UNRAVELING EARNINGS MANAGEMENT

A COMPREHENSIVE ANALYSIS OF LOAN LOSS PROVISIONS UNDER IFRS 9 AND THE INFLUENCE OF EXECUTIVE REMUNERATION

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Abstract:

This study examines what impact the change from the Incurred Loss (IL) model under IAS 39 to the Expected Credit Loss (ECL) model under IFRS 9 had on earnings management through loan loss provisions (LLP). By studying a sample of listed European banks, our findings suggest that CEOs manage earnings through LLP but with different loss recognition practices under the two accounting regimes, recognizing fewer LLP under IAS 39 and more under IFRS 9. This study builds upon previous research by showing that when it comes to earnings management through LLP, CEOs do not perceive there to be a one size fits all solution to increase share price. Moreover, the study finds support that banks smooth income to a greater extent under IFRS 9 than under IAS 39, but only for banks whose CEOs are highly incentivized by increases in share price. This implies that executive remuneration plays a crucial role in determining the extent to which earnings management through LLP is used. Our study contributes to the existing literature on accounting standards and earnings management by highlighting the influence of executive remuneration and discretion on accounting decisions. Despite the lack of robustness, our findings have implications for both regulators and investors, emphasizing the need for a better understanding of the impact of IFRS 9 and its consequences.

Keywords:

Loan loss provisions, Banks, IFRS 9, Earnings management, Executive remuneration.

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1. Introduction

Following the 2008 financial crisis, world leaders and financial regulators criticized accounting standard setters for their role in implementing the standards regarding the impairment of financial assets, which was viewed as a contributing factor to the crisis. These accounting standards required banks to delay loss recognition resulting in loan losses that were recognized too late into the credit cycle (PwC, 2016). As a result of this criticism, the IASB created IFRS 9 to replace the existing IAS 39 with the ambition of better meeting the needs of the users of the financial statements. The result was a move from an incurred loss (IL) model to an expected credit loss (ECL) model (BCBS, 2015). The purpose of this change was to improve the financial reporting of banks, but what the real consequences have been requires more research.

When Silicon Valley Bank filed for bankruptcy in March of 2023, it became the second-largest bank failure in recorded history (Murray, 2023). Only two weeks thereafter the crisis-ridden Credit Suisse announced that they were being acquired in a distressed sale to avoid bankruptcy (Wendel, 2023). This was not the end of it as First Republic Bank failed in late April, usurping Silicon Valley Bank's short-lived title of the second-largest bank failure in history (Farrell et al., 2023). These banks got into trouble because of ill-advised investments in corporate bonds which lost value due to rising interest rates (McCabe and Mitchell, 2023; Murray, 2023). Most stakeholders were taken by surprise by these developments which revived the debate regarding financial reporting in banks. Even though these banks report under US GAAP, the philosophy of its impairment model for financial assets is similar to the model under IFRS (PwC, 2017). This raises questions about the potential implications of IFRS 9 and the ECL model.

With the incorporation of forward-looking information, the Basel Committee on Banking Supervision (BCBS) (2015) states that the increase in accounting discretion allows banks to report their outstanding loans at their expected value. It should, although, be noted that discretion has its limitations. Penman (2013) lists loan loss provisions (LLP) as the largest area of concern within the banking sector as it is the accrual that is most susceptible to accounting manipulation. With new remuneration legislation following the financial crisis and the expected impact of such remuneration schemes on earnings management, especially when managers are allowed to make discretionary accounting decisions, our study aims to answer the following research question:

"Will CEOs whose compensation is more tied to share price conduct more earnings management through the use of LLP after the change from IAS 39 to IFRS 9?"

As discussed above, since IFRS 9 allows for more discretionary decisions compared to its predecessor, more judgment is necessary to estimate how much LLP to expect in the future (BCBS, 2015). The challenge with more discretionary decisions is that it also leaves room for human errors, or even intentional fraudulent behavior (Lawrence and O'Connor, 2005). Additionally, multiple studies have concluded that managers who are highly incentivized through share programs are more prone to purposefully manipulate their financial statements

to achieve results that aim to increase share prices (Espahbodi et al., 2022; Beaudoin et al., 2015). If these arguments on remuneration and discretionary accounting hold, Penman's (2013) warning should be taken seriously.

When analyzing the perceptions of different stakeholders, there are mixed opinions on the implementation of the ECL model. Academics and auditors view this discretion as a worrisome attribute of the new ECL model as it could facilitate earnings management (Gebhardt and Novotny-Farkas, 2011; Ball, 2006; Copeland, 1968). However, investors and regulators view the ECL model positively since the standard requires banks to report the estimated value of the loans earlier which reduces information asymmetry and risk (Onali et al., 2021; Onali and Ginesti, 2014; Ball, 2006).

Existing research has already studied if banks use LLP to manage earnings (Fonseca and González, 2008; Anandarajan et al., 2007; Ahmed et al., 1999; Beatty et al., 1995; Greenawalt and Sinkey, 1988). Studies like Ahmed et al. (1999), Beatty et al. (1995), Wetmore and Brick (1994), and Scheiner (1981) could not find evidence supporting earnings management through LLP. On the other hand, there are ample studies providing evidence that this relationship does seem true (Curcio and Hasan, 2015; Leventis et al., 2011; Fonseca and González, 2008; Anandarajan et al., 2007). An interesting method in which Anandarajan et al. (2007) differentiate their article from the earlier influential papers is that they control for listed versus non-listed banks. We believe the most compelling difference regards executive remuneration. Anandarajan et al. (2007) argue that for listed banks there is the opportunity to reward managers using equity, potentially incentivizing earnings management to increase share prices. The inclusion of studying banks that have more incentives to manage earnings could be an explanation for why Anandarajan et al. (2007) managed to find proof for their hypothesis whilst articles such as Ahmed et al. (1999) did not.

Several articles compare the recognition practices of LLP before and after a regulatory change that either facilitates or hinders earnings management, to examine the impact of the change on this phenomenon (Curcio and Hasan, 2015; Leventis et al., 2011; Anandarajan et al., 2007; Ahmed et al, 1999). However, now that IAS 39 has been replaced with IFRS 9, one of the bigger changes in accounting standards, surprisingly little research has been done into its consequences. There have been studies trying to analyze some implications of the change, such as Fang et al. (2022) who try to draw some predictions about IFRS 9 by studying a similar change in accounting standards in China. However, to our knowledge, not a single study has yet used IFRS 9 data to draw any conclusions about LLP and earnings management. The reason no research has been done on this topic may be because of how recently the change was implemented, and that only now, in 2023, one has access to five years' worth of IFRS 9 data. We believe this research gap should be filled. Additionally, with the remuneration changes after the financial crisis and historical findings about remuneration and earnings management, we believe it would be interesting to focus more on the effect of executive remuneration on earnings management through LLP. Moreover, BCBS (BIS, 2021) proclaims that:

"Given the expected greater scope for management judgment under ECL standards, it will be important to examine the role that management incentives play in affecting loss recognition practices, including measurement and timing."

We agree with BCBS that it is important to analyze the impact of executive remuneration on provisioning for loan losses under IFRS 9. Our goal is to contribute by presenting an accurate method for calculating executive remuneration in this field, while also being the first article, to our knowledge, to examine earnings management through LLP under IFRS 9. This topic is interesting and relevant since the change in accounting standards opened the door for bank executives to perform accounting practices that could misguide users of financial statements by temporarily adjusting the bank's earnings. If these suspicions ought to be true, our study aims to share new insights into how to detect earnings management to see which kind of banks take advantage of the increased discretion.

Our study includes data from 90 listed European Banks in 15 countries between the period of 2014-2022. To study earnings management, tests were conducted to see if there is any correlation between an incentive ratio and the relative level of recognized LLP. The incentive ratio was computed by measuring how much a 1% increase in share price affects the CEO's total annual remuneration. Furthermore, we study if there is any correlation between earnings before taxes and loan loss provisions (EBTLLP) and LLP since Ahmed et al. (1999) and Anandarajan et al. (2007) both argue that a correlation between these variables indicates income smoothing. Because it should be more difficult to manage earnings through LLP under IAS 39 compared to IFRS 9, our study investigates whether the correlation between EBTLLP and LLP under the latter is significantly stronger compared to the former. When studying IAS 39, a negative correlation was found between the level of managerial monetary incentives (MMI) and recognized LLP but when studying IFRS 9, a positive correlation between these two variables was instead found. This makes us draw the conclusion that our previous assumptions were faulty and to maximize share price, CEOs use different LLP recognition practices under different accounting regimes. We argue that since IAS 39 uses a backward-looking model, CEOs believe that the market will only perceive LLP as proof of unprofitability during this period. Since IFRS 9 is more forward-looking, it is argued that CEOs believe that recognizing more LLP in this era is seen as a more proactive step in managing risk as well as more transparent. We also put forth the argument that the possibility to smooth income is only possible under IFRS 9, due to increased discretion, and that smoothing income is perceived as a better way to manage earnings than to constantly minimize costs. Furthermore, a positive correlation between EBTLLP and LLP was found for banks with a high level of MMI in the IFRS 9 era. Linking back to our research question, our results suggest that a CEO that is highly incentivized by increases in share price will manage earnings through LLP to a higher degree under IFRS 9 than under IAS 39. This indicates the detrimental influence incentives and discretion in combination have on earnings management. Our final contribution to the existing literature is to show that the recognition practices of LLP probably can be used in diverse ways to manage earnings depending on the accounting standard and credit loss model.

2. Institutional background

The purpose of this chapter is to provide background information on the transition from IAS 39 to IFRS 9 and the underlying argumentation for this change. Additionally, the implications of the new ECL model under IFRS 9 for the financial statements and its effect on the accounting process will be discussed.

2.1 From IAS 39 to IFRS 9

After the financial crisis, the G20 gathered and issued a statement urging the standard setters to: "*strengthen accounting recognition of loan-loss provisions by incorporating a broader range of credit information*" (G20, 2009). There was a belief that the accounting standards for LLP at the time exacerbated the effects of the financial crisis. Therefore, stakeholders desired an accounting standard that communicated the value of bad loans earlier to the market. LLP are a part of or an entire loan that is unlikely to be repaid and are then recognized as a loss on a bank's financial statements (Frykström and Frederickson, 2019). In 2018, IAS 39 was replaced by IFRS 9 which changed the way banks are supposed to recognize LLP from an incurred, rule-based, loss model to an expected, more principle-based, credit loss model (BCBS, 2015).

2.2 Reasons for the change

The change from IAS 39 to IFRS 9 changed more than how banks should recognize their LLP. For instance, it also changed how companies should classify and measure their financial instruments and how to implement hedge accounting (Kun and Figgie, 2019). However, it should be noted that these changes are outside the scope of our study. The general argument for the change is that IAS 39 was too complex and inconsistent regarding how companies should manage their risk (PwC, 2017). When it comes to LLP specifically, the reason for the change stems from the opinion that under IAS 39, LLP were recognized too late in the credit cycle (PwC, 2017). To make matters worse, bank executives usually tend to delay the recognition of loan losses and share bad news, as shown during the financial crisis (Bischof et al., 2021: Kothari, 2009). These findings provide insights into how the IL model amplified certain managerial tendencies. By taking a more forward-looking approach, BCBS (2015) states that the bank's financial assets are going to be valued through a method that is more representative of the estimated value of the assets and should improve the timeliness of loss recognition. Under the previous IL method, banks would not recognize LLP, despite factors indicating that the loan would not be fully repaid until a default event occurred (Barth and Landsman, 2010).

Furthermore, under the IL model, loans could only be written down, limiting the reversal during economic upturns (Barth and Landsman, 2010). This exacerbated procyclicality and became an issue during the financial crisis as the valuations of a bank's loan portfolio were volatile (Bischof et al., 2021). The inability to reverse loan losses and delayed loss recognition partially caused information asymmetry between the bank and the market about the true value of the financial assets which increased market uncertainty (Barth and Landsman, 2010). With the

ECL model under IFRS 9, banks instead report the estimated value of the bank assets earlier, preparing the market better for potential economic swings.

2.3 The implications on the financial statements and accounting process

A bank recognizes LLP as the difference between the present value of all the contractual cash flows and the present value of expected cash flows, discounted with the effective interest rate (Kun and Figgie, 2019). This difference arises when borrowers are expected to default on the loans and the expected value of any collateral is worth less than the carrying amount of the loan. Under IFRS 9, these expected LLP are calculated by forecasting a weighted average where LLP are estimated for different economic scenarios of which the likelihood is assessed. The loan losses are estimated using the following formula:

$$EL_t = \sum_{t=1}^{N} \left(PD_t(I_t) * \frac{LGD_t(I_t)}{(1+dr)^t} \right) (1)$$ [1]

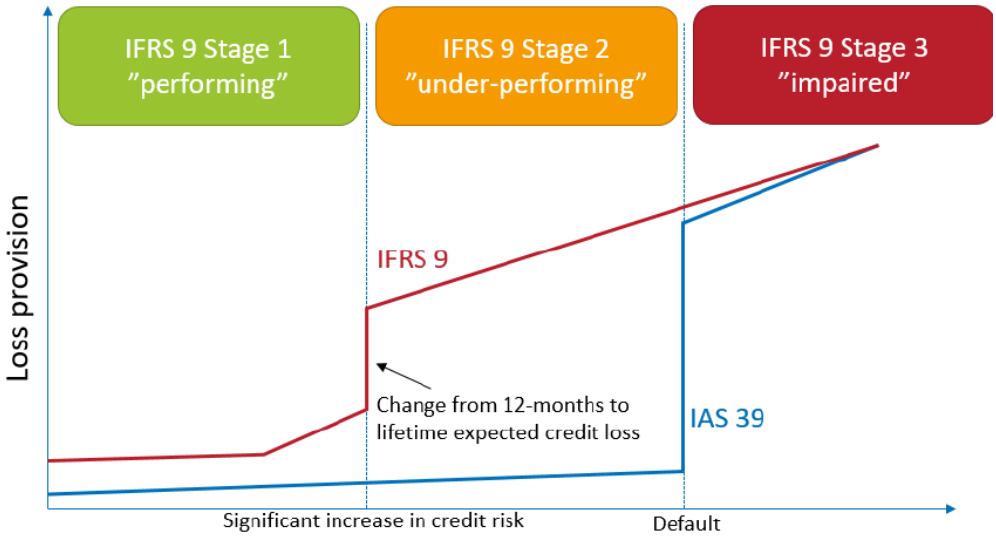
To compute the probability of default, the definition of default used for financial reporting should be consistent with the definition that the banks use for the management of their own credit risk (IASB, 2021). Under both accounting regimes, this provides banks with discretion in deciding the exact definition of default (IASB, 2021).[2] This impairment model applies to financial assets that are recognized at amortized cost and to financial assets recognized at fair value through other comprehensive income, where impairments are charged to income whereas other fair value changes are charged to other comprehensive income (Novotny-Farkas, 2016).

Depending on the risk for each specific loan, LLP could be recognized in three different stages. Stage 1 implies that the bank recognizes expected LLP for default events within 12 months, but the loans themself are still considered to be "performing". The LLP are calculated as the probability the loan will default within the next 12 months multiplied by the remainder of Equation 1. Stage 2 implies that there is a significant increase in credit risk but there is not yet any probable evidence that the loans will default. IFRS 9 does not specify what constitutes a "significant increase" instead, it is up to the bank's managers to make that decision (Frykström and Li, 2018). LLP in stage 2 are then estimated using the lifetime probability of default and the loans are considered "under-performing". Since LLP are calculated for the lifetime of the financial asset in stage 2, compared to 12 months in stage 1, a significantly higher provision is required for the loan creating a cliff effect (Frykström and Li, 2018), as shown in Figure 1. In Stage 3, a default event has already occurred, and credit risk is significant, requiring recognition of LLP for the entire lifetime of the asset. These loans are "impaired" (BCBS, 2015). For stages 1 and 2, the LLP act as provisions and are supposed to capture and absorb the banks' credit risk while for the LLP in stage 3, the default event has already occurred and they are thus in line with the LLP recognized under IAS 39, see Figure 1 (Frykström and Li, 2018). The LLP show up as a cost in the income statement and will be recognized on the balance sheet as a contra-

[1] PDt(It) denotes the cumulative probability of default, LGDt(It) is the loss given default and dr denotes the discount rate (Novotny-Farkas, 2016).
[2] It should be noted that the maximum definition of default is set at 90 days past due (IASB, 2021).

asset called loan loss allowance (LLA). This LLA is expected to cover the expected losses for the loan portfolio. If too few loan losses are provisioned for, the bank then recognizes an additional LLP. On the other hand, if the bank recognizes too much LLP, the bank should do a reversal of the LLP that may be less, equal, or even exceed the amount that was initially recognized as an expense in the income statement (Kun and Figgie, 2019). With the above-mentioned knowledge on how accounting for LLP has changed, it can be concluded that accounting for LLP is becoming more dependent on management judgment and more principle-based, compared to the old rule-based IAS 39.

Figure 1. Development of provisions under IFRS 9 and IAS 39 (Frykström and Li, 2018)



The figure shows the different stages of how LLP are recognized in the ECL model under IFRS 9 and compares it to how LLP would have been recognized under the IL model of IAS 39.

3. Literature review

The purpose of this literature review is to outline the existing theories and findings relating to our research area. The first section aims to describe executive remuneration in banks as a response to agency problems and the renewed challenges that emerge from this. The second section aims to provide a perspective of different stakeholders on how the transition to the ECL model under IFRS 9 will affect accounting quality. The third section provides a theoretical background on the existing research on earnings management through LLP in banks. At the end of this chapter, our hypotheses will be introduced and motivated.

