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THE EFFECT OF CHANGES IN THE ACCOUNTING FOR LOAN LOSS PROVISIONS ON MANAGERS' DECISIONS.

by

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FACULTY OF ECONOMIC AND MANAGEMENT SCIENCES

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LIST OF ABBREVIATIONS

ANOVA	=	Analysis of variance
ANCOVA	=	Analysis of covariance
CA	=	Chartered Accountant
CEO	=	Chief Executive Officer
CTA	=	Certificate in the Theory of Accounting
CU	=	Currency Unit
ECL	=	Expected Credit Losses
EMI	=	Earnings management incentive
EU	=	European Union
FAS	=	Financial Accounting Statement
FASB	=	Financial Accounting Standards Board
GAAP	=	Generally Accepted Accounting Principles
GDP	=	Gross Domestic Product
IAS	=	International Accounting Standard
IASB	=	International Accounting Standards Board
ICL	=	Incurred Credit Losses
IFRS	=	International Financial Reporting Standard
IRB	=	Internal Rating Based
LLP(s)	=	Loan loss provision(s)
Neg	=	Negative
No EMI	=	No earnings management incentive
P1	=	Phase one
P2	=	Phase two
Pos	=	Positive

R&D	=	Research and development
SA	=	South Africa
SAB	=	Staff Accounting Bulletin
SAICA	=	South African Institute of Chartered Accountants
SD	=	Standard Deviation
SFAS	=	Statement of Financial Accounting Standards
UK	=	United Kingdom
US	=	United States

ABSTRACT

This study provides evidence of the effect of the change in the accounting for loan loss provisions from allowing low levels of professional judgement, to a new standard that permits managerial judgement and discretion in the measurement and application of loan loss provisions. The International Financial Reporting Standard (IFRS) 9 introduces an 'expected credit loss' model that takes into account reasonable and supportable forward-looking information. Under IFRS 9 it is no longer necessary to have 'objective evidence' of impairment before a provision is recognised as was the requirement of the International Accounting Standard (IAS) 39. The change to greater discretion in measuring loan loss provisions makes this event particularly useful to examine the impact of accounting standards that allow more judgement and discretion on managerial behaviour. I used an experiment to examine whether the expected credit loss model of IFRS 9 leads to an increase in earnings management compared to the incurred credit loss model of IAS 39. Using a banking environment setting, the experiment manipulated the presence versus absence of earnings management incentives and IFRS 9 versus IAS 39 accounting standard. I contributed to the literature by demonstrating that the change from IAS 39 to IFRS 9 achieved the objective of allowing more managerial discretion without causing increased earnings management.

1.   INTRODUCTION

The objective of this study was to determine whether the change in the accounting for loan loss provisions (LLPs) from allowing low levels of professional judgement to a new standard that permits greater judgement and discretion leads to an increase in earnings management. The study asks the question whether International Financial Reporting Standard (IFRS) 9's expected credit loss (ECL) model of determining loan loss provisions (LLPs) for financial firms is associated with greater earnings management relative to International Accounting Standard (IAS) 39's incurred credit loss (ICL) model. ECL model under IFRS 9 is based on expected or estimated losses rather than on 'objective evidence' as was done in IAS 39's ICL model (López-Espinosa et al. 2021). The ECL approach in IFRS 9 incorporates more forward-looking information in determining LLPs. It also requires a higher level of managerial judgement and discretion that increases the flexibility the standard allows compared to the ICL model in IAS 39 (Jin and Wu 2022, López-Espinosa et al. 2021). The concern is that adopting IFRS 9 would allow greater earnings management. It is argued that earnings management is easier under flexible accounting standards, allowing greater leeway for managers to manage earnings through management's judgements (Abdul Adzis et al. 2016; Cuccia et al. 1995; Gomaa et al. 2019; Liu et al. 2014; Schipper 2003). The Chairman of the International Accounting Standards Board (IASB) warned to take care not to introduce changes in IFRS 9 that address IAS 39 criticism but create opportunities for earnings management (Hoogervorst 2014). The discretionary nature of LLPs as described makes this change from IAS 39 to IFRS 9 particularly useful to examine the impact of accounting standards which allow more judgement and discretion on earnings management behaviour.

An objective of the International Accounting Standards Board is to develop internationally acceptable high-quality financial reporting standards (Barth et al. 2008). The objective of financial reporting is to provide financial information that is a faithful representation of what it purports to represent to users (IASB 2018). To achieve this objective, the IASB has issued standards that use accounting measurements that faithfully represent an entity's financial position and performance (Barth et al. 2008). Accounting amounts that faithfully represents an entity's underlying economics can increase accounting quality because doing so provides investors with information to help them make better investment decisions (Barth et al. 2008). Less earnings management, more timely loss recognition and high-value relevance of earnings all improve earnings quality, which is a component of accounting quality (Barth et

al. 2008). Therefore, if the IASB wants to achieve its objective of providing information that is a faithful representation, IFRS 9 must more faithfully represent loan losses than its predecessor, IAS 39. For IFRS 9 to achieve this objective it must ensure higher accounting quality so that loan losses are recognised timelier and earnings management is reduced compared to that of IAS 39.

This study investigated if earnings management increased or decreased using the accounting guidelines in IFRS 9 compared to its predecessor, IAS 39. IFRS 9 requires managerial discretion and judgement when incorporating forward-looking information to measure LLPs[1]. Early evidence suggests that this forward-looking approach to LLPs allows more timely LLPs (Jin and Wu 2022), but may also create more opportunities to manage earnings. This study tested the differences between earnings management behaviour through an LLP calculation for a hypothetical financial firm in a controlled environment using an experiment. This study complements archival earnings management research by using an experiment in which I manipulated the accounting standard and earnings management incentive while holding all else constant. This allowed me to: (1) test for earnings management opportunities and incentives, and (2) provide *ex ante* evidence about IFRS 9's potential effectiveness.

1.1   Research question

Since the adoption of IFRS, increased levels of judgement have been needed for decision-making and reporting (Callao and Jarne 2010). Allowing more judgement provides managers with substantial discretion that allows more flexibility in interpreting accounting standards and, therefore, increases opportunities to manage earnings (Callao and Jarne 2010, Jin and Wu 2022). Accounting standards that over-emphasise the trustworthiness of the accounting data may lead to financial statements that provide less relevant and less timely information. Conversely, accounting standards that rely too much on management's own judgements may lead to the financial information that is viewed sceptically by users due to the potential for earnings management (Healy and Wahlen 1999). Managers have the opportunity to report financial information that does not accurately reflect the underlying economics because the auditing process is not perfect (Healy and Wahlen 1999).

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[1] In this study I refer to the LLP as the balance which reduces the outstanding loans on the statement of financial position and the change in the LLP as the amount to recognise on the statement of profit or loss and other comprehensive income called a loan loss.

Some believe that allowing more professional judgement within IFRS may provide more leeway for unsavoury earnings management (Agoglia et al. 2011; Gomaa et al. 2019; Liu et al. 2014). Allowing more discretion to determine LLPs may result in reduced transparency resulting in investor doubt about banks' intrinsic value (Bushman 2016; Bushman and Williams 2012; Novotny-Farkas 2016). Increased managerial discretion may create opportunities for banks to avoid disclosing negative information that may intensify capital inadequacy concerns during economic downturns by compromising the ability of LLPs to cover unanticipated losses (Bushman 2016; Novotny-Farkas 2016). Earnings management may be easier under flexible accounting standards that provide limited guidelines or formulae to calculate LLPs, giving bank managers flexibility to determine LLPs (Abdul Adzis et al. 2016). There is, therefore, a concern that adopting IFRS 9 will allow greater earnings management because of the flexibility and increased judgement the accounting standard requires to determine LLPs.

An opposing view is that entities are less likely to report aggressively when increased levels of managerial discretion are required (Agoglia et al. 2011; Psaros and Trotman 2004), because of the costs imposed on the firm if earnings management is revealed (Becker et al. 1998; Dutta and Gigler 2002). Managers applying less precise accounting standards could decide not to select their desired accounting treatment, because of the increased risk of possible costs imposed through regulation and litigation (Agoglia et al. 2011). The uncertainty surrounding the risk of being perceived to be non-compliant is greater when the absence of detailed guidance requires managers to use their judgement and discretion (Agoglia et al. 2011). Shareholders may prefer accounting standards that do not overly restrict management's ability to engage in earnings management, to ensure that earnings management is not too costly (Dutta and Gigler 2002). Critics of rules-based accounting standards have also argued that these rules can become inadequate and dysfunctional when the economic environment changes or as managers find creative ways around them (Benston et al. 2006; Ewert and Wagenhofer 2005). Rules-based standards do not necessarily reduce earnings management and do not increase the value relevance of financial reports if the rules provide managers with the ability to structure transactions that meet these rules while violating the underlying economics of transactions (Benston et al. 2006; Ewert and Wagenhofer 2005; Healy and Wahlen 1999; Nelson et al. 2003; Okamoto 2011; Schipper 2003). Aggressive reporting and increased earnings management are likely

to be more difficult to justify with a less precise accounting standard requiring more judgement (Agoglia et al. 2011; Psaros and Trotman 2004).

The two different perspectives on earnings management through LLPs can be summarised as follows: the first perspective is that managers opportunistically seek to mislead investors, and the second is that managers use their discretion to reveal private information about the firm's future cash flows to investors to make the reported earnings more informative. These opposing views at a conceptual level guided me to investigate if financial reporting standards that permit greater judgement and discretion at the same time encourage greater earnings management behaviour. I specifically investigated this in the LLP environment that led me to the research question:

Does IFRS 9 expected credit loss model of determining LLPs for firms encourage greater earnings management behaviour compared to IAS 39 incurred loss model?

1.2   Background

The financial crisis of 2008 led to policy debates amongst banking and accounting regulators around the world (Laux and Leuz 2009). In addition, LLPs have been a focus area for many regulatory bodies responding to the financial crisis (Leventis et al. 2011). Accounting principles are essential for a well-functioning capital market and, therefore, accounting carried some of the blame for the financial crisis (Magnan and Markarian 2011; Markarian 2014). As loans form such a big portion of a bank's financial statements, LLPs were central to the 2008 financial crisis (Barth and Landsman 2010; López-Espinosa et al. 2021). IAS 39 incurred loss model was defined by rather low levels of professional judgement and by the delayed recognition of loan losses (Marton and Runesson 2017). The delayed recognition of loan losses was identified as a weakness of IAS 39's incurred loss model (Beatty and Liao 2014; Giner and Mora 2019; Laeven and Majnoni 2003; Novotny-Farkas 2016; Marton and Runesson 2017; Ryan 2017, Taylor and Aubert 2022). This created a concern that during a financial crisis some banks could be using LLPs to manage earnings (Beck and Narayanamoorthy 2013) by for example increasing LLPs when income is high to lower volatility of reported earnings (Greenawalt and Sinkey 1988; Leventis et al. 2011; Ma 1988) or decreasing LLPs to improve the capital adequacy ratio and earnings (Leventis et al. 2011).

Before the financial crisis, some bank managers were pursuing bolder credit lending strategies to boost the bank's current earnings and increase their compensation without any regard for the long-term consequences (Gebhardt and Novotny-Farkas 2011; Markarian 2014). During the financial crisis, this behaviour resulted in considerable costs when the hidden risks turned into significant actual losses (Gebhardt and Novotny-Farkas 2011; Markarian 2014). More timely identification and provisioning for loan losses are in line with the needs of users of financial statements as this will improve transparency regarding changes in credit trends and enhance financial stability (Beatty and Liao 2011; Gomaa et al. 2019; Jin and Wu 2022, Novotny-Farkas 2016).

Firms opportunistically use the discretion afforded to them by accounting standards to realise gains and losses to manage regulatory capital and earnings and to avoid losses (Barth et al. 2017; Lloyd 2018). Earnings management is of great concern to securities regulators and is widely researched due to the impact this has on the quality of reported earnings (Barth et al. 2008; Liu et al. 2014). Earnings management practices give rise to an important ethical issue facing the accounting profession (Johnson et al. 2012). Prior research found that managers use LLPs to manage earnings (Anandarajan et al. 2007; Kanagaretnam et al. 2003, 2004a; Leventis et al. 2011; Ma 1988; Marton and Runesson 2017; McNichols and Wilson 1988). One of the ways banks can manage earnings is by decreasing the LLP (to increase earnings by debiting LLP and crediting income) if the actual losses exceed the expected losses and increasing the LLP (decrease earnings by debiting expense and crediting LLP) if actual losses are lower than expected losses (Laeven and Majnoni 2003; López-Espinosa et al. 2021). Therefore, when bank earnings are high, managers reserve some of these earnings as a provision for loan losses, the notion of saving for a rainy day (Greenawalt and Sinkey 1988). When earnings are low, the LLP can be utilised to obscure actual loan losses (Greenawalt and Sinkey 1988).

Before IFRS 9 was adopted by entities, earnings management was easier due to the flexible and non-precise guidelines under local Generally Accepted Accounting Principles (GAAP) in determining LLPs (Abdul Adzis et al. 2016; Gebhardt and Novotny-Farkas 2011; Leventis et al. 2011). The implementation of IFRS can reduce earnings management behaviour by limiting the accounting options available to managers due to stricter accounting rules that can improve earnings quality (Abdul Adzis et al. 2016; Barth et al. 2008; Leventis et al.

2011). IAS 39 was first issued in December 1998 and became mandatory in January 2001 (Gebhardt and Novotny-Farkas 2011). Since then, IAS 39 was revised numerous times (Gebhardt and Novotny-Farkas 2011). The incurred loss model in IAS 39 was introduced to limit management's ability to create hidden reserves during a positive economic cycle (that could be used to smooth earnings during a negative economic cycle) as this kind of earnings management was considered to be misleading to investors (Gebhardt and Novotny-Farkas 2011; Hoogervorst 2014; Leventis et al. 2011). Paragraphs 58-70 in IAS 39 set out specific 'loss events' and were introduced to guide banks to only provide for credit risk when there is 'objective evidence' that impairment has occurred (Gebhardt and Novotny-Farkas 2011).

LLPs in IFRS 9 allow more managerial discretion over the timing as well as the measurement of expected losses (Novotny-Farkas 2016). This managerial discretion permits bank managers to communicate private information about future credit losses to users of financial statements but can also be used opportunistically to increase reported earnings (Beatty and Liao 2014; Jin and Wu 2022, Marton and Runesson 2017; Novotny-Farkas 2016). The managerial discretion that IFRS 9 requires when measuring impairment losses could provide more opportunities for earnings management (Gebhardt 2016; Gomaa et al. 2019). Research has found that reducing the amount of reporting discretion can reduce the level of earnings management and improve earnings quality (Ewert and Wagenhofer 2005). GAAP guidelines regarding LLPs applicable in the different individual countries before the adoption of IFRS resemble the current IFRS 9 guidelines (Marton and Runesson 2017; Novotny-Farkas 2016), indicating that we are potentially moving back to the accounting guidelines that were applicable before IAS 39. This created a concern that earnings management will increase after the adoption of IFRS 9 due to the increased reporting discretion.

The Chairman of the IASB warned that we must be careful not to introduce changes in IFRS 9 that address IAS 39 criticism but create opportunities for earnings management (Hoogervorst 2014). The IASB claims that careful attention was paid to limit opportunities for earnings management in developing the ECL model in IFRS 9 (Hoogervorst 2014). One of the ways the IASB claims to achieve this is by entities providing information to the users of financial statements about the judgement and discretion the LLP decision is based on and how this has changed. This is done by the compulsory completion of disclosures that

explain the assumptions used and the source of changes in LLP from period to period (Hoogervorst 2014).

Even though there are similarities in the level of judgement and discretion required to determine LLPs under local GAAP that preceded IFRS and IFRS 9, they are in essence different. Local GAAP did not have the same guidelines applicable across different countries. For example, each individual country applying local GAAP standards had significant leeway in how they applied the LLP guidelines (Novotny-Farkas 2016) whereas IFRS 9 is a global standard. Previous earnings management research showing that earnings management decreased when IAS 39 was adopted could also be confounded by the effects of IFRS adoption (implementing a global standard versus having different guidelines in different countries). Barth et al. (2008) found that firms applying IFRS generally show less evidence of earnings management and more value-relevant accounting amounts in the post-adoption period than firms applying local GAAP. By contrast, Jeanjean and Stolowy (2008) provide evidence that earnings management does not necessarily decline after the introduction of IFRS. In this respect, Capkun and Collins (2018) demonstrate that neglecting to control for changes in timely profit and loss recognition when entities adopt IFRS, can cause inaccurate inferences regarding the effects of IFRS adoption on earnings management and accounting quality. Therefore, we cannot simply rely on previous research to determine if IFRS 9 (a change within IFRS) will increase earnings management.

This study focused on accounting standards that require more managerial judgement and discretion in measurements and application. The change from IAS 39's ICL model to IFRS 9's ECL model of determining LLPs allows more managerial judgement to incorporate future losses in the LLP calculation. This creates the perception that management will have more perceived control over the behaviour. This change also creates an opportunity to investigate the impact of the change in the level of judgement and discretion on managerial earnings management behaviour.

1.3   Research methodology

This study employed a 2 × 2 between-subjects fully crossed experiment where the treatment groups included (1) IAS 39 ICL model versus IFRS 9 ECL model and (2) earnings management incentive (emi) versus no emi. The experiment was divided into two phases. Participants were randomly assigned to either an IFRS 9 or an IAS 39 treatment group with

or without emi. An additional control condition (no accounting standard and earnings management) was also included. Participants in all treatment groups were asked to indicate the percentage in each age category of the debtors' book they want to include in the LLP of Bank X in Country Y in the current year.

The purpose of this study was to examine whether managers exploit the available judgement and discretion to determine LLPs to manage earnings differently under IAS 39 compared to IFRS 9. This study focused on whether participants make earnings management behaviour decisions. The interaction effect between earnings management incentives (a bonus that is based on the size and accuracy of the LLP and analysts' earnings forecast information) and accounting standard (IFRS 9 versus IAS 39) was compared between those participants who received no emi and those who did.

Participants targeted in this study are in their second or third year of their training contract or newly qualified Chartered Accountants (CAs). To become a Chartered Accountant in South Africa (CA(SA)) one must complete a Certificate in the Theory of Accounting (CTA) at an accredited university. This means that participants will study for four years full-time, or longer if the university qualification is obtained through part-time study. The university qualification will focus on Accounting, Auditing, Financial Management and Taxation. Participants also need to pass two professional qualifying examinations after they have obtained the university qualification and while they are completing their learnership programme. The first examination is called the Initial Test of Competence (ITC) and the second the Assessment of Professional Competence (APC). As part of the process to become a CA(SA) all participants must complete a three-year fixed-term learnership programme, also called a training contract, at a registered training office. Most of the training offices in South Africa are registered audit firms. This full-time employment contract provides participants with the opportunity to develop their professional competence while applying technical knowledge in a practical work environment. An individual will qualify as a CA(SA) when he or she has passed the two professional qualifying examinations and completed the three-year fixed-term learnership programme. Participants who completed this case study had to have completed a minimum of one year of their employment contract to give them the required practical experience.

The decision to use an experimental task was based on the fact that IFRS 9 has only been effective from 1 January 2018 and limited archival data is available to test the hypothesis. It is, therefore, possible that the effects of IFRS 9 adoption in terms of earnings management may not be noticeable for some time. Furthermore, empirical-archival studies of earnings management are sometimes criticised for omitting variables (Hageman 2008; Libby et al. 2002; Libby and Seybert 2009) while an experiment allows direct control of many variables. It is also possible that earnings management can lead to increased value relevance if the accounting principles provide appropriate restrictions (Ewert and Wagenhofer 2005). If managed earnings lead to higher value-relevance, an archival study looking at value-relevance might conclude that IFRS 9 is an improvement over IAS 39 when it reflects more managed earnings.

By creating an opportunity in the experiment for participants to deliberatively change the LLP after observing the impact the LLP decision had on Bank X's earnings, this experimental accounting study focused on the earnings management definition rather than a proxy when measuring earnings management. Earnings management is defined as 'a deliberative manipulative decision that management makes after observing the firm's true economic earnings' (Dutta and Gigler 2002). This study provided evidence that individual managers deliberately manage earnings. As earnings management is the result of the individual's choices, I examined the earnings management decisions by the individual manager through this experiment while much of the previous research used archival data that examines firm-level impacts.

1.4   Summary of the main findings

This study provides important evidence that financial reporting standards that permit greater latitude and flexibility in measurements and application do not lead to an increase in earnings management. The results support the argument that the change from IAS 39 to IFRS 9 achieved the objective of allowing more managerial discretion without resulting in greater earnings management. Even though IFRS 9 incorporates more forward-looking information in determining the LLP and this increases the flexibility, judgement and discretion of LLP calculations, I did not find evidence that IFRS 9 changes participants' earnings management behaviour. This provides support that the standard-setting process is working.

Even though earnings management does not differ between the various accounting standards, I found evidence that earnings management takes place in the LLP stage that is subject to the highest level of judgement and discretion compared to the LLP stages that require less judgement and discretion to determine the provision. This finding provides support that earnings management is expected in the discretionary component of LLPs rather than the non-discretionary component.

I also found evidence that managers manage earnings when there is an incentive to manage earnings, irrespective of the level of flexibility, managerial discretion and judgement allowed by the accounting standard. In line with previous research, I found evidence that when earnings are low, participants with an incentive to manage earnings, increase LLPs less than participants who do not have an incentive to manage earnings. I found evidence that participants understate LLPs to obtain a higher bonus or to meet or beat analysts' earnings forecasts. This study confirms prior literature by providing evidence that a bonus incentive and analyst earnings forecasts are potential incentives for managers to manipulate earnings.

1.5   Motivation

The IASB's Chairman, in a speech in January 2016, highlighted that the introduction of an ECL model for credit losses that replaced the ICL model is the biggest change between IAS 39 and IFRS 9 (Hoogervorst 2016). This change in the accounting standard gave me a unique opportunity to test earnings management behaviour when more judgement and discretion in accounting standards are required because of the forward-looking LLPs in IFRS 9, versus the backward-looking LLPs in IAS 39 for a single industry (i.e., banking). For many banks, the adoption of the ECL model will be the most significant accounting change they have experienced (Limani and Meta 2017; López-Espinosa et al. 2021). This study helps users of financial statements to discern whether reported accounting numbers based on accounting standards that allow more judgement and discretion better reflect the economic reality by focusing on the use of accounting judgement and discretion to manage earnings.

Limited research is available comparing the impact of allowing more managerial discretion in accounting standards, focusing on how a change in measurement requirements changes management's behaviour. To produce greater insight into the effects of accounting standards, which incorporate uncertain forward-looking information, this study investigated if the new IFRS 9 encourages or deters earnings management behaviour compared to IAS

39. It, therefore, focuses on how managers change their LLP decision after the impact on profit or loss was observed. This experiment also manipulated management's incentives to manage earnings to evaluate if the different levels of judgement and discretion in the different stages when determining an LLP lead to earnings management. Understanding how the judgement and discretion in accounting standards affect LLPs is critical because LLPs are an important discretionary financial reporting choice for a bank (Andries et al. 2017; Beatty and Liao 2014; López-Espinosa et al. 2021; Ryan 2017).

1.6 Contribution

IFRS 9 may allow greater earnings management due to the discretionary component the standard allows when determining LLPs (Giner and Mora 2019). This study contributes to and builds on recent advances in the international accounting earnings management literature by demonstrating the role that accounting standards that permit greater latitude and flexibility and more discretion in measurement play as a driver of earnings management.

Nelson et al. (2002) indicate that earnings management attempts most often involve reserves. Even though other previous research comparing LLPs under local GAAP with IAS 39 shows that accounting standards that require more professional judgement might allow more leeway for earnings management, without further examination it cannot be concluded that IFRS 9 will have the same consequence. Different measurement criteria after initial recognition are used in the different standards. Before IFRS adoption, stakeholders did not have the comparability of LLPs in financial statements across banks and across countries that are available today. The adoption of IFRS removed the allowable accounting alternatives that were available in local GAAP standards where each individual country developed its own rules (Leventis et al. 2011). IFRS 9 is a global standard and still has the comparability that was a benefit of adopting IAS 39. This study only focused on the impact of LLPs that allow more or less judgement and discretion have on earnings management and not the impact of adopting a global standard across countries as Leventis et al. (2011) and Marton and Runesson (2017) investigated.

Armstrong et al. (2010) argue that the positive market reaction in Europe as a result of the IFRS adoption could reflect the anticipated benefits linked to IAS 39 adoption. These benefits are not only associated with earnings management behaviour. Capkun and Collins (2018) demonstrate that previous research which neglected to control for changes in the

timely profit and loss recognition in IFRS adoption studies can cause inaccurate inferences regarding the effects of IFRS adoption on earnings management and accounting quality. An obstacle that accounting researchers often face when detecting earnings management in cross-industry samples of firms is that it is a challenge to unravel the smoothness of earnings that reflect the smoothness of either the fundamental earnings process or the accounting rules or intentional earnings management (Ryan 2012). A benefit of this experiment is that all the variables were controlled for a single industry and there was no confounding from cross-industry or IFRS adoption effect.

Behavioural studies of earnings management complement the findings in the archival literature by addressing some shortcomings and providing evidence that earnings management behaviour is very prevalent (Hageman 2008). Earnings management empirical studies are dependent on the earnings management proxy the authors use (Jeanjean and Stolowy 2008; Libby et al. 2002; McNichols and Wilson 1988). Evidence of changes in economic behaviour and the impact of economic incentives when accounting standards change is limited (Beatty 2007). The changes observed in empirical research findings cannot cleanly be attributed to the new regulation when comparing firms before and after a change, because control firms that are not affected by the change are hard to find (Beatty and Liao 2014). In this experiment I could control which participants report under IAS 39 and which participants report under IFRS 9. I could also create a control group that does not receive any accounting guidance to be able to report earnings management behaviour decisions. In this behavioural study, I examined individuals' earnings management decisions while much of the previous research used archival data that examined firm-level impacts.

IFRS 9 breaks down the impairment of financial assets in stages and these stages require different levels of judgement and discretion to determine the LLP. Management needs to apply the highest level of judgement and discretion in Stage two loan portfolios. This study divides the LLP decision for the participants into different stages to provide important evidence that the different levels of judgement and discretion that are required influence the earnings management decision. It also provides evidence that if management has an incentive to manage earnings, this will take place in IFRS 9 Stage two LLP due to the level of judgement that is required for the Stage two LLP. According to my knowledge, no previous study has specifically separated the LLP decisions into stages to analyse earnings management.

Gomaa et al. (2019) also provide some evidence on the effectiveness of replacing the ICL model of IAS 39 with the ECL model of IFRS 9 to account for credit impairment losses. This study differs from the Gomaa et al. (2019) study and contributes to the literature in several ways. This study used professionals including second- and third-year auditing trainees (South African Institute of Chartered Accountants (SAICA) trainees) from different accounting and auditing firms in South Africa. I also included Chartered Accountants in South Africa (CA(SA)) who had qualified in 2020 in the sample. These participants have full-time professional experience. They are used to interpreting complex accounting standards and applying them to judgement decisions. By contrast, participants who completed the Gomaa et al. (2019) study were in their third and fourth years of undergraduate programmes in engineering and business graduate programmes without specific prior academic or practical exposure to accounting judgements. Moreover, participants in the present study have experience in the real world to draw on when making the LLP decision since this study uses an authentic LLP calculation for a bank that is more in line with real-world LLP experiences these participants may have had exposure to. The Gomaa et al. (2019) study applied the LLP decision to a production environment that is different from a financial environment. Finally, my study focused on the definition of earnings management by allowing participants to make changes to the LLP before submission. I created an opportunity for participants to deliberatively change or adjust the LLP after observing what impact the LLP decision has on earnings. The primary objective of the Gomaa et al. (2019) study was to test if the mandatory replacement of the ICL model with the ECL model achieved its intended outcome, namely, to increase the adequacy of expected credit-loss allowances or reserves. The Gomaa et al. (2019) study, therefore, did not focus on earnings management whereas it is the main focus of this study. The objective of this study was to determine whether financial reporting standards that permit greater judgement and discretion in measurements and application lead to an increase in earnings management. This study used the earnings management pressure versus no earnings management pressure to see if participants manage earnings based on a decision that will have an advantage for them.

This study also focused on the psychological aspects of earnings management behaviour on an individual decision-making level rather than at a firm level. Certain personal characteristics or traits of individual managers that may influence their willingness to manage earnings were investigated. Given how important LLPs are for banks' financial

statements, an analysis of how a manager's characteristics impact on LLP decisions and earnings management is very important. Only a handful of studies to date have examined the correlation between personal characteristics and earnings management behaviour with the chief executive officer (CEO) or chief financial officer (CFO) as the executive of interest (Qi et al. 2018), whereas I examined the effect of trainee accountants at an entry level. Most of these behavioural studies examining earnings management and ethical issues in accounting focus on United States (US) firms (Heinz et al. 2013; Qi et al. 2018). This study contributes to the existing literature by providing empirical evidence that males are more likely to respond to incentives provided and take real action to achieve desired outcomes compared to females. These results can shed a light on gender and earnings management in South Africa where ongoing accounting scandals (Steinhoff, Tongaat Hulett, VBS Bank and KPMG) have ravaged the trust in the profession. The study further contributes to the debate on gender and incentives, and how accounting discretion allowed in financial reporting is used to manage earnings. The findings may have important implications for audit firms in terms of training staff, assigning teams to audit engagements as well as identifying audit focus areas depending on the bank management's gender.

