	0,290	0,290	0,290	0,290	0,290	0,290

This table shows the exchange rates that has been used for Norway and Lithuania when calculating the value of total asset in Euro.