3.1 Agency problems and executive remuneration in banks

Today's literature landscape starts to turn away from the assumption that managers are risk-averse, self-serving individuals who would shirk their responsibilities when not closely monitored (Pepper, 2019; Evans and Tourish, 2017). More empirical evidence claims that managers want to perform and often have moral issues with purposefully misleading other stakeholders by manipulating accounting numbers to achieve desired financial outcomes, so-called earnings management (Beaudoin et al., 2015). Particularly within the banking sector, managers experienced an increase in supervision and scrutiny by regulators, auditors, and the market after the financial crisis, making managing earnings more difficult (Svanberg et al., 2019). As a result of a more ethical perspective of managers and the increased checks and balances for banks, earnings management has steadily decreased over the last decades (Espahbodi et al., 2022; Beaudoin et al., 2015). This decrease does however not mean that the problems presented in Agency Theory no longer exist, and Adam Smith's (1791) old quote *"Being the managers of other people's money rather than of their own, it cannot well be expected that they should watch over it with the same anxious vigilance"* still seems to ring true.

Agency Theory tackles two main problems, The Agency Problem, that the agent's and principal's interests do not align, and The Risk Sharing Problem, that the agent and principal have different attitudes toward risk (Jensen and Meckling, 1976). The most popular solution to these two problems is to align the agent's and the principal's interests through remuneration (Jensen and Meckling, 1976). By aligning agents and principals through incentives, theory suggests that agents become less risk-averse, aligning with the wishes of the principals (Jensen and Meckling, 1976). However, the traditional way agency problems can be reduced through incentives is limited for banks because of their unique capital structure and their macro-economic importance. Banks are mostly financed through customer deposits resulting in significantly higher leverage compared to non-banks (Hagendorff, 2019). Partially due to the customer deposits being government-backed, the depositors do not discipline banks (Flannery and Bliss, 2019). Due to this factor and the significant macroeconomic importance of banks, the government is perceived as the stakeholder with the highest stakes involved, leading them to adopt a crucial supervisory role. Considering the risk-averse nature of most governments, regulation is often created to limit the banks' risk-seeking incentives (Hagendorff, 2019). Thus,

governments are limiting the incentive packages banks' equity holders can create to incentivize risk-seeking behavior amongst their executives.

The structure of executive remuneration within banks became more scrutinized during the financial crisis which led to some systemic changes. Regulations and enhanced regulatory oversight were implemented to restructure executive compensation and mitigate their excessive risk-taking (European Banking Authority, 2016). As a result, executive compensation became more tied to share price and was focused on providing executives with skin in the game (Becht et al., 2011). That executive compensation through equity reduces risk may seem counterintuitive based on traditional agency theory, but Houston and James (1995) demonstrate that higher ownership in banks does in fact lead to reduced risk-taking behavior. Nonetheless, historical research has proven that share-based incentives create new problems on their own. Bebchuk and Fried (2003) show that managerial compensation through shares increases managerial rent-seeking, indicating that executives are incentivized to maximize their utility Additionally, executives with higher dependence on share price for remuneration are also more likely to manage earnings (Bergstresser and Philippon, 2007; Burns and Kedia, 2006; Healy, 1985). Building upon these findings are Beaudoin et al. (2015) and Lawrence and O'Connor (2005) who introduce new interesting aspects to this research area by discussing the impact of ethics (Beaudoin et al.,2015) and the effect of discretion in accounting standards (Lawrence and O'Connor, 2005). Beaudoin et al. (2015) show that there is a negative relationship between ethics and earnings management, both in scenarios where executives are incentivized to manage earnings and in the absence of such incentives. This shows the importance of personal characteristics in earnings management decision-making, however, due to research method constraints, our study will not build upon this. On the other hand, the findings of Lawrence and O'Connor (2005) are more interesting and relevant to our research. Lawrence and O'Connor (2005) found that managers who possess ownership stakes and need to make discretionary accounting decisions make more forecasting errors due to either honest mistakes or purposeful manipulation. Considering the increase in discretion due to IFRS 9, our research aims to build upon Lawrence and O'Connor (2005) by studying earnings management within this context. By linking back, the positive correlation between earnings management and increased ownership to Jensen and Meckling's (1976) argument that increased ownership better aligns the interest of the managers and owners, this could potentially imply that owners, to a degree, desire earnings management. This line of argumentation will be further expanded upon in section 3.3 where earnings management will be connected to the recognition practices of LLP.

To limit earnings management, Crocker and Slemrod (2007) argue that contacts between principals and agents should be designed in a manner to incentivize the agent to take actions towards increasing actual profitability whilst minimizing incentives to falsify earnings. In a perfect world, contracts would contain no earnings management incentives, and instead incentivize the desired level of risk-taking. However, this is no perfect world. Due to the financial crisis and governments' vested interests in banks, new remuneration regulations have been established to curb excessive risk-taking. However, a lingering drawback of these regulations is the continued incentive for earnings management. Therefore, the relationship

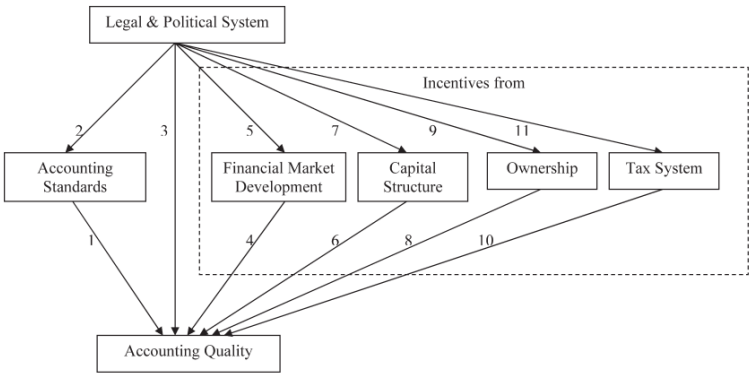
between managerial incentives and earnings management is interesting to study considering the new remuneration guidelines.

3.2 Accounting quality and the implementation of IFRS 9

With the initial implementation of IFRS in 2005, numerous studies have analyzed what influence IFRS has had on accounting quality. The impact of changes in accounting standards on accounting quality is usually measured by looking at timely loss recognition, the clarity of financial statements, and the levels of earnings management (Gebhardt and Novotny-Farkas, 2011; Armstrong et al., 2010; Barth et al., 2007; Soderstrom and Sun, 2007). Christensen et al. (2015) and Barth et al. (2007) compare the implementation of IFRS against the old local GAAPs and find that IFRS, in general, has resulted in more timely loss recognition. Armstrong et al. (2010) also find that IFRS 9 has led to reduced information asymmetry as financial statement users have a better understanding and an easier time spotting irregularity under IFRS compared to local GAAPs. Such improvements in accounting quality have been particularly evident in the banking sector (Gebhardt and Novotny-Farkas, 2011; Armstrong et al., 2010).

However, we are interested in analyzing what has been the general view about the adoption of IFRS 9 specifically and, in this case, the implementation of the ECL model. Generally, adopting a model with forward-looking information improves timely loss recognition and reduces information asymmetry by incorporating more accurate economic information into the accounting, making, in these aspects, the financial statements more useful for stakeholders (Ball, 2006). However, stakeholders have different opinions on the ECL model and how it should be implemented (Novotny-Farkas, 2016). To effectively analyze the effect of the implementation of the ECL model on accounting quality, it is crucial to understand these different perspectives to fully get an understanding of how well the accounting standards fulfill their intended purposes. Soderstrom and Sun (2007) state that one of the most important and influential stakeholders regarding accounting quality is the legislator. Soderstrom and Sun (2007) provide a model of which factors affect accounting quality where the authors argue that the level of accounting quality originates from the legal and political system, which exert direct and indirect influence over the accounting quality, as depicted in Figure 2.

Figure 2. Soderstrom and Sun's (2007) model on factors influencing accounting quality



The figure shows the factors that influence accounting quality and a visualization of how the legal and political system affects it.

Bank supervisors and governments want banks to be conservative in their income recognition and to recognize a higher degree of LLP as this reduces the probability of unexpected defaults and the potential burden that falls on taxpayers in case of default (Novotny-Farkas, 2016). However, other stakeholders want the financial statements to be as fairly represented as possible, creating a mismatch between stakeholders' desires (Novotny-Farkas, 2016). Compared to supervisors and governments who push for earlier loss recognition, potentially at the detriment of accounting quality, Nicoletti (2018) shows that auditors desire more timely loss recognition. Despite auditors being skeptical of too-early loss recognition under the ECL model, the increased transparency in the financial statements still seems to somewhat satisfy their needs (Nicoletti, 2018).

Even though the market might not agree that banks should be conservative in their accounting, Onali and Ginesti (2014) provide evidence that the market's reactions to the news of the implementation of IFRS 9 have been positive, especially in countries with poor regulatory supervision. This indicates that investors view the implementation of IFRS 9 as a standard that can reduce information asymmetry and protect investors from corporate malpractice. After its implementation, Onali et al. (2021) show that the markets assess the transition to IFRS 9 from distinctive perspectives: the advantages of enhanced monitoring on the one hand, and the disadvantages of increased compliance costs and heightened potential for opportunistic behavior on the other hand. (2021) show that the market assesses the transition to IFRS 9 from distinctive perspectives: the advantages of enhanced monitoring on the one hand, and the disadvantages of increased compliance costs and heightened potential for opportunistic behavior on the other. Since Onali et al. (2021) observe positive stock market reactions regarding the implementation of the ECL model, they take this as evidence that the market believes that the monitoring benefits outweigh the increased costs of compliance and opportunistic behavior. The authors claim that the monitoring benefit from IFRS 9 comes from a more accurate value of loans being communicated earlier to the market, reducing information asymmetry (Onali et al. 2021). Onali et al. (2021) show these benefits exist specifically for banks that are deemed riskier because of lower profitability, higher systemic risk, or received government support during the financial crisis. The findings of Onali et al. (2021) complement the findings of Onali and Ginesti (2014) as both show that the market views IFRS 9 and its ECL model as a tool to reduce risk. This corroborates the findings by Leventis et al. (2011) who show that riskier banks benefit more from the limited transparency under IAS 39. The favorable responses observed in countries with poor investor protection and riskier banks indicate that the monitoring advantages are particularly evident in situations where diminishing information asymmetry can yield the greatest benefits.

On the other hand, academia raises concerns about the new ECL model. By comparing the change from IAS 39 to IFRS 9 to the similar change in accounting standards in China in 2017, Fang et al. (2022) draw deductions that IFRS 9 will lead to a higher audit risk due to the complex nature of forecasting future losses. The increased audit risk is corroborated by auditors, who routinely identify provisioning for loan losses as a Key Audit Matter in the audit

report of banks.[3] Moreover, Fang et al. (2022) anticipate that the implementation cost of IFRS 9 has been significant and remains substantial, warranting a comprehensive evaluation in light of the supporting arguments favoring the adoption of the ECL model. Other research also argues that because of increasing complexity through incorporating forward-looking information, managerial opportunities to manually influence earnings often are created (Ball, 2006). Gebhardt and Novotny-Farkas (2011), for example, compare the previous IL model under IAS 39 against its predecessors in the local GAAPs. Under the local GAAPs, a comparable model to the current one employed under IFRS 9 was utilized. Gebhardt and Novotny-Farkas (2011) observe that transitioning from those local GAAPs to the IL model significantly diminished income smoothing, thereby enhancing accounting quality in this aspect. Hence, already before the implementation of IFRS 9, there existed concerns about what consequences a forward-looking loan impairment model would have on provisioning for loan losses. It is thus easy to be concerned about what implications IFRS 9 might have on earnings management. These concerns are strengthened by analyzing IFRS 9 through Copeland's (1968) income smoothing model and linking it to Sundvik's (2018) findings. Copeland (1968) claims that an accounting standard with the characteristics of IFRS 9 would be a valid income smoothing tool because of the level of judgment required and the significance of the accrual on the financial statements. To make matters worse, Sundvik (2018) shows that principle-based accounting standards, like IFRS 9, are an enabler for accrual-based earnings management. Despite the overall positive responses from the market and governments, earnings management concerns should not be understated.

3.3 Loan loss provisions and earnings management

With sound worries regarding the usage of the ECL model as an earnings management tool, it is important to understand potential motivations and historical evidence regarding earnings management through LLP.

There are ample arguments for why LLP could be used to manage earnings. Beaver and Engel (1996) show that four motivations for earnings management through LLP exist, Regulatory, Financial reporting, Tax, and Signaling motivations. Our study will primarily focus on the financial reporting motivations described by Beaver and Engel (1996), which are motivators where accounting numbers can impact economic value. These motivations are particularly relevant for executives with management compensation contract incentives, as they are more inclined to manage earnings through LLP to maximize the value of their share and options portfolio (Bergstresser and Philippon, 2007; Burns and Kedia, 2006; Healy and Wahlen, 1999; Healy, 1985). Moreover, Trueman and Titman (1981) demonstrate that income smoothing is employed by managers to reduce earnings volatility and risk, with an anticipated positive impact on share price, while the newly introduced ECL model, as discussed in section 3.2, is suggested as a suitable tool to smooth income and increase share price. Additional financial reporting motivations can be found in Bischof et al. (2021) and Kothari (2009) who show that managers are unwilling to recognize loan losses and delay sharing bad news to the market in

[3] According to our own research, 93% of audit reports for listed banks include loan loss provisioning as a Key Audit Matter.

attempts to reduce turmoil and keep the share price up. By linking the above-mentioned points back to the argument of whether earnings management would potentially be preferred by owners, it is argued that earnings management aimed at reducing variability in earnings and risk may be desired. There is a risk that investors may condemn earnings management practices employed by executives, however, to quote Lewis (2004) *"The investor cares about short-term gains in stock prices a lot more than he does about the long-term viability of the company*." This quote indicates that the investors might appreciate earnings practices that will in the short run benefit share price and can be viewed as an additional explanation of why management potentially is incentivized to use LLP to manage earnings.

Although existing research has not found any conclusive evidence that banks use LLP to manage earnings, there currently are more studies in favor of such a relation. Supporting earnings management, there are, amongst others, Ozili (2017), Leventis et al. (2011), Fonseca and González (2008,) Anandarajan et al. (2007), Kanagaretnam et al. (2003), Collins et al. (1995), and Greenawalt and Sinkey (1988). Collins et al. (1995), for example, analyzed expected and reported accruals and found that banks with larger differences changed their LLP recognition practice to adhere to analyst forecasts as well as capital ratios. Since Collins et al.' (1995) publication, more articles that find a relation between LLP and earnings management have, however, slowly shifted their focus towards incentives to better scan for which banks are more likely to manage earnings. Kanagaretnam et al. (2003) present that managers with job security concerns are more likely to manage earnings through LLP whilst Bai et al. (2022) show, in an experimental setting, that banks with higher dependence on share-based compensation perform more earnings management by recognizing fewer LLP. Anandarajan et al. (2007) argue that after the changes in the 1998 Basel Accord, banks no longer needed to include LLP in their Tier 1 capital ratio and hence taking on fewer LLP would no longer lower the bank's capital adequacy ratio, diminishing the cost of managing earnings. Anandarajan et al. (2007) managed to show that after this change listed commercial banks in Australia started to align LLP with their EBTLLP whilst unlisted banks did not. The idea that a correlation between LLP and EBTLLP could be a sign of earnings management, or more precisely income smoothing, was first introduced by Ahmed et al. (1999) but has since been seen as the most common way of measuring earnings management through LLP. Anandarajan et al.' (2007) findings then support the idea that LLP are used to manage earnings. Additionally, Gebhardt and Novotny-Farkas (2011), and Leventis et al. (2011) also find a correlation between income smoothing and LLP but interestingly this correlation became weaker after the implementation of IFRS, supporting the argument that IFRS has generally improved accounting quality.

On the other hand of the debate, some articles do not find any correlation between LLP and earnings management, such as Ahmed et al. (1999). Ahmed et al. (1999) studied how a new capital regulation, which had similar implications as the 1998 Basel accord studied by Anandarajan et al. (2007), impacted earnings management through LLP. Ahmed et al. (1999) argued that since managers could manage earnings with less cost after the change, they would, to a higher degree, use LLP to smooth income. However, the authors found the opposite to be true and were unable to conclude that banks smooth income through LLP. When examining

other studies, including Beatty et al. (1995), Wetmore and Brick (1994), and Scheiner (1981), a similar lack of evidence regarding the use of LLP for earnings management can be observed.

Although most of the literature supports earnings management, some studies have presented evidence that challenges the notion of LLP being used to manage earnings. Moreover, the existing research highlights the importance of incentives and the institutional environment in understanding earnings management and how these factors facilitate earnings management practices. Our study contributes to this debate by analyzing the LLP under the new accounting standard, IFRS 9. By using more timely and accurate remuneration measures with real-world data, our study hopes to bring some new insights to the topic.

3.4 Hypotheses development

3.4.1 Cost minimization

To continue our reasoning in section 3.2, the move from local GAAPs to IFRS has improved the accounting quality for European banks. However, despite the adoption of IFRS 9 being appreciated by the market, it should be remembered that discretion in accounting standards can work as a double-edged sword.

"On the one hand, discretion allows bank managers to incorporate private information about future credit losses. On the other hand, discretion might be used opportunistically to prop up reported earnings and regulatory capital." (Novotny-Farkas, 2016).

Earnings management as a phenomenon has decreased in the last decade but the creativity in how managers can find ways to manipulate earnings through accounting decisions seems endless. There already exists empirical findings arguing that LLP have been used as a tool for earnings management, that LLP have a material impact on earnings, and that executives who have a higher dependence on share price recognize fewer LLP in an experimental setting. Given the greater flexibility provided by IFRS 9, it is thought that CEOs who are primarily motivated by share and options programs may find it difficult to resist the temptation to use LLP to increase share price. Bai et al. (2022) find in their experiment that bank executives with higher dependence on share price recognize fewer LLP, probably to increase net income and share price, as corroborated by Bischof et al. (2021) and Kothari (2009). Therefore, we are especially interested in studying this relationship, together with the impact of managerial monetary incentives (MMI) as well as if these practices have significantly changed from IAS 39 to IFRS 9. To research this the following hypotheses are being studied:

H-1A: A CEO whose total annual compensation is to a higher extent tied to their bank's share price will recognize fewer LLP.