The results of this study could be of interest to the IASB in their post-implementation review of IFRS 9 as well as to inform their current steps to improve the recognition of LLPs that are more forward-looking. This study provides evidence to improve our understanding of the calculation of LLPs and the reliability of IFRS 9's LLPs to accounting researchers, accounting standard setters, supervisors, policymakers, regulators, preparers, auditors and users of financial statements to help them better understand accounting information's relevance as they continue to focus on the appropriate use of LLPs. Providing earnings management behaviour insight helps researchers better understand management judgements and decisions. This study is of interest in the ongoing initiative against earnings management in accounting standards that allow more judgement and discretion. This study provides important evidence that financial reporting standards that permit greater latitude and flexibility in measurements and application do not lead to an increase in earnings management. Importantly, this study was not influenced by the confounding effect of IFRS adoption. The findings should also be of interest to the securities and exchange commissions in their ongoing initiative against earnings management.

1.7   Delimitation

This study is operationalised by investigating whether IFRS 9's ECL model of determining LLPs for financial firms is associated with greater earnings management relative to IAS 39's ICL model. The results of this study should be interpreted considering its limitations. This study focused on LLPs in a banking environment and the results may not be generalisable beyond the particular provision or industry examined. Participants' responses may have been influenced by this artificial setting. It is possible that additional factors may be present in the banking environment which would either deter or encourage earnings management through accounting for LLPs. The design of the study does not account for the effect earnings management may have on the reputation of a participant.

The study includes two earnings management incentives. As the two incentives occur together in the treatment, it limits the study's ability to say if one of the incentives has a stronger influence on the likelihood of management managing earnings. It also limits the study's ability to say if one of the incentives is enough to cause earnings management. This study does not investigate other causes of earnings management that might influence the earnings management decision.

1.8   Chapter outline

The remainder of this study is set out as follows: in Chapter 2 the accounting guidelines for financial instruments and how these have changed over time are discussed. In Chapter 3 the findings of prior earnings management literature and the accounting guidelines' impact on earnings management are summarised. The gap that exists in the literature is highlighted and the research hypotheses are explained. In Chapter 4 the research methodology is set out and details of the experiment design are explained, while the detailed results of the tests investigating the hypotheses are discussed in Chapter 5. Finally, Chapter 6 contains the summary and conclusion. Appendix 1 contains the full detailed website information provided to participants in Phases one and two. Appendix 2 includes the results of the pilot study while Appendix 3 includes the participant-related descriptive statistics. Appendix 4 presents the results of the tests for basic assumptions.

1.9   Summary and conclusion

The main purpose of this study was to determine whether financial reporting standards that permit greater judgement and discretion in measurements and application lead to an

increase in earnings management. This was executed by establishing whether IFRS 9's ECL model of determining LLPs for financial firms is associated with greater earnings management relative to IAS 39's ICL model. Given the significant amount of time that was spent revising IAS 39 to replace it with IFRS 9 and how important LLPs are for banks' financial statements, this study contributes to the literature by evaluating if the deficiencies in IAS 39 were addressed without increasing opportunities for earnings management. This study focused on the increased level of managerial judgement and the impact this has on earnings management. This study provides important evidence that financial reporting standards that permit greater latitude and flexibility in measurements and application do not lead to an increase in earnings management. The results suggest that the IASB was successful in limiting opportunities for earnings management when developing the ECL model in IFRS 9.

2. ACCOUNTING GUIDELINES FOR FINANCIAL INSTRUMENTS

A loan loss provision (LLP) is a provision for expected credit losses (ECL) also called a loss allowance (IASB 2014). The purpose of the LLP is to cover potential loan losses on, for example, uncollected loans and loan payments, bad loans and customer defaults, ensuring that loan losses are recorded when they occur (Wall and Koch 2000). At each financial reporting date, bank managers have to use their judgement to determine the loan losses they expect due to defaults (Gebhardt and Novotny-Farkas 2011). Accounting standards provide the guidelines as to what degree anticipated loan losses are recognised (Gebhardt and Novotny-Farkas 2011). Over time LLPs have been calculated in different ways. These differences include the extent to which changes in the probability of default are considered, what information is used to determine the probability of default (forward or backward-looking), and the discount rate used to account for the time value of money (Novotny-Farkas 2016).

2.1 Local GAAP guidelines for the impairment of financial instruments

Before the IFRS adoption, most European countries applied a mixture between the incurred-loss and expected-loss models (Gebhardt and Novotny-Farkas 2011). When evaluating how LLPs evolved over time, there is no clear-cut distinction between the incurred-loss model and the expected-loss model as we currently understand them (Camfferman 2015). IAS 39 incurred-loss model required objective evidence of impairment that resulted in insufficient and delayed LLP recognition (Camfferman 2015; Gomaa et al. 2019; Limani and Meta 2017; López-Espinosa et al. 2021; Novotny-Farkas 2016). IFRS 9 expected-loss model requires a higher level of managerial judgement and discretion in determining the LLP. This allows management to incorporate forward-looking information in the LLP decision (Camfferman 2015; Gomaa et al. 2019; Limani and Meta 2017; López-Espinosa et al. 2021; Novotny-Farkas 2016). When looking at an incurred-loss and an expected-loss model, researchers should look at the positions on a continuum of approaches that allow greater or lesser scope for early loss recognition (Camfferman 2015).

2.1.1 <u>Impairment</u>

Before IAS 39 was effective in Europe, bank managers could make a 'general' LLP without identifying possible customers at risk of default (Gebhardt and Novotny-Farkas 2011;

Leventis et al. 2011; Marton and Runesson 2017). Local GAAP allowed banks to anticipate probable loan losses due to expected future events and these were based on more forward-looking loan loss provisioning (Gebhardt and Novotny-Farkas 2011; Leventis et al. 2011). Even the beginning stages of IAS 39 were based on a recoverable-amount criterion or a loss-event criterion only (Camfferman 2015). It provided very limited guidance, only requiring that it is probable that an asset had been impaired (Camfferman 2015). Local GAAP allowed more judgement (Marton and Runesson 2017). The flexible guidelines left significant leeway for managers to use their own discretion and judgement and therefore the ability to manage earnings (Abdul Adzis et al. 2016; Gebhardt and Novotny-Farkas 2011).

Different countries had different approaches to accounting for LLPs in terms of when deterioration in credit quality had to be recognised and how loan losses should be measured (Gebhardt and Novotny-Farkas 2011). Most local GAAP in Europe calculated LLPs by determining the market value or present value of expected future cash flows using the current market interest rate as the discount factor (Gebhardt and Novotny-Farkas 2011). The UK GAAP previously had an incurred-loss regime, but it did not require strict evidence to recognise a loan loss (O'Hanlon 2013). The previous Danish GAAP guidelines required banks to make LLPs for losses deemed to be unavoidable as well as for foreseeable losses (Gebhardt and Novotny-Farkas 2011). This guideline was interpreted in such a way that the loan balance, after the LLP, should resemble the current market value (Gebhardt and Novotny-Farkas 2011). Incurred as well as ECL were included in LLPs according to the Danish GAAP implemented previously (Gebhardt and Novotny-Farkas 2011). These guidelines resemble the current IFRS 9 guidelines (Gebhardt and Novotny-Farkas 2011), indicating that the potential movement is back to the accounting guidelines that were applicable before IAS 39.

Banking regulations issued in the US in 1969 required that a minimum LLP must be calculated based on historical loss experience. Based on management's judgement an additional amount could be charged, if the minimum provision was determined to be insufficient (Greenawalt and Sinkey 1988). The previous Financial Accounting Statement (FAS) 5, Accounting for Contingencies, issued by the US Financial Accounting Standards Board (FASB), defined impaired loans in terms of a recoverable-amount principle. It took into account the open-ended category of 'current information and events' (Camfferman

2015). Loan impairment focused on losses expected to result from past events under FAS 5 (Giner and Mora 2019). There was also a reference to future confirming events in FAS 5 that was ambiguous due to the wording of the sentence. The wording could support an understanding that such confirming events would confirm the more general information available on the reporting date, as opposed to the more restrictive events that must have occurred before the reporting date (Camfferman 2015). Financial statement preparers were left with the question of whether issuing a loan with a probability of non-repayment constituted 'an event' that could validate day-one losses (Camfferman 2015).

2.1.2   Local GAAP criticism

Concern was raised that the accounting guidelines applicable to the impairment of loans under the different local GAAP were ambiguous and flexible and they were exploited to postpone the recognition of losses in financial statements (Camfferman 2015). Managers were using various different methods when assessing individual loans and there was no clear link between the application of historical loss experience and the inclusion of 'supplemental' reserves for loan losses when determining LLPs. The LLPs under local GAAP were criticised because they could not be meaningfully compared to one another (Gomaa et al. 2019) and, therefore, change was needed.

2.2   IAS 39 accounting guidelines

In 1988, a project was started in association with the Canadian Institute of Chartered Accountants to develop IAS 39 *Financial Instruments: Recognition and Measurement* (Pucci and Skærbæk 2020; Walton 2004). In 1991, an exposure draft was first issued followed by another exposure draft in 1994 (Walton 2004). IAS 39 was finally issued in 1998 and has been revised several times (Gebhardt and Novotny-Farkas 2011). The purpose of IAS 39 was to reduce the judgement and discretion allowed to determine LLPs in local GAAP before IFRS adoption (Gebhardt and Novotny-Farkas 2011) and reduce the potential for manipulation (Pucci and Skærbæk 2020).

2.2.1   IAS 39 recognition and measurement principles

When a financial asset is recognised initially under IAS 39, an entity should measure it at its fair value plus (except for assets measured at fair value through profit or loss) directly attributable to transaction costs (IASB 2011). An entity classifies financial assets as measured at fair value through profit or loss; held to maturity investments; loans and

receivables; and available for sale financial assets (IASB 2011). The classification of the financial instrument is based on the specific definitions for each category. The subsequent measurement of financial assets is at the financial asset's fair value before deducting any transaction costs. An exception applies to loans and receivables and held to maturity investments that are measured at amortised cost using the effective interest method. Investments in equity instruments that do not have a quoted market price in an active market and whose fair value cannot be reliably measured (including derivatives that are linked to and must be settled by delivery of such unquoted equity instruments) are measured at cost (IASB 2011). Although I discuss all the categories in IAS 39, this study was primarily concerned with LLPs for banks which apply to financial assets classified as loans and receivables that are measured at amortised cost.

IAS 39 defines the amortised cost of a financial asset or financial liability as 'the amount at which the financial asset or financial liability is measured at initial recognition minus principal repayments, plus or minus the cumulative amortisation using the effective interest method of any difference between that initial amount and the maturity amount, and minus any reduction (directly or through the use of an allowance account) for impairment or uncollectability'.

2.2.2 <u>Fair value through profit or loss</u>

A financial asset at fair value through profit or loss is either those financial assets held for trading or those designated to this category at inception. A financial asset is held for trading if it is obtained or originated to sell or buy it back in the future. The purpose of these financial assets is to generate a profit from short-term fluctuations in price or if it is part of a portfolio of identified financial assets that are managed together and for which there is proof of a short-term profit-taking pattern. Examples of financial assets held for trading include debt and equity securities; loans and receivables acquired by the entity to make a short-term profit and derivatives, except if they are accounted for as hedges.

An entity can also decide to designate a financial asset to the fair value through a profit or loss category on initial recognition provided. Such a designation results in more relevant information. Examples of a designation that results in more relevant information will be because it either eliminates or significantly reduces a measurement or recognition inconsistency (sometimes referred to as 'an accounting mismatch'); or is part of a group of

financial assets that is managed and its performance is evaluated on a fair value basis following a documented risk management or investment strategy, and information about the group is provided internally on that basis to the entity's key management personnel (IASB 2011).

2.2.3   Held-to-maturity investments

Held-to-maturity investments are financial assets with fixed or determinable payments and fixed maturity where the entity has the objective and ability to hold to maturity. The objective and ability are re-examined at each subsequent statement of financial position date. Examples of held-to-maturity investments include debt securities and redeemable preference shares where the entity has the objective and ability to hold-to-maturity. This category excludes loans and receivables and those financial assets that the entity has designated as at fair value through profit or loss or available for sale upon initial recognition. Equity securities do not have a fixed maturity date and therefore can also not be classified as held-to-maturity.

Selling more than an insignificant amount of held-to-maturity securities (other than in exceptional circumstances) casts doubt on an entity's objective or ability to hold investments to maturity. If the entity has, during the current financial year or the two previous financial years, sold or reclassified more than an insignificant amount of held-to-maturity investments before maturity, the entity is prohibited from using the held-to-maturity classification for any financial assets for two financial years. All the held-to-maturity investments should then be reclassified as available for sale and measured at fair value.

2.2.4   Loans and receivables

Financial assets are classified as loans and receivables when they are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. An entity will not be allowed to classify a financial asset as a loan or receivable if the holder does not recover its initial investment to a large extent for a reason other than credit deterioration (IASB 2011).

2.2.5   Available for sale

Financial assets that are not classified in any of the other categories will be classified as available for sale. It includes all equity securities other than those classified as at fair value

through profit or loss. An entity also has the right to designate any asset, other than a trading one, to this category at inception (IASB 2011).

2.2.6 Impairment

According to IAS 39, a financial asset is impaired if its carrying amount exceeds the estimated recoverable amount (Camfferman 2015; Giner and Mora 2019; IASB 2011). This deterioration of the credit quality of loans is recognised through LLPs (Gebhardt and Novotny-Farkas 2011). At each reporting date an entity should determine if any objective evidence exists that a financial asset, or group of assets, may be impaired (Camfferman 2015; IASB 2011). IAS 39, paragraph 59 provides a non-exclusive list of 'trigger events' that are indicators of impairment for example significant financial difficulty of the borrower or a breach of contract (Camfferman 2015; IASB 2011). Banks' LLPs under IAS 39 do not reflect losses that are not incurred at this time (Giner and Mora 2019; Ryan 2017). LLPs under the incurred loss model in IAS 39 focus on losses expected to result from events that have already happened and expected future loan-loss events are not considered, no matter how likely they are to occur (Giner and Mora 2019; Pucci and Skærbæk 2020). Only if objective evidence of impairment exists[2], should the entity determine the recoverable amount of that asset or group of assets and recognise an impairment loss (Camfferman 2015; Gebhardt 2016; IASB 2011; Jin and Wu 2022, Pucci and Skærbæk 2020).

The amount of the impairment loss is calculated differently for financial assets carried at amortised cost, financial assets carried at cost and available for sale financial assets (Gebhardt 2016). For financial assets carried at amortised cost an impairment should be recognised when there is a probability that amounts due in terms of the contractual terms of loans, receivables or held-to-maturity investments carried at amortised cost will not be collected (Camfferman 2015). The amount of the impairment loss that should be recognised in profit or loss for the period, is calculated as the difference between the financial asset's carrying amount and the recoverable amount which is the present value of expected future cash flows (excluding future credit losses that have not been incurred), discounted at the financial asset's original effective interest rate[3] (Abdul Adzis et al. 2016; Camfferman 2015;

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[2] Lifetime expected credit losses under Stage three in IFRS 9 is described similarly to the assets that have objective evidence of impairment at the reporting date as described in IAS 39 (Pucci and Skærbæk 2020).
[3] The effective interest rate computed at initial recognition.

Gebhardt 2016; IASB 2011). The future cash flows are estimated by management (Gebhardt 2016).

If a financial asset is carried at cost because it is an unquoted equity instrument for which the fair value cannot be measured reliably, the amount of the impairment loss that should be recognised in profit or loss for the period is calculated as the difference between the carrying amount of the financial asset and the present value of estimated future cash flows, discounted at the current market rate of return for a similar financial asset (IASB 2011).

For available for sale financial assets the amount of the impairment loss that should be recognised is calculated as the difference between the acquisition cost after taking into account any principal repayments and amortisation, and the current fair value of the financial asset, after taking into account any previously recognised impairment loss (Camfferman 2015; Gebhardt 2016; IASB 2011). All fair value changes for available for sale financial assets that were recognised in equity are recycled from other comprehensive income to profit or loss (Gebhardt 2016; IASB 2011). The recognition of losses does not only include ECL but also the positive or negative effects of changes in other risk factors, for example, interest rate risk (Gebhardt 2016).

2.2.7   Benefits of replacing local GAAP with IAS 39

A benefit of adopting the tighter IAS 39 rules compared to local GAAP was that IAS 39 adoption decreased earnings management (Abdul Adzis et al. 2016; Gebhardt and Novotny-Farkas 2011; Leventis et al. 2011). Leventis et al. (2011) found that the implementation of IFRS with the adoption of IAS 39 by banks in January 2005 in the European Union (EU) improved earnings quality by reducing the likelihood of bank managers using LLPs to engage in earnings management. IAS 39 adoption reduced the subjectivity allowed before to capture credit risk (Leventis et al. 2011). Gebhardt and Novotny-Farkas (2011) also found that the reduced scope of management's judgement and discretion in determining LLPs under IAS 39 reduced earnings management for European banks. Consistent with the findings of Leventis et al. (2011) and Gebhardt and Novotny-Farkas (2011), Abdul Adzis et al. (2016) found that the adoption of IAS 39 by banks in Hong Kong also led to less earnings management. Greenawalt and Sinkey (1988) also found evidence of earnings management behaviour that increased when previously there was a shift from a more formula-driven LLP approach to management applying more judgement to determine the LLP. This supports the

evidence that the reduced scope of management's judgement and discretion also reduces earnings management. The concern that is raised is that the current IFRS 9 is moving back to this increased judgement that will lead to increased earnings management.

Even though previous research shows that accounting standards that require more professional judgement might allow more leeway for earnings management, without examining it, it cannot be concluded that IFRS 9 will have the same consequence. One of the benefits of IFRS adoption was the increased comparability of LLPs across banks and countries. Before the adoption stakeholders did not have this comparability in financial statements that are available today (Gebhardt and Novotny-Farkas 2016). IFRS adoption increased the comparability of LLPs across banks and countries and thereby improved the validity of the LLPs (Gebhardt and Novotny-Farkas 2016). Previous LLP earnings management research could therefore be confounded by the effects of adopting IFRS and not just the change in the LLP measurement rules. IFRS adoption had a positive market reaction in Europe due to investors expecting IFRS to improve the information quality for entities (Armstrong et al. 2010).

2.2.8 IAS 39 criticism

The financial and banking crisis in the late 2000s, however, raised various criticisms about IAS 39's incurred-loss model for the recognition of credit losses. IAS 39 was criticised for the complexity of the multiple and inconsistent impairment models applied across the different classifications of the financial instruments (Camfferman 2015; Lloyd 2018; Onali and Ginesti 2014). This was regarded as one of the primary weaknesses in IAS 39. Before IFRS 9 was drafted and during the financial crisis, companies recognised LLPs differently for financial assets measured at amortised cost. Available-for-sale financial assets were only recognised when there was objective evidence that the loan was impaired, as a result of a past event that occurred after the initial recognition of the asset, based on IAS 39 'incurred-loss model' (Camfferman 2015; Novotny-Farkas 2016). Marton and Runesson (2017) provide evidence that the incurred-loss model of IAS 39, compared to local GAAP standards, limited management's ability to disclose sufficient private information about loan losses.

IAS 39 requires impairment losses to be recognised when a loss is probable, based on past events and conditions at the financial statement date. To meet the 'probable' requirement, banks must conclude that the loan loss is 'more likely than not' (Ryan 2017). LLPs take into

account probable losses based on events that have already occurred up to that point and exclude expected future losses (Harris et al. 2018). Under the incurred-loss model, entities are not allowed to incorporate possible or expected losses based on the trends that may lead to additional losses (Beatty and Liao 2011; Camfferman 2015; Novotny-Farkas 2016; Ryan 2012). Critics of the incurred-loss approach say that it doesn't consider all available information about expected future losses (Beatty and Liao 2021; Gebhardt and Novotny-Farkas 2011). This may be due to the incurred-loss approach that prevents banks from reporting 'known losses' that are inseparable from the loan portfolios (Gebhardt and Novotny-Farkas 2011). Banks recognised the losses inherent in their loan portfolios on a less timely basis with the adoption of IAS 39 (Pucci and Skærbæk 2020). Therefore, there was a delay in providing information to markets about deteriorations in the credit quality of loans (Gebhardt and Novotny-Farkas 2011).

Bank regulators' focus is on financial stability and they would prefer forward-looking provisioning that covers all expected loan losses rather than IAS 39 incurred-loss model (Gebhardt and Novotny-Farkas 2011). The incurred-loss model generally understates expected losses (Gebhardt and Novotny-Farkas 2011). This model prohibits using management's expectations of future losses, limiting management's discretion in measuring LLPs (Abdul Adzis et al. 2016). Therefore, critics say that this delayed recognition is because the judgement and discretion allowed to determine the LLP under the incurred-loss model in IAS 39 is less than what is allowed in many local GAAP. They, therefore, criticise IAS 39 for this delayed recognition of credit losses (Gebhardt and Novotny-Farkas 2011; Marton and Runesson 2017; O'Hanlon 2013). The lack of judgement that could be applied also prevented management from being conservative with their credit-loss provisions (Camfferman 2015). The incurred-loss model was, therefore, also criticised for not timely reflecting all expected credit losses inherent in loan portfolios (Gebhardt 2016; Gebhardt and Novotny-Farkas 2011; Gomaa et al. 2019; Hashim et al. 2016; O'Hanlon 2013).

There is an argument that banks reporting under IAS 39 are thought to increase LLPs during downturns and decrease LLPs during economic growth periods. This is because losses will only be recognised after they have occurred, leading to higher earnings in early years and lower earnings in later years. It, therefore, intensifies the procyclicality of banks' earnings (Abdul Adzis et al. 2016; Gebhardt and Novotny-Farkas 2011). IAS 39's incurred-loss model

is criticised for exacerbating the global financial crisis, resulting in procyclicality (Badertscher et al. 2012; Hronsky 2010; Marton and Runesson 2017; Pucci and Skærbæk 2020; Seitz et al. 2018).

However, some researchers suggest that the issue may not be with the accounting guidelines but rather with how banks implement the guidelines in practice (Ryan 2012). For example, Beatty and Liao (2011) argue that the requirement of 'objective evidence of impairment as a result of one or more events that occurred' with the incurred-loss method was incorrectly understood to mean that loss recognition should be delayed until the debtor actually defaults. This created a delay in credit-loss impairments under IAS 39 due to its 'incurred-loss model', resulting in impairments that are recognised just before the default occurs (Ernst & Young 2018; Gomaa et al. 2019; Hashim et al. 2016; Novotny-Farkas 2016; O'Hanlon 2013). Related hereto, Beck and Narayanamoorthy (2013) provide evidence that Staff Accounting Bulletin (SAB) 102 guidance triggered banks to overemphasise historical loss rates when determining LLPs. Therefore, while not all researchers agree that undesirable outcomes can be wholly (or even partially) ascribed to the accounting guidelines, all these criticisms sparked the process to develop different accounting guidelines for the recognition and measurement of financial instruments (Hronsky 2010).

2.3   IFRS 9 accounting guidelines

The International Accounting Standards Board (IASB) developed IFRS 9 in response to stakeholders' criticisms (Lloyd 2018). The change was needed to move away from the current guidance of IAS 39 to a standard that will improve the relevance and faithful representation of financial statements. During the financial and banking crisis in the late 2000s, the US FASB and the IASB unsuccessfully attempted to work toward developing one expected-loss-based model to replace IAS 39 and the various US GAAP for financial assets (Hashim et al. 2016; Pucci and Skærbæk 2020). The IASB was under political pressure to address the differences between the accounting rules applicable to the financial assets under IFRS and US GAAP (Hashim et al. 2016). The FASB and IASB then both developed their own forward-looking expected-loss model (Giner and Mora 2019; Hashim et al. 2016). The IASB's accounting requirements for LLPs were included in the IASB's 2014 final version of IFRS 9 Financial Instruments, effective from 1 January 2018 (Hashim et al. 2016; IASB 2014).

The objective of IFRS 9 is to establish guidelines for the financial reporting of financial instruments that will provide relevant and useful information to users of financial statements (IASB 2014). IFRS 9 focuses mainly on the recognition and measurement criteria for financial instruments and replaced IAS 39. IFRS 9 requires that an LLP for ECL should be created to account for the impairment of financial assets (IASB 2014). According to IFRS 9 financial assets measured at amortised cost, investments in debt instruments measured at fair value through other comprehensive income, lease receivables accounted for in terms of IFRS 16, contract assets accounted for in terms of IFRS 15, loan commitments and financial guarantee contracts not measured at fair value through profit or loss should be impaired using criteria set out in IFRS 9 (Ernst & Young 2018; IASB 2014). The overarching guideline of the ECL model in IFRS 9 is to reflect a broad pattern of deterioration or improvement in the credit quality of financial instruments (Ernst & Young 2018).

2.3.1   IFRS 9 measurement principles

After initial recognition, an entity shall subsequently classify financial assets as measured at amortised cost, fair value through other comprehensive income or fair value through profit or loss based on the entity's business model (IASB 2014). An entity's business model refers to how an entity generates cash flows from financial assets (IASB 2014). An entity shall apply the same impairment requirements to financial assets measured at amortised cost and to financial assets measured at fair value through other comprehensive income (Ernst & Young 2018; IASB 2014).

2.3.2   Amortised cost

A financial asset should be measured at amortised cost if both of the following conditions are met:

- the financial asset is held within a business model where the objective is to hold the assets to collect contractual cash flows, and
- the contractual terms of the financial asset give rise to cash flows on specified dates that are solely payments of capital and interest on the capital amount outstanding.

Amortised cost of a financial asset is the amount at which the asset is measured at initially less the principal repayments, plus or minus the cumulative amortisation (using the effective interest method) of any difference between that initial amount and the maturity amount, adjusted for any loss allowances (IASB 2014). The effective interest rate method is used to

calculate the amortised cost of the financial asset and to calculate the interest revenue or expense in profit or loss based on the effective interest rate for the applicable period (IASB 2014). The effective interest rate is the rate that discounts the estimated future cash receipts through the expected life of the financial asset to the gross carrying amount of a financial asset (IASB 2014). When determining the effective interest rate, an entity shall estimate the expected cash flows taking into account the contractual terms of the financial instrument excluding ECL (IASB 2014). An exception to the effective interest rate excluding ECL is credit-impaired financial assets that have objective evidence of impairment on initial recognition, whereby an entity is required to include the initial ECL in the estimated cash flows when calculating the effective interest rate (Hashim et al. 2016).

2.3.3 Fair value through other comprehensive income

An investment in a debt instrument should be measured at fair value through other comprehensive income if both of the following conditions are met:

- the financial asset is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets and;
- the contractual terms of the financial asset give rise to cash flows on specified dates that are solely payments of principal and interest on the principal amount outstanding (IASB 2014).

An entity has the option to designate an investment in an equity instrument (that is not held for trading nor contingent consideration recognised by an acquirer in a business combination) as at fair value through other comprehensive income. Examples of equity investments recognised at fair value through other comprehensive income may be when an investor holds shares in an entity for 'strategic' reasons rather than for trading purposes for example to enhance business relationships or to gain access to a certain market (Lloyd 2018). In these instances, the investor is holding the investment for non-contractual benefits rather than for a value increase. Therefore, changes in the value of such an investment do not reflect the investor's performance or effort and should not be recognised in profit or loss (Lloyd 2018).

2.3.4 Fair value through profit or loss

A financial asset should be measured at fair value through profit or loss except if it is measured at amortised cost or fair value through other comprehensive income (IASB 2014). At initial recognition an entity may make an irrevocable choice to measure an investment in an equity instrument at fair value through other comprehensive income only if the equity instrument is not held for trading and is not a contingent consideration recognised by an acquirer in a business combination to which IFRS 3 applies (IASB 2014). The default requirement in IFRS 9 is to measure equity investments at fair value through profit or loss rather than fair value through other comprehensive income (Lloyd 2018).

2.3.5 Impairment

Compared to IAS 39, IFRS 9 applies a single impairment model for all debt instruments measured at fair value through other comprehensive income as well as debt instruments measured at amortised cost (Ernst & Young 2018; IASB 2014; Novotny-Farkas 2016). Lifetime ECL are recognised, considering all reasonable and supportable information, including that which is forward-looking, even if the loss has not yet been incurred.

IFRS 9 defines a financial asset as being credit-impaired when one or more events that have a detrimental impact on the estimated future cash flows of the financial asset have occurred (IASB 2014). IFRS 9 defines credit losses as the difference between all contractual cash flows due to an entity in terms of the contract and the contractual cash flows that the entity expects to receive, discounted at the original effective interest rate (IASB 2014).

The basic approach for the measurement of impairment losses for financial assets measured at amortised cost has not changed significantly from that of IAS 39 (Gebhardt 2016). IFRS 9, however, provides more guidance on what information to use, for example forward-looking information from risk management (Gebhardt 2016).