H-1B: *A CEO whose total annual compensation is to a higher extent tied to their bank's share price will recognize fewer LLP in the IFRS 9 era relative to the IAS 39 era.*

3.2.2 Income smoothing

As discussed above, most articles study earnings management through LLP in the form of income smoothing. To test income smoothing, the relationship between LLP and earnings is taken as a proxy for earnings management as it is expected that executives will recognize more LLP in good times to have a cookie jar[4] for troubled times. The proxy for earnings management through LLP was taken from Ahmed et al. (1999), and others who study the effects of regulatory changes on income smoothing through LLP. By smoothing income, the variance in the earnings will be reduced, lowering the perceived risk which is expected to have a beneficial effect on the share price. Except for only studying if there is a negative correlation between MMI and LLP, our research aims to refine the hypotheses of previous research investigating the alignment between EBTLLP and LLP. This phenomenon will be studied under a different regulatory change, namely the transition from IAS 39 to IFRS 9, and utilizing more precise remuneration measures. By examining the effects of increased discretion under IFRS 9 together with high levels of executive compensation, it is interesting to study whether this led to an increase in income smoothing. Therefore, the following hypotheses will be tested:

H-2A: There exists a positive correlation between LLP and EBTLLP.

H-2B: The correlation between LLP and EBTLLP will be more positive in the IFRS 9 era relative to the IAS 39 era.

H-2C: The correlation between LLP and EBTLLP will be more positive for banks where executive incentives are more tied to share price in the IFRS 9 era relative to the IAS 39 era.

[4] A cookie jar is referred to as an accounting reserve that has been used conservatively in the past but could be utilized in the future to increase future earnings (Penman, 2013).

4. Method

This chapter aims to outline our research methodology and motivates certain decisions that were made. It will describe our sampling method, our statistical model, our variables, and the measurement of these variables. Additionally, our method is compared to existing research and potential limitations of our decisions will be discussed.

4.1 Sampling and data

Our sampling method takes inspiration from the procedure used by Leventis et al. (2011). To analyze what effect the implementation of IFRS 9 has on loan loss provisioning and compare this to a bank executive's remuneration dependence on share price, our sample has to fulfill four criteria: [1] the organization has to be a financial institution whose main operating activity is to grant loans, i.e. a commercial bank, [2] the bank has to be listed on a European stock exchange, [3] the banks' financial statements have to be prepared under IFRS and [4] the banks have to operate in countries that follow the remuneration guidelines from the European Banking Authority (EBA). By screening through these requirements, our sample will consist of banks that have similar business models, follow the same remuneration guidelines, and are listed. The importance of the banks being listed for our research stems from three areas, the required reporting for listed firms under IFRS in specific geographic areas, the increased likelihood of having share-based compensation for executives, and the opportunity to influence share price. It should be noted that since 2021 British banks are no longer under the supervision of EBA due to Brexit, but, because British banks still follow the same remuneration guidelines, they are still included (Enria, 2023; Jones et al., 2022).

Table 1. Sample selection[5]

Sample selection procedure	
Listed banks in Europe	277
Remove banks from non-EBA countries	-28
Remove listed subsidiaries	-18
Remove non-commercial banks	-15
Remove banks with missing data	-141
Banks included in final sample	90

The table depicts our sample selection process.

To sample these requirements, Capital IQ was utilized to screen for banks that fit the requirements. After removing banks' listed subsidiaries, or banks that have missing remuneration or ownership information, our sample consists of 90 banks. The loan and financial statement data were gathered through Capital IQ whilst all other data was gathered manually from annual reports or other publicly available resources. To conduct a comprehensive pre-post analysis capturing the effects of the implementation of IFRS 9 data spanning from 2014 to 2022. This period allows us to effectively assess the impact of the

[5] In Appendix 4 and 5, a summary of the banks per country and a name list of the sample banks are provided.

accounting standard change. To mitigate the impact of the bonus cap regulation on bank executives' compensation, data was selected from 2014 onwards (European Parliament, 2013).[6] Because of new bank listings during our research period, our research has an unbalanced sample. A challenge with researching a specific period is that banks have exited and entered the population affecting our sample. This could result in potential survivorship bias, i.e., attrition bias. Of the 90 banks researched, 30 have gotten listed during our research period whereas 3 potential sample banks have defaulted (European Central Bank, 2023). [7] Our results are affected by some form of attrition bias,[8] however, due to the limited size of the population, increasing the sample size to cope with this issue is deemed unfeasible.

4.2 The model

To test our hypothesis and answer our research question, our study utilizes a model that is inspired by Ahmed et al. (1999) and used by, among others, Anandarajan et al. (2007) and Leventis et al. (2011). Whereas Anandarajan et al. (2007) and Ahmed et al. (1999) investigate earnings management in banks through LLP in light of a change in capital regulation, Leventis et al. (2011), as well as our study, aim to analyze what the effect of a change in accounting regulation has been. Considering that this model has been tested in the aforementioned studies and was deemed valid, a similar model with some modifications is deemed fitting for our research. A contribution of our research is the focus on the effect of remuneration and therefore a variable capturing this is added to the model which is presented in Equation 2.

$$\begin{aligned} LLP_{it} = {} & a_0 + \beta_1 MMI_{it} + \beta_2 EBTLLP_{it} + \beta_3 \Delta Loans_{it} + \beta_4 Z - score_{it} + \beta_5 \Delta GDP_{it} \\ & + \beta_6 Size_{it} + \beta_7 Tratio_{it} + \beta_8 Big4_{it} + \beta_9 ECBS_{it} + \beta_{10} LLA_{it} \\ & + \beta_{11} MMI_{it} * POST + \beta_{12} EBTLLP_{it} * POST + \beta_{13} EBTLLP_{it} * MMI_{it} \\ & + \beta_{14} EBTLLP_{it} * MMI_{it} * POST + Country\ dummies + Year\ dummies + \varepsilon_{it} \end{aligned} \quad (2)$$

Table 2 defines all the model's variables, the measurement of each variable, and the variable's expected coefficient towards the dependent variable.

Table 2. The variables of the model

Variable	Definition	Measurement	Expected coefficient
LLP	Loan loss provisions	Loan loss provisions / Total year-end loans	N/A
MMI	Monetary Managerial Incentives	See 4.2.3	-
EBTLLP	Earnings before taxes and loan loss provisions	EBTLLP / Total year-end assets	+
ΔLoans	Change in loans	Change in total loans / Lagged total loans	+
Z-score	Measurement of bank risk	See 4.2.5	-
ΔGDP	Real change in GDP	Percentage change in real GDP per country	+/-
Size	Natural logarithm of assets	LN(Total year-end assets)	-
Tratio	Tier 1 capital ratio	Tier 1 capital / Minimum required Tier 1 capital	-
Big4	Dummy variable capturing audit quality	1 if the financial statements are audited by a Big 4 firm, 0 otherwise	+
ECBS	Dummy variable capturing level of supervision	1 if the banks is global or other systemic institutions or directly supervised by the ECB, 0 otherwise	+
LLA	Loan loss allowance	Lagged loan loss allowance / Lagged total loans	+/-
POST	Dummy variable capturing accounting regime	0 for IAS 39, 1 for IFRS 9	-

The table shows the dependent (LLP), core independent (MMI, EBTLLP, and POST), and control (the remaining) variables in our model and what their expected correlation with our dependent variable will be.

[6] The bonus cap limits how much cash bonuses bank managers can be rewarded (European Parliament, 2013).
[7] The banks that have failed are Veneto Banca, Banca Popolare di Vicenza, and Banco Popular Espanol (European Central Bank, 2023).
[8] The regressions with a balanced sample show increased significance for our interactive variables under regressions 3 and 4 whereas significance disappears for our triple interaction under Regression 5. The results are displayed in Appendix 3.

4.2.1 Research methodology and methodological concerns

To identify income smoothing, the model initially created by Ahmed et al. (1999) looks at the relationship between EBTLLP and LLP. This model measures earnings management through LLP assuming that stronger relationships between EBTLLP and LLP can be viewed as a proxy for income smoothing. The idea behind using this relationship as a proxy is that executives use LLP as a cookie jar. Additionally, by introducing MMI into the model, our study aims to analyze whether executives whose incentives are more tied to share price tend to consistently recognize a different amount of LLP compared to executives with low MMI. Furthermore, by controlling the non-discretionary component of LLP (Discussed in section 4.2.5), our study estimates the usage of discretionary LLP and provides us with the opportunity to make inferences regarding earnings management.

To capture the effect of a regulatory change, one would usually use a difference-in-difference approach to study a group that is subject to the regulatory change and select a suitable control group to estimate the effect. However, this is not a suitable methodological approach in our research setting. Beatty and Liao (2014) discuss that if the entire population is subjected to the same regulatory change, there is no opportunity to create a control group and analyze the impact of the regulatory change. Therefore, to capture the overall effect of the accounting change, a dummy variable named POST is added to depict the accounting regime (0 for IAS 39, 1 for IFRS 9). By combining the usage of a POST-dummy and controlling for other relevant, influential factors, this approach will effectively capture the effect of the accounting change. It is expected that there will be a stronger relationship between EBTLLP and LLP under IFRS 9 than under IAS 39 as well as a stronger negative relationship between MMI and LLP due to the increased discretion. When introducing MMI, it is expected that this effect will be amplified because of the agency problems created when tying incentives to share price.

4.2.2 LLP

The dependent variable in our study is loan loss provisions (LLP). LLP are viewed as a valid accrual to manage earnings because of the level of judgment required and the material impact the accrual has on a bank's financial statements. Our measurement for this variable is inspired by Ahmed et al. (1999), Anandarajan et al. (2007), and others who calculate this variable as a ratio of LLP divided by average total loans. Our measurement differs slightly from this as our study divides LLP by total year-end loans. With the change in accounting standard to IFRS 9, provisioning for loan losses has become more forward-looking and loans are already provisioned for at initial recognition. Therefore, LLP divided by total year-end loans is seen as a more accurate, representative measurement.

4.2.3 MMI

MMI, or managerial monetary incentives, is our first independent variable. As our study is interested in studying whether earnings management has increased from the IAS 39 era to the IFRS 9 era, it makes sense to highlight executives that are incentivized to manage earnings since this facilitates the opportunity to study this phenomenon and allows us to analyze the development more precisely. There are multiple ways one could measure managerial incentives

to manage earnings. In their research, Healy and Wahlen (1999) identified four reasons why managers engage in earnings management, external contract incentives, regulatory motivations, capital market motivations, and management compensation contract incentives. While these four reasons were initially considered exhaustive, more recent studies by Dikolli et al. (2014), Dasgupta and Sarafidis (2009), and Kanagaretnam et al. (2003) have demonstrated that reputation and career concerns also are possible alternatives. However, these factors are complex and require significant subjective judgment. Therefore, our study will build upon Healy and Wahlen's (1999) fourth motivation, 'management compensation contract incentives. By examining compensation, the reliance on judgment is reduced and the impact remuneration has on earnings management can be estimated. This motivation is preferred because the first three motivations rely on meeting or beating specific targets, which attracts more scrutiny from auditors, investors, and regulators. Monetary incentives, on the other hand, are more discreet and challenging to analyze. As discussed in our literature review, banks face substantial scrutiny and supervision, making it more difficult for them to meet or beat targets without triggering reactions from stakeholders. Additionally, Rani et al. (2013) and Graham et al. (2005) have found that monetary incentives are the most prevalent factors in earnings management decisions. Another motivation for studying the effect of monetary incentives is the significant changes in executive remuneration guidelines following the financial crisis. As mentioned in our literature review, linking remuneration to share price helps address agency problems. However, it also creates challenges as increased dependence on share price can lead to higher levels of earnings management. Now that the type of managerial incentives in our study has been introduced, it will be discussed whose incentives are measured and how they will be measured.

In our opinion, the CEO's remuneration is the most interesting and relevant measurement in our study for two reasons. Firstly, BCBS (2015) states that senior management must approve of the philosophy and model for estimating LLP, stressing the CEO's influence on this process. Secondly, there is significantly more detailed data available for CEOs than for most other employees involved in financial reporting allowing us to use more precise data. The limitation of solely focusing on the CEO is that the impact other employees have on the process of estimating LLP is neglected. Due to the limited time and resources available for our study, including more executives was deemed as not feasible.

To measure the executives' incentives, the formula presented by Bergstresser and Philippon (2007) will be used to show how much the value of a CEO’s share and option holdings are affected by a 1% increase in share price and how significant this is to the CEO’s annual remuneration. Bergstresser and Philippon (2007) create a variable named ONEPCT, depicting the currency unit change in the value of a CEO’s share and option holdings coming from a 1% increase in the firm's share price according to Equation 3.

$$ONEPCT_{it} = 0.01 * PRICE_{it} * (SHARES_{it} + OPTIONS_{it} * DELTA_{it}) \quad (3)$$

The first three inputs, Price, Shares, and Options, are simple to gather and estimate. Using annual reports, the CEO's share and option data were gathered for the end of the year. To

effectively match this, the year-end share price was used and sourced through Capital IQ. The judgmental part regarding this formula regards the estimation of the options Delta. To estimate the options Delta, i.e., how much an increase of 1% in the bank's share price increases the owners of the options' wealth, Bergstresser and Philippon (2007) assume a Delta of 1 for options deep in the money[9] and follow Core and Guay's (2002) approach of using a simplified Black-Scholes valuation for the options deep out of the money. We find this simplified approach naive as the author's assumption relating to the Delta of options that are deep in the money is an oversimplification that could distort the true value of ONEPCT. Therefore, we took a slightly different approach by utilizing an options calculator to directly calculate an estimation of the Delta for options with a strike price between 0.5 of the current share prices and 2 times over the current share price.[10] In Table 3, these Deltas are displayed over our nine-year period. Based on our analysis of the existing option portfolio of executives, the average time to maturity for the options was three years. To match this, the three-year EURIBOR[11] rate was used as the risk-free rate, because the EURIBOR represents, for a creditworthy European bank with low credit risk, the cost of lending from another European bank. This, coupled with the fact that EURIBOR is commonly used as the benchmark for options held within the Eurozone, convinces us that it serves as a suitable proxy for the risk-free rate applicable to options held in European banks (European Central Bank, 2021). The EURIBOR risk-free rate has been mostly negative these last nine years with a low of -0.75%. These negative rates are due to an extended period of low inflation rates and slow economic growth which has led to a surplus of savings and a shortage of profitable investments (Davis, 2019). Therefore, these low returns are used as risk-free rates as they reflect the interest one would receive on most low-risk instruments. By going through the bank's annual reports, different strike prices were extracted for the banks whose CEOs owned options. We then went back in time to approximate which year most of the CEO's options were acquired or rewarded and used that year's strike price. For our dividend yield and sigma, yearly averages were estimated for our sample. The dividend yields were calculated by dividing the yearly dividends by the closing share price, and from this creating an average dividend yield for each calendar year. The sigma was determined by calculating the natural logarithmic returns for each bank annually, followed by computing the standard deviation for each bank. This standard deviation was then transformed into a specific sigma for each year, considering data from all banks. As presented in Table 2, even when the strike price is half of the current share price, the option calculator still does not consider the Delta of the option to be equal to one showing the effects of not using the assumption by Bergstresser and Philippon (2007). By implementing these variables into Equation 3, it is derived how much wealth a CEO gains from a 1% percent increase in share price.

[9] It should be noted that Bergstresser and Philippon (2007) do not exactly disclose what they define as deep in the money, however, as shown in Table 3 significant differences can occur up to a strike price that is at 50% of the current share price.

[10] The option deltas were calculated through the DerivaGem option calculator.

[11] Euro Interbank Offered Rate (European Central Bank, 2021).

Table 3. Delta values for options

Strike price \ Year	2014	2015	2016	2017	2018	2019	2020	2021	2022
<0.5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.5	0.8772	0.9864	0.9838	1.0000	1.0000	1.0000	1.0000	1.0000	0.9113
0.6	0.8151	0.8851	0.8817	0.9144	1.0000	0.9182	0.9352	1.0000	0.8312
0.7	0.7574	0.7912	0.7878	0.8067	0.9411	0.8181	0.8247	1.0000	0.7587
0.8	0.7038	0.7040	0.7013	0.7078	0.7619	0.7210	0.7203	0.8068	0.6924
0.9	0.6540	0.6237	0.6220	0.6181	0.6131	0.6291	0.6233	0.6248	0.6321
1	0.6079	0.5506	0.5503	0.5375	0.4899	0.5444	0.5353	0.4782	0.5771
1.1	0.5655	0.4850	0.4859	0.4659	0.3887	0.4680	0.4569	0.3617	0.5273
1.2	0.5264	0.4264	0.4285	0.4029	0.3065	0.4003	0.3880	0.2709	0.4820
1.3	0.4903	0.3744	0.3777	0.3478	0.2406	0.3412	0.3286	0.2011	0.4410
1.4	0.4571	0.3286	0.3326	0.3001	0.1882	0.2900	0.2774	0.1482	0.4038
1.5	0.4264	0.2884	0.2931	0.2586	0.1469	0.2461	0.2338	0.1087	0.3701
1.6	0.3982	0.2532	0.2585	0.2230	0.1143	0.2084	0.1968	0.0795	0.3396
1.7	0.3724	0.2223	0.2280	0.1925	0.0890	0.1766	0.1658	0.0581	0.3119
1.8	0.3485	0.1953	0.2012	0.1661	0.0693	0.1496	0.1395	0.0423	0.2868
1.9	0.3262	0.1717	0.1778	0.1435	0.0540	0.1266	0.1173	0.0307	0.2638
2	0.3059	0.1512	0.1573	0.1241	0.0420	0.1072	0.0988	0.0224	0.2431
>2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Yield	3.35%	3.12%	3.21%	3.10%	4.07%	2.11%	2.59%	3.65%	3.99%
Sigma	50.82%	35.13%	36.09%	32.94%	24.93%	30.08%	29.75%	21.87%	45.37%
Risk free rate	0.33%	-0.17%	-0.45%	-0.65%	-0.45%	-0.53%	-0.58%	-0.75%	0.02%

This table shows the Delta values over nine years for options with a strike price between 50% and 200% of the share price. The data is gathered from DerivaGem who calculated the Delta of options with a strike price of below 50% of the share price as 1 and we assumed that the Delta was 0 for options whose strike price was more than double the current share price. The table also shows the estimated yields, sigmas, and risk-free rates for each of these nine years.

The next step is to put this wealth increase in relation to the CEO's total annual remuneration as shown in Equation 4. As intuition dictates, it is the percentage of total remuneration, not the absolute amount, that comes from the share price that determines the incentive to manipulate one's share price.

$$MMI_{it} = \frac{ONEPCT_{it}}{(ONEPCT_{it}+SALARY_{it}+BONUS_{it})} \quad (4)$$

By dividing the ONEPCT variable with ONEPCT plus the CEO's salary and different bonuses, it is derived how share price increases impact the CEO's total annual remuneration. Both the salary and the bonus figures were gathered in the same manner as the shares and options data, by manually going through annual reports. We expect MMI to have a negative correlation with LLP in the IFRS 9 era since it is anticipated that managers with high MMI want to increase share price by showing a stronger net income by recognizing fewer LLP.

A limitation of this measurement is that it neglects the potential decision-making effect of long-term equity incentive plans. Nonetheless, considering that the CEOs do not yet own the shares and still need to meet certain requirements to receive the shares, there is uncertainty about whether the CEOs will eventually meet the requirements. Therefore, the share interests that could be potentially gained through long-term incentive plans are neglected. Additionally, this measurement neglects the effect of deferred compensation, the so-called inside debt, as discussed in Hagendorff (2019). A further limitation is that the formula does not provide clear guidance on how to deal with a change in CEOs during the year. In annual reports, banks disclose, in case of a change in CEO, how much each CEO was paid for their duties as CEO.

Therefore, our study calculates the combined ONEPCT and puts this into Equation 4 together with the combined salary and bonus payments. A fair critique on the usage of this measurement in combination with the income smoothing hypothesis regards volatility. In option valuation, increased volatility would benefit the valuation of options out of the money (Black and Scholes, 1973). When investigating income smoothing where the aim is to reduce volatility in earnings, the use of this metric may give rise to concerns, as it could be argued that certain CEOs may deliberately seek to increase volatility to increase the value of their option portfolio, especially if a substantial portion of the portfolio comprises of options out of the money. However, our measurement is still valid because an increased share price has a larger effect on the value than the volatility (see Table 3).

4.2.4 EBTLLP

Our second independent variable is earnings before taxes and loan loss provisions (EBTLLP). To measure an earnings metric to analyze income smoothing and the relationship between earnings and LLP, our study has copied the EBTLLP variable from Ahmed et al. (1999) and Anandarajan et al. (2007). Their studies take EBTLLP and divide it by average total assets and use this as a metric of the operating performance of the company. Intuitively there should exist a negative correlation between EBTLLP and LLP in case of no earnings management. Since the bulk of most banks' income comes from their outstanding loans when a bank has a good year with a high EBTLLP, few of their outstanding loans should logically default. When this is not the case and one could observe a positive correlation between the two variables, then existing studies claim that managers use LLP to smooth earnings (Anandarajan et al., 2007; Ahmed et al., 1999). Since it is anticipated that earnings management is present, a positive correlation to LLP is expected.

4.2.5 Controlling for the non-discretionary component of LLP

An existing challenge for earnings management research on banks is the lack of a generally accepted abnormal accrual model (Beatty and Liao, 2014). When researching earnings management, it is key to model an abnormal or discretionary component as that is the part of the accrual executives can use to manage earnings (Subramanyam, 1996). Therefore, researchers studying earnings management in banks must find a way to overcome the absence of a generally accepted abnormal accrual model and increase the validity of its findings. Many studies aim to control for the non-discretionary component of the LLP by including controls that capture the non-discretionary component of the LLP (Curcio and Hasan, 2015; Bouvatier and Lepetit, 2012; Gebhardt and Novotny-Farkas, 2011; Ahmed et al., 1999). In our study, a similar approach will be followed to capture the non-discretionary component of the LLP which allows us to make inferences regarding earnings management. To explain the non-discretionary component of the LLP, our study takes inspiration from Gebhardt and Novotny-Farkas (2011) who include a measure of non-performing loans and change in loans Additionally, our study introduces two more control variables that aim to capture the non-discretionary component.

ΔLoans is captured by calculating the change in outstanding loans and dividing this by lagged total loans. This change in loans will affect how much LLP the bank must recognize considering that LLP are now recognized at initial recognition of the loan (PwC, 2017). Considering that a higher number implies a bigger change in the loan portfolio, it is expected that more LLP will be recognized. Therefore, a positive coefficient is anticipated.

Our second non-discretionary component is a little bit different from the non-performing loans used by Gebhardt and Novotny-Farkas (2011). The reason non-performing loans are not used is the observed data quality in the databases for this metric. With Capital IQ, there was a considerable number of data points missing for non-performing loans and when trying to complement the missing amounts with other databases (Eikon) or annual report data, significant differences were observed between the data available. Therefore, the second control to capture the non-discretionary component of the LLP is the accounting Z-score developed by Boyd et al. (1993) which is used as a proxy for bank risk. The following formula is used to calculate this risk metric:

$$Z_{it} = \frac{(\pi_{it}/A_{it})+(E_{it}/A_{it})}{Sr_{it}} \quad (5)$$ [12]

A lower Z-score indicates a higher level of operational risk, which in turn suggests a greater likelihood of non-performing loans and requires a higher allocation of LLP. Therefore, a negative coefficient is expected. A critique may be that this is not an accurate metric to capture the risk of non-performance, however, historical research has shown that the market is relatively accurate in estimating what actual loan losses will look like (Bischof et al., 2021). Therefore, this metric is considered a good substitute for non-performing loans.

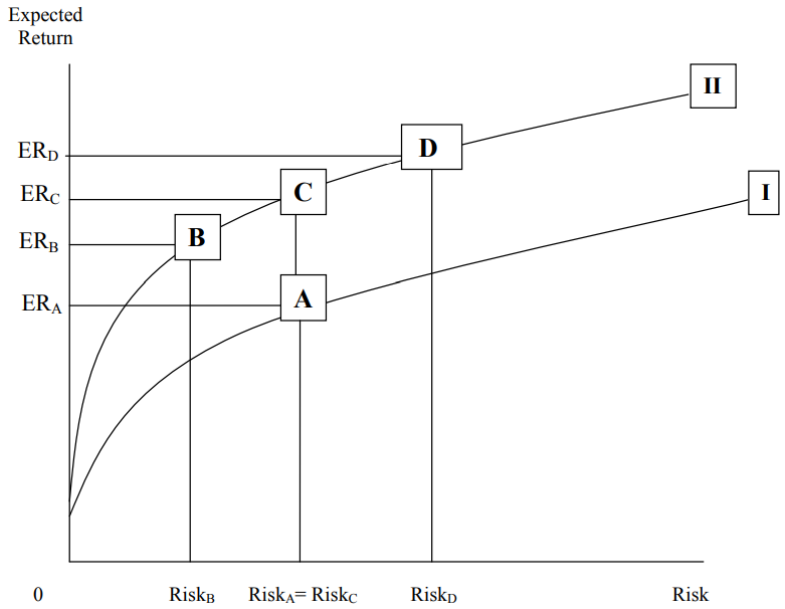
Our third non-discretionary control variable is ΔGDP (Gross Domestic Product). ΔGDP is a proxy for the real change in a certain country's economic growth. The purpose of this variable is to serve as a proxy for the effect of the macroeconomic environment on the recognition of LLP. The idea is that when the economy is growing most companies often borrow more to expand their operations. The number of outstanding loans then tends to increase in periods with high changes in economic growth. Anandarajan et al. (2007) argue that banks need to take account of this additional risk and assume a positive correlation between ΔGDP and LLP. What the authors might not take into consideration is that an increase in economic growth often also leads to a more prosperous economy where defaults become less frequent. So, we predict that the correlation between ΔGDP and LLP is as likely to be negative despite Anandarajan et al. (2007) arguments and findings.

Our fourth non-discretionary control is Size measured as the natural logarithm of total assets. There is one key reason why Size is included, namely diversification. Hughes and Mester (2013) show that bigger banks that have the same expected return carry less risk, as displayed

[12] πit depicts the market value of profit, which is calculated as the Δmarket capitalization for year t, Ait is the market value of the bank as calculated by a sum of the market capitalization and debt according to Capital IQ, Eit is the market capitalization of the firm, Sr is the estimated standard deviation of $\frac{\pi_{it}}{A_{it}}$.

in Figure 3, implying that bigger banks are expected to recognize fewer LLP on their loans due to a more diversified loan portfolio.

Figure 3. Risk-return frontiers for banks - Hughes and Mester (2013)



This figure depicts risk-return frontiers for banks that have smaller (I) and larger (II) outputs.

4.2.6 Additional controls, fixed effects, and standard error treatment

In addition to the variables controlling for the non-discretionary component of the LLP, our study has implemented additional controls to capture additional variation.

Our first discretionary control is Tratio which is calculated by dividing Tier 1 capital by the minimum required Tier 1 capital. Ahmed et al. (1999) and Anandarajan et al. (2007) find evidence that the recognition of LLP was used as a tool to manage capital. The purpose of this variable is to control for capital management motivations in our study and like Ahmed et al. (1999) and Anandarajan et al. (2007), a negative coefficient is expected. The coefficient is expected to be negative because banks with a higher Tier 1 ratio are better capitalized and feel more comfortable with taking a more non-conservative approach due to their ability to absorb losses.

Our second discretionary control is a dummy variable capturing whether the bank was being audited by a Big 4 firm as a proxy for audit quality. The reason Big4 is included is that the skill of the auditors to analyze discretionary decisions and ensure that financial statements are fairly represented will make it harder for bank managers to manage earnings. It is assumed that these abilities will be more prevalent among Big 4 companies than other auditing firms. Since we theorize that banks will manage earnings by recognizing fewer LLP, a positive correlation between Big4 against LLP is expected.

Our third discretionary control is a proxy of the level of supervision the banks face. This control (ECBS) is a dummy variable receiving a 1 if the bank is directly supervised by the European

Central Bank (ECB), if it is ranked as a G-SII[13] by the EBA, or if it is ranked as an O-SII by the EBA. According to Goddard et al. (2019), banks are eligible for direct supervision by the ECB if they meet any of the following criteria: having assets exceeding €30 billion, having assets above €5 billion and constituting 20% of the GDP of the country they are located in, being one of the top three banks in terms of size within the country, engaging in significant cross-border activity, or having received bailout assistance during the financial crisis. The reason ECBS is included is that banks that face more supervision are less likely to manipulate LLP and find a significant positive relationship, implying that higher levels of supervision are expected to reduce earnings management. Additionally, Nicoletti (2018) found that supervision resulted in earlier provisioning for loan losses and is therefore expected to have a positive coefficient.

Our fourth, and final, discretionary control is loan loss allowance (LLA) measured as the ratio of lagged LLA divided by lagged loans. This variable is used to control for the existing loan loss reserves on the bank's balance sheet to account for potential loan losses in the current loan portfolio. Considering banks already have a loan loss reserve for their existing loan portfolio, banks with a higher loan loss reserve are expected to recognize fewer LLP throughout the year. On the other hand, it could work as a signaling device to communicate a riskier loan portfolio resulting in potentially increased loan losses. Therefore, there is uncertainty about the direction of the coefficient. In addition to the lagged measurement being logical, a benefit of the lagged measurement is its reduction of potential endogeneity bias. One may argue that LLA may be viewed as a non-discretionary component, however, as shown by Gebhardt and Novotny-Farkas (2011), there is a discretionary nature to this variable as LLA is a factor of LLP that has been recognized historically and could play a factor in income smoothing decisions.

To limit the effect of omitted variable bias, fixed effects are used. Like Leventis et al. (2011) and Fonseca and González (2008), Country and Year fixed effects are used. In our beliefs, Country fixed effects serve an important purpose because Fonseca and González (2008), and Mechelli and Cimini (2021) show the importance of corporate governance, culture, and investor protection backgrounds in accounting for LLP. Therefore, Country fixed effects are used to control for time-invariant country effects. Finally, Year fixed effects are used to account for effects that are bank-invariant but change over time (Wooldridge, 2010). Lastly, it was decided that our standard errors will be clustered on the firm level in our regressions. Clustering standard errors on the firm level provides two main benefits. Firstly, it provides us with unbiased standard errors that are robust to heteroskedasticity and ensures that no Gauss-Markov assumptions for unbiased OLS regressions are violated (Wooldridge, 2010). Secondly, because our regressions are run on panel data, clustering our standard errors eliminates the impact potential serial correlation has on our results (Wooldridge, 2010). With the clustered standard errors, the relationships between variables can be understood better, and make more reliable inferences from our results.

[13] G-SII is an abbreviation of Globally Systemic Important Institution and O-SII is an abbreviation of Other Systemic Important Institution. These terms are given to firms that are viewed as important to the macro-economy or the macro-economic climate of a specific region (European Banking Authority, 2016).

5. Descriptive Statistics and Results

This chapter introduces the regressions and aims to provide a descriptive overview of our data. Furthermore, our regression results will be linked back to the hypothesis and the robustness of our results will be discussed.

5.1 Descriptive statistics[14] [15]

Table 4. Descriptive statistics

	Full sample						IAS 39						IFRS 9					
Variable	N	Mean	Min	Max	Median	SD	N	Mean	Min	Max	Median	SD	N	Mean	Min	Max	Median	SD
LLP	694	0.0044	-0.0170	0.0633	0.0021	0.0080	268	0.0065	-0.0102	0.0633	0.0031	0.0094	426	0.0031	-0.0170	0.0488	0.0017	0.0067
MMI	670	0.0117	0.0000	0.0479	0.0045	0.0154	266	0.0118	0.0000	0.0479	0.0037	0.0163	404	0.0117	0.0000	0.0479	0.0052	0.0148
EBTLLP	698	0.0124	-0.0191	0.0902	0.0107	0.0105	268	0.0130	-0.0191	0.0902	0.0114	0.0116	430	0.0121	-0.0099	0.0691	0.0103	0.0098
ΔLoans	695	0.0780	-1.0000	2.0023	0.0453	0.1971	268	0.0699	-0.5351	2.0023	0.0368	0.2109	427	0.0831	-1.0000	1.4984	0.0490	0.1880
Z-score	666	5.9019	-77.067	87.234	4.7054	8.3360	253	5.1358	-77.067	16.777	5.2710	5.8986	413	6.3712	-1.4626	87.234	4.1672	9.5025
ΔGDP	698	1.9642	-11.300	24.400	2.0000	3.5931	268	2.3799	-0.4000	24.4	2.1000	2.2946	430	1.7051	-11.300	13.600	2.0000	4.1861
Size	698	9.7330	4.838	14.836	9.2033	2.8380	268	9.7860	4.8375	14.626	9.2488	2.9603	430	9.6999	5.0775	14.836	9.1787	2.7620
Tratio	698	2.7935	1.3617	4.7833	2.7667	0.5657	268	2.5762	1.3617	4.7833	2.4917	0.5817	430	2.9289	1.7167	4.4800	2.9033	0.5113
Big4	698	0.9427	0	1	1	0.2326	268	0.9552	0	1	1	0.2072	430	0.9349	0	1	1	0.2470
ECBS	698	0.3668	0	1	0	0.4823	268	0.3843	0	1	0	0.4873	430	0.3558	0	1	0	0.4793
LLA	695	0.0323	0.0000	0.2040	0.0178	0.0374	268	0.0402	0.0000	0.2040	0.0233	0.0423	427	0.0273	0.0000	0.2036	0.0147	0.0331

The table shows the following descriptive statistics for our entire sample, our IAS 39 sample, and our IFRS 9 sample: Number of Observations (N), Mean, Minimum (Min), Maximum (Max), Median, and standard deviations (SD). These descriptive statistics are based on the 90 banks that are included in our sample that are headquartered in 15 countries. LLP measures the loan loss provisions, MMI measures managerial monetary incentives, EBTLLP measures earnings, ΔLoans measure the change in a bank's loan portfolio, Z-score measures bank risk, ΔGDP measures the change in gross domestic product, Size measures the total assets of the bank, Tratio measures a bank's capital buffer, Big4 measures whether the bank is audited by a Big 4-firm, ECBS measures supervision, and LLA measures the existing loan loss reserve.

[14] There are fewer observations for MMI due to Italian banks publishing their executive remuneration data in the end of April or early May which are neglected in our study. For Z-score, there are fewer observations owing to banks going public during the research period resulting in less data regarding market capitalization.
[15] For our sample, LLP consist of 36.5% of EBTLLP indicating the magnitude of this accrual.

Table 4 presents some of our descriptive statistics. It shows that across our research period, on average, a listed European bank annually recognizes LLP worth 0.4% of their outstanding loans. Furthermore, the table also shows that the average CEO at listed European banks receives 1.2% of their total annual remuneration from a 1% increase in share price. An interesting observation is that both means have declined from the IAS 39 era to the IFRS 9 era, suggesting that a smaller portion of the CEO's total annual remuneration is tied to share price increases. That LLP have decreased may either indicate that banks recognize fewer LLP despite the recent macroeconomic turbulence or that they have proportionally granted more loans. Also shown in Table 4, almost our entire sample is audited by a Big 4 company, but the overall supervision level is dispersed as approximately only a third of our sample is supervised by the ECB or is viewed as systemically important by the EBA. Even though the change is small, both the ECB supervision and the number of banks using a Big 4 auditor have slightly decreased from the 2014-2017 period to the 2018-2022 period, indicating that banks are a bit less monitored in our IFRS 9 sample. For most of our variables, a clean normal distribution was observed, except for MMI. MMI had numerous influential outliers that distorted the normal distribution of our data set which eroded the possibility to make generalizable deductions. Thus, MMI was winsorized, and not trimmed, at the 10th and 90th percentile as these extreme and influential outliers still are important observations (Aguinis et al., 2013).