A credit loss is defined as the difference between the cash flows that are due to an entity in accordance with the contract and the cash flows that the entity expects to receive discounted at the original effective interest rate (IASB 2014). ECL are determined by calculating the probability-weighted estimate of credit losses and are measured at the present value of all cash shortfalls (IASB 2014). These losses are an estimate of credit losses over the life of the financial instrument (IASB 2014). When measuring the ECL an entity considers the

probability-weighted credit loss outcome, the time value of money and any other reasonable and supportable information that is available without undue cost or effort (IASB 2014). The idea with IFRS 9's ECL model is that the LLPs should be adequate to cover expected losses (Badenhorst et al. 2018; Fillat and Montoriol-Garriga 2010). ECL represent the possibility that a financial asset could become credit-impaired (Badenhorst et al. 2018). Such losses are recognized at each reporting period, even if no actual loss events have taken place (IASB 2014). Unexpected losses should be adequately buffered by shareholders' capital (Badenhorst et al. 2018; Fillat and Montoriol-Garriga 2010).

The IASB developed a model that reflects the general pattern of deterioration in the credit quality of financial instruments (Giner and Mora 2019; Hashim et al. 2016). IFRS 9 expands the information an entity is required to consider when calculating the expected loan losses (Novotny-Farkas 2016). Expected loan losses is the average loan loss weighted by the risks of default (IASB 2014). Entities are required to incorporate information from past events, and current conditions, as well as reasonable and supportable forecasts in their measurement of expected loan losses (Novotny-Farkas 2016). IFRS 9 does not have the 'probable' threshold requirement used in the incurred-loss model as per IAS 39 (Beatty and Liao 2014). IFRS 9 impairment model groups financial assets into those for which 12-month expected losses will be recognised and those for which lifetime expected losses will be recognised at the reporting date (Giner and Mora 2019; Hashim et al. 2016; Pucci and Skærbæk 2020).

IFRS 9 further breaks down the impairment of financial assets in the following stages, although it does not specifically use the words 'Stage one to three':

- Stage one: Financial assets for which credit risk has not increased significantly since initial recognition. For these financial assets, 12-month expected losses are recognised and interest is calculated based on the gross carrying amount before deducting the loss allowance (IASB 2014).
- Stage two: Financial assets for which credit risk has increased significantly and the resulting credit risk is not considered to be low. For these financial assets full lifetime ECL are recognised and interest is calculated based on the gross carrying amount before deducting the loss allowance (IASB 2014).

- Stage three: Financial assets where credit risk has increased to the extent that the particular assets are considered to be credit-impaired. Full lifetime ECL are recognised and interest is calculated based on the gross carrying amount of the asset less the loan loss allowance (IASB 2014).

Lifetime ECL under Stage three in IFRS 9 are described similarly to the individual ICL described in IAS 39 (Ernst & Young 2018; Pucci and Skærbæk 2020). The same criteria are used as was done in IAS 39 to assess if the individual financial assets are credit impaired. However, the loss allowance for a Stage three assets may be higher than for an impaired asset under IAS 39 (Ernst & Young 2018). Both IFRS 9 and IAS 39 provide similar examples of events that would indicate that a financial asset is impaired (Ernst & Young 2018). The credit exposure in IFRS 9 Stages one and two will in principle substitute those exposures measured under IAS 39 for a group of financial assets (Ernst & Young 2018).

The three-stage approach in this model requires a build-up of provisions from day one when an asset is held (Seitz et al. 2018). This means that it is virtually impossible to have a financial asset in the relevant categories with a zero LLP, i.e., all financial assets have some sort of LLP from day one. This implies that LLPs will be structurally higher under IFRS 9, as IAS 39 would have had no loss allowance on day one (Barclays 2018; Ernst & Young 2018; Seitz et al. 2018).

2.4 Summary and conclusion

This chapter highlights the key differences between IAS 39 and IFRS 9. A summary thereof is provided in Table 1.

Table 1: Key differences between IAS 39 and IFRS 9

IAS 39	IFRS 9
Classification and Measurement	
The classification categories for financial assets that determine measurement are held to maturity, loans and receivables, fair value through profit or loss, held for trading and available-for-sale which reflect how the financial assets are measured.	The classification categories for financial assets that determine measurement are amortised cost, fair value through other comprehensive income and fair value through profit or loss which reflect how the financial assets are measured.
Classification of the financial asset is based on the specific definitions for each category.	Classification of the financial asset is based on the contractual cash flow characteristics and the entity's business model for managing the financial asset.
Equity investments in private companies for which the fair value is not reliably determinable can be measured at cost.	All equity investments are measured at fair value.
Reclassification of the financial asset or financial liability is a result of a change in the intention or ability of the entity.	Reclassification of the financial assets is required only when an entity changes its business model for managing financial assets. Financial liabilities may not be reclassified.
Impairment: Incurred-Loss Model	*Impairment: Expected Credit-Loss Model*
Credit loss events have to occur. Credit losses are recognised when there is objective evidence of impairment.	ECL are recognised at each reporting period, even if no actual loss events have taken place.
Takes into account historical information that is adjusted to reflect the effects of current conditions.	Takes into account more timely and forward-looking information.
When determining the amount of impairment, historical information and objective evidence of impairment are considered. The historical information is adjusted to reflect the current conditions. The effects of future credit loss events are not considered, even when they are expected.	When determining the amount of impairment, past events, current conditions and reasonable and supportable forward-looking information that is available, without undue cost or effort, are considered. Forward-looking information includes forecasts of future economic conditions.
Different impairment models apply for financial assets measured at amortised cost and available-for-sale financial assets.	A single impairment model applies to all financial assets measured at amortised cost and debt instruments at fair value through other comprehensive income.
Scope excludes loan commitments and financial guarantee contracts.	Scope includes loan commitments and financial guarantee contracts with special provisions for purchased or originated credit-impaired instruments.

Standard setters argue that fair value accounting is the most relevant measurement for financial instruments and that the fair value measurement aspect delivers more useful financial statements for bank investors (McInnis et al. 2018). The fair value model is believed to be the most effective based on market discipline because it provides markets with the best information about the loans (Barth and Landsman 2010).

However, while most financial instruments are initially measured at fair value, it should be clear from the discussions in this chapter that the accounting for financial instruments described is not completely based on fair value in either of the accounting standards, namely IAS 39 or IFRS 9. Fair value accounting measures loans based on the economic valuation of the loan (Novotny-Farkas 2016). Fair value accounting takes into account all expected losses arising both from changes in credit risk and changes in market interest rates, not only the ECL (Novotny-Farkas 2016). Therefore, fair value accounting would recognise losses earlier than under the incurred-loss model in IAS 39 and thereby force banks to take appropriate measures early and make it more difficult to hide potential financial problems (Laux and Leuz 2009). However, the current ECL model in IFRS 9 also does not include all expected losses and therefore is not an all-inclusive fair value model as can be seen in Figure 1.
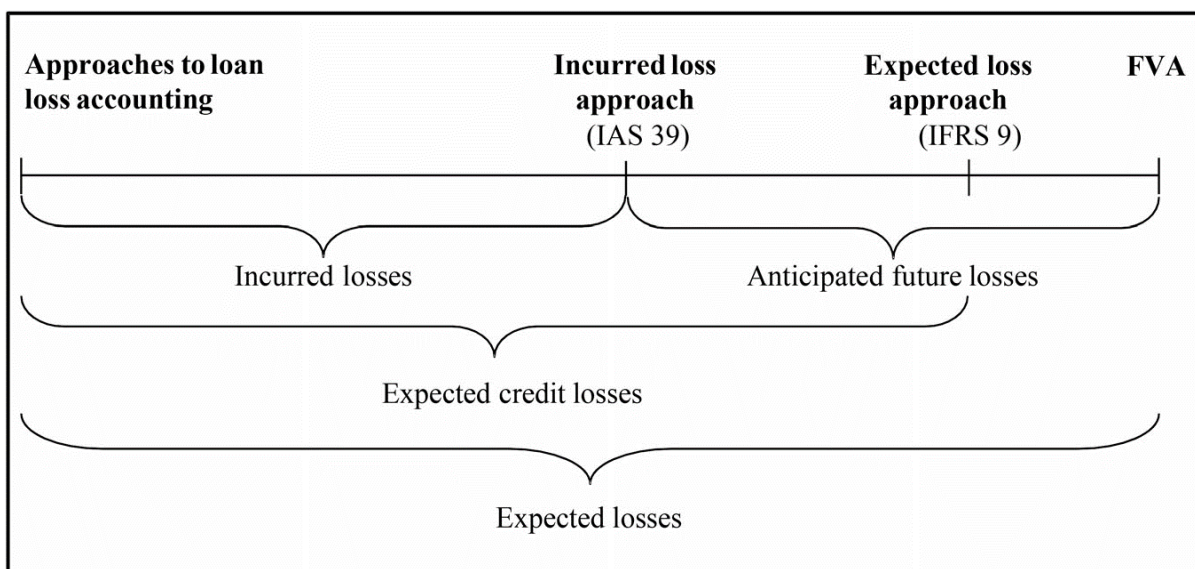
Figure 1: Loan loss recognition under alternative accounting regimes. (Source: Novotny-Farkas 2016, p. 199)

Nevertheless, IFRS 9 is expected to report financial instruments in a transparent way that will result in better, more useful and relevant information being included in the financial statements (Jin and Wu 2022, Lloyd 2018). One of the major benefits of the ECL model in

IFRS 9 is that it provides managers with wide-ranging guidelines to enable management to apply their judgement to fit each entity's distinctive characteristics. It can, therefore, be applied to a variety of circumstances (Gomaa et al. 2019).

The next chapter presents the discussion on how IAS 39 and IFRS 9 LLP accounting guidelines create concerns for earnings management.

3. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

3.1 Introduction

Due to the nature of a bank's business, loans, loan loss provisions (LLPs) and loan losses are a significant portion of a bank's financial statements and, therefore, LLPs for banks are a significant amount to be disclosed (Ahmed et al. 1999; Barth and Landsman 2010; Ryan 2012). Because loans form such a big portion of a bank's financial statements, the management of receivables and LLPs have played a significant role for firms that encountered financial problems (Barth and Landsman 2010; Fonseca and Gonzalez 2008). Prior research has found that LLPs are a primary tool banks use to manage earnings (Leventis et al. 2011; Kanagaretnam et al. 2003, 2004a; Ma 1988; McNichols and Wilson 1988). However, the adoption of IFRS has significantly reduced this earnings management behaviour (Leventis et al. 2011). Earlier researchers argue that this is due to the adoption of IAS 39 which limited the ability of managers to exercise flexibility in determining LLPs (Leventis et al. 2011). When IFRS 9 was developed to replace IAS 39, the Chairman of the IASB warned that care must be taken not to introduce changes in IFRS 9 that address IAS 39 criticism, but create opportunities for earnings management (Hoogervorst 2014). Therefore, the adoption of IFRS 9 created an opportunity to determine if the previously observed decrease in earnings management was due to the adoption of IFRS or the specific guidelines of IAS 39.

3.2. Earnings management

Financial reports that rely on managers to use their judgement create opportunities for earnings management and, because the auditing process is not perfect, managers have the opportunity to report provisions that do not accurately reflect the underlying economics (Evans et al. 2014; Healy and Wahlen 1999; Nelson et al. 2002). Earnings management is described as the purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (Commerford et al. 2018; Dutta and Gigler 2002; Schipper 1989). 'Earnings management is a deliberative manipulative decision that management makes after privately observing the firm's true economic earnings' (Dutta and Gigler 2002). This occurs when managers use their allowed judgement in the financial reporting process in designing transactions to change financial reports to either deceive

stakeholders about the economic performance of the company or to influence results that depend on reported accounting numbers (Healy and Wahlen 1999; Roychowdhury 2006).

Earnings management is motivated by managers' desire to mislead stakeholders into believing certain financial reporting goals have been met in the normal course of business and is achieved by deviating from normal business practices (Roychowdhury 2006). This activity can obscure underlying economic performance and results which then cloud the ability of stakeholders to make informed decisions (Davidson III et al. 2004). Earnings management may also affect the comparability of earnings as management expectations will differ from the stakeholders' expectations and across firms (Gebhardt 2016).

An opposing argument is that managers can also use accounting judgement and earnings management to make financial information more informative to users (Healy and Wahlen 1999; Jeanjean and Stolowy 2008). Earnings or capital management could better align with shareholders' interests and is, therefore, not necessarily opportunistic (Beatty and Liao 2014). Stakeholders are likely to expect and tolerate a limited amount of earnings management (Healy and Wahlen 1999). Earnings management can have the benefit of allowing managers to disclose their value-relevant private information to users of financial information (Ewert and Wagenhofer 2005; Schipper 1989). Jiraporn et al. (2008) show that earnings management, on average, is not opportunistic, and may even be beneficial as there exists a positive relationship between earnings management and firm value. Earnings management can, therefore, also lead to increased value relevance if accounting principles provide appropriate restrictions (Ewert and Wagenhofer 2005).

Earnings management can occur due to the agency problem and information asymmetry (Abdul Adzis et al. 2016; Anandarajan et al. 2007; Ball 2013; Davidson III et al. 2004; Evans et al. 2014; Greenawalt and Sinkey 1988; Jiraporn et al. 2008). Due to the essence of banks' asset and financial structure, banks have specific information asymmetry concerns with stakeholders that are different from those they may have with shareholders (Giner and Mora 2019). This information asymmetry can create an inability for outsiders to value banks due to a lack of timely and accurate information (Beatty and Liao 2014). Within the context of agency theory, management finds ways to manipulate financial statements by using the opportunity provided by the accounting standards' discretion. These discretionary accounting choices generate agency costs in the sense that they are opportunistic rather

than optimal and the shareholders make non-optimal economic decisions because of the managed earnings (Ball 2013; Davidson III et al. 2004). If managers release financial reports that do not present an accurate economic picture of a firm because earnings were managed and shareholders make non-optimal investment decisions as a result, there is an agency cost linked to the earnings management (Davidson III et al. 2004; Jiraporn et al. 2008). Information asymmetry is vital to agency problems between bank managers and shareholders (Beatty and Liao 2014; Jiraporn et al. 2008). This information asymmetry can increase the cost of issuing outside equity and raising regulatory capital (Beatty and Liao 2014). Information asymmetry motivates managers to manage earnings (Davidson III et al. 2004). The possible information asymmetries between banks and their supervisors require bank supervisors to have a clear understanding of banks' timing of LLPs (de Haan and van Oordt 2018). Bigger firms may have more incentives to manage earnings because they are more visible than smaller firms (Callao and Jarne 2010). However, public banks face higher information asymmetry compared to private banks and may provide timely LLPs to mitigate information asymmetry (Beatty and Liao 2014).

If management is concerned about the agency cost under discretionary accounting choices, they may manage earnings less if they want to decrease the agency cost. This will depend on management's favourable or unfavourable evaluation of the earnings management behaviour that will determine their willingness to manage earnings (Ajzen 1991). A favourable or unfavourable evaluation of the earnings management behaviour will be influenced by management's knowledge of the accounting standard (Grasso et al. 2009) and, since IFRS 9 is a new standard, management may be less willing to manage earnings[4].

The IASB claims that careful attention was paid to limit opportunities for earnings management in developing the expected credit losses (ECL) model in IFRS 9 to reduce misleading financial reporting (Hoogervorst 2014). Yet, the change to IFRS 9 also may have the indirect effect of changing views about management's ability to manage earnings. The

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[4] There are a number of different theories that can explain earnings management behaviour for example the theory of planned behaviour. The theory of planned behaviour clarifies that behaviour can be explained by intentions, which are shaped by three factors: attitude toward the behaviour, the subjective norm, and perceived control over the behaviour (Ajzen 1991; Barr-Pulliam 2017; Grasso et al. 2009). Carpenter and Reimers (2005) found that attitude, subjective norms and perceived behavioural control explained a significant amount of the variance in behavioural intent to defer the recording of an expense that is in violation of GAAP. The more favourable management's attitude and subjective norm towards earnings management through LLPs is, and the greater they perceive they have control over the LLP decision, the greater the opportunity for management to manage earnings (Barr-Pulliam 2017). In this study I focus on agency theory.

change in the accounting standard's guidance could change management's perceived normative views that could affect management's attitude toward earnings management behaviour.

Specific to banking, increased managerial discretion could affect financial stability negatively (Novotny-Farkas 2016). Allowing more discretion to determine LLPs could result in reduced transparency that worsens financing frictions and weakens market discipline resulting in investor uncertainty about banks' intrinsic value (Bushman 2016; Bushman and Williams 2012; Novotny-Farkas 2016). Increased managerial discretion could create opportunities for banks to suppress negative information. This could intensify capital inadequacy concerns during economic recessions by compromising the capability of LLPs to meet unexpected recessionary loan losses and loss overhangs from prior unrecognised losses (Bushman 2016; Novotny-Farkas 2016). Capital inadequacy concerns in combination with high financing frictions can increase bank fragility, while capital inadequacy combined with weak market discipline can provide strong incentives for banks to engage in risk-shifting behaviour (Bushman 2016; Novotny-Farkas 2016).

Earnings management incentives for banks are reduced when there is better investor protection, stricter legal enforcement, enhanced accounting disclosure, restrictions on bank activities and official and private supervision (Fonseca and Gonzalez 2008). Bank regulation and supervision that reduce a bank's risk-taking will reduce a bank's incentives to manage earnings (Fonseca and Gonzalez 2008). Increased audit quality also reduces management's earnings management incentives and leads to less aggressive reporting (Agoglia et al. 2011; Barr-Pulliam 2017; Kim et al. 2003). Auditor conservatism is especially effective to counteract managers' earnings management incentives to overstate reported earnings through income-increasing accrual choices (Kim et al. 2003). Therefore, Evans et al. (2014) argue that the quality of accounting standards or the enforcement mechanisms may not necessarily lead to less earnings management. For reporting regulations to effectively control accrual earnings management, the regulation must enable both the detection and enforcement of reporting violations (Evans et al. 2014).

3.3   Prior experimental earnings management research

IFRS aims to limit the ability of management to engage in opportunistic behaviour by limiting the accounting principles and options available to them. The adoption of IFRS should reduce

the ability of management to manage earnings (Barth et al. 2008; Jeanjean and Stolowy 2008). Since the adoption of IFRS, there has been a shift from a rules-based system to a more principle-based system that increased the level of management's judgement needed for decision-making and reporting (Callao and Jarne 2010; Marton and Runesson 2017). The use of a principle-based system provides managers with substantial discretion that allows more flexibility in interpreting accounting standards and could therefore potentially increase earnings management (Callao and Jarne 2010).

Principle-based accounting standards feature professional judgement as a distinctive element of the accounting process (Benston et al. 2006; Carmona and Trombetta 2008; Gomaa et al. 2019; Marton and Runesson 2017; Mergenthaler 2009). It requires preparers of financial statements to exercise professional judgement when determining values (Schipper 2003). Gomaa et al. (2019) categorise the incurred credit losses (ICL) of IAS 39, which provides preparers with exact rules and detailed requirements, as a rules-based standard. IFRS 9 ECL model that requires significant judgement is categorised as a principle-based accounting standard as it provides managers with general guidelines that can be altered to fit each entity's distinctive characteristics (Gomaa et al. 2019).

3.3.1 Testing the efficacy of replacing the incurred credit losses model with the expected credit losses model

Gomaa et al. (2019) provide some initial evidence of the replacement of the ICL model of IAS 39 with the ECL model of IFRS 9. Gomaa et al. (2019) used an experiment to provide evidence on the effectiveness of replacing the ICL model with the ECL model to account for impairment losses. Their study used the simplified approach of the ECL model described in IFRS 9 but applied it to a production environment where the participants played the role of financial managers who made periodic decisions regarding the reserves that they carry to account for potential future losses in a production and sales environment. Gomaa et al. (2019) created a hypothetical entity that manufactures a product with a varying number of defective products that carries an additional cost for the entity. Participants needed to create a provision to absorb the potential losses. Three different manager compensation schemes were used to incentivise the participants. Gomaa et al. (2019) found that the choice in manager compensation schemes had a significant effect on earnings management and that earnings management increased after the adoption of IFRS 9 guidelines. However, the

earnings management is less than expected and does not take away from the positive impact the changes in the ECL model have.

The present study differs from the Gomaa et al. (2019) literature in several ways and therefore I expect different results from their findings[5]. Firstly, the present study used professionals including second- and third-year auditing trainees (South African Institute of Chartered Accountants (SAICA) trainees) from different accounting and auditing firms in South Africa. The sample also included Chartered Accountants in South Africa (CA(SA)) who had qualified in 2020. These participants are used to interpreting complex accounting standards and applying them to judgement decisions. Participants who had completed the Gomaa et al. (2019) study were third- and fourth-year students of undergraduate programmes in engineering and business graduate programmes without significant prior academic or practical exposure to accounting judgements.

Secondly, I used authentic LLP calculations for a bank that are more in line with real-world LLP experiences that these participants may have had exposure to. This study requires participants to determine the LLP ending balance that relates to doubtful debt based on the outstanding debtors' book in line with the specific accounting standards. In contrast, the Gomaa et al. (2019) study tested earnings management using a 'reserve for the uncertainties of technology and nature' because the number of Beta products that will be manufactured is associated with the equipment's useful life and weather conditions during storage rather than credit risk as in this study. This means that participants in this study have experience in the real world to draw on when making the LLP decision in this experiment.

Thirdly, this study simplified the calculation of the LLP by creating an age analysis table for the participants where they complete the percentage they will include in the LLP in each age category (similar to LLP stages). Participants see the impact of the LLP on their profit and can make changes to the LLP before they submit their answers. In comparison, Gomaa et al. (2019) limited participants' ability to see the impact of their decision as they could only see the impact on the profit for the period and the manager's compensation once a decision was made about the Fixer to carry into the next period. No changes could be made

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[5] Refer to chapter 4 for the detailed discussion on the research methodology applied in this study and chapter 5 for the detailed discussion of the results of this study.

subsequently after seeing the impact the decision regarding the Fixer had on profit. This study focuses on the definition of earnings management as described by Dutta and Gigler (2002). They define earnings management as 'a deliberative manipulative decision that management makes after observing the firm's true economic earnings' (Dutta and Gigler 2002). I, therefore, created an opportunity for participants to deliberatively change the LLP after observing the impact the LLP decision has on earnings.

Finally, the primary objective of the Gomaa et al. (2019) study was to test if the mandatory replacement of the ICL model with the ECL model achieved its intended outcome, namely, to increase the adequacy of ECL allowances or reserves, and to test if managers will behave according to the expectations of the ICL and ECL models. In contrast, the objective of this study was to determine whether IFRS 9's ECL model of determining LLPs for financial firms was associated with greater earnings management relative to IAS 39's ICL model. In this study participants received one of five treatment conditions that varies the accounting guidelines (IFRS 9 or IAS 39) and earnings management incentive (emi) (bonus compensation scheme as well as analysts' earnings forecasts or no emi) with an additional control condition (no accounting guidelines or earnings management pressure). All participants in the emi group received the same bonus structure as well as analysts' earnings forecast information. Participants who are in the no emi group received no bonus or analysts' earnings forecast information. Gomaa et al. (2019) provided all participants with a bonus calculated based on one of three different manager compensation schemes. An LLP is an uncertain amount that will be based on judgement and management cannot determine what will happen in the future. I, therefore, used the emi versus the no emi group to see if management manages earnings based on a decision that will have an advantage for them. As I also compare the accounting standard impact under conditions of no earnings management pressure I can also determine if the LLP amount reflects the judgement that they applied to determine their best estimate of future losses. By providing all participants with an incentive to manage earnings Gomaa et al. (2019) could not determine if the Fixer provision is as a result of management applying their best judgement versus aggressively managing earnings to optimise their incentive.

3.3.2   Earnings management in behavioural accounting research

Behavioural research methods in accounting can add a unique contribution to the earnings management literature. A large group of experimental earnings management studies,

however, focus on auditors' motivations and the circumstances under which auditors will allow managers to make more aggressive accounting choices (Libby et al. 2002). Previous behavioural accounting research found that managers manage earnings to meet analyst forecasts by failing to correct misstatements that are quantitatively immaterial if correcting the misstatement would cause earnings to fall below forecasts (Libby and Kinney Jr 2000).

Other research suggests that real earnings management could increase when managers are held responsible for the external reporting effects of a project (Seybert 2010). Seybert (2010) illustrates how capitalisation of research and development (R&D) expenses can increase real earnings management in the form of overinvestment. Evans et al. (2014) examined how US GAAP versus IFRS reporting standards influence real versus accrual earnings management. The study using a web-based exercise found that US firms using US GAAP rely more heavily on real methods than non-US firms (irrespective of whether they use IFRS or US GAAP) and US firms using IFRS. US firms using US GAAP operate in an environment that encourages real earnings management over accruals earnings management. The probability and level of earnings management, however, did not change across conditions, implying that firms using less accruals earnings management tend to compensate by increasing real earnings management methods. This suggests that the quality of accounting standards or the implementation mechanism may not lead to less earnings management, but rather less accruals earnings management, replaced by more real earnings management (Evans et al. 2014). Li et al. (2020) found that firms with a higher level of financial distress tend to engage in more accrual earnings management and less real earnings management.

Tax-related research has found that tax practitioners are similarly more aggressive under vaguely worded standards than they are under more precise, quantitative or numerical types of standards but that the type of aggression differs (Cuccia et al. 1995; Maines et al. 2003). The studies found that with vaguely worded standards, the practitioners use the freedom inherent in the rules to justify aggressive reporting (Cuccia et al. 1995; Maines et al. 2003). Under more precise, quantitative or numerical types of standards, they use the freedom available in assessing rules to justify an aggressive reporting position (Cuccia et al. 1995; Maines et al. 2003). The authors conclude that when practitioners have motivations to report aggressively, changes to standards to make them more stringent and quantitative measures

may be ineffective in reducing the aggressiveness of the reporting (Cuccia et al. 1995; Maines et al. 2003).

Rosman et al. (2012) found evidence that individuals with more years of work experience were more likely to manage earnings using discretionary accruals when they received an emi bonus compared to individuals with less work experience. Greenfield et al. (2008) investigated how an incentive for an individual person (rather than a companywide incentive) might influence ethical orientation and the level of professional commitment and how this impacts on the decision to manage earnings. Greenfield et al. (2008) also found that an individual's ethical orientation influences the impact a personal incentive has on an individual's willingness to manage earnings and individuals with an increased level of professional commitment are less likely to manage earnings. Overall, these studies provide evidence that managers and auditors use flexibility in accounting standards to make disclosures that are favoured by their incentives.

3.4   LLPs as an earnings management tool

The purpose of LLPs is to reflect management's expectations about future changes in actual loan losses (Ahmed et al. 1999; Anandarajan et al. 2007; Liu et al. 1997). Bank managers have significant discretion to calculate LLPs (Fonseca and Gonzalez 2008; Jin et al. 2018; Kanagaretnam et al. 2004a; Peterson and Arun 2018). Due to LLPs that are an expectation determined by management applying their discretion, these LLPs cannot 100% match actual losses incurred and are imprecise to a degree (Anandarajan et al. 2007). It is this margin for imprecision (also referred to as the discretionary component of LLPs) that has been exploited by banks to manage earnings (Anandarajan et al. 2007).

LLP calculations could differ based on signalling and income smoothing motivation (Kanagaretnam et al. 2004a; Peterson and Arun 2018) as bank managers are given incentives to use LLPs to manage earnings and regulatory capital to signal private information about future prospects (Ahmed et al. 1999; Gebhardt and Novotny-Farkas 2011; Beccalli et al. 2015). Several papers have tested the hypothesis of LLPs as a tool used for earnings management by banks (Leventis et al. 2011). These studies include research by Anandarajan et al. (2007), Beatty et al. (2002), Fonseca and Gonzalez (2008), Greenawalt and Sinkey (1988), Kanagaretnam et al. (2003, 2004a), Leventis et al. (2011), Liu et al. (1997), Liu and Ryan (2006) and Ma (1988).

The manipulation of LLPs is one of several ways to manage earnings (McNichols and Wilson 1988). It is easier to use LLPs to manage earnings due to the inability of market participants to determine the credit quality of the loan portfolio precisely (Gebhardt and Novotny-Farkas 2011; Gray and Clarke 2004). Many income and expense items in the statement of profit or loss have a discretionary component and management can exercise discretion through accounting choice, operating, investing, and financing policies, and choice of estimates (McNichols and Wilson 1988). Of these three ways to exercise discretion, the choice of the LLP estimate is relevant to this study.

Greenawalt and Sinkey (1988) also refer to attributes that will enable an entity to use an account or transaction to manage earnings or smooth income. This includes among others the use of professional judgement, and the fact that the account does not require a real transaction with an external party and is used over several consecutive periods. LLPs meet all these criteria and therefore create a way for banks to manage earnings (Greenawalt and Sinkey 1988). Because bank managers have significant discretion to calculate LLPs, these LLPs can be used as an earnings management tool (Fonseca and Gonzalez 2008; Jin et al. 2018; Kanagaretnam et al. 2004a; Peterson and Arun 2018). The banking industry is also more susceptible to earnings management compared to other industries because of the judgement and discretion required when determining LLPs (Greenawalt and Sinkey 1988). A reduction in reporting discretion creates an improved association between the LLPs and actual loans written off for banks and can therefore reduce earnings management (Altamuro and Beatty 2010).