5.2 Hypotheses and Results

To address our hypotheses, five Ordinary Least Squares (OLS) regressions were conducted, as outlined in Table 6. Regressions 1 and 2 focus on the relationship between MMI and LLP with Regression 2 including the interactive variable MMI*POST to explore potential differences in the correlation between MMI and LLP under the different accounting regimes. For both these regressions and for Regression 3, a negative correlation was found between MMI and LLP on a significance level between 1% and 5%. This indicates that if a CEO’s total annual remuneration is more tied to increases in share price, that bank will probably recognize fewer LLP under IAS 39. Since the same correlation was not found for regressions 4 and 5, this relationship can only be supported for banks that do not have a low level of EBTLLP. As a positive correlation was found between MMI*POST and LLP on a 5% significance level, our findings support the notion that CEOs with a high level of MMI recognize more LLP under IFRS 9.

In regression 1 to 5, a positive correlation is discovered on a 1% significance level between EBTLLP and LLP indicating that banks do align these variables. For these three regressions, three additional interactive variables were introduced. Regression 3 tested the interactive variable EBTLLP*POST, but no significance was found, meaning we cannot find evidence of alignment between EBTLLP and LLP for the average bank in the IFRS 9 era. Regression 4 introduced the interactive variable EBTLLP*MMI to assess whether banks with higher levels of MMI exhibited a stronger association between EBTLLP and LLP, but no significance was observed for this variable either. Finally, Regression 5 incorporated all previous interactive variables and found no significance for MMI*POST but did find a negative significance on a 1% level for EBTLLP*POST and EBTLLP*MMI. Furthermore, Regression 5 includes the

interactive variable EBTLLP*MMI*POST, which exhibited a positive correlation against LLP at a significance level of 1%.

Furthermore, as shown in Table 6 two of our controls are significantly correlated against LLP. Firstly, Tratio is negatively significant at the 1% level in all regressions against LLP, meaning that the better capitalized the bank is, the fewer LLP are required for them to absorb losses which is in line with Ahmed et al.'s (1999) and Anandarajan et al.'s (2007) results. The other significant control that instead shows a positive correlation against LLP is LLA which also follows Ahmed et al.'s (1999) and Anandarajan et al.'s (2007) findings. This means that when a bank has higher LLP reserves, it will also recognize more LLP. An explanation for this correlation is that a higher loan loss reserve could be viewed as a sign of a lower-quality loan portfolio that requires more provisioning. A negative correlation between ΔGDP and LLP was found, but only at the 10% significant level. Even though we cannot say that higher growth in GDP, in general, lowers the number of recognized LLP, one might think extra about Anandarajan et al.'s (2007) assumption that banks increase their risk calculations when more companies increase their borrowing. Instead, our explanation that fewer legal entities might find themself in financial distress when the economy is on an upswing might be worth some consideration. For ΔLoans, Z-score, Size, and ECBS, no significance was found which implies that we cannot determine whether these variables influence LLP.

Table 5. Pearson correlation coefficients

	LLP	MMI	EBTLLP	ΔLoans	Z-score	ΔGDP	Size	Tratio	Big4	ECBS	LLA	VIF
LLP	1.0000											-
MMI	0.0441	1.0000										1.28
EBTLLP	0.4592***	0.1739***	1.0000									1.53
ΔLoans	0.0055	0.2012***	0.2157***	1.0000								1.15
Z-score	-0.1231**	-0.0290	-0.0466	-0.0488	1.0000							1.06
ΔGDP	-0.1661***	-0.0565	0.0067	0.0139	0.0929**	1.0000						1.05
Size	0.0515	0.2208***	-0.4189***	-0.1219**	-0.0096	-0.0189	1.0000					4.40
Tratio	-0.2923***	-0.0935**	-0.0259	-0.0404	0.1093***	0.0536	-0.2071***	1.0000				1.21
Big4	0.0811**	0.1378***	0.0374	0.0339	-0.1065***	0.0224	0.2517***	0.0162	1.0000			1.2
ECBS	0.0125	0.0959**	-0.3641***	-0.1802***	-0.0586	-0.0226	0.8302***	-0.1502***	0.1748***	1.0000		3.54
LLA	0.3334***	-0.1569***	0.2077***	-0.1102**	-0.1160***	0.1003***	-0.1844***	-0.0786**	0.1683***	-0.0938**	1.0000	1.27

***, **, and * respectively denote significant differences for 0.01, 0.05, and 0.1 significant levels. LLP measures the loan loss provisions, MMI measures managerial monetary incentives, EBTLLP measures earnings, ΔLoans measure the change in a bank's loan portfolio, Z-score measures bank risk, ΔGDP measures the change in gross domestic product, Size measures the total assets of the bank, Tratio measures a bank's capital buffer, Big4 is a dummy measuring whether the bank is audited by a Big 4-firm, ECBS is a dummy measuring supervision, and LLA measures the existing loan loss reserve.

Table 6. Results of regression model

	Hypothesis 1A & 1B		Hypothesis 2A, 2B, & 2C		
	1	2	3	4	5
Intercept	0.0087	0.0090	0.0087	0.0079	0.0066
	(2.23)**	(2.33)**	(2.22)**	(2.12)**	(1.68)*
MMI	-0.0576	-0.1181	-0.0570	-0.0170	0.0058
	(2.30)**	(2.89)***	(2.11)**	(0.40)	(0.11)
EBTLLP	0.3246	0.3158	0.3293	0.3954	0.5337
	(4.69)***	(4.75)***	(3.52)***	(5.04)***	(3.12)***
ΔLoans	-0.0024	-0.0024	-0.0023	-0.0021	-0.0015
	(1.63)	(1.76)*	(1.62)	(1.45)	(1.18)
Z-score	-0.0001	-0.0000	-0.0000	-0.0004	-0.0000
	(1.59)	(1.53)	(1.61)	(1.72)*	(1.40)
ΔGDP	-0.0002	-0.0001	-0.0002	-0.0002	-0.0001
	(1.76)	(1.58)	(1.78)*	(1.73)	(1.28)
Size	-0.0001	-0.0001	(0.00)	-0.0001	-0.0001
	(0.39)	(0.55)	(0.38)	(0.29)	(0.14)
Tratio	-0.0036	-0.0036	-0.0036	-0.0037	-0.0030
	(4.00)***	(4.10)***	(4.00)***	(4.14)***	(3.56)***
Big4	0.0013	0.0012	0.0013	0.0012	0.0010
	(1.58)	(1.56)	(1.62)	(1.51)	(1.27)
ECBS	0.0023	0.0023	0.0023	0.0022	0.0020
	(1.38)	(1.43)	(1.39)	(1.36)	(1.39)
LLA	0.0625	0.0625	0.0627	0.0616	0.0647
	(2.24)**	(2.26)**	(2.28)**	(2.15)**	(2.39)**
POST	-	-	-	-	-
	-	-	-	-	-
MMI* POST	-	0.1144	-	-	-0.1080
	-	(2.20)**	-	-	(1.46)
EBTLLP*POST	-	-	-0.0093	-	-0.3819
	-	-	(0.09)	-	(3.12)***
EBTLLP*MMI	-	-	-	-3.1130	-9.0629
	-	-	-	(1.20)	(3.80)***
EBTLLP*MMI*POST	-	-	-	-	16.148
	-	-	-	-	(3.88)***
βMMI*POST-βMMI	-	0.2325	-	-	-0.1134
	-	(2.64)**	-	-	(1.00)
βEBTLLP*POST-βEBTLLP	-	-	-0.3386	-	-0.9156
	-	-	(1.84)*	-	(4.16)***
βEBTLLP*MMI-βEBTLLP	-	-	-	-3.5090	-9.5966
	-	-	-	(1.33)	(3.86)***
βEBTLLP*MMI*POST-βEBTLLP*MMI	-	-	-	-	25.2100
	-	-	-	-	(4.14)***
Number of observation	638	638	638	638	638
Adjusted R^2	0.43	0.44	0.43	0.43	0.47
F-statistic	6.797***	6.831***	7.037***	12.50***	22.33***

The regression table shows our OLS regressions. ***, **, and * respectively denote significant differences for 0.01, 0.05, and 0.1 significant levels. The number in the parentheses represents the absolute values of the t-statistics. LLP measures the loan loss provisions, MMI measures managerial monetary incentives, EBTLLP measures earnings, ΔLoans measures the change in a bank's loan portfolio, Z-score measures bank risk, ΔGDP measures the change in gross domestic product, Size measures the total assets of the bank, Tratio measures a bank's capital buffer, Big4 is a dummy measuring whether the bank is audited by a Big 4-firm, ECBS is a dummy measuring supervision, LLA measures the existing loan loss reserve, and POST is a dummy measuring the accounting regime. Furthermore, interactive variables are created to estimate the effect of the accounting changes and the effect of remuneration on the relationship between MMI, EBTLLP, and LLP. For the interactive variables, a linear combination of estimators (Lincom) test was conducted. The coefficients and significance levels of the Lincom test are provided and follow the same logic as the normal regression.

5.2.1 Hypotheses 1A and 1B

Regressions 1 and 2 are related to our first hypothesis, that a bank whose CEO's total annual compensation is more dependent on increases in share price will recognize fewer LLP (1A) and that this correlation will be stronger in the IFRS 9 era compared to the IAS 39 era (1B). Since a significant negative correlation between MMI and LLP was found in Regression 1, our results support Hypothesis 1A. We suspect that if a CEO's remuneration is more dependent on increases in share price, the CEO will recognize fewer LLP if the bank does not have a low level of EBTLLP. In contrast, Regression 2 revealed a positive correlation at the 5% significance level between MMI*POST and LLP. This suggests that all the negative correlations identified between MMI and LLP are attributed to the IAS 39 era. This finding is further supported by the significant negative correlation between MMI and LLP in Regression 2, which exclusively considers observations from the IAS 39 period. Furthermore, these findings are confirmed by our Lincom test which shows that MMI*POST is significantly higher than MMI, implying that executives with high MMI recognize more LLP in the IFRS 9 era. Overall, we then find enough evidence to support that CEOs with higher MMI recognize fewer LLP. However, because of the positive effect between MMI*POST and LLP, we cannot state that this correlation has become stronger after the change in accounting standards.

5.2.2 Hypotheses 2A, 2B, and 2C

Regressions 1 to 5 are related to our hypotheses 2A, 2B & 2C, that there exists a positive correlation between EBTLLP and LLP (2A), that this correlation is stronger under IFRS 9 than under IAS 39 (2B) and that this correlation will be stronger for CEOs with a higher level of MMI under IFRS 9 than under IAS 39 (2C). Since significance was found for all these regressions between EBTLLP and LLP with a positive coefficient, this illustrates that banks in general are aligning their EBTLLP levels with their LLP or, as research perceives it, smooth their income. This goes in line with the findings of Leventis et al. (2011), Fonseca and González (2008), and Anandarajan et al. (2007) as well as supporting our Hypothesis 2A.

Our results are a little bit ambiguous to interpret when comparing the correlations of the interactive variables in regressions 3, 4, and 5. Regression 3, for example, shows no significant correlation between the interactive variable EBTLLP*POST and LLP. This indicates that when only studying IFRS 9, no sign of alignment between EBTLLP and LLP could be found for the average bank. Since Regression 4 as well did not provide any significance for the interactive variable EBTLLP*MMI against LLP, our results could also not prove that high levels of MMI are a catalyst for alignment between EBTLLP and LLP when studying the entire research period. However, Regression 5 found a positive correlation between EBTLLP*MMI*POST and LLP, demonstrating that when only studying companies with a high level of MMI, stronger evidence of income smoothing is found under IFRS 9. Furthermore, since Regression 5 also found a negative correlation between EBTLLP*POST and LLP, this means that for banks with a low to medium level of MMI, the opposite is true. Additionally, Regression 5 shows a negative correlation for the interactive variable EBTLLP*MMI which means when solely analyzing the IAS 39 era, one can observe that EBTLLP and LLP once again move in opposite directions. However, since a positive correlation was found between EBTLLP and LLP in

Regression 5, we found evidence supporting that banks with low levels of MMI do align EBTLLP and LLP even under IAS 39. After running regressions and a WALD-test, significant results were observed for EBTLLP, EBTLLP*POST, and EBTLLP*MMI*POST (F-statistics of 25.23, 9.76, and 15.06). The analysis revealed that the latter variables exhibited larger coefficients, indicating that banks with high levels of MMI align their LLP with EBTLLP to a higher degree under IFRS 9 compared to IAS 39. From all of this, it can be deduced that the amount of income smoothing has increased from the IAS 39 era to the IFRS 9 era but only for banks with high levels of MMI. Hence, our data support the statement that there exists a positive correlation between EBTLLP and LLP. For the average bank, we could however not say that this correlation has become stronger from IAS 39 to IFRS 9, but our data does support the notion that this correlation has become stronger after the change in accounting standards for banks with high levels of MMI.

5.3 Robustness checks and sensitivity analysis

This section aims to describe our robustness tests and discuss the concept of multicollinearity with our results. To test for robustness and sensitivity, three different robustness checks will be done to verify the results, regressions without fixed effects, regressions excluding Spanish and British bank observations, and regressions with a balanced dataset.

5.3.1 Multicollinearity

Table 5 displays our Pearson Coefficient Table, which is used to assess the correlation between our variables. This analysis helps us identify any potential multicollinearity issues within our dataset that could impact the reliability and validity of our findings. In combination with a Pearson Coefficient Table, a Variance Inflation Factors test (VIF) was undertaken to test for multicollinearity. Something a little worrisome is that both MMI and EBTLLP are correlated against LLA which itself is correlated against LLP. This indicates that some of the correlations found between LLP and EBTLLP and MMI could be hidden behind LLA. The VIF value for LLA is only 1.27 which is not high enough to justify expelling the variable from our model (Bryman and Bell, 2013). The largest VIF-value is for the variable Size of 4.40, meaning that the coefficient estimate for Size is 4.40 times higher than it would have been if our model did not have any multicollinearity which is not considered to be high enough to justify the variable to be expelled from our model. Furthermore, none of the correlation coefficients surpass the absolute value of 0.9, suggesting that concerns related to multicollinearity can be disregarded. One may argue that Size and ECBS are too correlated, however, removing either of them would result in omitted variable bias. Therefore, it was decided to include both in our model. In Table 6, the independent variable POST is omitted because of multicollinearity. However, this is not a concern since our interest in POST lies in its interactive effects on our variables of interest, MMI, and EBTLLP.

5.3.2 Partially accounting for endogeneity bias

Despite the benefits of using fixed effects in panel data analysis, using fixed effects also has its limitations. A key limitation is that there is unobserved heterogeneity (Hill et al., 2020). Furthermore, when there are few periods and a larger number of cross-sectional identifiers,

there is a potential for biased coefficients to exist (Hill et al., 2020). Therefore, the regressions will be run without fixed effects to test the robustness of our results and see the impact of fixed effects. The results of the regressions without fixed effects can be found in Appendix 1. Overall, the results of our regressions without fixed effects are similar to the results of our core regressions model. The coefficients and significance stayed similar for most of our regressions that analyze income smoothing, however, the significance showing the effect of MMI on the usage of LLP under regressions 1 and 2 disappeared. Another difference is the significance of our controls. Because the fixed effects absorb a significant amount of variation, the explanatory power of our controls decreases. Without the fixed effects, the significance of our controls increases indicating that the controls are still relevant and useful in explaining variation. As expected, the exclusion of fixed effects does reduce the explanatory power of our model, however, this is not an area of concern.

5.3.3 Exclusion of Spanish and British Banks

When it comes to provisioning for loan losses and executive remuneration at banks Spain and the United Kingdom warrant special attention. Since the year 2000, Spain has been unique in its regulation of banks regarding provisioning for loan losses. Spanish regulation requires all banks to use a dynamic provisioning model, similar to IFRS 9, which is counter-cyclical compared to the previous IAS 39 (Saurian, 2009). Considering that this causes the POST treatment to have a different effect on the Spanish observations, all observations were dropped as a robustness check just as Curcio and Hasan (2015) did in their study. A second country that requires attention is the United Kingdom. During our research period, Brexit happened causing the United Kingdom to leave the European Union. One implication of this change is that British financial institutions are no longer under the supervision of the European Banking Authority, and as of January 1st, 2021, they are no longer subject to European legislation, such as the banking remuneration legislation (Enria, 2023). This could result in a change in the behavior of the British banks because of either stronger or weaker supervision. Therefore, as a robustness check, all British observations are dropped. The results from these regressions can be found in Appendix 2. Overall, the coefficients and significance levels are similar to those in our core model. Therefore, it is concluded that our results are not influenced by any potential biases caused because of the inclusion of British and Spanish banks.

5.3.4 Overall robustness

The overall robustness of our results is limited as our results for Hypothesis 1A and 1B change when running the regressions without fixed effects whilst there also seems to be attrition bias. This lack of robustness could be an effect of no existing results, results on opposite sides of the spectrum netting each other out, or several other reasons. Normally, one would increase the sample size in the study to limit potential biases and increase robustness, however, due to the limited size of the population, this is deemed unfeasible. The regression results for our robustness checks are included in our appendix to be as transparent as possible and provide the opportunity for the reader to consider this when reading our analysis.

6. Analysis

This chapter aims to synthesize our results with existing research. Through our synthesis, this chapter aims to develop an argument that explains the change in earnings management behavior in light of the accounting change and the effect remuneration has on this phenomenon.

By studying the income smoothing hypothesis, developed by Ahmed et al. (1999), in light of the accounting change from IAS 39 to IFRS 9, our findings result in interesting implications for listed European banks. As shown in Table 4, after the change to IFRS 9 fewer LLP have in fact been recognized. Furthermore, our results support the notion that EBTLLP was positively correlated against LLP under IAS 39, but we failed to find the same to be true for the IFRS 9 era. These outcomes were surprising since we had theorized to find proof that the average listed European bank performs more income smoothing in the IFRS 9 era compared to the IAS 39 era. This line of thinking was grounded in the understanding that IAS 39 provided limited discretion in the financial reporting process. We assume that the reason banks were able to smooth income under IAS 39 at all was because they were still allowed to define what constitutes as a default event. More interestingly is that we found a positive correlation between the interactive variable MMI*EBTLLP*POST and LLP but a negative correlation for MMI*EBTLLP in Regression 5. This indicates that when taking into consideration that different banks have different monetary incentive schemes, it seems clear that the banks who have higher levels of MMI smooth income under IFRS 9 whilst banks with high levels of MMI do not smooth income under IAS 39. We are thus of the belief that this is what could be attributed to the original model presented by Ahmed et al. (1999). Unlike us, Ahmed et al. (1999) found a negative coefficient between EBT*REG[16] and LLP. But since the authors anticipated that the regulatory change would facilitate earnings management, they took these results as proof that their hypothesis was faulty and that banks do not use LLP to smooth income. Instead, if one would compare the results of our interactive variable, MMI*EBTLLP*POST, with the findings of the comparable variable conducted by Anandarajan et al. (2007), it is easier to draw the deduction LLP are used for income smoothing. We argue that what separates our study and Anandarajan et al. (2007) from Ahmed et al. (1999) and explains why Ahmed et al. (1999) might have committed a type 2 mistake, is that Ahmed et al. (1999) neglected the impact of managerial incentives in their model. To determine whether banks can manage earnings through LLP and if this has become easier from one period to another, comparing the recognition practices of executives who are incentivized to smooth income with those that are not, facilitates finding valid results. Studies like Anandarajan et al. (2007), Leventis et al. (2011), and Curcio and Hasan (2015) show that income smoothing can still be found without controlling for potential executive incentive effects, however, Anandarajan et al. (2007) also present that incentives may be a considerable motivator to smooth income.[17] This raises the question of whether the results of Ahmed et al. (1999) would still be the same if they controlled for incentives. Additionally, our results also indicate the importance of a high level of EBTLLP. The regressions conducted on banks with

[16] This variable was Ahmed et al. (1999) version of what EBTLLP*POST is in our study.

[17] Anandarajan et al. (2007) show that income smoothing can be found through LLP both for banks with and without incentives to smooth income, although the correlation is much stronger for those with incentives.

low levels of EBTLLP did not provide any evidence of earnings management. Since Onali et al. (2021) show that the ECL model especially improves the monitoring of less profitable banks and the logic that less profitable banks would face more critical supervision, it appears reasonable that earnings management practices are more prevalent in better-performing banks.

Overall, our results already suggest the notion that banks smooth income through LLP and that this phenomenon has become stronger after the change in accounting standards, at least for banks with high levels of MMI. But unlike previous studies, we also analyze earnings management through LLP by testing if the amount of LLP recognized significantly differs between banks with high and low levels of MMI. Intuitively, we theorized that managers with high levels of MMI would recognize fewer LLP, which would lead to higher profits and thus to a higher share price. Since we find a negative correlation between MMI and LLP when studying the entire period, this would suggest that our theory has some merit to it. This is somewhat supported further by our findings in Regression 2 where our study provides evidence that banks with higher levels of MMI recognized fewer LLP under IAS 39. Even though we expected less earnings management in this period, we still assumed that a certain level of earnings management was possible during this period. Therefore, these results on their own do not go against our assumptions. However, what does go against our assumptions is that we find a positive correlation between MMI*POST and LLP, which turns our reasoning on its head. Thus far, we have argued that a CEO that desires to manage earnings is likely to recognize fewer LLP as well as it should be easier to manage earnings under IFRS 9 than under IAS 39. Since we find that managers with a high level of MMI recognize more LLP under IFRS 9, we must revisit these assumptions.

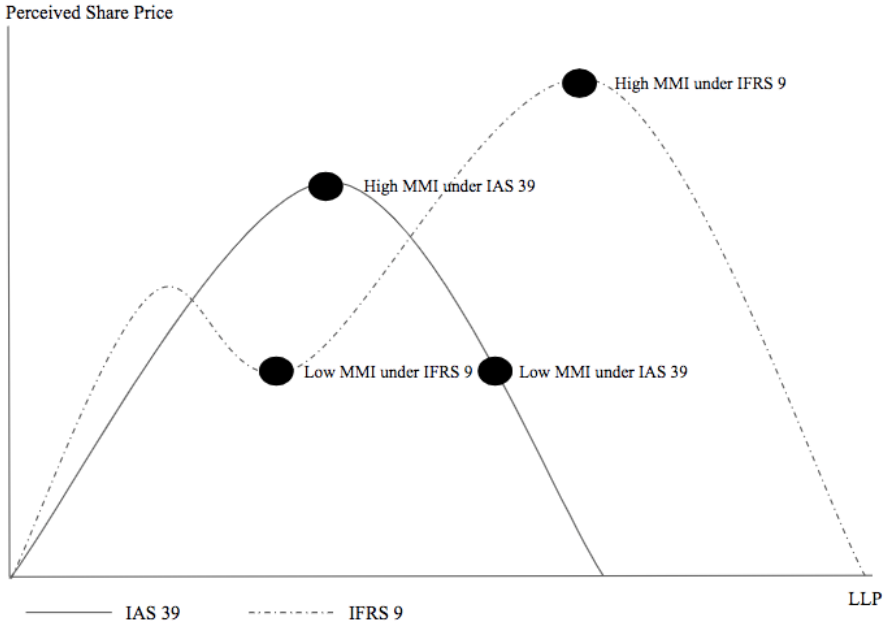
We see three possible explanations that could explain the positive correlation between MMI*POST and LLP: [1] it has not become easier nor more lucrative to manage earnings under IFRS 9 compared to under IAS 39, [2] LLP are not an appropriate tool for earning management or [3] fewer recognized LLP are not always desirable to maximize share price. To begin with, we will examine the first explanations. The change in accounting standards from IAS 39 to IFRS 9 was the most fundamental alteration in how European banks are supposed to recognize LLP in modern times. Under both accounting regimes, banks had limited discretion in accounting for LLP. However, with the implementation of IFRS 9, banks are now required to make a greater number of discretionary judgments concerning credit risk, thereby impacting their provisions for loan losses. By analyzing these parameters, it is straightforward to assume that it should have become easier to perform earnings management from 2018 onwards. However, it may be that the penalties for earnings management have increased or that regulators or auditors more harshly scrutinize the bank's provisioning model and hence have deterred banks from performing earnings management. These two suggestions do, however, not explain our positive correlation between MMI*POST and LLP. If earnings management would not take place under IFRS 9, we would not expect any correlation between MMI*POST and LLP. But since we find a positive correlation for our interactive variable, we can deduce that the change in accounting standards allowed for behavior that managers with high MMI want to take advantage of. This correlation in conjunction with what we saw in our descriptive statistics that supervision has decreased from the IAS 39 era to the IFRS 9 era indicates that

Explanation 1 is probably faulty. Most of the argument, why Explanation 1 might not be correct, can be used to disprove Explanation 2. If LLP were not a useful tool for earnings management, we would instead expect to find no correlation between MMI*POST and LLP since we would expect that managers with high MMI do not recognize significantly different amounts of LLP compared to managers with low levels of MMI. Explanation 2 becomes even more unlikely considering that our interactive variable MMI*EBTLLP*POST shows that banks with high MMI tend to align EBTLLP and LLP, implying income smoothing under IFRS 9. We are thus comfortable with refuting Explanation 2 and are left with Explanation 3.

Even if we are assuming that Explanation 3 holds, our results are still not intuitively easy to interpret. Since we found a negative correlation between MMI and LLP under IAS 39 and a positive correlation under IFRS 9, we speculate that CEOs believe that to maximize share price, they need to have different provisioning strategies for the different accounting regimes. Figure 4 divides the recognition practices of the CEOs with high versus those with low levels of MMI and presents their recognition practices under the different accounting regimes. We suggest that CEOs with a lower level of MMI are more likely to accurately recognize the fair value of LLP. This is based on the argument that these CEOs have fewer incentives to manipulate earnings to boost the bank's share price. We argue that since both accounting regimes aim to ensure the fair representation of LLP, the recognition practices of executives with low MMI are perceived to have an equivalent impact on share price under both accounting regimes. [18] Interesting to note from the figure is that CEOs with low MMI recognize fewer LLP than the same group under IAS 39. Admittedly, this goes against BCBS‘ (2015) assumptions that more LLP would be recognized earlier under the ECL model, but it is what our results suggest. Finally, Figure 4 shows that CEOs that are more inclined to maximize share price will recognize fewer LLP under IAS 39 and more under IFRS 9 compared to their counterparts with low levels of MMI. Thus, our results raise an interesting question: Why did the strategy on how to maximize share price change from recognizing few LLP under IAS 39 to recognizing more under IFRS 9?

[18] Figure 4 introduces the concept of “perceived share price”. Since we have not studied how the actual share prices have fluctuated depending on how banks recognized their LLP, we are unable to show the real share price in the graphs. Instead, our lines in Figure 4 show CEOs’ expectations of how share price will react depending on what strategy they employ under the different accounting regimes.

Figure 4. Earnings management strategies through LLP



The figure shows how CEOs perceive that they can increase share price under the different accounting regimes. The full line shows that under IAS 39 the best-perceived strategy to maximize share price is to recognize fewer LLP compared to the fairer value represented by the amount that CEOs with low MMI recognize. Although this strategy is only perceived to work up to a certain level before stakeholders become skeptical and the share price plummets. The dotted line shows that under IFRS 9 the best-perceived strategy is to recognize more LLP compared to the fairer value recognized by CEOs with low MMI. The dotted line also shows that CEOs under IFRS 9 still perceive that they can increase share price by recognizing fewer LLP under this period, but not as much under IAS 39.

The reason for the shift in approach on how to manage earnings most efficiently through LLP can most likely be attributed to the distinctive features of the two different standards. Firstly, we suspect there to be perceived psychological factors that are playing a part in the different recognition practices. Our view is that since the IL model is backward-looking, CEOs that operated during IAS 39 thought that the market only viewed LLP as proof of unprofitability and riskiness. This has logic to it. Since banks only could recognize LLP after a default event occurred and it could not be reversed in the future, it is hard to view these LLP as anything else than a provision for a defaulted loan. This, however, does not need to be the case under IFRS 9 which requires banks to incorporate forward-looking information in their loan loss provisioning. Under IFRS 9, CEOs might have suspected that the market no longer only views LLP as a sign of poor historical performance but also evaluates LLP from multiple forward-looking angles. For example, CEOs might believe that recognizing more LLP under IFRS 9 shows that their banks are taking a proactive step in managing their risk and underlying uncertainties. During periods of uncertainty, such as a pandemic, war, or high inflation, only a few industries manage to remain immune to economic downturns. In such times, CEOs might believe that the market tends to favor banks that have accumulated loan loss reserves. This preference comes from the perception that these banks possess the capacity to withstand future losses and are less risky compared to banks viewed as less prepared and more exposed. Moreover, CEOs may perceive that with a change in accounting standards, the recognition of a higher amount of LLP is now regarded by stakeholders as a demonstration of transparency, as this is corroborated by the findings of Onali et al. (2021). These arguments are not without merit since Wheeler (2021) shows that when the market suspects a bank to underrecognize

LLP, that bank's share price is more severely punished than it would have been if the bank recognized more LLP and presented a lower net income. Hence, there are reasons to assume that some managers might want to recognize excessive LLP to avoid the market believing they are recognizing too few.

There might also be more practical reasons why it is only realistic to recognize more LLP to increase share price under IFRS 9, and not under IAS 39. We speculate that the method of managing earnings through income smoothing only is effective under IFRS 9. Our results reveal that banks with high levels of MMI tend to engage in income smoothing under IFRS 9, which is a departure from their behavior of letting LLP and EBTLLP go in opposite directions under IAS 39. Meanwhile, banks with low levels of MMI exhibit some alignment between EBTLLP and LLP under IAS 39, albeit to a lesser extent than the banks with high MMI levels. Based on this, we deduce that income smoothing may only have a positive effect on share price under IFRS 9, potentially because it was not feasible to carry out to a large enough extent under IAS 39, which is corroborated by Gebhardt and Novotny-Farkas (2011) who noticed a significant decrease in income smoothing following the implementation of IAS 39. Since IAS 39 allows for less discretion, the only amount of alignment between EBTLLP and LLP that was possible during this period was the low coefficient observed for banks with low levels of MMI. The reason for this alignment was probably not to increase the share price, since these CEOs should not be as incentivized by this, but instead due to another reason. For the banks with high levels of MMI, the best option to maximize share price then appears to be to minimize LLP under IAS 39, before stakeholders become too suspicious, as shown by the full line in Figure 4. When the shift in accounting standards was implemented and more discretion was allowed, income smoothing reappeared as a valid option to manage earnings. We think that given the option between income smoothing and minimizing cost, managers perceive that the best way to increase share price is to smooth income by recognizing more LLP from 2018 onward. The reason for this, we speculate, is that income smoothing is viewed by CEOs as a more sustainable way to increase share price since it minimizes volatility, and thus is perceived as less risky. Minimizing costs, on the other hand, most likely cannot be sustained for more than a few years before stakeholders become suspicious. So, income smoothing may be the most effective way to maximize share price in the long run. We argue that CEOs may speculate that they can boost share prices in the short term by recognizing fewer LLP, and thereby increasing net income even under IFRS 9. However, considering the aforementioned psychological factors, CEOs may have doubts about their ability to elevate share prices to the same extent as under IAS 39 before share price begins to drop, as depicted by the first bulge in the dotted line illustrated in Figure 4.

In the end, we cannot say if the difference in recognition practices comes from phycological factors or because CEOs were prohibited from using income smoothing under IAS 39, or even a combination of them both. What we believe is that CEOs were of the belief that they could increase share price by recognizing fewer LLP under IAS 39 and more under IFRS 9. No matter if the CEOs' beliefs are correct or not, we think Explanation 3 has merit to it and that earnings management probably exists under both accounting regimes, just with different strategies for how to achieve it and to different degrees. This is something we believe most of the previous

literature misses. Since Ahmed et al. (1999) introduced the idea that banks manage earnings through LLP by smoothing income, this has become the common way to test this phenomenon. Our study suggests that there may be multiple ways in which executives can manage earnings through LLP and depending on the accounting standard. Thus, we take the positive correlation we found for both MMI*POST and MMI*EBTLLP*POST against LLP as support for the notion that LLP are used for earnings management and that incentivized CEOs do manage earnings to a higher extent after the change in accounting standard, but with the caveat that the way they manage earnings might have changed.

7. Concluding remarks

7.1 Conclusion

The change from IAS 39 to IFRS 9 had major consequences on accounting in European banks. In this paper, we study what effect this change has had on the recognition practices of LLP and earnings management. The academic community agrees that the overall implementation of IFRS generally improves accounting quality (Gebhardt and Novotny-Farkas, 2011; Barth et al., 2007). However, there exist concerns that the discretionary nature of IFRS 9 enables banks to smooth their income (Ball, 2006). Due to concerns regarding the dangerous combination of incentives and discretionary accounting, BCBS (2015) expressed a need to examine the role of managerial incentives on LLP recognition practices under the newly created IFRS 9 and its ECL model.

By studying if the regulatory accounting change to IFRS 9 has increased the amount of earnings management through LLP, our study provides new insights into the existing literature. This study expands upon Anandarajan et al. (2007) idea of incorporating executive incentives into their model to determine the existence of earnings management. Instead of comparing listed versus unlisted banks, our study utilizes a metric measuring a CEO's remuneration dependence on increases in share price, as formulated by Bergstresser and Philippon (2007). It was found that CEOs with higher levels of MMI recognize more LLP following the change to IFRS 9 whilst they recognize fewer LLP under IAS 39. These results indicate that to maximize share price, different strategies are perceived as optimal when it comes to LLP recognition. Our argument for this stems from both psychological and practical factors such as that CEOs might believe that the market views an LLP differently depending on whether the loss model in use is forward- or backward-looking. Since IAS 39 also allowed for limited discretion the same techniques to manage earnings might not have been available in both periods. We speculate that CEOs became able to properly smooth income under IFRS 9 and believe that income smoothing is a more sustainable way to manage earnings than minimizing cost, which seemed more favorable under IAS 39. Even though these results are only true for banks with high levels of EBTLLP, probably because unprofitable banks are more heavily monitored (Onali et al. 2021), our findings still contribute to the existing literature by suggesting that not only do banks manage earnings through LLP but depending on the amount of discretion allowed, they will use different strategies to do so.

Furthermore, we also bring new light to the debate whether banks specifically smooth income through LLP. Our results support this, but only for banks with a high level of MMI and only under IFRS 9. This strengthens our assumption that income smoothing was only suitable when more discretion was available under IFRS 9 where a high level of discretion is allowed, but it also demonstrates the importance of incentives. The lack of incentives as a variable could explain why studies such as Ahmed et al. (1999) failed to find any proof of income smoothing. Even though our results lack robustness, we still urge regulators and investors to be aware that the change from IAS 39 to IFRS 9 probably has increased the amount of earnings management within European banks, especially for those with incentivized CEOs.

7.2 Contribution

We believe our findings contribute to the existing literature in three ways. Firstly, our results support the notion that the change from IAS 39 to IFRS 9 has increased the amount of earnings management amongst listed European banks, most likely due to the increased discretion allowed under the ECL model. Secondly, with our incorporation of Bergstresser and Philippon's (2007) measure of remuneration, our research focuses on the effect that executive remuneration has on the recognition of LLP and earnings management. Historical research does not focus on the exact impact of incentives in the provisioning process and by incorporating an accurate remuneration measure into our research, this article contributes to the debate by showing that remuneration could explain certain earnings management decisions. Thirdly, our research builds upon existing literature on how banks manage earnings through LLP. Previous literature almost exclusively studied earnings management through LLP in the form of income smoothing. Our study shows that depending on the accounting regime and the characteristics of the accounting standard, different earnings management strategies could be optimal to maximize share price.