Although it is generally understood that IFRS allows management to apply more judgement than most local GAAP, the opposite is true for IAS 39's ICL model that requires a 'loss event' to have occurred for LLPs to be made (Marton and Runesson 2017). Researchers, therefore, conclude that local GAAP with regard to LLPs is more forward-looking and allows greater discretion (Gebhardt and Novotny-Farkas 2011; Marton and Runesson 2017). Similarly, Gomaa et al. (2019) found that the increased flexibility under the ECL model in IFRS 9 compared to the ICL model in IAS 39 could increase the level of earnings management. The ECL model differs from the ICL model in that the ECL requires increased levels of managerial judgement and discretion to determine LLPs (López-Espinosa et al. 2021). Some believe that granting more professional judgement with principle-based IFRS

may provide more leeway for unsavoury earnings management (Agoglia et al. 2011; Liu et al. 2014). Accounting standards that overemphasise the credibility of the accounting data may lead to financial statements that provide less relevant and less timely information. However, accounting standards that rely too much on management's own judgements and discretion may lead to financial information that is viewed sceptically by users due to the potential for earnings management (Healy and Wahlen 1999).

The capital market prices discretionary and non-discretionary components of the LLP differently (Beaver and Engel 1996). Research by Beaver and Engel (1996) highlights the importance of differentiating between discretionary and non-discretionary LLPs (López-Espinosa et al. 2021). Anandarajan et al. (2007) explain that earnings management is expected in the discretionary component of LLPs rather than the non-discretionary component. Beaver and Engel (1996) differentiate between discretionary and non-discretionary components of the LLP by allocating non-performing loans to the definition of the non-discretionary component of LLPs. A loan is classified as non-performing when payments of interest or principal are 90 days or more past due (Bholat et al. 2018; Cummings and Durrani 2016).

IFRS 9 estimates the probability of default according to a three-stage classification for financial assets (López-Espinosa et al. 2021). When a loan is non-performing it is considered to be in Stage three (López-Espinosa et al. 2021). When the credit risk of the loan has increased significantly, the financial asset will move from Stage one to Stage two (Gebhardt 2016; López-Espinosa et al. 2021; Novotny-Farkas 2016; Pucci and Skærbæk 2020). IFRS 9 requires management to use their judgement and discretion to determine what a significant increase in credit risk is, as no direct guidance is given in IFRS 9 (Gebhardt 2016). As long as management can argue that an increase in credit risk is not yet significant, the resulting impairment can be delayed (Gebhardt 2016). Due to the different levels of judgement and discretion that are required to determine when the credit risk of the loan has increased significantly to allocate to the different stages, earnings management is not expected to take place equally across the different stages.

In summary, prior research therefore suggests that the presence of increased management judgement and discretion is associated with greater earnings management. As the degree

of management judgement and discretion differs between the various stages in IFRS 9, I therefore expect that the degree of earnings management will also differ between these stages.

The first hypothesis formally stated:

H1: Earnings management through LLPs takes place in portfolios where management needs to apply the highest level of judgement and discretion.

3.5 Motivation to manage earnings

Earnings management is widespread and a variety of earnings management incentives exist. Bank managers may purposefully calculate higher LLPs in years when income is high to cover losses that happen in years when income is low or bank managers understate LLPs to increase net income and capital in the current year (Abdul Adzis et al. 2016; Ryan 2012). When bank earnings are high, managers can reserve some of these earnings as a provision for loan losses, the notion of saving for a rainy day (Greenawalt and Sinkey 1988; Ryan 2012). In subsequent years when income is low, this previous overstated LLP can be utilised to cover actual loan losses (Greenawalt and Sinkey 1988; Ryan 2012). When earnings are high, bank managers increase LLPs by debiting profit or loss (expense) and crediting LLP (Statement of Financial Position). When earnings are low, bank managers decrease LLPs by debiting LLP (Statement of Financial Position) and crediting profit or loss (income). Larger LLPs decrease both the Statement of Profit or Loss and Other Comprehensive Income and the Statement of Financial Position strength and may increase the costs of external equity financing (Beatty and Liao 2009).

Regulatory pressure to reduce procyclicality in losses and capital also creates incentives to use LLPs to manage earnings (Gebhardt and Novotny-Farkas 2011; Beccalli et al. 2015). Managers have an incentive to use LLPs to manage earnings to produce less volatile earnings to stabilise stock prices (Anandarajan et al. 2007). Banks are normally entities that have high leverage which makes them vulnerable to changes in asset values and banks may use LLPs to improve bank stability (Fonseca and Gonzalez 2008). Firms in financial trouble have strong incentives to manipulate their earnings to achieve a certain target and consequently mislead stakeholders regarding their underlying financial performance.

Opportunistic accounting choices allow managers to respond to incentives that include compensation schemes, capital market pressures and capital inadequacy concerns (Novotny-Farkas 2016). Changes in accounting standards might impact the calculation of regulatory capital ratios and therefore might motivate changes in economic behaviour (Beatty and Liao 2014). For example, banks with low regulatory capital will have incentives to increase it (Barth et al. 2017; Ryan 2012). Banks may change their behaviour due to regulatory capital costs that could arise from the change in accounting rules (Beatty 2007). Capital management is a significant contributing factor to LLPs (Ahmed et al. 1999; Collins et al. 1995; Jin et al. 2018; Kanagaretnam et al. 2004b). This can result in management having strong incentives and greater opportunities under the ECL model to delay the recognition of losses and to smooth income (Novotny-Farkas 2016). The ECL model may therefore be more susceptible to earnings management (Camfferman 2015; Gomaa et al. 2019). Limiting management's discretion could increase accounting quality by decreasing earnings management (Barth et al. 2008; Leventis et al. 2011).

Literature also indicates that the level of judgement required by an accounting standard does not necessarily alter the ability of management to manage earnings (Maines et al. 2003; Psaros and Trotman 2004). Jeanjean and Stolowy (2008) provide evidence that earnings management does not necessarily decline after the introduction of IFRS. They found that the pervasiveness of earnings management increased in France, a code-law country, after the adoption of IFRS commenting that accounting standards are not the only role players when it comes to earnings management. Management incentives also play an important role (Jeanjean and Stolowy 2008).

When there is a change in accounting standards there may be a change in economic behaviour due to management compensation schemes (Beatty 2007). Some empirical evidence exists that bonus calculations do motivate firms to change their economic behaviour in response to accounting changes (Beatty 2007; Beatty and Liao 2014; Rosman et al. 2012). When managers are evaluated and compensated based on the entity's financial performance they will have incentives to manage the entity's earnings (Davidson III et al. 2004; Beatty and Liao 2014; Schipper 1989).

The compensation scheme offered by the principal can cause the manager to manage earnings because compensation schemes selected by principals are encouraging earnings

management behaviour (Greenawalt and Sinkey 1988; Healy 1985; Holthausen et al. 1995; Jin et al. 2018; Kanagaretnam et al. 2004b). Healy (1985) reports that bonus schemes are a method to influence managerial accrual and accounting decisions that can result in earnings management. For example, managers may manage earnings downward when their bonuses have reached the maximum level (Fan et al. 2019; Healy 1985; Holthausen et al. 1995). Managers compensated by bonus plans that do not have a limit are expected to select income-increasing discretionary accruals, except if earnings are so low that earmarked earnings will not be achieved, irrespective of which accounting procedures are selected (Healy 1985). More experienced managers may manage earnings to maximise bonuses through discretionary accruals (Rosman et al. 2012).

Firms also manage earnings to meet analyst earnings forecasts (Barr-Pulliam 2017; Beccalli et al. 2015; Jackson and Liu 2010; Liu and Ryan 2006; Ryan 2012) or to beat or meet earnings benchmarks (Zang 2012). Firms face pressure to meet analysts' expectations and the existence of performance evaluations leads firms to manage earnings if they expect competitor firms to manage earnings (Beneish 2001). Earnings management might be undertaken to produce reported figures that are more in line with forecast benchmarks by making various accounting adjustments (Beccalli et al. 2015). Alternatively, management could use engagement activities, such as revising the management earnings forecasts downward if they expect they will not hit analysts' earnings forecasts (Beccalli et al. 2015). Banks have been found to use income-increasing LLPs to transform small declines in earnings into small increases in earnings (Beatty et al. 2002) or to meet or beat analysts' earnings forecasts (Jackson and Liu 2010). Banks manage earnings upward by under-provisioning the LLP when pre-managed earnings are below the analyst forecasts (Beccalli et al. 2015). The managers of growth firms are motivated to manage earnings to prevent earnings disappointments and significant downward adjustments in the entities' share prices (Callao and Jarne 2010). Managers are motivated to reach or even surpass earnings forecasts because investors generally reward such behaviour positively by increased stock returns (Beccalli et al. 2015). A considerable amount of earnings management evidence relies on firm performance, suggesting that earnings management is more probable when a firm's performance is either unusually good or unusually bad (Beneish 2001).

Prior research finds that management responds to upward earnings management pressure. As the LLP is a tool that is used to manage earnings, I expect that, in the presence of

earnings management pressure, management will resort to using this tool by under-providing LLPs to boost earnings.

The second hypothesis formally stated:

H2: In the presence of upward earnings management pressure, management will under-provision LLP.

3.6 Accounting standards requiring more judgement and the impact on earnings management

Accounting standards play a relevant role in the quality of financial information (Callao and Jarne 2010). Although empirical evidence of changes in managements' economic behaviour due to changes in accounting standards is limited, changes in economic behaviour (i.e., operating and financing decisions) appear to be linked to the regulatory use of accounting numbers (Beatty 2007). IFRS 9's LLPs are calculated based on the ECL model which is determined by managements' expectations about the risk of default and the estimated future cash flows (Gebhardt 2016). The measurements do not have straightforward observable links which make earnings management a possibility (Gebhardt 2016). Incorporating forward-looking information when determining LLPs can either have positive or negative consequences, depending on how managers use their discretion (Bushman and Williams 2012; Giner and Mora 2019).

Two different perspectives on earnings management exist (Bushman and Williams 2012; Jin et al. 2018; Ryan 2012). The first is that managers opportunistically seek to mislead investors. The second is that managers use their discretion to reveal their private information and expectations about the firm to investors to make the reported earnings more informative (Beneish 2001; Burgstahler et al. 2006; Bushman and Williams 2012; Jin et al. 2018; Liu et al. 2014; Marton and Runesson 2017).

3.6.1 Benefits of allowing more judgement in accounting guidelines

Accounting standards requiring managers to exercise their professional judgement are encouraged (Schipper 2003). Accounting standards that provide less guidance increase the need for financial statement preparers to apply their professional judgement, resulting in more meaningful and informative financial statements for users (Agoglia et al. 2011; Healy

and Wahlen 1999; Jeanjean and Stolowy 2008). Increased discretion may enable managers to include more information about expected future losses into loan loss provisioning decisions and mitigate procyclicality (Bushman and Williams 2012). Managerial discretion allows managers to incorporate private information into banks' financial reports that better reflect the economic position and performance (Barth et al. 2008; Bushman 2016; Jeanjean and Stolowy 2008; Marton and Runesson 2017). Managers can use this given discretion in determining the timing and amounts of income and expenses to reflect the underlying business condition of the firm more accurately (Teoh et al. 1998). An event study investigating how stock markets respond to the new IFRS 9 guidelines suggests that the shift from ICL to ECL model will improve market discipline and financial reporting quality (Onali et al. 2021).

Although this study focused on accounting earnings management (the way accounting standards are applied to record given transactions and events), Ewert and Wagenhofer's (2005) findings on real earnings management (changes in the timing or structuring of real transactions) are also interesting. Ewert and Wagenhofer (2005) found that tighter accounting standards increase earnings quality, measured by the variability of reported earnings and by the association between reported earnings and market price reactions. The tighter accounting standards increase value relevance. The increase in value relevance is a motivation to increase real earnings management, but the increase in real earnings management is costly and then reduces the firm value thereby eliminating the initial benefit (Ewert and Wagenhofer 2005). Therefore, less strict accounting rules may reduce the marginal benefit gained from real earnings management (Callao and Jarne 2010; Ewert and Wagenhofer 2005).

Moreover, tighter accounting standards do not necessarily reduce earnings management and increase the value relevance of financial reports if the rules provide managers with the ability to structure transactions that meet these rules while violating the underlying economics of transactions and events (Benston et al. 2006; Ewert and Wagenhofer 2005; Healy and Wahlen 1999; Nelson et al. 2002; Schipper 2003). Accounting standards that overly restrict managers' ability to engage in earnings management may be detrimental to shareholders (Dutta and Gigler 2002). Shareholders may prefer accounting standards that allow accounting earnings management to reduce real earnings management, which is more costly (Dutta and Gigler 2002).

Zang (2012) also indicated that managers' earnings management choices are influenced by the costs and timing of the earnings management activities. Accounting and real earnings management are both costly activities. Therefore, when one earnings management activity is more costly compared to the other, firms may engage in more of the other earnings management activity (Zang 2012). Accounting earnings management is often limited due to audit scrutiny limiting the accounting flexibility, which results in firms resorting to real earnings management activities (Zang 2012). However, accounting earnings management tends to increase compared to real earnings management when the cost of earnings management increases due to having a less competitive standing in the industry, if the firm is currently experiencing unhealthy financial conditions, experiencing higher levels of monitoring from institutional investors, or incurring higher tax expenses (Zang 2012).

Specific to LLPs, Jin et al. (2018) found that managers mainly use the allowed discretion in determining LLPs as a risk management rather than an earnings management tool. Managers can use discretionary accruals to provide useful information to users of financial statements and increase the informativeness of earnings (Leuz et al. 2003). Bank managers may use LLPs to disclose private bank information to address information asymmetries between more informed managers and less informed investors or regulators (Beatty and Liao 2014). Liu and Ryan (2006) found that banks manage earnings more when they need to follow rules to determine LLPs for homogeneous loans compared to banks that apply their judgement in determining LLPs for heterogeneous loans. Banks can use their discretion to recognise LLPs on a more timely basis and use the LLP to signal information to users (Beatty and Liao 2014; Gebhardt and Novotny-Farkas 2011).

Prior research found that entities are less likely to report aggressively under less precise accounting standards (Agoglia et al. 2011; Psaros and Trotman 2004). Aggressive reporting and more earnings management are likely to be more difficult to justify with a less precise accounting standard (Agoglia et al. 2011; Maines et al. 2003). A reason for this could be the costs imposed on the firm if earnings management is revealed (Agoglia et al. 2011; Becker et al. 1998; Dutta and Gigler 2002; Nelson et al. 2002). The uncertainty surrounding the risk of being perceived to be non-compliant is greater when the absence of detailed guidance requires managers to use their judgement and discretion (Agoglia et al. 2011). Accounting standards requiring increased managerial judgement can make financial reports more informative by overcoming restrictions in accounting standards (Healy and Wahlen 1999).

Researchers supporting managers to apply their professional judgement when determining accounting numbers believe that this method leads to increased quality financial reporting that better reflects the underlying economics of transactions and events, resulting in less aggressive financial reporting (Agoglia et al. 2011; Barth et al. 2008). It may also be more effective in stopping biased financial reporting (Psaros and Trotman 2004). These arguments agree with the initial evidence provided by Gomaa et al. (2019) who found evidence that the ECL of IFRS 9 increased the amount (higher LLP reserves) and sufficiency of the reserve decisions.

IFRS 9's forward-looking loan loss provisioning captures the degree to which current provisions anticipate future declines in a loan portfolio and results in the timely recognition of expected loan losses that are associated with an improved risk-taking discipline (Bushman and Williams 2012; Novotny-Farkas 2016). Market participants may rely on accounting information in their capital allocation decisions and the late recognition of loan losses could deny markets timely information regarding the value of bank assets (Barth and Landsman 2010). Marton and Runesson (2017) report findings that IAS 39's ICL model which requires a relatively low level of judgement by preparers, decreased the ability of LLPs to predict actual loan losses compared to local GAAP in the EU that requires a high level of judgement. They argue that local GAAP has a more accurate predictive ability compared to the ICL model in large, more profitable banks due to the high level of specialised skills and system support needed to make timely provisions under high-judgement standards (Marton and Runesson 2017).

IAS 39's ICL model for LLPs is expected to lead to an increase in the required provision during economic downturns (Beatty and Liao 2009), because LLPs are underestimated during a positive economic cycle (Fillat and Montoriol-Garriga 2010). Evidence shows that banks on average postpone LLPs when in a positive economic cycle until negative conditions set in (Laeven and Majnoni 2003). Researchers argue that under IAS 39's ICL model, LLPs are recognised after the losses have occurred (Abdul Adzis et al. 2016; Gebhardt and Novotny-Farkas 2011). Therefore, under IAS 39 banks are expected to increase LLPs during recessions and decrease LLPs during economic growth periods, as losses will only be recognised after they have occurred. The amount will depend on economic conditions leading to higher earnings in early years (economic growth periods) and lower earnings in later years (downturns) (Abdul Adzis et al. 2016; Bhat et al. 2019;

Gebhardt and Novotny-Farkas 2011). This delayed recognition of loan losses was identified as a weakness of IAS 39's ICL model (Beatty and Liao 2014; Giner and Mora 2019; Laeven and Majnoni 2003; Novotny-Farkas 2016; Marton and Runesson 2017; Ryan 2017, Taylor and Aubert 2022). Seitz et al. (2018), in their study that compared a time series of real reserves under IAS 39 with a simulated time series of reserves under IFRS 9, found that IFRS 9 reserves are, in general, not higher compared to IAS 39 reserves. However, during times of crisis, IFRS 9 reserves mostly exceed IAS 39 reserves. This creates the question if bank managers will only increase the LLPs briefly to create a buffer, which reinforces the undesirable procyclical effect that IAS 39 was criticised for (Seitz et al. 2018).

As the recognition of LLPs under IAS 39's ICL model is delayed until after the losses have occurred, I expect LLPs to be recognised earlier under IFRS 9 and therefore the LLPs under IFRS 9 will be higher.

The third hypothesis formally stated:
H3: IFRS 9 total LLP will be higher and closer to actual loan losses than IAS 39 total LLP.

3.6.2   Criticism against allowing more judgement in accounting guidelines

Some believe that accounting standards that require more judgement might allow more leeway for unsavoury earnings management. This implies that preparers and auditors cannot be trusted to properly exercise professional judgement with objectivity (Liu et al. 2014). Accounting standards that allow greater flexibility in determining accounting numbers may have a negative impact on the quality of financial reporting (Callao and Jarne 2010). Discretion in accounting standards enables managers to estimate and project accounting numbers that could be different from the underlying economic conditions of the entity (Arun et al. 2015).

Before IAS 39 was adopted by entities, earnings management was easier due to the flexible and non-precise guidelines under local accounting standards in determining LLPs (Abdul Adzis et al. 2016; Gebhardt and Novotny-Farkas 2011; Leventis et al. 2011). The local accounting standards provided no specific guidelines or formulae to calculate LLPs giving bank managers flexibility in determining LLPs (Abdul Adzis et al. 2016). IAS 39 required extensive disclosure of financial information that limited the use of LLPs to smooth income compared to local accounting standards to some extent. This was because IAS 39 requires

banks to disclose an accurate provision for bad debts and prohibits hidden reserves (Abdul Adzis et al. 2016). Peterson and Arun (2018) found evidence that when managers have discretion in forward-looking LLPs these LLPs are used to smooth income.

Accounting standards that limit opportunistic discretion are of higher quality because they result in accounting earnings that are more reflective of a firm's underlying economics (Barth et al. 2008). Taylor and Aubert (2022) find evidence that income smoothing through earnings before taxes and LLPs decreased when reporting under IFRS 9. However, providing detailed guidance can decrease accounting earnings management achieved through management judgements but can increase earnings management achieved through transaction structuring, offsetting the standard-setters' intention (Schipper 2003; Ewert and Wagenhofer 2005). Researchers argue that the adoption of IFRS can reduce the amount of reporting discretion relative to some local GAAP and improve earnings quality (Barth et al. 2008; Jeanjean and Stolowy 2008). Reducing the level of reporting discretion can reduce the level of earnings management and this will improve earnings quality (Ewert and Wagenhofer 2005; Jeanjean and Stolowy 2008). Barth et al. (2008) found that firms applying IFRS generally show less evidence of earnings management and more value relevance of accounting amounts in the post-adoption period than firms applying local GAAP. Although it is generally understood that IFRS allows management to apply more judgement than most local GAAP, the opposite was true for IAS 39's ICL model that required a 'loss event' to have occurred for LLP to be made (Marton and Runesson 2017). This contrasts with local GAAP that allowed a general LLP. Researchers, therefore, conclude that local GAAP was more forward-looking and allowed greater discretion (Gebhardt and Novotny-Farkas 2011; Marton and Runesson 2017). When entities moved away from local GAAP to IFRS, banks had an opposite view regarding limiting the options available to them and were not in favour of IAS 39 to determine LLPs (Leventis et al. 2011). Banks argued that the application of IFRS to determine LLPs will limit their ability to adequately capture various subjective and judgemental aspects of credit risk assessments that are not considered on an individual basis (Leventis et al. 2011).

Leventis et al. (2011) and Gebhardt and Novotny-Farkas (2011) found that the implementation of IFRS, with the adoption of IAS 39 by banks in Europe, improved earnings quality by reducing the likelihood of bank managers using LLPs to engage in earnings management. Abdul Adzis et al. (2016) found similar evidence of reduced earnings

management by banks in Hong Kong when IAS 39 was adopted. Marton and Runesson (2017) found that banks with low operating income do not experience the benefits of providing improved private information about credit losses to users when banks have more discretion to determine LLPs. These benefits are offset by incentives to manage earnings and therefore more managerial discretion has a negative impact on banks with a low operating income (Marton and Runesson 2017). Onali et al. (2021) found evidence that banks with lower profitability, higher systemic risk, higher sovereign debt risk, and higher skewness in stock returns respond more positively to ECL model announcements. Jin and Wu (2022) reported evidence that opportunistic incentives and implementation costs weaken the likelihood of the adoption of the ECL model to reduce the risk of a future stock crash for banks. Couch et al. (2017) investigated if the fair value option adoption of the Statement of Financial Accounting Standards (SFAS) 159 by US financial institutions in 2008 resulted in a similar earnings volatility decrease as was observed when IAS 39 was adopted. They found evidence that the adoption of SFAS 159 increased earnings volatility (Couch et al. 2017). Couch et al. (2017) argue that IAS 39 is less flexible compared to SFAS 159 and requires more precise guidelines and therefore the greater flexibility allowed in SFAS 159 could be a reason the researchers did not find a similar decrease in earnings volatility under SFAS 159.

Previous GAAP guidelines regarding LLPs resemble the current IFRS 9 guidelines (Novotny-Farkas 2016), indicating that there may be a move back to the accounting guidelines that were applicable before IAS 39. This creates a concern that earnings management will increase after IFRS 9 adoption due to the increased reporting discretion.

Although previous research shows that accounting standards that require more professional judgement might allow more leeway for earnings management, the conclusion cannot be made that IFRS 9 will have the same consequence without examining the details. One of the benefits of IFRS adoption was the increased comparability of LLPs across banks and countries. Before IFRS adoption stakeholders did not have this comparability in financial statements that is available today (Gebhardt and Novotny-Farkas 2016). Onali and Ginesti (2014), when investigating the pre-adoption market reaction to IFRS 9 found that investors support the view that IFRS 9 results in better cross-country comparability. Further IFRS 9 market reaction evidence provided by Onali et al. (2021) suggested that it will be unlikely for IFRS 9 to lead to opportunistic behaviour. IFRS adoption removed the allowable accounting

alternatives that were available in local GAAP standards (Leventis et al. 2011). Gebhardt and Novotny-Farkas (2016) found an improved association between the LLP and actual loan losses after countries adopted IFRS. They specifically mentioned that they do not claim that the ICL model is more forward-looking than the local GAAP model, however, IFRS adoption increased the comparability of LLPs across banks and countries and by achieving this, improved the validity of the LLPs (Gebhardt and Novotny-Farkas 2016). In this respect, IFRS 9 represents an evolution in accounting standards that already benefit from global comparability while IAS 39 coincided with the move from local to global accounting standards.

Previous LLP earnings management research could therefore be confounded by the effects of adopting IFRS and not just the change in the LLP measurement rules. IFRS adoption had a positive market reaction in Europe due to investors expecting it to improve the information quality for entities (Armstrong et al. 2010). Armstrong et al. (2010) found a positive reaction for entities with lower pre-adoption information quality, in line with investors anticipating that greater informational benefits will follow IFRS adoption. They found an even greater positive reaction for banks with lower pre-adoption information quality. Armstrong et al. (2010) argue that this positive reaction could reflect the anticipated benefits linked with IAS 39 adoption. IAS 39 had the expected benefit to improve the information quality for banks although IAS 39 adoption had controversial requirements for European banks that included the fair value measurement of derivatives and hedge accounting (Armstrong et al. 2010).

The banking industry has also undergone significant changes since the 2000s. Prior research that investigated earnings management under local GAAP can, therefore, not be extrapolated to IFRS 9's as accounting guidelines are different even though similar arguments about timelier LLP recognition and higher levels of managerial discretion are made regarding local GAAP and IFRS 9. Recent changes in the current economic environment include changes in technology, risk changes after the global financial crisis, reforms in bank regulation including bank capital adequacy requirements, stress testing, market liquidity risk, banking supervision and structural changes. Bank managers did not have the technology of today to gather data about impaired loans or future expectations to assist them with making judgements about LLPs. In addition, collecting data was a very onerous process as big data tools were limited.

It is not possible to simply compare local GAAP and IFRS 9 or purely rely on prior research findings to judge IFRS 9 earnings management impact. Various deficiencies in IAS 39 were addressed in IFRS 9 to allow improvement rather than going backwards. The chair of the IASB, Hans Hoogervorst, said in his speech: Closing the accounting chapter of the financial crisis on 08 March 2014:

> That is why, in developing our expected loss approach, we have been careful to limit opportunities for earnings management. To help avoid this, part of the model is a package of disclosures that we have provided to explain the assumptions used and the source of changes in allowance balances from period to period.

IFRS 9 requires extensive disclosure of the process followed to determine the LLP that to some extent limits the use of LLPs to smooth income.

Looking at LLP accounting guidelines over time, how the level of judgement allowed in the calculation has changed and the impact on earnings management behaviour, creates uncertainty around the potential consequences of the increased judgement in IFRS 9 to determine an LLP. When IFRS 9 was developed, concern was raised about the earnings management potential, due to the discretion managers have when providing for expected loan losses (Gebhardt 2016; Hoogervorst 2014). Accounting standards requiring more managerial judgement allow greater leeway for managers to use their discretion to manage earnings (Gebhardt and Novotny-Farkas 2011) and increase the potential risk for opportunistic or misguided accounting behaviour by managers (Bushman and Williams 2012). Limiting the recognition of expected losses to those that were expected to occur as a result of an event that existed at reporting date as described in IAS 39, has been thought to be a tool that could be used to limit opportunities for earnings management (Gebhardt 2016; Giner and Mora 2019).

The research results of Gomaa et al. (2019) show that managers might opportunistically abuse the increased discretion and judgement allowed in IFRS 9 accounting guidelines to maximise their compensation through earnings management. Marton and Runesson (2017) found that earnings management incentives increase when bank income is low compared to higher incomes. Libby et al. (2002) argue that managers use judgement in accounting rules to make disclosures favoured by their incentives. They suggest that when holding constant the level of judgement in an accounting standard, changes in incentives will move disclosure in the direction favoured by those incentives (Libby et al. 2002). It is, therefore,

uncertain whether the increased flexibility in the accounting guidelines will lead to an increased degree of conservatism and / or opportunistic behaviour (Gomaa et al. 2019). There are several different arguments suggesting earnings management can either increase or decrease when accounting standards allow more managerial judgement and discretion as explained previously. Whether IFRS 9 is associated with an increase in the magnitude of earnings management is an empirical question.

Nevertheless, the main expectation from empirical researchers in this area (Gebhardt 2016; Gomaa et al. 2019, Novotny-Farkas 2016) is that the increased management discretion in IFRS 9 will be associated with an increase in earnings management. Moreover, this also reflects the direction of concern of the standard-setters themselves (Hoogervorst 2014). Consequently, despite the arguments to the contrary (and in the absence of empirical evidence), there is a general expectation that the balance of risks with the adoption of IFRS 9 falls on the side of greater earnings management.

The fourth hypothesis formally stated:

H4: In the presence of upward earnings management pressure, earnings management through LLPs is more prevalent for managers reporting under IFRS 9 compared to managers reporting under IAS 39.

3.7   Summary and conclusion

The objective of this chapter was to explore the literature on LLP accounting guidelines, earnings management literature and the link between accounting guidelines and earnings management to formulate the research hypotheses. This study primarily investigated how managers use their judgement allowed in IFRS 9's ECL model compared to IAS 39's ICL model of determining LLPs for financial firms to manage banks' earnings. Prior research suggests that increased managerial judgement to determine LLPs may increase or decrease earnings management, but the research is not conclusive about whether IFRS 9 ECL model will deter or encourage greater earnings management. IFRS 9 has only been effective from 1 January 2018 and limited archival data is available to test the hypotheses. Given the significant amount of time that was spent revising IAS 39 to replace it with IFRS 9 and how important LLPs are for banks' financial statements, this study contributes to the literature by evaluating if the deficiencies in IAS 39 were addressed without increasing opportunities for earnings management.

The debate if accounting standards that require more professional judgement might allow more or less leeway for earnings management is ongoing. Both accounting standards that require more or less professional judgement might allow more or less leeway for earnings management (Okamoto 2011). This study further contributes to this debate by examining the impact of IFRS 9 on earnings management.