7.3 Limitation

During the analysis of our research, readers should be aware of three key limitations. Firstly, it is important to understand the limitations of our remuneration measurements. As discussed, our metric does not take long-term equity incentive plans and inside debt into account. This results in a potentially incomplete metric and neglects specific effects that the mentioned financial incentives may have. Previous research has shown the effects of inside debt on executive behavior and due to the magnitude of the long-term share incentive plans, an impact of this is expected as well. Additionally, it should be noted that our remuneration metric neglects the potential impact of other executives' and employees' involvement in the financial reporting process, personal characteristics, and potential changes in the CEO. Therefore, readers should take this information into account when reading and analyzing our measurement of remuneration and results. A second limitation of our research is the robustness of our results. In our robustness testing, our results are affected by attrition bias and changes to our results occur under different scenarios. There may be numerous explanations for the lack of robustness, however, this is not easy to solve considering the limited size of the population. We believe the reader must be aware of this limitation to grasp a complete understanding of our results and the implications of our results. A third limitation of our research lies in the research design. As discussed by Beatty and Liao (2014), a methodological challenge in investigating a regulatory change that applies to the entire population is the impossibility of using a control group. Even though our study aims to solve this by using a dummy variable as an indicator for the accounting regimes and aims to add variables to the model to control for other relevant factors, one can wonder if the same effects would have taken place if there was no change to IFRS 9.

7.4 Avenues for future research

With the contributions and limitations of our research, we see three main avenues where future research could be developed. Firstly, it would be interesting to incorporate a remuneration metric that considers inside debt, long-term share incentive plans, and total wealth. Information on long-term share incentive plans and inside debt is disclosed in the annual report and could be gathered from there whereas information regarding total wealth may be trickier to find. With the historical research findings on the effect of inside debt (Hagendorff, 2019) and the magnitude of the long-term incentive plans, studying this in an earnings management context could add to existing research by incorporating a more complete remuneration measurement. A second direction for future research is to analyze how the personal characteristics of executives affect the earnings management process in banks. Beaudoin et al. (2015) show that the ethics of an executive impact their stance on earnings management, however, it would also be interesting to investigate the effect of gender, age, financial expertise, and other personal characteristics. Since CEOs have these distinct characteristics, it could also be interesting to investigate how earnings management behavior was affected by a change of CEO. A third area for future research is based on our analysis that there are different optimal strategies to manage earnings to maximize share price. Even though this is just a line of thinking, it would be valuable to investigate the impact of LLP on share price by investigating LLP and actual share price developments.

7.5 Final thoughts

We hope that our research provides the readers with an improved understanding of IFRS 9 and the practicalities surrounding its ECL model. By studying this change in accounting standards in the context of remuneration and earnings management in banks, we hope that standard setters and regulators get a better understanding of the effects of discretion in accounting and share-based remuneration on financial reporting. Finally, while our findings are not robust, they still provide important insights into the complex relationship between executive incentives, accounting regulation, and earnings management. Further research is needed to expand on our findings to continue the ongoing discussion about the quality of financial reporting within the banking industry.

8. Reference list

Ahmed, A. S., Takeda, C., & Thomas, S. (1999). Bank loan loss provisions: A reexamination of capital management, earnings management and signaling effects. *Journal of Accounting & Economics, 28*(1), 1-25. Doi: 10.1016/S0165-4101(99)00017-8

Anandarajan, A., Hasan, I., & McCarthy, C. (2007). Use of loan loss provisions for capital, earnings management and signalling by Australian banks. *Accounting and Finance (Parkville), 47*(3), 357-379. Doi: 10.1111/j.1467-629X.2007.00220.x

Aguinis, H., Gottfredson, R. K., & Joo, H. (2013). Best-practice recommendations for defining, identifying, and handling outliers. *Organizational Research Methods, 16*(2), 270-301. Doi: 10.1177/1094428112470848

Armstrong, C. S., Barth, M. E., Jagolinzer, A. D., & Riedl, E. J. (2010). Market reaction to the adoption of IFRS in Europe. *The Accounting Review, 85*(1), 31-61. Doi: 10.2308/accr.2010.85.1.31

Bai, G., Yang, Q., & Elyasiani, E. (2022). Managerial risk-taking incentives and bank earnings management: Evidence from FAS 123R. *Sustainability (Basel, Switzerland), 14*(13721), 13721. Doi: 10.3390/su142113721

Ball, R. (2006). International financial reporting standards (IFRS): Pros and cons for investors. *Accounting and Business Research, 36,* 5-28. Doi: nfo:doi/

Bank for International Settlements (BIS). (2021). *The procyclicality of loan loss provisions: A literature review* BIS.

Barth, M. E., & Landsman, W. R. (2010). How did financial reporting contribute to the financial crisis? *The European Accounting Review, 19*(3), 399-423. Doi: 10.1080/09638180.2010.498619

Barth, M. E., Landsman, W. R., & Lang, M. H. (2007). International accounting standards and accounting quality. *Journal of Accounting Research, 46*(3), 467-498. Doi:10.1111/j.1475-679X.2008.00287.x

Basel Committee on Banking Supervision (BCBS). (2015). *Guidance on credit risk and accounting for expected credit losses* Basel Committee on Banking Supervision.

Beatty, A., Chamberlain, S. L., & Magliolo, J. (1995). Managing financial reports of commercial banks: The influence of taxes, regulatory capital, and earnings. *Journal of Accounting Research, 33*(2), 231-261. Doi: 10.2307/2491487

Beatty, A., & Liao, S. (2014). Financial accounting in the banking industry: A review of the empirical literature. *Journal of Accounting & Economics, 58*(2-3), 339-383. Doi: 10.1016/j.jacceco.2014.08.009

Beaudoin, C. A., Cianci, A. M., & Tsakumis, G. T. (2015). The impact of CFOs' incentives and earnings management ethics on their financial reporting decisions: The mediating role of moral disengagement. *Journal of Business Ethics, 128*(3), 505-518. Doi: 10.1007/s10551-014-2107-x

Beaver, W. H., & Engel, E. E. (1996). Discretionary behavior with respect to allowances for loan losses and the behavior of security prices. *Journal of Accounting & Economics, 22*(1), 177-206. Doi: 10.1016/S0165-4101(96)00428-4

Bebchuk, L. A., Fried, J. M., & Walker, D. I. (2002). Managerial power and rent extraction in the design of executive compensation. *The University of Chicago Law Review, 69*(3), 751-846. Doi: 10.2307/1600632

Bebchuk, L.A., & Fried, J. M. (2003). Executive compensation as an agency problem. *The Journal of Economic Perspectives, 17*(3), 71-92. Doi: 10.1257/089533003769204362

Becht, M., Bolton, P., & Röell, A. (2011). Why bank governance is different. *Oxford Review of Economic Policy, 27*(3), 437-463. Doi: 10.1093/oxrep/grr024

Bergstresser, D., & Philippon, T. (2007). CEO incentives and earnings management. *Journal of Financial Economics, +*(80), 511-529.

Basel Committee on Banking Supervision (BCBS). (2015). *Guidance on credit risk and accounting for expected credit losses* Basel Committee on Banking Supervision.

Bischof, J., Laux, C., & Leuz, C. (2021). Accounting for financial stability: Bank disclosure and loss recognition in the financial crisis. *Journal of Financial Economics, 141*(3), 1188-1217. Doi: 10.1016/j.jfineco.2021.05.016

Black, F., & Scholes, M. (1973). The pricing of options and corporate liabilities. *The Journal of Political Economy, 81*(3), 637-654. Doi: 10.1086/260062

Bouvatier, V., & Lepetit, L. (2012). Provisioning rules and bank lending: A theoretical model. *Journal of Financial Stability, 8*(1), 25-31. Doi: 10.1016/j.jfs.2011.04.001

Boyd, J. H., Graham, S. L., & Hewitt, R. S. (1993). Bank holding company mergers with nonbank financial firms: Effects on the risk of failure. *Journal of Banking & Finance, 17*(1), 43-63. Doi: 10.1016/0378-4266(93)90079-S

Bryman, A. & Bell, E. (2015). Business research methods. 4.th edn, Oxford Univ. Press, Oxford.

Burns, N., & Kedia, S. (2006). The impact of performance-based compensation on misreporting. *Journal of Financial Economics, 79*(1), 35-67. Doi: 10.1016/j.jfineco.2004.12.003

Christensen, H. B., Lee, E., Walker, M., & Zeng, C. (2015). Incentives or standards: What determines accounting quality changes around IFRS adoption? *The European Accounting Review, 24*(1), 31-61. doi:10.1080/09638180.2015.1009144

Collins, J. H., Shackelford, D. A., & Wahlen, J. M. (1995). Bank differences in the coordination of regulatory capital, earnings, and taxes. *Journal of Accounting Research, 33*(2), 263-291. Doi: 10.2307/2491488

Copeland, R. M. (1968). Income smoothing. *Journal of Accounting Research, 6*(2), 101-116. Doi:10.2307/2490073

Core, J., & Guay, W. (2002). Estimating the value of employee stock option portfolios and their sensitivities to price and volatility. *Journal of Accounting Research, 40*(3), 613-630. Doi: 10.1111/1475-679X.00064

Crocker, K. J., & Slemrod, J. (2007). The economics of earnings manipulation and managerial compensation. *The Rand Journal of Economics, 38*(3), 698-713. Doi: 10.1111/j.0741-6261.2007.00107.x

Curcio, D., & Hasan, I. (2015). Earnings and capital management and signaling: The use of loan-loss provisions by European banks. *The European Journal of Finance, 21*(1), 26-50. Doi: 10.1080/1351847X.2012.762408

Dasgupta, A., & Sarafidis, Y. (2009). Managers as administrators: Reputation and incentives. *Journal of Economic Behavior & Organization, 70*(1), 155-163. Doi: 10.1016/j.jebo.2008.12.009

Davis, J. (2019). Negative rates – how low can you go? Retrieved from https://am.jpmorgan.com/us/en/asset-management/liq/insights/portfolio-insights/fixed-income/fixed-income-perspectives/negative-rates-how-long-can-you-go/

Dikolli, S. S., Mayew, W. J., & Nanda, D. (2014). CEO tenure and the performance-turnover relation. *Review of Accounting Studies, 19*(1), 281-327. Doi: 10.1007/s11142-013-9247-6

Enria, A. (2023). Brexit and the EU banking sector: From the fundamental freedoms of the internal market to third country status. Retrieved from https://www.bankingsupervision.europa.eu/press/interviews/date/2023/html/ssm.in230130~cd7de9ce0c.en.html

Espahbodi, H., Espahbodi, R., John, K., & Xin, H. C. (2022). Earnings management in the short- and long-term post-regulation periods. *Review of Quantitative Finance and Accounting, 58*(1), 217-244. Doi: 10.1007/s11156-021-00993-2

European Banking Authority. (2016). *The European banking authority at a glance*. Luxembourg: Publications Office. Retrieved from http://dx.publications.europa.eu/10.2853/571589

European Central Bank. (2021). Working group on euro risk-free rates. Retrieved from https://www.ecb.europa.eu/paym/interest_rate_benchmarks/WG_euro_risk-free_rates/html/index.en.html

European Central Bank. (2023). What happens when a bank is failing or likely to fail? Retrieved from https://www.bankingsupervision.europa.eu/press/publications/newsletter/2018/html/ssm.nl180516_3.en.html

European Parliament. (2013). MEPs cap bankers' bonuses and step-up bank capital requirements. Retrieved from https://www.europarl.europa.eu/news/en/press-room/20130225IPR06048/meps-cap-bankers-bonuses-and-step-up-bank-capital-requirements

Evans, S., & Tourish, D. (2017). Agency theory and performance appraisal: How bad theory damages learning and contributes to bad management practice. *Management Learning, 48*(3), 271-291. Doi: 10.1177/1350507616672736

Fang, X., Guo, Y., Mei, B., & Ye, J. (2022). Implementation costs of IFRS 9 for non-financial firms: Evidence from China. *Accounting and Finance (Parkville), 62*(2), 2781-2805. Doi: 10.1111/acfi.12889

Farrell, M., Hirsch, L. & Smialek, J. (2023). First Republic Bank is seized by regulators and sold to JPMorgan chase. Retrieved from https://www.nytimes.com/2023/05/01/business/first-republic-bank-jpmorgan.html?fbclid=IwAR2yl2bj-MHXSPfp6qpj8_c_MJei9Vzo-OO8gmwEAnbEfVafHW1AISaDqIw

Flannery, M. J., & Bliss, R. R. (2019). Market discipline in regulation: Pre and post crisis. *The Oxford Handbook of Banking,* Retrieved from https://academic.oup.com/edited-volume/34288/chapter/290684916

Fonseca, A. R., & González, F. (2008). Cross-country determinants of bank income smoothing by managing loan-loss provisions. *Journal of Banking & Finance, 32*(2), 217-228. Doi: 10.1016/j.jbankfin.2007.02.012

Frykström, N., & Frederiksson, O. (2019). "Bad loans" and their effect on banks' financial stability.

Frykström, N., & Li, J. (2018). *IFRS 9 -the new accounting standard for credit loss recognition* Riksbank.

G20. (2009). *Declaration on strengthening the financial system - London summit* G20.

Gebhardt, G., & Novotny-Farkas, Z. (2011). Mandatory IFRS adoption and accounting quality of European banks. *Journal of Business Finance & Accounting, 38*(3-4), 289-333. Doi: 10.1111/j.1468-5957.2011.02242.x

Goddard, J., Molyneux, P., & Wilson, J. O. S. (2019). Banking in Europe: Integration, reform, and the road to a banking union. In A. N. Berger (Ed.), *The oxford handbook of banking* (pp. E50-E67). Oxford: Doi: 10.1111/boer.12126

Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting & Economics, 40*(1), 3-73. Doi: 10.1016/j.jacceco.2005.01.002

Greenawalt, M. B., & Sinkey Jr, J. F. (1988). Bank loan-loss provisions and the income-smoothing hypothesis: An empirical analysis, 1976-1984. *Journal of Financial Services Research, 1*(4), 301-318. Doi: 10.1007/BF00235201

Hagendorff, J. (2019). Corporate governance and culture in banking. *The oxford handbook of banking* (). United Kingdom: Oxford University Press. Doi: 10.1093/oxfordhb/9780198824633.013.1 Retrieved from https://doi.org/10.1093/oxfordhb/9780198824633.013.1

Healy, P. M. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting & Economics, 7*(1), 85-107. Doi: 10.1016/0165-4101(85)90029-1

Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons, 13*(4), 365-383. Doi: 10.2308/acch.1999.13.4.365

Hill, T. D., Davis, A. P., Roos, J. M., & French, M. T. (2020). Limitations of fixed-effects models for panel data. *Sociological Perspectives, 63*(3), 357-369. Doi: 10.1177/0731121419863785

Houston, J. F., & James, C. (1995). CEO compensation and bank risk is compensation in banking structured to promote risk taking? *Journal of Monetary Economics, 36*(2), 405-431. doi:10.1016/0304-3932(95)01219-2

Hughes, J. P., & Mester, L. J. (2013). Who said large banks do not experience scale economies? evidence from a risk-return-driven cost function. *Journal of Financial Intermediation, 22*(4), 559-585. Doi: 10.1016/j.jfi.2013.06.004

International Accounting Standards Board (IASB), (2021). The Annotated IFRS Standards Part A: The Conceptual Framework for Financial Reporting and requirements. IFRS.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305-360. Doi: 10.1016/0304-405X(76)90026-X

Jones, H., Withers, L. & White, L. (2022). Bankers wary of backlash if Britain ditches bonus cap to cut EU ties. Retrieved from https://www.reuters.com/markets/europe/bankers-wary-backlash-if-britain-ditches-bonus-cap-cut-eu-ties-2022-09-15/

Kanagaretnam, K., Lobo, G. J., & Mathieu, R. (2004). Earnings management to reduce earnings variability: Evidence from bank loan loss provisions. *Review of Accounting & Finance, 3*(1), 128-148. Doi: 10.1108/eb043399

Kothari, S. P. (2009). Do managers withhold bad news? *Journal of Accounting Research, 47*(1), 241-276. Doi: 10.1111/j.1475-679X.2008.00318.x

Kun, A. A., & Figgie, E. (2019). *Agenda decision - "curing of a credit-impaired financial asset"* IFRS Foundation.

Lawrence, M., & O'Connor, M. (2005). Judgmental forecasting in the presence of loss functions. *International Journal of Forecasting, 21*(1), 3-14. Doi: 10.1016/j.ijforecast.2004.02.003

Leventis, S., Dimitropoulos, P. E., & Anandarajan, A. (2011). Loan loss provisions, earnings management, and capital management under IFRS: The case of EU commercial banks. *Journal of Financial Services Research, 40*(1-2), 103-122. Doi: 10.1007/s10693-010-0096-1

Lewis, M. (2004, June 6). The irresponsible investor. *The New York Times* Retrieved from https://www.nytimes.com/2004/06/06/magazine/the-irresponsible-investor.html

McCabe, C., & Mitchell, J. (2023). Why is Credit Suisse in trouble? the banking turmoil explained. Retrieved from https://www.wsj.com/articles/why-is-credit-suisse-in-trouble-the-banking-turmoil-explained-6f8ddb5b

Mechelli, A., & Cimini, R. (2021). The effect of corporate governance and investor protection environments on the value relevance of new accounting standards: The case of IFRS 9 and IAS 39. *Journal of Management and Governance, 25*(4), 1241-1266. Doi: 10.1007/s10997-020-09551-9

Murray, C. (2023). What to know about Silicon Valley bank's Collapse—The biggest bank failure since 2008. Retrieved from https://www.forbes.com/sites/conormurray/2023/03/13/what-to-know-about-silicon-valley-banks-collapse-the-biggest-bank-failure-since-2008/?sh=6c7dc09a4c27

Nicoletti, A. (2018). The effects of bank regulators and external auditors on loan loss provisions. *Journal of Accounting & Economics, 66*(1), 244-265. Doi: 10.1016/j.jacceco.2018.05.003

Novotny-Farkas, Z. (2016). The interaction of the IFRS 9 expected loss approach with supervisory rules and implications for financial stability. *Accounting in Europe, 13*(2), 197-227. Doi: 10.1080/17449480.2016.1210180

Onali, E., & Ginesti, G. (2014). Pre-adoption market reaction to IFRS 9: A cross-country event study. *Journal of Accounting and Public Policy, 33*(6), 628-637. Doi: 10.1016/j.jaccpubpol.2014.08.004

Onali, E., Ginesti, G., Cardillo, G., & Torluccio, G. (2021). Market reaction to the expected loss model in banks. *Journal of Financial Stability,* 100884. Doi: 10.1016/j.jfs.2021.100884

Ozili, P. K. (2017). Discretionary provisioning practices among western European banks. *Journal of Financial Economic Policy, 9*(1), 109-118. Doi: 10.1108/JFEP-07-2016-0049

Penman, S. H. (2013). *Financial statement analysis and security valuation* (5th ed.). New York: McGraw-Hill Higher Education.

Pepper, A. (2019). *Agency theory and executive pay: The remuneration committee's dilemma*. Cham, Switzerland: Palgrave Macmillan.

PwC. (2016). *Basel committee guidance on accounting for expected credit losses for banks.* PwC.

PwC. (2017). Contrasting the new US GAAP and IFRS credit impairment models (US2017-24). Retrieved from https://viewpoint.pwc.com/dt/us/en/pwc/in_depths/2017/us201724_contrasting/us201724_contrasting_US/us201724_contrasting_US.html

Rani, P., Hussain, F. F., & Chand, P. V. (2013). Managerial incentives for earnings management among listed firms: Evidence from Fiji. *Global Journal of Business Research, 7*(1), 21-31. Retrieved from https://search.proquest.com/docview/1221127187

Saurino, J. (2009). Dynamic provisioning: The experience of Spain. *The World Bank Group,*

Scheiner, J.H. (1981) Income smoothing: an analysis in the banking industry. J Bank Res 12:119–123

Smith, A. (1791). *An inquiry into the nature and causes of the wealth of nations* (4th ed.). Basil:

Soderstrom, N. S., & Sun, K. J. (2007). IFRS adoption and accounting quality: A review. *The European Accounting Review, 16*(4), 675-702. Doi: 10.1080/09638180701706732

Subramanyam, K. R. (1996). The pricing of discretionary accruals. *Journal of Accounting & Economics, 22*(1), 249-281. Doi: 10.1016/S0165-4101(96)00434-X

Sundvik, D. (2018). The impact of principles-based vs rules-based accounting standards on reporting quality and earnings management. *Journal of Applied Accounting Research, 20*(1), 78-93. doi:10.1108/JAAR-05-2018-0063

Svanberg, J., Öhman, P., & Neidermeyer, P. E. (2019). Auditor objectivity as a function of auditor negotiation self-efficacy beliefs. *Advances in Accounting, 44*, 121-131. Doi: 10.1016/j.adiac.2018.10.001

Trueman, B. & Titman, S. (1981). An explanation for accounting income smoothing; discussion. *Journal of Accounting Research, 26*, 127.

Wendel, J. (2023). Credit Suisse uppgång och fall – 615 börsmiljarder upp i rök. Retrieved from https://www.di.se/nyheter/credit-suisse-uppgang-och-fall-615-borsmiljarder-upp-i-rok/

Wetmore, J. L., & Brick, J. R. (1994). Loan-loss provisions of commercial banks and adequate disclosure: A note. *Journal of Economics and Business, 46*(4), 299-305. Doi: 10.1016/0148-6195(94)90040-X

Wheeler, P. B. (2021). Unrecognized expected credit losses and bank share prices. *Journal of Accounting Research, 59*(3), 805-866. Doi:10.1111/1475-679X.12353

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data* (2nd ed.). Cambridge, Mass.; MIT.

9. Appendix

Appendix 1: Results of regression model without fixed effects

	Hypothesis 1A & 1B		Hypothesis 2A, 2B, & 2C		
	1	2	3	4	5
Intercept	0.0083	0.0092	0.0083	0.0077	0.0057
	(2.55)**	(2.68)***	(2.52)**	(2.37)**	(1.61)
MMI	-0.0372	-0.0946	-0.0376	-0.0175	0.0236
	(1.55)	(2.26)**	(1.46)	(0.44)	(0.50)
EBTLLP	0.3486	0.3418	0.3433	0.3841	0.5265
	(4.47)	(4.60)***	(3.47)***	(4.54)***	(5.09)***
ΔLoans	-0.0022	-0.0023	-0.0021	-0.0020	-0.0013
	(1.51)	(1.63)	(1.50)	(1.49)	(1.13)
Z-score	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(1.41)	(1.52)	(1.44)	(1.57)	(1.42)
ΔGDP	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004
	(6.20)***	(6.02)***	(6.28)***	(5.63)***	(6.36)***
Size	0.0001	0.0001	0.0001	0.0001	0.0001
	(0.34)	(0.27)	(0.35)	(0.44)	(0.74)
Tratio	-0.0033	-0.0033	-0.0033	-0.0033	-0.0030
	(4.02)***	(4.07)***	(4.04)***	(4.02)***	(3.69)***
Big4	0.0003	0.0002	0.0003	0.0002	-0.0000
	(0.35)	(0.29)	(0.35)	(0.29)	(0.07)
ECBS	0.0024	0.0025	0.0024	0.0024	0.0022
	(1.94)*	(1.99)*	(1.96)*	(1.95)	(2.00)**
LLA	0.0464	0.0467	0.0464	0.0458	0.0492
	(2.41)**	(2.47)**	(2.41)**	(2.28)**	(2.64)***
POST	-0.0016	-0.0028	-0.0017	-0.0015	0.0019
	(2.59)**	(3.00)***	(1.26)	(2.52)**	(1.20)
MMI* POST	-	0.1060	-	-	-0.1380
	-	(1.98)*	-	-	(1.91)*
EBTLLP*POST	-	-	0.0101	-	-0.3987
	-	-	(0.08)	-	(3.12)***
EBTLLP*MMI	-	-	-	-1.5190	-8.4382
	-	-	-	(0.48)	(3.21)***
EBTLLP*MMI*POST	-	-	-	-	17.582
	-	-	-	-	(4.12)***
Number of observation	638	638	638	638	638
Adjusted R^2	0.371	0.379	0.37	0.371	0.414
F-statistic	9.475***	8.745***	8.747***	15.89***	19.80***

The regression table shows our OLS regressions without Fixed Effects and ***, **, and * respectively denote significant differences for 0.01, 0.05, and 0.1 significant levels. The number in the parentheses represents the absolute values of the t-statistics. LLP measures the loan loss provisions, MMI measures managerial monetary incentives, EBTLLP measures earnings, ΔLoans measures the change in a bank's loan portfolio, Z-score measures bank risk, ΔGDP measures the change in gross domestic product, Size measures the total assets of the bank, Tratio measures a bank's capital buffer, Big4 is a dummy measuring whether the bank is audited by a Big 4-firm, ECBS is a dummy measuring supervision, LLA measures the existing loan loss reserve, and POST is a dummy measuring the accounting regime. Furthermore, interactive variables are created to estimate the effect of the accounting changes and the effect of remuneration on the relationship between MMI, EBTLLP, and LLP. Additional statistics are provided to provide an improved understanding of our model.

Appendix 2: Results of regression model without Spanish and British banks

	Hypothesis 1A & 1B		Hypothesis 2A, 2B, & 2C		
	1	2	3	4	5
Intercept	0.0063	0.0061	0.0061	0.0059	0.0040
	(1.38)	(1.36)	(1.40)	(1.32)	(0.84)
MMI	-0.0816	-0.1590	-0.0876	-0.0522	-0.0161
	(2.72)***	(3.13)***	(2.70)***	(0.87)	(0.24)
EBTLLP	0.3836	0.3765	0.3506	0.4304	0.5450
	(4.11)***	(4.28)***	(2.88)***	(4.30)***	(4.20)***
ΔLoans	-0.0032	-0.0036	-0.0032	-0.0030	-0.0018
	(1.63)	(1.82)*	(1.68)	(1.53)	(1.07)
Z-score	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(1.68)*	(1.74)*	(1.64)	(1.72)*	(1.35)
ΔGDP	0.0000	0.0000	-0.0000	0.0000	0.0001
	(0.13)	(0.47)	(2.70)***	(0.16)	(0.71)
Size	0.0001	0.0001	0.0001	0.0001	0.0001
	(0.16)	(0.19)	(0.22)	(0.20)	(0.40)
Tratio	-0.0037	-0.0037	-0.0037	-0.0038	-0.0028
	(3.50)***	(3.64)***	(3.56)***	(3.60)***	(2.74)***
Big4	0.0011	0.0010	0.0010	0.0011	0.0005
	(1.18)	(1.11)	(1.15)	(1.18)	(0.62)
ECBS	0.0031	0.0029	0.0030	0.0029	0.0029
	(1.17)	(1.20)	(1.18)	(1.17)	(1.34)
LLA	0.0623	0.0629	0.0607	0.0617	0.0645
	(2.16)**	(2.21)**	(2.17)**	(2.08)**	(2.37)**
POST	-	-	-	-	-
	-	-	-	-	-
MMI* POST	-	0.1378	-	-	-0.1744
	-	(2.13)**	-	-	(1.77)*
EBTLLP*POST	-	-	0.0732	-	-0.3912
	-	-	(0.56)	-	(2.58)**
EBTLLP*MMI	-	-	-	-2.1009	-8.9972
	-	-	-	(0.62)	(3.04)***
EBTLLP*MMI*POST	-	-	-	-	19.912
	-	-	-	-	(3.93)***
Number of observation	516	516	516	516	516
Adjusted R^2	0.428	0.441	0.429	0.429	0.476
F-statistic	5.578***	5.696***	6.001***	9.421***	18.74***

The regression table shows our OLS regressions without Spanish and British bank observations and ***, ** and * respectively denote significant differences for 0.01, 0.05, and 0.1 significant levels. The number in the parentheses represents the absolute values of the t-statistics. LLP measures the loan loss provisions, MMI measures managerial monetary incentives, EBTLLP measures earnings, ΔLoans measures the change in a bank's loan portfolio, Z-score measures bank risk, ΔGDP measures the change in gross domestic product, Size measures the total assets of the bank, Tratio measures a bank's capital buffer, Big4 is a dummy measuring whether the bank is audited by a Big 4-firm, ECBS is a dummy measuring supervision, LLA measures the existing loan loss reserve, and POST is a dummy measuring the accounting regime. Furthermore, interactive variables are created to estimate the effect of the accounting changes and the effect of remuneration on the relationship between MMI, EBTLLP, and LLP. Additional statistics are provided to provide an improved understanding of our model.

Appendix 3: Results of regression model with a balanced dataset

	Hypothesis 1A & 1B		Hypothesis 2A, 2B, & 2C		
	1	2	3	4	5
Intercept	0.0110	0.0116	0.0119	0.0086	0.0097
	(3.73)***	(4.03)***	(3.81)***	(2.72)***	(2.88)***
MMI	-0.0815	-0.1426	-0.0707	0.0036	-0.0138
	(2.52)**	(2.93)***	(2.04)**	(0.07)	(0.18)
EBTLLP	0.2385	0.2279	0.3072	0.3960	0.5210
	(3.97)***	(3.90)***	(3.25)***	(3.33)***	(3.23)***
ΔLoans	-0.0033	-0.0034	-0.0036	-0.0025	-0.0027
	(1.60)	(1.68)*	(1.68)*	(1.33)	(1.43)
Z-score	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(0.51)	(0.74)	(0.79)	(0.99)	(1.32)
ΔGDP	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
	(1.91)*	(1.84)*	(1.73)*	(1.78)*	(1.40)
Size	-0.0001	-0.0002	-0.0002	0.0000	-0.0001
	(0.38)	(0.61)	(0.57)	(0.03)	(0.42)
Tratio	-0.0037	-0.0037	-0.0039	-0.0036	-0.0036
	(4.20)***	(4.31)***	(4.41)***	(3.95)***	(4.05)***
Big4	0.0007	0.0008	0.0010	0.0004	0.0008
	(0.91)	(1.00)	(1.16)	(0.45)	(0.89)
ECBS	0.0026	0.0022	0.0027	0.0020	0.0018
	(1.17)	(1.00)	(1.22)	(0.98)	(0.89)
LLA	0.0432	0.0437	0.0465	0.0369	0.0430
	(1.62)	(1.66)	(1.78)*	(1.24)	(1.54)
POST	-	-	-	-	-
	-	-	-	-	-
MMI* POST	-	-0.1399	-	-	0.0443
	-	(2.60)**	-	-	(0.55)
EBTLLP*POST	-	-	-0.2212	-	-0.3893
	-	-	(2.08)**	-	(2.56)**
EBTLLP*MMI	-	-	-	-7.7806	-10.521
	-	-	-	(2.40)**	(2.39)**
EBTLLP*MMI*POST	-	-	-	-	8.1820
	-	-	-	-	(1.61)
Number of observation	512	512	512	512	512
Adjusted R^2	0.404	0.415	0.417	0.417	0.449
F-statistic	14.35***	14.53***	11.50***	18.52***	13.09***

The regression table shows our OLS regressions with a balanced dataset and ***, ** and * respectively denote significant differences for 0.01, 0.05, and 0.1 significant levels. The number in the parentheses represents the absolute values of the t-statistics. LLP measures the loan loss provisions, MMI measures managerial monetary incentives, EBTLLP measures earnings, ΔLoans measures the change in a bank's loan portfolio, Z-score measures bank risk, ΔGDP measures the change in gross domestic product, Size measures the total assets of the bank, Tratio measures a bank's capital buffer, Big4 is a dummy measuring whether the bank is audited by a Big 4-firm, ECBS is a dummy measuring supervision, LLA measures the existing loan loss reserve, and POST is a dummy measuring the accounting regime. Furthermore, interactive variables are created to estimate the effect of the accounting changes and the effect of remuneration on the relationship between MMI, EBTLLP, and LLP. Additional statistics are provided to provide an improved understanding of our model.

Appendix 4: Country summary

Country	No. of banks
Austria	1
Denmark	17
Estonia	2
Finland	4
France	3
Germany	2
Iceland	2
Ireland	3
Italy	10
Netherlands	2
Norway	22
Slovenia	1
Spain	4
Sweden	6
United Kingdom	11
Total	90

The appendix shows an overview of where our sample banks are mainly incorporated.

Appendix 5: Banks included in our sample with the country of incorporation.

Austria	**France**	**Netherlands**	**Slovenia**
Erste Group Bank AG	BNP Paribas SA	ABN AMRO Bank N.V.	Nova Ljubljanska Banka d.d.
Denmark	Crédit Agricole S.A.	ING Groep N.V.	**Spain**
Djurslands Bank A/S	Société Générale Société anonyme	**Norway**	Banco de Sabadell, S.A.
Fynske Bank A/S	**Germany**	Aasen Sparebank	Banco Santander, S.A.
Hvidbjerg Bank A/S	Aareal Bank AG	Aurskog Sparebank	CaixaBank, S.A.
Jyske Bank A/S	Deutsche Bank Aktiengesellschaft	DNB Bank ASA	Unicaja Banco, S.A.
Kreditbanken A/S	**Iceland**	Høland og Setskog Sparebank	**Sweden**
Lån & Spar Bank A/S	Arion banki hf.	Instabank ASA	Collector Bank AB
Lollands Bank A/S	Íslandsbanki hf.	Komplett Bank ASA	Nordnet AB
Møns Bank A/S	**Ireland**	Melhus Sparebank	Skandinaviska Enskilda Banken AB
Nordfyns Bank A/S	AIB Group plc	Nidaros Sparebank	Svenska Handelsbanken AB
P/F BankNordik	Bank of Ireland Group plc	Pareto Bank ASA	Swedbank AB
Ringkjøbing Landbobank A/S	Permanent TSB Group Holdings plc	Romerike Sparebank	TF Bank AB
Skjern Bank A/S	**Italy**	Romsdal Sparebank	**United Kingdom**
Spar Nord Bank A/S	Banca IFIS S.p.A.	Sandnes Sparebank	Arbuthnot Banking Group PLC
Sparekassen Sjælland-Fyn A/S	Banca Mediolanum S.p.A.	Skue Sparebank	Bank of Georgia Group PLC
Sydbank A/S	Banca Monte dei Paschi di Siena S.p.A.	Sogn Sparebank	Barclays PLC
Totalbanken A/S	Banca Popolare di Sondrio S.p.A	Sparebank 68° Nord	HSBC Holdings plc
Vestjysk Bank A/S	Banco BPM S.p.A.	Sparebanken Møre	Lloyds Banking Group plc
Estonia	BPER Banca SpA	Sparebanken Øst	Metro Bank PLC
AS LHV Group	illimity Bank S.p.A.	Sparebanken Vest	NatWest Group plc
Coop Pank AS	Intesa Sanpaolo S.p.A.	Sunndal Sparebank	OSB Group Plc
Finland	Mediobanca Banca di Credito Finanziario S.p.A.	Totens Sparebank	Secure Trust Bank PLC
Aktia Pankki Oyj	UniCredit S.p.A.	Tysnes Sparebank	Standard Chartered PLC
Ålandsbanken Abp		Voss Veksel- og Landmandsbank ASA	Virgin Money UK PLC
Nordea Bank Abp			
Oma Säästöpankki Oyj			

The appendix shows a summary of the banks included in our sample.