4. RESEARCH METHODOLOGY

4.1 Introduction

This study tests the research hypotheses using a 2 × 2 full factorial experiment (IFRS 9/IAS 39 by no earnings management incentive (emi) / earnings management incentive). IFRS 9 has only been effective from 1 January 2018 and limited archival data is available. Using an experiment in this study provides the ability to control the variables and to examine the details of how individuals process accounting information.

Experimental research often focuses more on judgements (Elliott et al. 2007; Maines et al. 2006). IFRS 9 and IAS 39 both require some level of managerial judgement to determine the loan loss provision (LLP), but IFRS 9 incorporates uncertain forward-looking information which requires more managerial judgement (Gebhardt 2016; Hashim et al. 2016; Novotny-Farkas 2016). IAS 39 requires that there must be a loss event and only if there is objective evidence of impairment can an LLP be recognised (IASB 2011). An objective of the new expected credit loss (ECL) model is to increase the allowed flexibility of managers to calculate LLPs (Gomaa et al. 2019).

This study focused on the decisions made by management reporting under IAS 39's model compared to IFRS 9's model of determining LLPs in an experiment. I focused on the effects of incorporating more forward-looking information that requires higher levels of managerial discretion and judgement, potentially allowing managers to manage earnings. IAS 39's incurred credit losses (ICL) model versus IFRS 9's ECL model and earnings management incentive (emi) versus no emi, were manipulated. Participants were required to determine the LLP for each outstanding debtor bucket.

4.2 Research method

4.2.1 Experimental research design

Empirical-archival studies of earnings management and consequences of the implementation of accounting policies concentrate on post-audited financial statements that are a combined product after negotiations between managers and auditors. This creates a challenge to distinguish between the individual contributions of managers' and auditors' separate incentives to manage earnings (Gomaa et al. 2019; Libby et al. 2002; Nelson et al.

2002). The definition of earnings management focuses on managerial intent, which is difficult to assess using *ex post* accounting information (Nelson et al. 2002).

Beatty and Liao (2014) raised a concern about assessing the changes in banking regulations through empirical research only. Often, empirical research attempts to evaluate new regulations by comparing firms before and after the change. Since control firms that are not affected by the change are hard to find, the observed changes cannot cleanly be attributed to the new regulation (Beatty and Liao 2014). The main focus of most previous studies is on the economic consequences of IFRS convergence, with limited thought of the impact of individual standards (Jin and Wu 2022). IFRS 9 was adopted on 1 January 2018 by all firms reporting under IFRS. An archival study will thus be able to observe changes in IAS 39 period compared to IFRS 9 period, however, IFRS 9 adoption is not the only change that occurred during this period. It is, therefore, difficult to estimate the potential effects of IFRS 9 changes on earnings management. For example, IFRS 16 Leases was effective from 1 January 2019. In 2020 the stock market also crashed after shutdowns of economic activities across Asia, Europe, the US and Africa due to the COVID-19 pandemic. Even though these examples are something archival researchers can control for, the impact of the implications was different for different countries at different times. These external influences are not a concern in this experiment as the laboratory environment is controlled.

It is also possible that the effects of IFRS 9 adoption in terms of earnings management will not be noticeable for some time and it might take years before researchers can use archival studies to find evidence of earnings management. Studying the long-term impact of the IFRS 9 guidelines is not yet feasible (Onali et al. 2021). Although empirical archival studies of earnings management have demonstrated multiple instances of apparent earnings management, their conclusions are often criticised for the following reasons: poor incentive proxies, misstated discretionary accrual models, or potential omitted variables such as operating choices that have non-earnings-management rationales but which affect discretionary accruals (Hageman 2008; Libby et al. 2002; Libby and Seybert 2009). It is also possible that earnings management can lead to increased value relevance if the accounting principles provide appropriate restrictions (Ewert and Wagenhofer 2005). If managed earnings lead to higher value-relevance, an archival study looking at value-relevance might conclude that IFRS 9 is an improvement over IAS 39 when it reflects more managed earnings.

To gain insight into how the change in accounting standards influences management's behaviour, this study used experimental accounting research that could isolate the different treatment groups and introduce control groups to observe changes. The use of experimental methods is encouraged to provide evidence of the economic consequences of regulatory changes in accounting standards (Gomaa et al. 2019). Experimental accounting research examines the incremental effect of probable consequences of new accounting policies and standards on decision-makers, holding all other influences constant (Gomaa et al. 2019). In addition, this method permits direct control of many variables that cannot necessarily be controlled using archival data and enables inferences from directional changes in observed behaviour (Gomaa et al. 2019). This study provides participants with specific motivations to manage earnings (i.e., the bonus incentive as well as the analyst forecast). Providing specific earnings management incentives assist in concluding whether these motivations encourage individuals to use the discretion permitted by IFRS 9 to engage in earnings management.

Earnings management is described as a deliberative manipulative decision that management makes after privately observing the firm's true economic earnings (Dutta and Gigler 2002). By creating an opportunity in the experiment for participants to deliberatively change the LLP after observing the impact the LLP decision had on Bank X's earnings, this experimental accounting study focused on the earnings management definition rather than a proxy when measuring earnings management. While many archival studies look at earnings management at a firm level, this study investigated if individual managers explicitly misstate earnings. As earnings management is an individual's choice, I could study the process of an earnings management decision using this experiment.

4.2.2 Task and procedures

This study aimed to create a realistic banking environment setting with second- and third-year auditing trainees (South African Institute of Chartered Accountants (SAICA) trainees) or recently qualified (2020) Chartered Accountants in South Africa (supervisor level), as proxies for bank financial managers. A website was developed for the experiment due to the inability of other survey instruments available at this time to track the total number of clicks on a button or a page. This was required to capture the number of times a participant changes the LLP calculation and the number of times participants accessed information for further analysis. The case study was reviewed by several experienced researchers to

ensure realism, relevance, accuracy and consistency. The printed version of the case study was thoroughly reviewed by experienced researchers and other scholars. The web-based version was shared with friends and colleagues, including auditors, to test. Finally, a pilot study was conducted with first to third-year audit trainees at a specific audit firm to obtain further feedback. Feedback was analysed and the complexity and volume of information of the case study were reduced and an automatic calculator was included in the web-based version.

Participants accessed the website via the hyperlink https://phd-accounting.sudotech.co.za/web/signup[6]. Screenshots of the information provided to participants on the website are included in Appendix 1. The first page contained a 'Research Study Consent Form' that participants had to agree to in order to proceed. Participants were informed that all responses are confidential. Participants were told that they will act as the financial manager of a hypothetical Bank X in Country Y. The instructions informed the participants that the information included in the case study is not necessarily all the information that they would use in an actual scenario and that they should make the best possible LLP estimate based on the information they have available, but there is no exact (right or wrong) answer[7].

Due to the high volume of information participants had to read, the email or invite participants received informed them: 'The website is best viewed in Google Chrome on a computer'. The case study information was split into Phases one and two and related information was presented on a screen and grouped as follows in Phase one: company and salary, audit information, debtors' book, economic expectations, journals, LLP guidelines, analyst earnings forecast and preliminary reported earnings and bonus[8]. Participants were presented with a brief realistic description and information about an LLP calculation at Bank X. Participants were told that the objective of this study is to determine the LLP based on the information provided and that the LLP balance determined will be audited. To ensure

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[6] The same link was used in the pilot study. Pilot study responses were downloaded and deleted before the final study was started. The experimental procedures of the pilot study were similar to the procedures of the final experiment. Appendix 2 provides the detailed pilot study procedures and results.

[7] This information was added in response to feedback in the pilot study that trainee accountants did not want to complete the case study since they were unsure what the right answer should be. They spent a lot of time trying to calculate the perceived right answer.

[8] Only emi group received the analyst earnings forecast and preliminary reported earnings and bonus information.

that the participants can determine the LLP, a brief definition of an LLP was provided to all participants. When a participant was ready to continue to the next set of information, they clicked on the Next button or Back button if they wanted to return to previous information. When a participant reached the LLP decision screen in Phase one, they could not go back via the Back button, but rather clicked on the links to the case study information provided to enable me to count the number of times a participant accessed the specific information. Once a participant clicked on the Submit button on the LLP decision screen, he or she could no longer access the Phase one case study information or the Phase one LLP decision. This was to ensure that no changes to the decision could be made after they had observed the outcome of the decision.

The website prevented participants from continuing to the next screen if all the questions were not answered. The website would highlight the question not answered by indicating in red: 'Please select an option below' or 'This field is required'. This ensured that all participants who completed the case study answered all the questions. Once a participant clicked Submit on a question screen, he or she could not go back to any previous screen to change their answers.

This study employed a 2 × 2 between-subjects fully crossed design[9] where the treatment groups included (1) IAS 39 incurred loss model versus IFRS 9 expected credit loss model and (2) earnings management incentive versus no earnings management incentive. The study included an additional control condition (no accounting standard and earnings management) as indicated in Table 2. Participants in all experimental treatment groups were asked to determine the LLP percentage to recognise per age category of the debtors' book.

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[9] The pilot study employed a 2 × 2 × 2 (positive versus negative economic environment x accounting standard x earnings management incentive) design. Participants on average spent 22 minutes longer completing a positive economic environment case study during the pilot. Due to a concern that insufficient responses will be obtained during the final study because of the unrealistic time commitments the positive environment required, I decided to exclude the positive economic environment experimental group from the final study where I then used a 2 × 2 design.

Table 2: Experimental design overview

Stage one

	IFRS 9	IAS 39	No accounting standard
No earnings management pressure (No EMI)	Determine LLP	Determine LLP	Determine LLP
Earnings management pressure (EMI)	EMI to determine LLP	EMI to determine LLP	
Stage two	Prior year negative economic cycle confirmed and further economic downturn predicted		
	IFRS 9	IAS 39	No accounting standard
No EMI	Determine LLP	Determine LLP	Determine LLP
EMI	EMI to determine LLP	EMI to determine LLP	

During Phase one the participants received a detailed description of and information about the LLP calculation at Bank X. During Phase two the negative economic conditions were confirmed and their LLP decision was compared to the actual credit loss at Bank X. Accounting guidelines provided to participants focused on how to determine an LLP as per IFRS 9 ECL model or IAS 39 ICL model without telling the participants the name of the accounting standard they are reporting under to avoid introducing potential bias.

4.2.2.1   Phase one

	IFRS 9	IAS 39
No EMI	Determine LLP	Determine LLP
EMI	EMI to determine LLP	EMI to determine LLP

Participants were randomly assigned by the website to an IFRS 9, IAS 39 or no accounting standard treatment group. The website allocated participants based on the number of participants who had completed a valid case study[10] in each of the treatment groups. There was no time limit for participants to complete the case study, therefore, participants who started a case study were considered for a 24-hour period after which it was assumed that they will not complete the case study. Participants' instructions were to calculate the LLP as per the accounting guidelines provided to them. These were based on the guidelines in

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[10] A valid case study is an observation where the participant passed all manipulation and attention check questions.

either IFRS 9 or IAS 39 (the actual accounting standard name was not mentioned) depending on which treatment group they were allocated to[11]. The objective of Phase one was to investigate whether the ECL model results in more or less earnings management compared to the ICL model, which would provide evidence as to whether the increased discretion and judgement affected the accounting behaviour of management or not.

Participants were provided with the following case study information in Phase one: company and salary, audit information, debtors book, economic expectations, journals[12], LLP guidelines[13], analyst earnings forecast and, solely in the case of the emi experimental group, preliminary reported earnings and bonus.

The debtors' book case study information informed participants that the total outstanding debtors' book balance as at 31 December 20X1 is CU 380 million. A breakdown of the different 0–30 days, 31–90 days and more than 90 days age buckets were provided. The LLP policy of Bank X and the range of percentages to calculate the LLP for each outstanding debtor bucket were part of the information. Participants in the case study were told that 'there is an increase in credit risk when debtors are 31 days past due'. This is in line with IFRS 9 'Stage two' guidelines that state 'Credit risk has increased significantly since initial recognition'. The impairment of financial assets under IFRS 9 in Stage two is subject to the highest level of discretion compared to Stages one and three (Oberson 2021). I believe that the different 'stages'[14] communicated in IFRS 9 are subject to different levels of discretion and therefore susceptible to different levels of earnings management.

I expected that participants will treat the 0–30 days, 31–90 days and more than 90 days outstanding debtors' buckets differently and, therefore, captured the results separately. Participants were required to separately indicate the percentage of each of the three periods' (0–30 days, 31–90 days and over 90 days) outstanding debtors' buckets that they would like to include in the final total LLP as illustrated in Exhibit 1.

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[11] Participants in the no accounting guideline control group received no accounting guidelines.
[12] All experimental groups received this information.
[13] Guidelines provided to IFRS 9, IAS 39 and no accounting guidelines experimental groups differed. All experimental groups received the definition of an LLP, IFRS 9 group received specific IFRS 9 guidelines and IAS 39 received specific IAS 39 guidelines.
[14] IFRS 9 does not specifically use the word stages however the term is used in practice.

Exhibit 1: Screenshot of the website where participants make the LLP decision in Phase one.

In line with the accounting guidelines applicable in Country Y, indicate the loan loss provision as a percentage of the debtors' book in each age category that you, as the financial manager of Bank X in Country Y, will provide in the current year (20X1) given the economic circumstances. When you click "calculate" the computer will automatically calculate the total loan loss provision in Currency Units as well as the reported earnings, after the loan loss provision for the year ending 31 December 20X1. When you are satisfied with your calculation, click "submit".

	0-30 Days	31-90 Days	Over 90 Days	Total
	CU m	CU m	CU m	CU m
	(75%) 285	(24%) 91,2	(1%) 3,8	(100%) 380
Loan loss provision	[ ] %	[ ] %	[ ] %	

Calculate

Case Study Information

Use below links to review the case study info

Salary
Loan loss provision guidelines
Audit Information
Analysts' earnings forecast and preliminary reported earnings
Debtors' book
Economic expectations
Bonus
Journals

When the participant clicked calculate, the website automatically calculated the total LLP in Currency Unit (CU) as well as the reported earnings after the LLP for the year. When the participant was satisfied with the calculation he or she clicked Submit. The Submit button only appeared once a participant clicked on Calculate to ensure that each participant clicked Calculate at least once to see the total LLP as well as the reported earnings after the LLP for the year.

Participants could go back and access any specific case study information at any point by clicking on one of the following links: salary, loan loss provision guidelines, audit information, analysts' earnings forecast and preliminary reported earnings, debtors' book, economic expectations, bonus or journals as illustrated in Exhibit 1.

For further questions I used five-point scales where applicable. Participants were asked to report their confidence in the LLP decision, indicate if they think their colleague would have

made a different LLP decision compared to theirs and what information they used to make their LLP decision.

Information provided to participants in Phase one is included in Appendix 1.

4.2.2.2   Phase two

	Prior year negative economic cycle confirmed and further economic downturn predicted.	
	IFRS 9	IAS 39
No EMI	Determine LLP	Determine LLP
EMI	EMI to determine LLP	EMI to determine LLP

I included a second stage in the decision context because the participants' LLP decisions in Phase one will affect the profit in the current and subsequent period (Rosman et al. 2012). The longer a loan was recognised in the accounting records of a bank, the greater the possibility of earnings management (Giner and Mora 2019). In line with the study conducted by Hellman et al. (2016), I provided participants with Phase two information to allow them to make a more comprehensive analysis to come up with an informed LLP. Financial analysts frequently update their models with revised estimates some time after the initial rapid response to financial information (Hellman et al. 2016). Therefore, to see how participants managed earnings after they observed an outcome, I would also observe their LLP decision in the next financial year.

There is an assumption that banks provide more for loan losses in positive economic circumstances suggesting that they will be providing less for loan losses in negative economic circumstances, because the cumulative amount of credit losses that will be realised is set (Ryan 2017). Loan loss provisioning takes place before the credit loss is realised and it is expected that LLPs will be timelier under IFRS 9 when compared to IAS 39. There is, however, uncertainty about what the directional effect of IFRS 9 on banks' LLPs in negative economic circumstances will be. I expected that the increase in LLP in Phase two for IAS 39 will be more than for IFRS 9 due to the delayed LLP recognition when reporting under IAS 39.

During a cyclical downturn, the quality of banks' assets deteriorates, which increases the risk exposure (Bikker and Metzemakers 2005). This usually leads to a reduction in the supply of credit (Jiménez et al. 2017). Banks might be forced to cut back their lending. This would further weaken cyclical conditions into a credit crunch, which would in turn exacerbate the downturn (Bikker and Metzemakers 2005). LLP is an uncertain provision and the actual loan loss outcome will only be revealed during the next financial year. Stage two, which represents the second financial year, was introduced to observe how participants change their LLP after receiving feedback on what the actual loan loss was. This gave participants a sense of a recurring economic cycle to assist them to anticipate future loan losses better. In addition, participants in the emi experimental group were reminded what their bonus was based on their LLP decision, as well as what the potential maximum bonus could have been to provide them with context on how their calculated bonus compared to the bonus they could have obtained.

Participants were provided with a summary of information that changed from Phase one to Phase two. The focus of the information provided in Phase two were the actual impaired loans for the 20X1 financial year[15], the outstanding debtors' book[16] and further economic expectations. Company and salary information, journals, LLP guidelines and bonus information were not provided again in Phase two to limit cognitive overload. In Phase two, participants were again required to determine the most appropriate LLP for the company. The negative economic cycle was confirmed from Phase one and was expected to continue and increase in the next financial year. The outcome of the actual impaired loans from Stage one, which was predetermined as CU 6 830 000, was provided to participants and compared to their LLP calculation after an audit adjustment.

The five versions of the scenario in Phase two appear in Appendix 1.

4.2.3   Participants

Behavioural studies often use students as proxies (Elliott et al. 2007). Researchers argue that participants need to be appropriate for the experimental task (Libby et al. 2002; Libby

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[15] Participants in the emi group also receive information about their actual bonus and that the potential maximum bonus could have been CU 185 000.
[16] Participants in the emi group also receive information about the analyst earnings forecast and preliminary reported earnings.

and Thorne 2017; Peecher and Solomon 2001). The goal of this experiment is to investigate economic behaviour. The use of student participants is also appropriate if the experimental task is properly constructed (Elliott et al. 2007; Hageman 2008). It is not advised to use auditing students or inexperienced staff in a complex audit decision setting (Abdolmohammadi and Wright 1987). Trottier and Gordon (2018) replicated an accounting experiment previously conducted that required participants (students and managers) to determine the likelihood that an asset would be impaired. When comparing the responses of students versus managers the study found that students judged a significantly lower probability that the asset should be impaired. However, the pattern of the student responses was similar to the manager responses and this led to the same inference and conclusions (Trottier and Gordon 2018). Therefore, student participants are still appropriate to use, particularly when, as in this study, results rest on a comparison between two different scenarios. Any effect of difference in the earnings mindset of participants compared to bank managers would be the same for both scenarios. The difference in mindset therefore does not prevent meaningful comparisons between the accounting standards.

Given the size of the study, it is not possible to target bank managers as the target participants. Moreover, despite the reasons that students might represent appropriate participants, I choose to target early career professionals who might typically be auditing or evaluating LLP decisions. LLP decisions are highly technical in nature, implying that participants require strong technical knowledge, eliminating undergraduate students as a potential target group. Moreover using graduates who are working in a professional auditing environment, means that participants' work experiences require them to apply their judgement to make decisions in a working environment. It also provides them with a far better understanding of the business environment applicable in the case study than would be applicable with participants who are students. Participants' LLP knowledge and experience is one of the key features of this study.

The targeted participants would all have received training on how to apply their judgement to make decisions as part of the SAICA programme. All Chartered Accountant (CA(SA)) trainees must have been exposed to and achieved the following competency: 'Evaluates or accounts for non-routine transactions, for example accounting estimates and transactions requiring judgement' as prescribed by SAICA's Technical Skills Review before they can officially qualify as a CA(SA) (SAICA 2023). I targeted second- and third-year auditing

trainees or newly qualified CAs as they would recently have been exposed to this 'accounting estimates and transactions requiring judgement' competency. This would mean that they have relevant real-world working experience. I was, therefore, confident that the target group had the required combination of technical knowledge, skills and relevant work experience to apply their judgement to make an LLP provision decision. The participants targeted in this study also had the relevant IFRS 9 knowledge but limited exposure to IAS 39 knowledge and, therefore, would not have preconceived ideas since these participants would not have been influenced by the historical development of the accounting standards.

As part of the SAICA training programme, all CA(SA) trainees must have been exposed to and achieved the competency: 'Demonstrates an ability to manage and lead' as prescribed by SAICA's Professional Skills Review before they can qualify as a CA(SA) (SAICA 2023). This includes the skills to manage and supervise others and to plan and manage projects (SAICA 2023), providing a certain level of comfort that the participants were appropriate proxies for people in managerial positions. Since it would be very difficult to find a sufficient number of bank managers to complete the case study, it raises the concern whether the sample is representative and whether the results can be generalised (Libby and Thorne 2017). However, this concern is reduced when the researcher has some prior knowledge about the participants (Libby and Thorne 2017). By limiting participants to second and third-year SAICA auditing trainees or CA(SA) members who had qualified in 2020, this increases the prior knowledge about the participants. In particular, the professional qualification ensures that the participants received the same basic University schooling and are exposed to the same competencies as part of their on-the-job training to become qualified CA(SA)s. Trottier and Gordon (2018) show that students are appropriate proxies for managers. Therefore, by using participants that have at least some mangerial experience (second and third-year SAICA auditing trainees or CA(SA) members), I ensure that the participants are reasonable proxies for bank managers in this study.

In terms of the level of technical knowledge required for this study, second and third-year SAICA auditing trainees or CA(SA) members who had qualified in 2020 were used to interpreting complex accounting standards and applying them. These participants were targeted in preference to students, as it is very important for meaningful results that the participants fully understand the technical complexities of the IFRS 9 accounting standard. These participants also had some real-world LLP experience, compared to students who

did not. Notably, a previous study by Gomaa et al. (2019) tested the efficacy of replacing the incurred credit losses model with the expected credit losses model used students (third and fourth years of undergraduate programmes in engineering and business graduate programmes) as participants. By using experienced participants, this study therefore increases the probability that participants had the necessary knowledge and experience for an LLP decision. Ninety-three percent of the full-time students who completed this case study[17] indicated that they have no experience with IFRS 9 LLP and 80% indicated that this is the first time they prepared an LLP calculation. This compares to participants in the final sample where only 18% indicated that they have no experience with IFRS 9 LLP and only 29% indicated that this is the first time they had prepared an LLP calculation as documented in Table 3 and Table 4, Panel B.

I collected data over a three-and-a-half-month period using a customised web-based instrument. The participants were initially recruited via an email sent to trainee accountants[18] or recently qualified CA(SA)s (qualified at the end of 2020) from 12 different auditing firms or a bank in South Africa who agreed to participate. Audit firms or a bank were used to recruit participants to ensure that they have the required knowledge and experience to participate in this study. The email invited audit participants to participate in the study and provided a hyperlink to the case materials, which participants accessed electronically on a computer through a website that was developed. I assured participants that their identities would remain confidential.

The first email was sent to a few audit firms on 3 May 2021 to determine how many responses will be obtained in a two-week period. Only a few responses were received and the case study was shared with the remaining audit firms on 18 May 2021. Follow-up emails were sent to the firms on 28 May 2021 and 17 June 2021 to request them to remind the applicable employees to complete the case study. Emails were only sent to auditing firms after the firm had provided official permission. The firms then distributed the email to all the second and / or third-year trainees or newly qualified CA(SA)'s. To supplement the initial response rate based on the emails sent, participants were further recruited via social media platforms including Facebook, Instagram, LinkedIn and WhatsApp. Most of the participants

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[17] Participants that indicated they are full-time students were excluded from the main analysis based on the concern that these students lack experience in the judgement and decision making domain.
[18] In the process of becoming a CA(SA).

who completed the case study, completed their highest level of education at the University of Pretoria (50 participants, 37.6%) or the University of South Africa (36 participants, 27.1%). I am a registered student at the University of Pretoria and the social media participant recruitment reached the University of Pretoria's alumni.

Table 3: Participant-related descriptive statistics

	Total (n=133)	
Participant related information	Mean	SD
Age (years)	25.85	2.621
Employment status	Third-year article clerk	1.421
Highest qualification	Assessment of Professional Competence – SAICA	1.745
University obtain your qualification	University of Pretoria	3.370
Language	English	2.326
Knowledge IFRS9 LLP	Average knowledge	.892
Experience with IFRS9 LLPs	Rarely see it on the job	.878
Number of times prepared/audited LLP calculations	1–5 times	.829
Knowledge IAS39 LLP	Below average knowledge	.893
Experience with IAS39 LLPs	Rarely see it on the job	.741
P1 Confidence to determine LLP	Fairly confident	.874
P2 Confidence to determine LLP	Fairly confident	.974

Descriptive statistics in Table 3 suggest that my sample is appropriate for the LLP task. Participants were 133 second- and third-year auditing trainees (SAICA trainees) or CA(SA)'s who had qualified in 2020 from different accounting and auditing firms in South Africa,[19] as proxies for bank financial managers. The average age of participants was 26 years with a range of 20 to 34 years which is consistent with the participants targeted. Sixty males, 72 females and 1 participant who preferred not to disclose his or her gender, successfully completed the study. Participants assumed the role of a bank financial manager, interpreting a professional standard, assessing evidential support, and making a reporting decision to determine the LLP. Table 3.1 in Appendix 3 includes detailed participant-related descriptive statistics per treatment group.

The sample is dominated by article clerks with most participants being either second (35.3% of the sample) or third-year clerks (36.1% of the sample). The qualifications participants obtained are also in line with the target sample. Twenty-eight (21.1%) participants' highest

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[19] Approval for the study was granted by the relevant companies as required.

qualification was a bachelor's degree, 29 (21.8%) had passed the Initial Test of Competence – SAICA (Part I - Qualifying Examination), 32 (24.1%) passed the Assessment of Professional Competence – SAICA (Part II - Qualifying Examination) and 21 (15.8%) had obtained a professional qualification (CA(SA)). Twenty-five (18.8%) participants indicated that they spend most of their time working on or auditing banking and financial services clients. These participants are expected to have the most exposure to LLPs. Twenty-five (18.8%) participants indicated that they spend most of their time working on or auditing small or private companies and 14 (10.5%) participants indicated that they spend most of their time working on or auditing retail and consumer companies. Study findings of Qi et al. (2018) suggest that more highly educated executives are more likely to engage in accrual earnings management. I was confident that participants' education level is at the appropriate level for this study.

Participants had more knowledge and more experience in IFRS 9 accounting standard compared to IAS 39, as indicated in Table 4, Panels A and B. One hundred (75.2%) participants had average or above average knowledge of IFRS 9 and 46 (34.6%) participants had average or above average knowledge of IAS 39. Fifty-nine (44.4%) participants had some experience in preparing IFRS 9 LLPs on the job and 113 (85%) had limited or no experience preparing IAS 39 LLPs. This is in line with the group of participants targeted that have the relevant IFRS 9 knowledge but limited exposure to IAS 39 and, therefore, would not have preconceived ideas towards one or the other accounting standard. Table 4 indicates that participants had sufficient expected LLP knowledge to complete the case study.

Table 4: Participants' IFRS 9 and IAS 39 LLP exposure
Panel A: Participants' IFRS 9 and IAS 39 LLP knowledge

	Knowledge of IFRS 9 LLP	Knowledge of IAS 39 LLP
	Frequency (Percent)	Frequency (Percent)
Very poor	7 (5.3)	42 (31.6)
Below average	26 (19.5)	45 (33.8)
Average	67 (50.4)	40 (30.1)
Above average	27 (20.3)	6 (4.5)
Excellent	6 (4.5)	0 (0)
Total	133 (100)	133 (100)

Panel B: Participants' IFRS 9 and IAS 39 LLP experience

	Experience with IFRS9 LLPs	Experience with IAS39 LLPs
	Frequency (Percent)	Frequency (Percent)
No experience	24 (18)	77 (57.9)
I rarely see it on a job	50 (37.6)	36 (27.1)
I sometimes see it on a job	51 (38.3)	20 (15)
I work with it very often	6 (4.5)	0 (0)
I always work with it	2 (1.5)	0 (0)
Total	133 (100)	133 (100)

The majority of participants indicated that they were confident to determine LLP in Phase one (60.9%) and Phase two (62.4%). In Phase one, 23 (17.3%) participants indicated they were mostly confident and 4 (3%) indicated they were very confident. In Phase two, 28 (21.1%) participants indicated they were mostly confident and 7 (5.3%) indicated they were very confident.

Auditors are often used as participants in judgement and decision-making behavioural accounting literature (Hageman 2008). It is, therefore, appropriate to use trainees and supervisors compared to bank financial managers. This study was designed to be short and the LLP calculation was simplified to enable second- and third-year auditing trainees and newly qualified CA(SA)s to complete the study.

4.2.3.1 Participant completion time

There was no time limit for the participants to complete the case study once they clicked on the hyperlink. Upon investigation, 32 participants spent more than 3 hours on the case study. It is unlikely that these participants spent 3 consecutive hours completing the case study and therefore they were removed from further analysis for time spent on the case study as was done in the pilot study.[20]

Table 5 provides a summary of the time each experimental group spent on completing the case study. After the 32 participants were removed from the analysis, participants took on average 33 minutes and 51 seconds to complete the case study. On average, participants

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[20] The remaining sample size for the analysis of time spent completing case study was 101 participants.

in IFRS 9-emi group took the longest to complete the study in an average time of 41 minutes and 09 seconds as indicated in Table 5.

Table 5: Average time used to complete a case study by different participant group

Treatment group	N	Average time (h:mm:ss)	SD
no_standard-no_emi	18	00:29:18	00:17:51.8
IAS39-no_emi	21	00:29:29	00:15:17.9
IAS39-emi	22	00:39:21	00:31:16.9
IFRS9-no_emi	22	00:30:15	00:21:18.9
IFRS9-emi	18	00:41:09	00:29:56.4
Total	101	00:33:51	00:24:06.4

Table 6 indicates that there is a statistically significant ($p < .05$) difference between the time spent on the case study between the emi and the no emi group excluding participants who spent more than three hours on the case study.

Table 6: Analysis of the time (h:mm:ss) spent by emi group allocation

	Mean	SD	Minimum	Maximum	*p-value* Sig[a]
No EMI (61)	00:29:42	18:06.0	00:08:32	01:47:30	
EMI (40)	00:40:10	30:18.3	00:11:02	02:51:19	
Total (101)	00:33:51	24:06.4	00:08:32	02:51:19	**.032**

a. Throughout this study, reported p-values are two-tailed, unless noted otherwise.

The emi group required more reading time since additional information[21] was provided to these participants. On average a participant in the emi group clicked 1.28 times to access the analyst earnings forecast and preliminary earnings information and 0.28 times to access the bonus information.[22] Participants in the earnings management group may have used more time to make the LLP decision because it took them more time to read the analyst earnings forecast and preliminary earnings and bonus information, to incorporate this

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[21] Refer to section 4.2.4.2 for a discussion on the analyst earnings forecast and preliminary reported earnings and bonus information provided to participants in the emi group.

[22] No difference is observed between the number of times participants in the emi and no emi groups clicked on the audit information, debtors' book, economic expectations, journals, LLP guideline or salary to access the information and it is therefore unlikely that this caused a difference in the time used to complete the case study by participants in the emi and no emi groups.

information in their LLP decision and / or attempt to manage earnings. This could indicate that earnings management is a thought-through decision that requires time.

4.2.3.2 *Participant remuneration*

One way in which economic experiments are differentiated from survey data is by the cash or other payments these experiments offer to participants (Friedman et al. 1994). Since I was conducting an economic experiment, it was important to provide participants with some form of payment. Participants who participated in this experiment needed to engage at a higher cognitive level that required time to make real-life financial decisions. These payments are important as they assist the researcher to enforce the rules of the experiment and therefore obtain control over the induced characteristics (Friedman et al. 1994). A recent study conducted by Gomaa et al. (2019) used a controlled laboratory environment to provide evidence on the potential effectiveness of replacing the ICL model of IAS 39 with the ECL model of IFRS 9. They used an experiment to extend the available survey data by providing a noteworthy reward to the participants. The participants in my experiment in all treatment groups behaved as financial managers in a bank environment. The reward, i.e., the bonus or participant fee, depended on the participant's LLP decision made in the experiment.

To ensure high internal validity, participants in the no emi group were told that they will receive a participation fee that will only be paid if attention and manipulation checks are passed. A combination of attention checks and participant remuneration fees is an effective method to ensure that experimental realism is not compromised (Libby and Thorne 2017). Participants needed to read a lot of financial information in this case study which requires a high cognitive load and therefore I encouraged them to pay attention to the information. The second reason participants in the low earnings management pressure group also received payment is for ethical reasons (to ensure fairness). Participants were randomly allocated to a treatment group. It would not be ethical to offer a reward to only some participants, but not others. In addition, it would not be in the best interest of future research (both my own and that of others) to offer payment to some participants only. Participants may resent an outcome where some are not offered remuneration for equal work and decline to participate in future studies on this basis. According to Largent and Lynch (2017), as long as the offer to remunerate a participant is genuine, the offer is appropriate for research purposes. As the offer of remuneration is not a threat or penalty to participants, but rather an opportunity

that the participant may decline out of his or her free will, an offer of remuneration is not coercion (Largent and Lynch 2017).

Another purpose of the participation fee is to also increase response and completion rates. The pilot study showed that a low participation fee (lucky draw and R50 voucher) leads to a low response rate (23%).

The participants who received emi treatment were told that their participation fee will be based on the bonus they received in the case study. The bonus in the case study was calculated based on each participant's LLP decision after Phases one and two.

Taking the above considerations into account and to ensure that participants were properly motivated and engaged in the task, all participants received a R200[23] Takealot[24] voucher participation fee. To be eligible to collect the voucher participants needed to correctly answer a series of attention-related questions that appear throughout the study. Participants in the emi treatment group were told that their bonus in Currency Units (CU) will be converted to a Takealot voucher at a predetermined ratio. In the questions at the end of Phase one, participants in the emi group were told what the calculated CU bonus is to motivate them to manage earnings in Phase two. Participants did not know how the portion of the bonus allocated by their manager was determined. This enabled me to ensure that all participants received the same R200 Takealot voucher pay-out whether they were in the emi or no emi group, irrespective of how their bonus was calculated in Phase one. Not informing participants what the CU conversion rate was, enabled me to provide participants who received a bonus with an emi at the end of Phase one. I did not communicate the bonus in CU to the participants at the end of Phase two. The reason all participants received the same participation fee was to ensure all participants in all treatment groups are remunerated fairly.

4.2.4 Independent variables

Independent variables that were crossed in a 2 × 2 between-subjects design include (1) IAS 39 ICL model versus IFRS 9 ECL model and (2) the emi versus no emi.

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[23] The dollar value of the Takealot voucher is $13,85 based on the average Rand to Dollar exchange rate as provided by Investec Bank on the dates the vouchers were emailed to the participants (between 14 May to 23 August 2021).

[24] Takealot is the leading ecommerce retailer in South Africa.

4.2.4.1   LLP guidelines

Participants were randomly assigned to either IFRS 9, IAS 39 or no accounting standard treatment group by the website and provided with the accounting guidelines to calculate an LLP as per either IFRS 9 or IAS 39.[25] This study avoided any mention of the specific accounting standard the participants are exposed to (i.e., the IFRS 9 or IAS 39). Knowledge of the accounting standard would likely affect the participants' perception of what they are required to do and introduce potential bias, as well as compromise the willingness to manage earnings. The study referred to the accounting guidelines applicable in Country Y.

Accounting guidelines provided to participants focus on how to determine an LLP as per the ECL model or the ICL model emphasising what evidence is required to decide whether or not to create an LLP. IFRS 9 allows the incorporation of forward-looking objective evidence which is not allowed by the IAS 39. The IAS 39 information states that 'expected future loan loss events are not considered, no matter how likely', whereas IFRS 9 information states that 'expected future loan loss events are considered'. Careful attention was paid to keeping the information as similar as possible and only making changes where there are differences in the accounting guidelines. A summary of the information provided to the different accounting standards is included in Exhibit 2 below.

Exhibit 2: Information provided to the different accounting standards
Panel A: IAS 39 accounting standard

A loan loss provision is a provision for expected credit losses, also called a loss allowance. This provision is for uncollected loans and loan payments in order to cover potential loan losses, including bad loans and customer defaults, ensuring that loan losses are recorded when they occur.

Bank X recognises a loan loss provision when there is **objective evidence of impairment as a result of a past event that occurred.**

When determining whether a past event occurred, Bank X will investigate whether, at reporting date, the debtors face liquidity problems, or are at risk to default, or are otherwise likely to be delinquent with their payments.

Bank X takes into account **past events**, **current conditions** and **historical loss experience** to determine the amount of the loan loss provision. Expected **future loan loss events** are **not considered**, no matter how likely.

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[25] Participants in the no accounting standard control group received only the general statement about what an LLP is and no accounting guidelines. The same statement about what an LLP is, was also provided to the IFRS 9 and IAS 39 experimental groups. Participants were not told which accounting standard they were allocated to.

Panel B: IFRS 9 accounting standard

A loan loss provision is a provision for expected credit losses, also called a loss allowance. This provision is for uncollected loans and loan payments in order to cover potential loan losses, including bad loans and customer defaults, ensuring that loan losses are recorded when they occur.

Bank X recognises a loan loss provision when the **credit risk has increased significantly**.

When determining whether a significant increase in credit risk occurred, Bank X will investigate whether, at reporting date, the risk of default of the debtors has increased significantly compared to initial recognition.

Bank X takes into account **past events**, **current conditions** and **reasonable and supportable forward-looking information** that is available to determine the amount of the loan loss provision. **Expected future loan loss events** are **considered**.

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4.2.4.2   Earnings management incentive

Participants were either allocated to a high earnings management pressure group (emi) or a low earnings management pressure group (no emi). Participants in the emi group only, received two incentives to manage earnings, namely bonus and analysts' earnings forecast information. Participants in the emi group therefore received information about their annual salary, how their bonus is calculated, the consensus analysts' earnings forecast after the LLP and the estimated reported earnings before the LLP. Participants in the no emi group received information about their annual salary only. Participants in the emi group received an opportunity to increase both personal income (bonus) and the bank's earnings and the no emi group only had an opportunity to increase the bank's earnings.

The compensation scheme offered by the bank can cause the manager to manage earnings because compensation schemes selected by principals encourage earnings management behaviour (Greenawalt and Sinkey 1988). One reason why management may manage earnings includes bonuses (Hageman 2008). Understanding how bank managers are compensated helps us to understand the incentives for bank managers to manipulate earnings (Beatty and Liao 2014). Therefore, consistent with other behavioural studies that use a bonus incentive to study earnings management (Rosman et al. 2012), I introduced a bonus scheme with a real-world pay-out for participants in the emi group. Participants were provided with a variable bonus based on the LLP calculation. The performance bonus was linked to the LLP calculation to ensure that participants are encouraged to understate the LLP to increase earnings to identify earnings management. In the Standard Bank Group, Governance and Remuneration Report 2018 and the Nedbank Group Remuneration Report 2017, the banks explain how they use the credit loss ratio to determine the performance of

executive officers when calculating their remuneration (Nedbank 2017; Standard Bank Group 2018). This provides evidence that LLPs are a realistic performance indicator to calculate bonuses.

The participants' bonus was calculated in two parts to ensure the realism of this experiment. The first part of the bonus was calculated based on the LLP balance determined by the participant. The closer the participant's calculation of the LLP is to the actual pre-determined loan loss of R6.83m that was unknown to participants, the higher the bonus. The validity of LLPs is defined by the ability to predict actual loan losses (Altamuro and Beatty 2010; Marton and Runesson 2017). This, together with the information that the LLP will be audited, helps to ensure that participants do not create excessively high or low unrealistic LLPs to maximise their bonus in the experiment. I used the bonus to ensure that participants in the emi group will not unrealistically manage earnings without considering consequences. The bonus rewards participants based on how close their determined LLP is to the real credit loss that is confirmed in the subsequent financial year.

Participants were told that the second part of their bonus will be determined by their manager based on earnings to create an incentive for participants to manage earnings upward by understating the LLP to optimise their bonus. This two-part bonus creates inherent conflict as participants want an accurate LLP (higher bonus) but a higher LLP leads to lower earnings (lower bonus). Many remuneration schemes in practice also use this incentive scheme where individuals face conflicting pressures to manage earnings to achieve a higher company profit and bonus. The calculation of the bonus the manager will provide to each participant is indicated in Table 7, Panel B.

The bonus scheme was tested during the pilot study. The pilot study identified that the bonuses in the negative economic cycle were on average higher than in the positive economic cycle and the maximum bonus a participant obtained in the negative economic cycle was CU 82 000 and in the positive economic cycle CU 49 000. Table 7, Panel A provides details of how the bonus of the negative economic environment in the pilot study was calculated. The updated bonus calculation used in the final study is presented in Table 7, Panel B. After the bonus changes were implemented, the average bonus calculated for the negative economic environment was more realistic and more similar to the positive

economic environment, even though the positive economic cycle was excluded from the final study.

Table 7, Panel B provides the percentages of Parts one and two of the bonus calculated in the final study. The percentages for Part one of the bonus as well as the ranges for the differences from the estimated LLP that will be used for the calculation were communicated to the participants. How the bonus is calculated by the manager (Part two) was not communicated to the participants. Participants in the emi group saw the final bonus allocated to them when they answered the questions at the end of Phase one.

Table 7: Bonus calculation
Panel A: Bonus calculation in the pilot study

Difference between the participant's LLP and the actual CU 6.83m LLP	Part 1	Part 2	Total bonus
Between CU 0 to CU 34 153	0,5% of earnings	0,45% of earnings	0,95%
Between CU 34 836 to CU 68 305	0,3% of earnings	0,45% of earnings	0,75%
More than CU 68 305	No bonus	0,45% of earnings	0,45%

Panel B: Bonus calculation in the final study

Difference between the participant's LLP and the actual CU 6.83m LLP	Part 1	Part 2	Total bonus
Between 0%–5%	0,5% of earnings	0,86% of earnings	1,36%
Between 5,01%–10%	0,3% of earnings	0,8% of earnings	1,1%
More than 10%	No bonus	0,75% of earnings	0,75%

Bonus information presented to participants in the emi group in the final study is shown in Exhibit 3.

Exhibit 3: Bonus information displayed to participants in the emi group

As the financial manager your bonus for the year will be calculated in two parts based on your loan loss provision balance calculation. Your bonus will be determined after the financial statements were finalised, based on the option you qualify for, and will be paid during the next financial year.

	Option 1	Option 2	Option 3
Part one: if the actual loan loss write-off (uncollected debtors in the next financial year) is	between 0% – 5% different from the estimated loan loss provision you will receive a bonus of 0,5% of profit for the year	between 5,01% – 10% different from the estimated loan loss provision you will receive a bonus of 0,3% of profit for the year	more than 10% different from the estimated loan loss provision you will not receive the first part of your bonus
Part two: determined by your manager based on the allocated bonus pool.	The allocated bonus pool is based on the earnings growth of the bank and the profit in the current financial year. A percentage of the bonus pool will be allocated to you at the discretion of your manager based on your performance.		
Total bonus	**0,5% of profit** + **% of bonus pool** based on the profit	**0,3% of profit** + **% of bonus pool** based on the profit	**% of bonus pool** based on the profit

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I expected that these cyclical economic conditions with the bonus calculation will encourage participants to under provide the LLP during the economic downturn to increase bank earnings. I also expected that the LLP for participants who received a bonus will be lower than the LLP for participants who did not receive a bonus.

Rosman et al. (2012) found that individuals with more work experience are more likely to manage earnings compared to individuals with less work experience when they received a bonus emi. Because participants in this study do not have extensive work experience, the bonus incentive may not be effective for everyone. I, therefore, introduced another emi.

One of the reasons why management may manage earnings is to avoid reporting earnings lower than analyst forecasts and to achieve zero earnings surprises (Burgstahler and Eames 2006; Dhaliwal et al. 2004). Managers manage earnings to meet earnings targets or analysts' earnings forecasts (Beccalli et al. 2015; Beneish 2001; Burgstahler and Eames 2006; Dhaliwal et al. 2004; Libby and Kinney Jr 2000; Nelson et al. 2002). Firms can use provisions to manage earnings to achieve analyst forecasts (Dhaliwal et al. 2004).

Managers may be motivated to manage earnings upward when earnings are below analyst forecasts (Beccalli et al. 2015). Managers of firms that are growing may be motivated to

manage reported earnings to avoid earnings disappointments and downward adjustments in the firms' stock prices (Callao and Jarne 2010). Managers are motivated to reach or even surpass earnings forecasts because investors generally reward such behaviour positively by increased stock returns (Beccalli et al. 2015). Evans et al. (2014) investigated reporting regulatory environments and earnings management. They introduced different earnings targets or benchmarks and estimated earnings to encourage participants to manage earnings. Libby and Kinney Jr (2000) in their experiment investigating if audit managers' estimated reported earnings are conditional on analysts' forecasts found that participants managed earnings by failing to correct quantitatively immaterial earnings overstatements when correction causes the company to miss the forecast. Nelson et al. (2002) found that auditors believed that the most likely incentive management has to manage earnings is meeting analyst expectations.

Participants in the emi group received the analysts' earnings forecast for the year (after the LLP) to compare with the bank's profit before LLP. This gave participants in the emi group the opportunity to manage earnings to meet the analyst forecast by coming up with a change in the LLP that will equal the bank's profit before LLP to the analysts' earnings forecast for the year. I, therefore, communicated the analyst's earnings forecast to participants of the emi group in Phase one as CU 13,25 million and the estimated reported earnings before the LLP for Bank X as CU 16,63 million, as shown in Exhibit 4, Panel A. The analyst's earnings forecast, after the LLP given to participants, is not equal to the profit before LLP less the LLP adjustment that participants should have made if they chose the correct estimate of the actual loan impairment given to them in Phase two. This is in line with reality. I added CU 500 000 to the estimate of the profit after LLP adjustment to determine the analysts' earnings forecast.

The analysts' earnings forecast is CU 13,2 million and the estimated reported earnings before the LLP is CU 15,8 million in Phase two as shown in Exhibit 4, Panel B. The change in the estimated reported earnings before the LLP is based on a 5% decrease from the previous financial year.

Exhibit 4: Analyst earnings forecast and preliminary reported earnings presented to participants in the emi group

Panel A: Phase one

The consensus analysts' earnings forecast, **after the loan loss provision**, for Bank X was **CU 13,25** million for the 20X1 financial year as determined at 31 December 20X0. The preliminary reported earnings, **before the loan loss provision**, for Bank X based on the information in the financial reporting system for the year ending 31 December 20X1 is **CU 16,63** million.

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Panel B: Phase two

The consensus analysts' earnings forecast, **after the loan loss provision**, for Bank X for the 20X2 financial year as determined at 31 December 20X1 was **CU 13,2** million. The preliminary reported earnings, **before the loan loss provision**, is **CU 15,8** million for Bank X based on the information in the financial reporting system for the year ending 31 December 20X2.

4.2.5   Dependent variables

The dependent measures elicited from each subject in the between-subjects design are (1) earnings management decision, (2) the desired ending LLP percentage of total debtors' book and (3) change in the desired ending LLP percentage of total debtors' book.

The four primary dependent variables observed in this experiment are included in Table 8, Panel A which are: P1 CU 31–90 Days, P1 Total LLP, P2 CU LLP 31–90 Days and P2 Total LLP. I collected data on a total of 14 potential variables. The variables observed in the experiment were identified to potentially measure earnings management between accounting standards. The other measures that I gathered in this experiment are included in Table 8, Panel B.

Table 8: Description of the dependent variables in the study
Panel A: Description of the primary dependent variables in the study to be used to calculate earnings management.

Name	Description	Measure-ment unit
P1 CU 31–90 Days	Portion of the outstanding debtors' book that falls into 31–90 days outstanding bucket that the participant wants to include in the final total LLP in Stage one. This is calculated by taking the % the participant chose for this bucket and multiplying it with CU 91,2m as indicated in the case study.	Currency units
P1 Final Total LLP	Total LLP that the participant chooses to provide for at the end of Stage one. This total is automatically calculated by the system after the participants input the percentages in the 0–30, 31–90 and over 90 days buckets.	Currency units
P2 CU 31–90 Days	Portion of the outstanding debtors' book that falls into 31–90 days outstanding bucket that the participant wants to include in the final total LLP in Stage two. This is calculated by taking the % the participant chose for this bucket and multiplying it with CU 96m as indicated in the case study.	Currency units

Name	Description	Measure-ment unit
P2 Final Total LLP	Total LLP that the participant chooses to provide for at the end of Stage two. This total is automatically calculated by the system after the participants input the percentages in the 0–30, 31–90 and over 90 days buckets.	Currency units

Panel B: Description of the additional dependent variables collected in the study

Name	Description	Measure-ment unit
P1 CU 0–30 Days	Portion of the outstanding debtors' book that falls into 0–30 days outstanding bucket that the participant wants to include in the final total LLP in Stage one. This is calculated by taking the % the participant chose for this bucket and multiplying it with CU 285m as indicated in the case study.	Currency units
P1 CU 90 Days	Portion of the outstanding debtors' book that falls into over 90 days outstanding bucket that the participant wants to include in the final total LLP in Stage one. This is calculated by taking the % the participant chose for this bucket and multiplying it with CU 3,8m as indicated in the case study.	Currency units
P1 Nr of Calc	The number of calculations is counted each time a participant changes the LLP calculation (percentages input in the different age buckets) and clicks calculate to determine their total LLP and the earnings after the LLP is in P1.	Number
P1 Calculated Bonus	The bonus is automatically calculated by the computer system for all experimental groups (irrespective if they were allocated to the emi or the no emi group), however, it is only communicated to the participants in the emi group since the bonus is an emi incentive. Participants in the no emi group will not know what their bonus was. The bonus is calculated by taking the LLP calculated by the participant in P1 after an audit adjustment of 1.0002 minus the predetermined actual LLP of CU 6,83 million. If this difference between the participant's LLP and the actual LLP is between CU 0 to CU 340 000, then the bonus will be calculated as 1,36% x participant's calculated reported earnings. If the difference is between CU 340 001 to CU 680 000 then the bonus will be calculated as 1,1% x participant's calculated reported earnings. If the difference is more than CU 680 001 then the bonus will be calculated as 0,75% x participant's calculated reported earnings.[26]	Currency units
P2 CU 0–30 Days	Portion of the outstanding debtors' book that falls into 0–30 days outstanding bucket that the participant wants to include in the final total LLP in Stage two. This is calculated by taking the % the participant chose for this bucket and multiplying it with CU 298m as indicated in the case study.	Currency units

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[26] Refer to section 4.2.4.2 for a more detailed description of the bonus calculation.

Name	Description	Measure-ment unit
P2 CU 90 Days	Portion of the outstanding debtors' book that falls into over 90 days outstanding bucket that the participant wants to include in the final total LLP in Stage two. This is calculated by taking the % the participant chose for this bucket and multiplying it with CU 6m as indicated in the case study.	Currency units
P2 Nr of Calc	The number of calculations is counted each time a participant changes the LLP calculation (percentages input in the different age buckets) and clicks calculate to determine what their total LLP and the earnings after the LLP is in P2.	Number
Difference between the last and the first LLP in P1	Difference between the final LLP that was submitted by the participant and the first LLP that the participant calculated in P1.	Currency Units
Difference between the last and the first LLP in P2	Difference between the final LLP that was submitted by the participant and the first LLP that the participant calculated in P2.	Currency Units
Difference between P1 LLP and CU 6.83m	Difference between the final LLP that was calculated and submitted by the participant and the predetermined LLP of CU6.83m in P1.	Currency Units

4.2.6   Key features of the experimental design across all experimental conditions

In addition to the independent variables described previously, there are several other features of the experimental environment that could impact the LLP decision. In this section I describe some of these key features of the decision environment.

4.2.6.1   Company and salary information

A brief realistic description and information about the LLP calculation at Bank X for 20X1 and 20X2 financial periods were presented to participants. Prior research found that LLPs are a primary tool used by banks to manage earnings (Leventis et al. 2011; Kanagaretnam et al. 2003, 2004a; Ma 1988; McNichols and Wilson 1988). The banking industry is more susceptible to earnings management compared to other industries because of the judgement and discretion managers must apply when determining LLPs (Greenawalt and Sinkey 1988). It is argued that the change from the ICL to the ECL model may have been influenced by information asymmetry problems specific to banks (Giner and Mora 2019).

IFRS 9 LLP changes are also expected to have a significant impact on the banking industry (Limani and Meta 2017). Therefore, the case study focused on a banking environment.

Hypothetical dates (20X0, 20X1 and 20X2) were chosen to ensure participants do not link their LLP decision to any current real-world economic circumstances but rely on what was provided to them in the case study.

4.2.6.2   Audit information

To ensure that participants behave ethically and not just viewed this as a gaming exercise, this study introduced investor protection (Callao and Jarne 2010; Fonseca and Gonzalez 2008). High audit quality limits managers' ability to make opportunistic accrual choices as an audit is seen as an effective monitoring tool (Agoglia et al. 2011; Fonseca and Gonzalez 2008; Kim et al. 2003). An enhanced internal control environment and auditor presence lead to improvements in the quality of financial reporting in the banking industry (Altamuro and Beatty 2010; Agoglia et al. 2011). Leuz et al. (2003) argue that strong and well-enforced outsider rights limit insiders' ability to obtain private control benefits, and as a result, reduce insiders' incentives to manage accounting earnings because they have nothing to hide from outsiders.

Earnings management is related to investor protection (Callao and Jarne 2010). Callao and Jarne (2010) documented that earnings management is more pronounced in countries with weaker legal systems and enforcement. Auditors, however, can help limit managers' use of accruals-based earnings management (Commerford et al. 2018; Zang 2012). Taylor and Aubert (2022) find evidence to support that country-level governance and institutional quality can help prevent the use of earnings before taxes and LLPs to smooth income. Taylor and Aubert (2022) state that the quality of governance and regulatory bodies will be critical in leveraging the ideal utility from IFRS 9.

Participants were told that Bank X is audited by one of the big auditing firms with an excellent reputation and they have been the auditors for the last four years. They were also told that all audit committee members of Bank X are independent with no disclosed relationship with the bank and all qualify as financial experts with broad experience and that the audit committee meets frequently.

To mimic real-life audit practice, participants' LLP calculation after an audit adjustment was compared to the actual predetermined LLP. The audit adjustment is calculated as the actual LLP the participant provided multiplied by a 0,02% adjustment rounded to the nearest CU 1 000.

4.2.6.3 Debtors' book

In Phase one, participants in all treatment groups were told that the LLP calculated at the end of 31 December 20X0 (the previous financial year) was CU 3,4 million of the total debtors' book of CU 360 million. This LLP represents the amount that is recognised on the statement of financial position. As this study focuses on the amount recognised on the statement of financial position, I did not provide participants with the actual credit loss for the previous financial year during the pilot stage. However, participants provided feedback during the pilot stage that insufficient information was available as the actual impaired loans for the 20X0 period were not made available. To ensure that participants do not hesitate to make an LLP decision because they feel insufficient information was provided, additional information was made available in the final study. Participants were told that the actual impaired loans for the 20X0 financial year are CU 3 210 000.

A bank's LLP reflects, in part, its exposure to credit risk (Greenawalt and Sinkey 1988). Credit risk is determined by external factors and factors subject to managerial judgement (Greenawalt and Sinkey 1988). De Haan and van Oordt (2018) found that the average LLP percentage scaled by total loans for a sample of 25 large, universal banks was between 0,5% and 1,5%. The average impaired loans of total loans percentages for the sample was between 1% at the beginning of 2008, which increased to 3,5% in 2013 (de Haan and van Oordt 2018). The predetermined actual impaired loan percentage for Phase one is 1,8% or CU 6,83 million, in line with de Haan and van Oordt's (2018) findings for impaired loans determined for the period 2009 to 2012. The predetermined actual impaired loan percentage at the end of Phase two is 2,35% or CU 9,4 million. The total debtors' book increased by 20 million each year from CU 360 million in 20X0 to CU 400 million in 20X2.

The case study provided participants with a breakdown of the total outstanding debtors' book of CU 380 million in Phase one and CU 400 million in Phase two on different days: 0–30 days, 31–90 days and more than 90 days age buckets. The LLP policy of Bank X and the

range of percentages to calculate the LLP for each outstanding debtor bucket were also provided.

IFRS 9 estimates the probability of default according to a three-stage classification for financial assets (López-Espinosa et al. 2021). The impairment of financial assets under IFRS 9 in Stage two is subject to the highest level of discretion compared to Stages one and three (Oberson 2021). A significant level of judgement is required to determine how much of a loan portfolio should move from Stage one to Stage two when there is a change in the credit risk (Ernst & Young 2018). Participants in the case study were told that 'there is an increase in credit risk when debtors are 31 days past due'. Therefore, it was expected that participants will treat the 31–90 days outstanding debtors as part of Stage two as described in IFRS 9. Due to the level of judgement that is required for the Stage two LLPs, earnings management is expected to take place in the Stage two loan portfolio and is expected to be observed in the 31–90 days bucket. Therefore, I expected earnings management under IAS 39 to take place in the '31–90 days' age bucket, as this bucket requires more discretion.

Due to the level of judgement and discretion that is required to determine when the credit risk of the loan has increased significantly to allocate to the different stages, earnings management under IFRS 9 is expected to mainly take place in the Stage two loan portfolio. Moreover, the Stage two loan portfolio is similar to the 31–90 days age bucket under IAS 39, creating similar expected concentrations of earnings management.

The ECL under Stage three in IFRS 9 represent lifetime ECL that are similar to 'assets that have objective evidence of impairment at the reporting date' as described in IAS 39 (Pucci and Skærbæk 2020). When a loan is non-performing it is considered to be in Stage three (López-Espinosa et al. 2021). Although the definition of default is not clearly defined in IFRS 9, IFRS 9 introduces a rebuttable presumption that default occurs when a financial asset is more than 90 days past due (Novotny-Farkas 2016). In this study participants were told that when payments are 90 days past due, the account is considered to be in default. The 90 days past due trigger is in line with what is applicable in practice (Ernst & Young 2018). Since it is argued that IAS 39 had less earnings management than pre-IFRS adoption, as discussed in section 2.2.7, and that earnings management is not expected in the non-discretionary components of the LLP, I did not expect earnings management to take

place in the 'more than 90 days' age bucket in IAS 39. I also did not expect an earnings management difference between IFRS 9 and IAS 39 in the 'more than 90 days' age bucket.

4.2.6.4 Economic expectations

The case study focused on a negative economic environment where the economy is expected to shrink and indicators suggest that Country Y will be in a recession. Previous studies found that firms in financial distress are motivated to manage earnings to achieve a certain target and hide the underlying financial performance from stakeholders (Li et al. 2020; Peterson and Arun 2018; Zang 2012). Peterson and Arun (2018) found evidence that suggests that earnings smoothing is more pronounced when banks expect losses. Li et al. (2020) argued that entities may make more use of real earnings management. Entities that are in financial distress might be more desperate to take the risks associated with accounting/accrual earnings management.

The financial industry fears that IFRS 9 will lead to an overreaction because economic expectations might be overly negative during a recession (Hoogervorst 2018). The requirement in IFRS 9 that full lifetime expected losses will have to be recognised as soon as a loan becomes significantly riskier, may reinforce the economic downward trend as these losses are expected to be recognised on a timelier basis compared to IAS 39 (Hoogervorst 2018). In a negative economic cycle, pessimism is at its highest, which may lead to significant increases in credit loss expectations that may result in higher expected loan losses than what may realise and in a positive economic cycle, optimism may lead to relative under-provisioning (Hronsky 2010). There is a concern that IFRS 9 could result in less relevant LLPs due to measurement error and / or management taking advantage of the discretion for their own benefit (López-Espinosa et al. 2021).

Laeven and Majnoni (2003) found a negative relationship between Gross Domestic Product (GDP) growth and LLPs, suggesting that banks only create an LLP during economic recessions and not before the recession. This suggests that LLPs will be higher during the negative economic cycle compared to a positive economic growth period (Laeven and Majnoni 2003). Marton and Runesson (2017) found that banks with low operating income do not experience the benefits of providing improved private information about credit losses to users when banks have more discretion to determine LLPs. These benefits are offset by incentives to manage earnings and therefore more managerial discretion has a negative

impact on banks with low operating income (Marton and Runesson 2017). I chose a negative economic environment as I believe more managerial discretion in IFRS 9 will have a higher impact in the negative economic environment.

A banking crisis might occur after volatility in the macroeconomic environment (Chaibi and Ftiti 2015) and include increases in levels of unemployment (Chaibi and Ftiti 2015). An increase in the unemployment rate could cause a decrease in the customer's ability to generate cash flow and pay debt (Chaibi and Ftiti 2015). Greenawalt and Sinkey (1988) state that a change in personal income is associated with loan defaults. Bikker and Metzemakers (2005), however, found that the unemployment rate did not have a significant effect on LLPs. To communicate external factors affecting the quality (riskiness) of the bank's debtors' book to participants, in line with a recent study published by López-Espinosa et al. (2021), participants were informed about the current unemployment rate and the change in the unemployment rate. Statistics South Africa (2019) communicated a 29,1% unemployment rate in South Africa in the third quarter of 2019 with a 1,6% year-on-year change. In October 2020, Statistics South Africa published a 6,6% increase in the unemployment rate in South Africa between the period June 2019 to June 2020. This was expected due to the Covid-19 pandemic (Statistics South Africa 2020).

I linked the unemployment rate to South African conditions because this study uses participants who are located in South Africa and are familiar with the South African economic conditions. Using South African conditions enables the participants to rely on their average experience to make assumptions. I used an unemployment rate of 29,0% which increases to 31,0%. I chose an increase in the unemployment rate as I believe this will be positively related to the change in LLP since a decrease in income should indicate hardship and increase the likelihood of loan defaults.

A change in GDP was also communicated to participants to indicate the change in economic growth (Anandarajan et al. 2007; Bouvatier and Lepetit 2008). When GDP growth is negative, firms may decrease borrowing to expand their activities (Bouvatier and Lepetit 2008; Leventis et al. 2011). I, therefore, believe the negative GDP growth would cause participants to increase the LLPs in Phases one and two.

Credit risk is affected by GDP growth (Chaibi and Ftiti 2015; López-Espinosa et al. 2021). Laeven and Majnoni (2003) found that the correlation between LLPs and GDP growth is negative, around 18 percent, suggesting procyclical loan loss provisioning. Bouvatier and Lepetit (2008) and Bikker and Metzemakers (2005) found that the macroeconomic conditions are relevant and that LLPs depend on the business cycle. I expected participants to increase the LLPs less in Phase two to increase income during negative economic conditions in line with participants using LLPs to manage earnings. I believe that the increase / decrease will be more pronounced under IAS 39 than IFRS 9 due to banks making LLPs during and not before economic recessions (Curcio et al. 2017).

4.2.6.5   Journals

As participants have only limited experience with LLPs, the journals and the impact of the journals on earnings for the year were provided to participants. LLPs are a complex topic and therefore more guidance was provided. This would assist in reducing the cognitive overload for the participants when making the LLP decision.

Banks decrease the LLP (to increase earnings by debiting LLP and crediting income) if the actual losses exceed the expected losses and increase the LLP (decrease earnings by debiting expense and crediting LLP) if actual losses are lower than expected losses (Laeven and Majnoni 2003).

The LLP provided to participants at the end of December 20X0 was CU 3 400 000. When a participant makes a change to the LLP, for example increases the LLP with CU 2 604 000 to CU 6 004 000 at the end of December 20X1 the following journal would be recorded in the accounting records:

	Debit CU	Credit CU
Adjustment to loan loss provision (earnings for the year)	2 604 000	
Loan loss provision (statement of financial position)		2 604 000
Adjustment to the loan loss provision		

The above journal will therefore result in a decrease in the current year's (20X1) reported earnings from the CU 16 630 000 preliminary reported earnings before LLP provided in the "emi" case study to CU 14 026 600 reported earnings. Participants were provided with the possible journal that will be recorded if they increase or decrease the LLP before they

determine the LLP in the current year, to indicate what the possible impact of the journal (change in LLP) will be on the reported earnings for the year. The journal information was provided to ensure that all participants correctly understood what the impact of the change (increase / decrease) in the LLP will be in the reported earnings (increase / decrease). Participants could observe the change in the reported earnings as they made changes to the LLP once they clicked on "calculate" as illustrated in Exhibit 5.

Exhibit 5: Screenshot of the website where participants make the LLP decision in Phase one after they have completed the LLP percentages and clicked 'calculate'.

In line with the accounting guidelines applicable in Country Y, indicate the loan loss provision as a percentage of the debtors' book in each age category that you, as the financial manager of Bank X in Country Y, will provide in the current year (20X1) given the economic circumstances. When you click "calculate" the computer will automatically calculate the total loan loss provision in Currency Units as well as the reported earnings, after the loan loss provision for the year ending 31 December 20X1. When you are satisfied with your calculation, click "submit".

	0-30 Days		31-90 Days		Over 90 Days		Total
	CU m		CU m		CU m		CU m
	(75%) 285		(24%) 91,2		(1%) 3,8		(100%) 380
Loan loss provision	0.2	%	2	%	95	%	**CU 6 004 000**
Reported earnings							**CU 14 026 000**

[Calculate] [Submit]

4.2.6.6   Task

Participants were asked to indicate the LLP as a percentage of the debtors' book in each age category (30 days, 31–90 days and more than 90 days) that they as the financial manager of Bank X in Country Y will provide in the current year (20X1 / 2), given the economic circumstances. Participants could manually type the percentages they wanted to submit or change them via the increase or decrease arrows provided on the website. The increase or decrease sensitivity of the arrow was 0,05% for each click. Participants were able to submit 0%, however, this had to be typed as 0 as the website did not allow a participant to submit an empty cell. A negative percentage below 0% could not be submitted as a company cannot create an LLP asset. The total allowed percentage between the three buckets (0–30 days, 31–90 and more than 90 days) could also not exceed 100%.

Management's favourable or unfavourable evaluation of the earnings management behaviour will determine their willingness to manage earnings (Ajzen 1991). IFRS 9 is expected to change management's perceptions of the societal norms regarding the ethics

of earnings management. IFRS 9's ECL model of determining LLPs allows more managerial judgement to incorporate future losses in the LLP calculation, which creates the perception that management will have more perceived control over the behaviour. I, therefore, believed that earnings management will increase more under IFRS 9 than under IAS 39.

4.2.7 Attention and manipulation check questions

I used attention and manipulation check questions to filter noise due to inattentive or unmotivated participants by excluding the data of participants who failed these questions. The manipulation check question[27] also assisted in finding support that a relationship between the accounting standard manipulation and the LLP decision exists, to help provide evidence of construct validity. To ensure participants have read all information and attended to the experimental treatment, two attention check questions[28] were asked. Participants who failed any of these questions did not qualify to receive the incentive.

4.2.8 Covariates

Several potential covariates were measured in the post-experimental questionnaire to enable me to control for certain characteristics that may influence participants' behaviour. The study gathered socio-economic information about the general demographic variables, including age, gender, education, employment status, home language and professional experience as well as LLP experience. Education is an eight-scale variable that is measured by asking participants' highest degree or level of education. This included the options: Initial Test of Competence and Assessment of Professional Competence which are specific requirements to qualify as a CA(SA). Participants were also requested to indicate where they obtained their highest university qualification by choosing an appropriate institution from a list of South African universities. Employment status options included the option 'Full-time student' to identify any participant who is not currently working in practice. For the question relating to home language participants were required to choose from a list of the 11 South African official languages and an 'other' option.

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[27] Analysis of the manipulation check questions in the pilot study indicated that participants identified the incorrect accounting standard. Accounting standard information was changed to be displayed in bold in the final study to ensure a participant reads this information attentively. Unnecessary words in the question were deleted.

[28] The attention check questions were updated after the pilot study. Unnecessary distractors from the options provided were deleted.

Questions were included in the instrument to filter out noise and control for factors that may influence earnings management behaviour and LLP decisions (for example, participants' knowledge and experience). The study asked participants to self-report their knowledge and work experience of IFRS 9 loan loss provisioning and IAS 39 loan loss provisioning using a five-point Likert scale. General work experience provided 19 options by requesting participants to indicate the type of client they audit mostly. Participants also indicated the number of times they have prepared and / or audited LLP calculations (This is the first time, 1–5 times, 6–10 times, More than 10 times).

Numerous archival studies using quantitative methods show that firms do use LLPs to manage earnings. Many of these archival studies focus on agency theory to explain earnings management. This study focused on the psychological aspects of earnings management behaviour on an individual decision-making level rather than a firm level. Certain personal characteristics or traits of individual managers can influence his or her willingness to manage earnings. Characteristics that may influence this behaviour include gender (Alqatamin et al. 2017; Bouaziz et al. 2020; Qi et al. 2018) and risk-taking (Abdel-Khalik 2007; Cain and McKeon 2016).

Prior research found contradicting results about whether gender plays a role in earnings management behaviour (Qi et al. 2018; Shawver and Clements 2015). Qi et al. (2018) found that older executives and female executives in Chinese listed firms are less likely to engage in earnings management behaviour. Liu et al. (2016) observed the impact of CFO gender on earnings management in China's listed firms from 1999 to 2011. The study found that female CFOs exhibit lower discretionary accruals, lower total accruals, lower abnormal production costs, and higher abnormal discretionary expenditures (Liu et al. 2016). Liu et al. (2016) also found evidence that male CFOs are more aggressive than female CFOs in managing earnings upward during their last year with the firm when they plan to leave. Male CFOs are more aggressive than female CFOs in managing earnings downward during their first year on the job. Overall, the findings suggest that female CFOs, compared to their male counterparts, engage in less earnings management and are more conservative (Liu et al. 2016; Arun et al. 2015). Na and Hong (2017) found that entities do use earnings management to increase earnings and the most likely main driver for this behaviour is entities with male CEOs. Fan et al. (2019) found evidence that the proportion of women on boards affects earnings management of banks and an adequate number of women on

boards of banks could limit earnings management. Female CEOs do not seem to be engaged in earnings management, even if there is an incentive to do so (Na and Hong 2017). Na and Hong (2017) also found that male CEOs tend to take real action to achieve earnings increases. Other studies found evidence suggesting that entities with female CFOs or CEOs are associated with more income-decreasing rather than income-increasing earnings management (Arun et al. 2015; Peni and Vähämaa 2010). This suggests that female CFOs follow a more conservative financial reporting strategy and have better accrual quality (Arun et al. 2015; Liu et al. 2016; Peni and Vähämaa 2010). Alqatamin et al. (2017), Bouaziz et al. (2020), Harris et al. (2019) and Peni and Vähämaa (2010), however, found no relationship between CEOs' gender and earnings management behaviour. Shawver and Clements (2015) found no significant differences between genders of professional accountants when they make a moral evaluation involving earnings management. Harris et al. (2019) found that equity-based compensation rather than gender influences earnings management behaviour.

Because it is argued that females are more risk-averse (Arun et al. 2015; Bouaziz et al. 2020; Peni and Vähämaa 2010), it is expected that they are less likely to manage earnings. I expected males to be more likely to respond to incentives provided and take real action to manage earnings, compared to females.

Cain and McKeon (2016) found evidence that CEOs' personal risk-taking tolerance to some level explains the corporate projects that are chosen and the overall exposure to risk a firm will tolerate. CEOs with a higher risk tolerance are associated with riskier firms and put up with a higher risk sensitivity in their remuneration contracts. Cain and McKeon (2016) use private pilot licenses as a proxy for personal risk-taking preferences. This study also measures participants' willingness to engage in risky behaviour in a financial environment by using questions by Blais and Weber (2006) that are adjusted to fit the current South African environment. Considering that earnings management intentions can be correlated with inherent risk preferences (Greenfield et al. 2008)), I chose to measure and control for risk preference.

An individual's propensity to take risks in the final study is measured using two different sets of questions[29]. The first question is a general risk question as used by Dohmen et al. (2006). A general risk question is argued to be the best all-round risk-attitude predictor (Dohmen et al. 2011b). The second set of five questions is an adjusted extract from the Domain-Specific Risk-Taking Scale. The Domain-Specific Risk-Taking Scale is a 30-item risk questionnaire that measures participants' willingness to engage in risky behaviour in the recreational, ethical, social and financial domains of risk. Limiting questions about risk attitudes to a specific domain gives a stronger measure for the corresponding domain (Dohmen et al. 2011b). Therefore, the questions included focused on the financial domain only, as this is the environment that will impact on participants' earnings management behaviour. The questions similar to those used in Blais and Weber (2006) were adjusted to fit the current South African environment and to make it more relevant for the participants targeted. For example, the question 'Investing 10% of your annual income in a moderate growth mutual fund' (Blais and Weber 2006) was changed to 'Investing 10% of your annual income in Bitcoin'. For the Risk-Behaviour scale, respondents evaluated their likelihood of engaging in these risk behaviours (i.e., 'indicate your likelihood of engaging in each activity or behaviour') on a seven-point rating scale ranging from 1 ('Extremely unlikely') to 7 ('Extremely likely'), similar to Blais and Weber (2006).

This study uses normative professional commitment questions as used by Smith and Hall (2008) to measure a participant's commitment to the accountancy profession. The normative professional commitment questions are used since this refers to a feeling of perceived moral obligation to stay within the profession (Smith and Hall 2008). This links best to the moral obligation to not manage earnings. For the professional commitment scale, respondents evaluated their level of agreement on a seven-point rating scale ranging from 1 ('Strongly disagree') to 7 ('Strongly agree').

4.3   Ethical considerations

Participants were randomly allocated to the emi versus no emi group. This means, based on the random allocation, some participants are eligible to receive a bonus and other

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[29] An individual's propensity to take risks was measured in the pilot study using three different sets of questions: a general risk question, an adjusted set of 13 risk behaviour questions extracted from the Domain-Specific Risk-Taking Scale and a standard gamble question. An exploratory factor analysis was performed and questions that did not related to investment or financial risk were identified and deleted to limit participants' time commitments and avoid cognitive overload.

participants are not. Participant pay-out for the group that receives a bonus is based on the bonus that is calculated based on how close the participants' LLPs were to the actual credit loss recognised as well as the bonus the manager allocated to them. Participants in the earnings management pressure group who received a bonus were informed that the bonus in CU will be converted to a Rand amount based on a predetermined ratio. They were not told what the ratio was. This enabled me to compensate all participants fairly. All participants received a R200 Takealot voucher.

To enable me to forward the Takealot vouchers to participants, I needed to obtain the contact details of respondents in the form of an email address voluntarily. Respondents were assured that the email addresses would only be used to forward the vouchers. Post-experimental questions did not require the identity of the respondents.

An application for ethical clearance for the study, including the contents of the case study and all questions and details of how participants will be compensated, was submitted to the Research and Ethics Committee of the Faculty of Economic and Management Sciences at the University of Pretoria. The committee approved the pilot study on 13 May 2020 and the final version of the case study on 22 March 2021.

4.4   Summary

In this chapter, the research methodology, experimental design and the rigour applied in the research process are described. As limited archival data is available this study tested the research question with a 2 × 2 full factorial experiment. Important aspects relating to the development and deployment of the case study were presented to provide the background of the reliability and validity of the research instrument. I also provided a detailed description of the tasks and procedures participants would perform. The method applied in this study is considered the best approach to address the research question, within the limits of practicality.

5. DETAILED ANALYSIS AND FINDINGS

5.1 Introduction

In this chapter, the detailed results of the tests investigating the hypotheses are presented. The discussion is divided into the following main areas: data collection and final sample, descriptive statistics, covariates, results for Phases one and two, and alternative earnings management measures.

5.2 Case studies completed

A total of 513 participants attempted the case study while two hundred and fifty-two participants completed the web-based case study. To identify any participants who had completed the study more than once, I searched all case studies to separate those where the participant name and email were the same. Eighteen case studies were identified where the participant who had attempted the case study had the same name and a very similar email address (participants sometimes added a symbol to the email address to enable them to register again on the website). These eighteen case studies were excluded from further analysis. A check was done to determine if any of the participants who had completed the pilot study also completed the final study by comparing the email addresses used to sign up. No participants were found. Two hundred and forty-three incomplete case studies were deleted since these case studies did not have sufficient information to include in the analysis. This resulted in a total of two hundred and fifty-two participants who had completed the case study, as indicated in Table 9. There was a 53% completion rate among participants who had started the case study and completed it.

Table 9: Description of the composition of the sample that started and completed the case study

	Number of participants
Recorded case study attempts	513
Dropped due to participants started and / or completed the case study more than once	(18)
Incomplete case study attempts	(243)
Total number of participants who completed the case study	252

Table 10 provides a breakdown of the incomplete case studies per experimental group. Untabulated results show that 44.4% of participants with incomplete case study attempts were allocated to IAS 39 accounting standard experimental condition and 46.5% to IFRS 9. Of the participants with incomplete case study attempts 48.1% were allocated to the no earnings management incentive (emi) experimental condition and 51.9% were allocated to the emi condition. No specific experimental condition caused participants to not complete the case study.

Table 10: Description of the case study group allocation for participants with incomplete case study attempts

Treatment group	Frequency	Percent
negative-no_standard-no_emi	22	9.1
negative-IAS39-no_emi	42	17.3
negative-IAS39-emi	66	27.2
negative-IFRS9-no_emi	53	21.8
negative-IFRS9-emi	60	24.7
Total	243	100.0

Table 11 provides a breakdown of the different phases where the 243 participants stopped completing the case study. One hundred and fifty-one (61.1%) participants only clicked on the case study link but did not continue to perform any calculations and 82 (33.7%) participants read the information in Phase one and continued to the loan loss provision (LLP) calculation in Phase one but did not complete the calculation.

Table 11: Description of the sample that did not complete the case study

	Number of participants
Clicked on case study link but did not continue to perform any calculations	151
Continued to LLP calculation in Phase one but did not complete the calculation	82
Completed the LLP calculation in Phase one and continued to further questions at the end of Phase one, but did not complete it	2
Completed Phase one and started Phase two	6
Completed the LLP calculation in Phase two and continued to further questions at the end of Phase two, but did not complete it	1
Completed Phases one and two but did not complete the post-experimental questions	1
Total number of incomplete case study attempts	243

The first page contained a 'Research Study Consent Form' that participants had to agree to in order to be able to proceed. Participants may not have wanted to provide consent and therefore dropped out. Participants may have clicked on the link to the case study that they received via WhatsApp on their phone, but then read the start page that indicated: 'The format of the information in the case study is better viewed on a computer. Please use a computer to complete the study' and then decided to exit the case study. These could be reasons why the 151 participants who only clicked on the case study link dropped out.

Other potential reasons why so many participants started the case study but did not complete it could be because participants needed to engage at a higher cognitive level to make real-life financial decisions. A participant might enter the case study and scan through the information to see what is required before deciding to continue. These reasons are supported by the 82 participants indicated in Table 11, who had read the information in Phase one and continued to the LLP calculation in Phase one but did not complete the calculation.

Participants had no time limit to complete the case study and some participants did not complete the case study in one sitting. As reported in Appendix 2, section 1.4.1, participants during the pilot study on average took 3 hours and 17 minutes to complete the case study. It is unlikely that participants spent 3 consecutive hours completing the case study. For the further analysis of the time participants that started the case study but did not complete it, I removed the 14 participants who took more than three hours from the time the case study was started to the last case study update. Untabulated results show that the remaining 229 participants,[30] on average took 5 minutes and 18 seconds to read the information provided in Phase one. The minimum time for participants who successfully completed the case study and were included in the final sample was 8 minutes and 32 seconds. The average time spent by these participants was 24 minutes and 6 seconds.[31] The minimum time for participants who read the information in Phase one and continued to the LLP calculation in Phase one but did not complete the calculation was 23 seconds. This indicates that some participants skipped through the information screen to see what the task was and then decided not to complete the case study. The average time spent by a participant who had

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[30] After removing the participants who took more than three hours. The adjustment to the 229 participants was for the time analysis only, I retained all participants for the further analysis.
[31] Excluding participants who spent more than 3 consecutive hours completing the case study.

clicked on the case study link but did not continue to perform any calculations was 1 minute and 16 seconds. The minimum amount of time was 0 seconds, indicating that participants only clicked and did not read or perform any task.

5.2.1   Manipulation checks

I manipulated the accounting standard by providing participants with specific LLP guidelines relating to IAS 39 or IFRS 9. When I asked participants to correctly identify the accounting guidelines applicable in Country Y when recognising an LLP, 56 participants (22.2%) were unable to do so correctly. Of the 56 participants, 46 allocated to the IAS 39 group incorrectly indicated the accounting guidelines applicable in the specific case study and 10 participants allocated to the IFRS 9 group incorrectly indicated the accounting guidelines applicable. One of the explanations for the high manipulation failure rate of the IAS 39 group could be that the participants targeted to complete the case study are unfamiliar with the IAS 39 accounting standard as this was an accounting standard that was excluded from the scope of the SAICA exams.[32] Certain participants may not think that it is a possibility that the accounting guidelines could be different from what they have had exposure to (IFRS 9) because they were never required to study it. Untabulated results show that participants who failed the manipulation checks in the IAS 39 group on average clicked 1.08 times on the LLP guidelines, compared to 0.94 times for participants in the same group who had passed the manipulation checks. The difference in the number of clicks is, however, not statistically significant.

5.2.2   Attention checks

I also asked participants to recall whether the unemployment rate in Country Y will increase or decrease. The correct answer participants should indicate was increase. Thirty-five participants (13.9%) failed the attention check question regarding the unemployment rate. The future economic expectation is important for an LLP decision. Therefore, the second attention check question I asked participants was to indicate if the economic expectations in Country Y are positive, negative or they don't remember. The correct answer was negative. Twenty-eight participants (11.1%) failed the attention check question regarding the economic expectations. A reconciliation of the number of participants who completed the case study and the number of participants retained in the analysis is presented in Table 12.

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[32] Professional accounting exam in South Africa.

Table 12: Reconciliation between the total number of completed case studies and valid case study observations

	Number of participants
Total number of participants who completed the case study	252
Number of participants who failed the manipulation check	(56)
Additional number of participants who failed the attention check question regarding the unemployment rate	(25)
Additional number of participants who failed the attention check question regarding the economic expectations	(13)
Total number of participants retained in the analysis	158

Table 13 contains a breakdown of the number of participants, out of the total 252 who had completed the case study, to indicate how many were allocated to each treatment group and the number that had passed or failed the manipulation and / or attention check.

Table 13: Description of the completed case study observations – number of participants in each treatment condition by manipulation / attention check pass or failure

Treatment group		No accounting standard	IAS39	IFRS9	Total
No EMI	Invalid observation	6	35	11	52
	Valid observation	28	31	35	94
	Total	34	66	46	146
EMI	Invalid observation	–	27	15	42
	Valid observation	–	31	33	64
	Total	–	58	48	106
Total	Invalid observation	6	62	26	94
	Valid observation	28	62	68	158
	Total	**34**	**124**	**94**	**252**

Table 14 contains the comparison of the means of participants who failed the manipulation and attention check questions with those who passed. Participants were not required to complete the case study in one sitting and therefore some participants only completed it over several days.

As can be observed from Table 14, the mean for 'Language' is significantly different for the group that failed the manipulation and attention check questions compared to those who passed. This identifies that a possible reason why participants failed the manipulation and / or attention check question was due to a language barrier as the case study was only presented in English. The case study required a significant amount of reading and a high cognitive level to process the given information and make decisions. Sixty-six percent of participants who indicated their home language was English or Afrikaans, passed the manipulation and attention check questions. Fifty-one percent of participants who indicated their home language is one of the other 9 official languages in South Africa (not Afrikaans or English) or select an 'other' option passed the attention and manipulation check questions. Fifty-seven (42.9%) of the participants included in the final sample's home language was English and 53 (39.8%) of participants' home language was Afrikaans.[33]

As depicted in Table 14, another reason why participants failed the manipulation and/ or attention check is knowledge and experience with LLP. This indicates that participants who failed the manipulation check potentially lacked sufficient experience to complete an LLP calculation. Thirty-nine percent of participants who failed the manipulation and / or attention check questions indicated that they have no experience with IFRS 9 loan loss provisioning. I took comfort in the fact that the vast majority (82.7%) of the participants in my final sample had prepared and / or audited an LLP calculation before starting this case study.

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[33] Refer to Table 3.1 in Appendix 3 for detailed participant-related descriptive statistics on the final sample.

Table 14: Descriptive statistics by observations that failed or passed the manipulation and / or attention check question

Manipulation and attention checks	Failed	n = 94	Passed	n = 158	
Post-experimental questions / responses	Mean	SD	Mean	SD	*p-value*[a]
Time used to complete case study (dd hh:mm)	3 01:11	11 08:32	3 11:04	11 06:05	0.780
Age	25.31	3.417	25.54	2.854	0.557
Gender[34]	1.61	0.553	1.56	0.535	0.542
Employment status	3.66	1.893	3.79	1.616	0.559
Highest qualification	3.60	2.086	3.80	1.857	0.427
University obtain your highest qualification	9.28	3.822	9.12	3.171	0.727
Language[35]	3.16	3.129	2.39	2.271	**0.024**
Client/business spending most time	11.77	6.193	11.17	6.458	0.473
Knowledge IFRS 9 LLP	2.63	1.005	2.84	0.963	0.105
Experience with IFRS 9 LLPs[36]	1.91	0.863	2.23	0.916	**0.008**
Number of times prepared/ audited LLP calculations[37]	1.57	0.711	1.89	0.837	**0.003**
Knowledge IAS 39 LLP	2.06	0.982	2.03	0.892	0.790
Experience with IAS 39 LLPs	1.56	0.727	1.54	0.737	0.787
General willingness to take risks	5.72	2.039	5.44	2.052	0.294

a. Throughout this study, reported p-values are two-tailed, unless noted otherwise.

I eliminated the 94 respondents who failed the manipulation or attention checks, as indicated in Table 13, from further analyses because participants did not correctly interpret the experimental manipulations or paid sufficient attention to the information provided. Despite the relatively high manipulation and attention check failures, I was able to collect enough observations to run my statistical analyses using data of participants who passed the manipulation and attention check questions. One hundred and fifty-eight valid[38] case study

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[34] Gender was coded (1) Male, (2) Female and (3) Prefer not to disclose.
[35] Language was coded (1) English, (2) Afrikaans, (3) – (11) other 9 official languages in South Africa and (12) other.
[36] Experience was coded (1) No experience working with IFRS 9 to (5) I always work with IFRS 9.
[37] Times prepared LLP was coded (1) This is the first time to (4) More than 10 times.
[38] Valid observation is an observation where the participant passed all manipulation and attention check questions.

observations were recorded. Including the 94 responses does not alter the study's conclusions.[39]

5.3 Unusable responses

5.3.1 Students who lack LLP experience

Participants targeted to complete the case study were trainee accountants/auditing trainees (in the process of becoming a CA(SA)) or recently qualified CA(SA)s. The participants targeted in this study should have relevant IFRS 9 knowledge. The participants' work experience was also expected to expose them to opportunities to apply their judgement to make decisions as part of the SAICA programme. Fifteen case studies were completed by inappropriately classified individuals as they indicated under the employment status that they are full-time students. Of these 15 participants, 93.3% indicated that they have no experience with IFRS 9 loan loss provisioning, 80% indicated that this was the first time they prepared and / or audited LLP calculations and 53.3% indicated that their level of knowledge about IFRS 9 loan loss provisioning is very poor. These case studies were removed from the main analysis based on the concern that these students lack experience in the judgement and decision-making domain.

5.3.2 Outliers

To identify outliers, I calculated the Z-scores for the four main variables, Phases one and two CU 31-90 Days and Phases one and two Final Total LLP for each experimental treatment group (no_standard_no_emi, ias39_no_emi, ias39_emi, ifrs9_no_emi and ifrs9-emi) separately. These variables were used to identify outliers as these are the dependent variables measured in the study and it is most likely that earnings management will be identified in these variables. Outliers were calculated for each treatment group, rather than the whole group as I expected differences between the different treatment groups. Outliers were determined to be observations greater than 2.5 standard deviations from the mean (Hair 2010). In total ten outlier case study responses were identified and deleted as indicated

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[39] Test for H4 was repeated with the full sample of 252 participants documented in Table 1 that includes students, participants who failed the manipulation and / or attention check questions as well as outliers. When I include these responses in the analysis the results weaken slightly and the AccountingStandard * EarningsmanagementIncentive interaction term remains insignificant for the P1 CU LLP 31–90 Days, P1 Total LLP, P2 CU LLP 31–90 Days and P2 Total LLP dependent variables. The EarningsmanagementIncentive effect for Phases one ($F = 3.624$, $p = 0.058$) and two ($F = 3.477$, $p = 0.063$) CU LLP 31–90 Days variable changes to marginally significant and the P1 Total LLP ($F = 1.396$, $p = 0.239$) does not find evidence of a significant difference between the emi groups.

in Table 15. Table 15 also provides detail of the unusable responses that were removed to determine the final sample.

Table 15: Reconciliation of the number of participants used in the main sample analysis

	no_standard _no_emi	ias39_ no_emi	ias39 _ emi	ifrs9_ no_emi	ifrs9_ emi	Total nr of participants
Total number of participants with valid case study responses	28	31	31	35	33	158
Participants who indicated they were full-time students and deleted	(5)	(1)	(2)	(4)	(3)	(15)
Outliers identified and deleted in P1 and P2 CU 31–90 Days and P1 and P2 Final Total LLP	(2)	(1)	(3)	(2)	(2)	(10)
Remaining sample used in the main analysis	21	29	26	29	28	133

5.4 Testing for basic assumptions

Analysis of variance (ANOVA) is a valid test procedure if it can be assumed that the dependent variable is normally distributed, the responses in the groups are independent and variances are equal for all treatment groups (Hair 2010). Based on the results for the normality, heteroscedasticity and independence tests for basic assumptions, I concluded that an ANOVA is a valid test procedure I can use to analyse the dependent variables. Appendix 2 contains the details of tests for basic assumptions.

5.5 Descriptive statistics

Detailed descriptive statistics analysed per experimental treatment group are included in Table 3.1 of Appendix 3. Concerning the demographics of the participants in this case study, the demographics between the different experimental groups are highly comparable and there were no significant differences identified between the variables except in the gender variable. Of the 133 participants in the final sample, 60 were males, 72 were females and 1 participant preferred not to disclose their gender. As there are significant differences between the treatment groups for the gender variable, I included this as a covariate in my

further analyses.[40] The demographic data of the characteristics related to the participants demonstrate appropriate diversity in the different treatment groups. The participants were recruited with the intention that they should represent early career professionals who might typically be auditing or evaluating LLP decisions and the demographic information on experience suggests the sample fits this target group.

5.6 Results

5.6.1 Introduction and summary of key results

I tested my hypotheses using ANOVA. The results suggest that managers reporting under IFRS 9's expected credit losses (ECL) model of determining LLPs that allows more judgement and discretion do not manage earnings more compared to managers reporting under IAS 39's Incurred Credit Losses (ICL) model. I found evidence that the judgement and discretion allowed in the different LLP 'stages' represented by the age buckets in this study, have an impact on management's decisions to manage earnings compared to the different accounting standard guidelines. I also found evidence that the change from IAS 39 to IFRS 9 was successful in allowing more managerial discretion without excessively managing earnings. I did not find evidence that earnings management is easier under flexible accounting standards allowing greater leeway for managers to manage earnings through management's judgements.

Table 16 summarises the different experimental treatment groups for which dependent variables were captured and analysed in this experiment.

Table 16: Different treatment groups analysed

		Accounting standard guidance		
		IFRS 9	IAS 39	No accounting standard
Earnings management incentive	Earnings management	IFRS9-emi	IAS39-emi	
	No earnings management	IFRS9-no_emi	IAS39-no_emi	no_standard-no_emi

The four primary dependent variables observed in this experiment are included in Table 17, Panel A, which are: P1 CU 31–90 Days, P1 Total LLP, P2 CU LLP 31–90 Days and P2 Total

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[40] Refer to section 5.6.1.2 for the discussion on covariates.

LLP. Due to the level of judgement and discretion that is required to determine when the credit risk of the loan has increased significantly to allocate a portion of the outstanding debtors' book to the Stage two LLPs, earnings management is expected to take place in the Stage two loan portfolio. I, therefore, focused on the 31–90 Days variable that represents the Stage two provision in IFRS 9. I also expected the biggest difference between IAS 39 and IFRS 9 experimental groups for the 31–90 Days variable. Stage three LLPs in IFRS 9 are similar to LLPs in IAS 39 (Pucci and Skærbæk 2020) and therefore I did not expect differences between the LLP in the 'more than 90 days' age bucket. The outcome of the percentage of participants changed in each bucket is captured by the total LLP. I also included the total LLP variables since the change in the total LLP will influence earnings on the statement of profit or loss and other comprehensive income as well as the statement of financial position. The total LLP variable also ensures that if the expectation of where earnings management takes place was incorrect or earnings management takes place in different stages for IFRS 9 compared to IAS 39, I can still detect earnings management in the total LLP. While there were four primary dependent variables that I used in my analysis, I collected data on a total of 14 potential variables. Eleven variables relate to an LLP measure, one to the bonus calculation and two to the number of times participants changed the LLP calculation. The additional 10 dependent variables observed in this experiment are included in Table 17, Panel B.

Table 17: Description of the dependent variables in the study
Panel A: Description of the primary dependent variables in the study to be used to calculate earnings management

Name	Description	Measure-ment unit
P1 CU 31–90 Days	Portion of the outstanding debtors' book that falls into 31–90 days outstanding bucket that the participant wants to include in the final total LLP in Stage one. This is calculated by taking the % the participant chose for this bucket and multiplying it with CU 91,2m as indicated in the case study.	Currency units
P1 Final Total LLP	Total LLP that participant chooses to provide for at the end of Stage one. This total is automatically calculated by the system after the participant inputs the percentages in the 0–30, 31–90 and over 90 days buckets.	Currency units
P2 CU 31–90 Days	Portion of the outstanding debtors' book that falls into 31–90 days outstanding bucket that the participant wants to include in the final total LLP in Stage two. This is calculated by taking the % the participant chose for this bucket and multiplying it with CU 96m as indicated in the case study.	Currency units

Name	Description	Measure-ment unit
P2 Final Total LLP	Total LLP that participant chooses to provide for at the end of Stage two. This total is automatically calculated by the system after the participant inputs the percentages in the 0–30, 31–90 and over 90 days buckets.	Currency units

Panel B: Description of the additional dependent variables in the study to be used to calculate earnings management

Name	Description	Measure-ment unit
P1 CU 0–30 Days	Portion of the outstanding debtors' book that falls into 0–30 days outstanding bucket that the participant wants to include in the final total LLP in Stage one. This is calculated by taking the % the participant chose for this bucket and multiplying it with CU 285m as indicated in the case study.	Currency units
P1 CU 90 Days	Portion of the outstanding debtors' book that falls into over 90 days outstanding bucket that the participant wants to include in the final total LLP in Stage one. This is calculated by taking the % the participant chose for this bucket and multiplying it with CU 3,8m as indicated in the case study.	Currency units
P1 Nr of Calc	The number of calculations is counted each time a participant changes the LLP calculation (percentages input in the different age buckets) and clicks calculate to determine their total LLP and the earnings after the LLP is in P1.	Number
P1 Calculated Bonus	The bonus is automatically calculated by the computer system for all experimental groups (irrespective if they were allocated to the emi or the no emi group), however, it is only communicated to the participants in the emi group since the bonus is an emi incentive. Participants in the no emi group will not know what their bonus was. The bonus is calculated by taking the LLP calculated by the participant in P1 after an audit adjustment of 1.0002 minus the predetermined actual LLP of CU 6,83 million. If this difference between the participant's LLP and the actual LLP is between CU 0 to CU 340 000, then the bonus will be calculated as 1,36% x participant's calculated reported earnings. If the difference is between CU 340 001 to CU 680 000, then the bonus will be calculated as 1,1% x participant's calculated reported earnings. If the difference is more than CU 680 001, then the bonus will be calculated as 0,75% x participant's calculated reported earnings.[41]	Currency units
P2 CU 0–30 Days	Portion of the outstanding debtors' book that falls into 0–30 days outstanding bucket that the participant wants to include in the final total LLP in Stage two. This is calculated by taking the % the participant chose for this bucket and multiplying it with CU 298m as indicated in the case study.	Currency units

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[41] Refer to section 4.2.4.2 for a more detailed description of the bonus calculation.

Name	Description	Measure-ment unit
P2 CU 90 Days	Portion of the outstanding debtors' book that falls into over 90 days outstanding bucket that the participant wants to include in the final total LLP in Stage two. This is calculated by taking the % the participant chose for this bucket and multiplying it with CU 6m as indicated in the case study.	Currency units
P2 Nr of Calc	The number of calculations is counted each time a participant changes the LLP calculation (percentages input in the different age buckets) and clicks calculate to determine what their total LLP and the earnings after the LLP is in P2.	Number
Difference between the last and the first LLP in P1	Difference between the final LLP that was submitted by the participant and the first LLP that the participant calculated in P1.	Currency Units
Difference between the last and the first LLP in P2	Difference between the final LLP that was submitted by the participant and the first LLP that the participant calculated in P2.	Currency Units
Difference between P1 LLP and CU 6.83m	Difference between the final LLP that was calculated and submitted by the participant and the predetermined LLP of CU 6.83m in P1.	Currency Units

5.6.1.1 *Descriptive statistics for LLP dependent variables*

Table 18[42] provides descriptive statistics for the four main dependent variables.[43] Descriptive statistics for other variables are not included in Table 18 to simplify the presentation. Further earnings management tests are completed on the alternative measures that are the Calculated Bonus and Nr of Calc variables in section 5.6.4.

The descriptive statistics in Table 18 indicate that the means move in the expected directions. This suggests that participants with an emi managed earnings upward by under-provisioning the LLP and thereby increasing earnings compared to participants who did not receive an emi to obtain a higher bonus. When bank managers want to increase earnings, they can do this by reducing (or under-provisioning for) the LLPs by debiting LLP (Statement

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[42] Skewness and Kurtosis results for the dependent variables are included in Appendix 4, Table 4.2.

[43] Descriptive statistics for P1 CU 0–30 Days, P1 CU 90 Days, P2 CU 0–30 Days, P2 CU 90 Days, Difference between the last and the first LLP in Phase one, Difference between the last and the first LLP in Phase two and Difference between P1 LLP and CU 6.83m are not included in Table 18. Results indicate that these variables are not effective earnings management measures and therefore further analysis of earnings management results are not conducted on these variables to simplify the presentation.

of Financial Position) and crediting profit or loss (income). Higher LLPs decrease the Statement of Profit or Loss and Other Comprehensive Income. The information in Table 18 reveals that participants in the emi treatment group had the lowest average LLPs in Phases one and two for all variables. Overall, this evidence suggests that participants with an emi are encouraged to manage earnings to obtain a higher bonus and / or to meet or beat the analyst earnings forecasts, irrespective of the accounting standard. This initial evidence suggests that the emi introduced in this case study was successful to encourage participants to use the LLP to increase earnings.

Table 18: Descriptive statistics of the earnings management dependent variables per experimental treatment group

	Accounting Standard	No acc std	IAS39			IFRS9			Total		
Dependent Variable		No EMI (21)	No EMI (29)	EMI (26)	Total (55)	No EMI (29)	EMI (28)	Total (57)	No EMI (79)	EMI (54)	Total (133)
P1 CU 31–90 Days	Mean	2 679 543	2 404 535	1 859 077	2 146 682	2 305 159	2 188 800	2 248 000	2 441 158	2 030 044	2 274 240
	Median	2 736 000	2 280 000	1 824 000	1 824 000	2 280 000	2 280 000	2 280 000	2 553 600	1 824 000	2 280 000
	SD	776 795	1 095 703	737 233	974 512	1 023 615	966 446	988 771	992 218	871 693	963 280
	Minimum	1 824 000	27 360	456 000	27 360	0	0	0	0	0	0
	Maximum	4 560 000	4 560 000	3 192 000	4 560 000	5 016 000	4 560 000	5 016 000	5 016 000	4 560 000	5 016 000
P1 Total LLP	Mean	6 721 952	5 930 069	5 332 500	5 647 582	5 760 483	5 295 393	5 532 018	6 078 316	5 313 259	5 767 692
	Median	6 878 000	6 099 000	4 745 000	4 864 000	5 624 000	5 833 000	5 624 000	6 061 000	5 367 500	5 778 000
	SD	1 665 363	2 683 663	1 859 668	2 329 409	2 821 173	2 370 528	2 596 900	2 512 137	2 119 993	2 382 418
	Minimum	2 156 000	3 290 000	2 860 000	2 860 000	312 000	0	0	312 000	0	0
	Maximum	10 260 000	15 542 000	10 212 000	15 542 000	16 416 000	11 210 000	16 416 000	16 416 000	11 210 000	16 416 000
P2 CU LLP 31-90 Days	Mean	2 820 571	2 766 124	2 383 385	2 585 193	2 881 655	2 619 429	2 752 842	2 823 008	2 505 778	2 694 208
	Median	2 880 000	2 640 000	2 448 000	2 496 000	2 880 000	2 880 000	2 880 000	2 880 000	2 616 000	2 880 000
	SD	948 156	1 113 862	474 971	885 976	812 005	941 550	880 111	956 589	756 444	891 584
	Minimum	960 000	729 600	1 440 000	729 600	192 000	288 000	192 000	192 000	288 000	192 000
	Maximum	4 800 000	5 280 000	2 880 000	5 280 000	4 800 000	5 280 000	5 280 000	5 280 000	5 280 000	5 280 000
P2 Total LLP	Mean	9 121 476	8 205 483	8 438 654	8 315 709	8 280 172	8 262 286	8 271 386	8 476 392	8 347 204	8 423 940
	Median	9 170 000	8 090 000	8 475 500	8 415 000	8 829 000	8 270 000	8 680 000	8 785 000	8 460 000	8 570 000
	SD	2 226 714	2 557 096	1 185 413	2 013 658	3 268 928	2 516 812	2 897 772	2 758 294	1 974 253	2 462 677
	Minimum	3 110 000	2 527 000	5 030 000	2 527 000	401 000	318 000	318 000	401 000	318 000	318 000
	Maximum	13 300 000	13 780 000	10 082 000	13 780 000	19 580 000	15 750 000	19 580 000	19 580 000	15 750 000	19 580 000

5.6.1.2   *Correlation analysis to identify covariates*

Correlations between the four main LLP dependent variables and the potential covariates were examined to determine whether any covariates should be included in the analyses to pull out error and reduce noise. Certain personal characteristics or traits of individual managers can influence his or her willingness to manage earnings, including risk-taking (Abdel-Khalik 2007; Cain and McKeon 2016), professional commitment (Greenfield et al. 2008) and gender (Alqatamin et al. 2017; Bouaziz et al. 2020; Fan et al. 2019; Na and Hong 2017; Peni and Vähämaa 2010; Qi et al. 2018). The examination of the Spearman's rho correlation coefficients in Table 19 revealed that Age, Gender, Type of Client, IFRS 9 Knowledge, IAS 39 Knowledge, Investing speculative stock and Betting sporting event are potential covariates due to the correlation with one or two LLP dependent variables.

Table 19: Spearman's rho correlations to identify potential covariates

Post-experimental questions	P1 CU 31–90 Days	P1 Total LLP	P2 CU LLP 31–90 Days	P2 Total LLP
Age	0.089	0.087	0.035	**.177***
Gender	**-.206***	**-.259****	-0.080	-0.161
EmploymentStatus	-0.072	-0.072	0.046	0.070
HighestQualification	0.017	-0.026	0.097	0.034
University	0.008	-0.022	0.092	0.045
Language	-0.089	-0.125	0.043	-0.065
Type of Client	-0.015	-0.145	-0.009	**-.185***
IFRS 9 LLP Knowledge	0.145	0.167	0.029	**.185***
IFRS 9 LLP Experience	0.113	0.080	0.077	0.081
Number of Times Prepared Audited LLP Calculations	-0.050	-0.050	-0.042	-0.051
IAS 39 LLP Knowledge	-0.158	0.018	**-.227****	-0.008
IAS 39 LLP Experience	-0.035	0.016	-0.006	0.071
P1ConfidencetodetermineLLP	0.054	0.082	0.066	0.116
P2ConfidencetodetermineLLP	0.084	0.108	0.113	0.154
General risk question	0.078	0.091	-0.109	0.059
Investing 5% of your annual income in a very speculative stock	0.165	**.181***	-0.032	0.051
Betting a day's income on the outcome of a sporting event	**.227****	0.125	0.079	-0.009
Investing 10% of your annual income in a new business venture	0.037	0.041	-0.124	-0.036
Investing 10% of your annual income in Bitcoin	0.044	-0.013	-0.081	-0.081
Starting your own business without any financial guarantee or support	-0.033	0.018	-0.104	0.011
I am in the accounting profession because of a sense of loyalty to it	-0.044	-0.031	-0.097	-0.108
I feel a responsibility to the accounting profession to continue in it	-0.117	-0.040	-0.095	-0.053
I would feel guilty if I left the accounting profession	-0.076	-0.045	-0.022	-0.004
I believe people who have been trained in a profession have a responsibility	-0.162	-0.076	-0.046	-0.014
**. Correlation is significant at the 0.01 level (two-tailed).				
*. Correlation is significant at the 0.05 level (two-tailed).				

Evidence exists that gender and task complexity can influence the accuracy of audit judgements (Chung and Monroe 2001). Na and Hong (2017) argue that management's gender may influence the earnings management decision of an entity when management has an incentive to increase earnings. Table 3.1 in Appendix 3, summarising the participant-related descriptive statistics, indicates that there is a statistically significant difference ($p <$ .05) between the genders of the participants in the different experimental groups. Fan et al. (2019) found evidence that gender influenced bank earnings management and therefore I included gender as a covariate.

Participants' lack of knowledge and experience might add noise to the LLP decision. The Type of Client, IFRS 9 Knowledge and IAS 39 Knowledge were identified as potential covariates that are correlated with the dependent variables that measured participants' knowledge and experience to determine LLPs. I included IFRS 9 Knowledge as a covariate. Participants are more likely to have different levels of LLP knowledge on IFRS 9 rather than IAS 39 due to the limited exposure to IAS 39 LLPs as well as limited knowledge as indicated in Table 4. Type of Client was not included as both IFRS 9 Knowledge and Type of Client were only significantly correlated with the P2 Total LLP as can be seen in Table 19. IFRS 9 Knowledge is, therefore, a sufficient covariate to control for participants' knowledge.

Greenfield et al. (2008) found that participants with higher levels of professional commitment are expected to be less likely to engage in earnings management. None of the commitment to the accountancy profession questions was correlated with any of the LLP dependent variables, as can be seen in Table 19. Professional commitment was randomly distributed through random assignment to the different experimental conditions and there is no statistically significant difference between the experimental groups as indicated in Appendix 3, Table 3.1. I, therefore, did not include any questions relating to commitment to the accountancy profession as a covariate.

The risk preference was randomly distributed through random assignment to the different experimental conditions. Peni and Vähämaa (2010) and Jackson and Liu (2010) argue that conservatism and risk appetite may influence earnings management behaviour. Based on exploratory factor analysis for the six risk measures included in the study, one risk factor was identified. Loadings had an eigenvalue of 3.014 and explained 50.23% of the total variance in the responses. I measured a participant's risk preference by transforming the six

questions that loaded together into one risk variable and included an average risk covariate in the analysis.

The Homogeneity of Variances test in Appendix 4, Table 4.4 indicated that Language is not independent across the different treatment groups. Table 14 indicated a significant difference in language between the participants who had passed or failed the manipulation and / or attention check questions. I, therefore, included Language as a covariate.

Alqatamin et al. (2017) and Bouaziz et al. (2020) found no relationship between CEOs' age and earnings management behaviour among companies in Jordan and France respectively and I, therefore, did not include 'Age' as a covariate in the analysis.

The four covariates chosen to control for in the main analysis are Gender, Language, IFRS 9 Knowledge and Risk.

5.6.2. Test of Hypothesis 1

In H1 I predicted that the allowed managerial judgement and discretion in the Stage two loan portfolios, which are represented by the 31–90 days bucket in this study, encourage management to manage earnings. I expected that earnings management will not take place in Stage one (0–30 Days bucket) and Stage three (more than 90 Days bucket) where less judgement and discretion are available. To determine if earnings management takes place in the 31–90 days bucket, a one-way ANOVA for the LLP decision per bucket was analysed and documented in Table 20. For the main analysis the control group that did not receive accounting standard or emi treatment is excluded.

On average, participants' P1 CU 0–30 Days, P1 CU 31–90 Days and P1 CU 90 Days LLP was lower for the emi than the no emi group. The average LLP determined in the P1 CU 31–90 Days age bucket was CU 2 030 044 for the emi group and CU 2 354 847 for the no emi group.

Table 20: Tests of H1

Panel A: Means for the different age buckets observed in Phases one and two

Dependent Variable:		N	Mean	SD
P1 CU 0–30 Days	No EMI	58	1 349 819	1 655 573
	EMI	54	973 222	745 360
P1 CU 31–90 Days	No EMI	58	2 354 847	1 052 124
	EMI	54	2 030 044	871 693
P1 CU LLP 90 Days	No EMI	58	2 140 651	1 360 041
	EMI	54	2 310 013	1 370 174
P2 CU LLP 0–30 Days	No EMI	58	1 680 103	2 167 280
	EMI	54	1 360 315	1 148 709
P2 CU LLP 31–90 Days	No EMI	58	2 823 890	967 858
	EMI	54	2 505 778	756 444
P2 CU LLP 90 Days	No EMI	58	3 738 828	2 055 082
	EMI	54	4 481 111	1 794 277

Panel B: ANCOVA results testing the difference between the LLP decision in the different age buckets for participants who received emi or not

Source	df	P1 CU 0–30 Days		P1 CU 31–90 Days		P1 CU LLP 90 Days		P2 CU LLP 0–30 Days		P2 CU LLP 31–90 Days		P2 CU LLP 90 Days	
		F	Sig.[a]	F	Sig.[a]	F	Sig.[a]	F	Sig.[a]	F	Sig.[a]	F	Sig.[a]
Intercept	1	1.370	0.244	19.453	0.000	11.041	0.001	0.321	0.572	31.498	0.000	15.390	0.000
Independent Variable													
Earnings management Incentive	1	4.023	**0.047**	8.408	**0.005**	0.029	0.864	0.127	0.723	4.773	**0.031**	2.405	0.124
Covariates													
Gender	1	0.845	0.360	6.879	0.010	3.604	0.060	0.084	0.773	0.572	0.451	0.370	0.544
Language	1	2.551	0.113	5.320	0.023	2.420	0.123	4.519	0.036	0.285	0.594	0.613	0.436
IFRS9LLPKnowledge	1	2.158	0.145	5.131	0.026	1.628	0.205	0.685	0.410	2.026	0.158	0.268	0.606
Risk	1	0.570	0.452	0.498	0.482	0.109	0.742	0.006	0.937	1.322	0.253	0.010	0.922
Corrected Model	5	1.641	0.155	4.364	0.001	1.685	0.144	1.422	0.222	1.567	0.176	1.044	0.396
Error	106												
Total	112												
Corrected Total	111												

a. Throughout this study, reported p-values are two-tailed, unless noted otherwise.

Table 20 indicates that there is a significant difference between the emi and the no emi groups' P1 and P2 CU 31–90 Days LLP decision, p < .05. I found evidence to support Hypothesis 1 as a significant difference between the 31–90 days age bucket in Phases one and two for emi group compared to no emi experimental group was consistently evident. The LLP determined by the emi group is significantly lower than the no emi group in the 31–90 Days buckets. I found evidence that, due to the level of judgement and discretion that is required for the Stage two LLPs (31–90 days buckets) compared to Stages 1 and 3, earnings management most likely takes place in the Stage two LLP. Table 20 also indicates that there is a significant difference between the emi and the no emi groups' P1 CU 0–30 Days (F = 4.023, p = 0.047). The result for the CU 0–30 Days LLP is not consistent in Phases one and two (F = 0.127, p = 0.723) and also changes in Phase one when covariates are excluded (p = .128).

It seems unlikely that earnings management will take place in Stage three (more than 90 days) as there is less judgement required to determine the LLP. Lifetime ECL under Stage three in IFRS 9 are described similarly to the individual ICL described in IAS 39 (Ernst & Young 2018). Loans are classified in Stage three when objective evidence of impairment exists and loans are non-performing. The criteria used in IFRS 9 to assess if the individual financial assets are credit impaired in Stage three are the same criteria used to impair financial assets under IAS 39 (Ernst & Young 2018). Ernst & Young (2018) claims that the loss allowance for a Stage three assets may be higher for an impaired asset under IAS 39. As was expected, IAS 39 90 Days LLP (P1 M = 2 297 729; P2 M = 4 310 945) is on average slightly higher than IFRS 9 90 Days LLP (P1 M = 2 149 533; P2 M = 3 890 000) in Phases one and two. However, there is no statistically significant difference.

I found evidence that management uses the judgement and discretion allowed in the different stages to manage earnings. This finding implies that auditors should spend more time and resources auditing Stage two of the LLPs determined under the IFRS 9 because this could help reduce the risk of earnings management in bank financials.

5.6.3 Phase one: the test of Hypotheses 2, 3 and 4

5.6.3.1 Main analysis H2, H3 and H4

To test H2, H3 and H4, participants' responses for the LLP determined in Phase one were analysed in a 2 × 2 ANCOVA based on whether or not they received earnings management

incentives as well as the accounting standard treatment applied. For the main analysis the control group that did not receive an accounting standard or emi treatment, is excluded. The primary analysis for the LLPs determined is presented in Table 21.

Table 21: Tests of H2, H3 and H4
Panel A: Means for the LLP dependant variables in Phase one

Dependent Variable:			P1 CU 31–90 Days		P1 Total LLP	
Accounting Standard		N	Mean	SD	Mean	SD
IAS39	No EMI	29	2 404 535	1 095 703	5 930 069	2 683 663
	EMI	26	1 859 077	737 233	5 332 500	1 859 668
IFRS9	No EMI	29	2 305 159	1 023 615	5 760 483	2 821 173
	EMI	28	2 188 800	966 446	5 295 393	2 370 528
Total	No EMI	79	2 441 158	992 218	6 078 316	2 512 137
	EMI	54	2 030 044	871 693	5 313 259	2 119 993

Panel B: Univariate analysis of variance with covariates of the effect of emi and accounting guidelines on LLP decisions in Phase one

		P1 CU 31–90 Days		P1 Total LLP	
Source	df	F	Sig.[a]	F	Sig.[a]
Intercept	1	16.706	0.000	16.603	0.000
Independent Variables					
Earnings Management Incentive	1	8.596	**0.004**	5.572	**0.020**
Accounting Standard	1	0.678	0.412	0.003	0.959
EarningsmanagementIncentive * AccountingStandard	1	1.994	0.161	0.127	0.723
Covariates					
Gender	1	6.555	0.012	6.597	0.012
Language	1	5.402	0.022	7.327	0.008
IFRS9LLPKnowledge	1	5.411	0.022	6.081	0.015
Risk	1	0.708	0.402	0.868	0.354
Corrected Model	7	3.523	0.002	3.319	0.003
Error	104				
Total	112				
Corrected Total	111				

a. Throughout this study, reported p-values are two-tailed, unless noted otherwise.

In H2, I predicted that in the presence of earnings management pressure, LLPs determined will be lower (under-provision). Consistent with H2, ANCOVA results in Table 21, indicate a

significant main effect for emi. The LLP determined by the emi group is significantly lower than the no emi group for the P1 CU 31–90 Days and P1 Total LLP dependent variables as indicated in Table 21, Panel A.

In line with previous research, I found evidence that when earnings are low, participants with an incentive to manage earnings, increase LLPs less than participants who do not have an incentive to manage earnings. I also found evidence that participants understate LLPs to obtain a higher bonus or to meet or beat analysts' earnings forecasts.

In line with prior research, I found evidence that the bonus incentive, as well as the analyst forecasts provided to participants in the case study are valid instruments to entice earnings management. The results support the fact that these dependent LLP variables are valid earnings management measures that can be used to test the difference in earnings management between IFRS 9 and IAS 39 in hypothesis 4.

In H3, I predicted that due to the allowed judgement and discretion, IFRS 9 total LLP will be higher and closer to actual loan losses than IAS 39 total LLP. In this case study the actual loan losses for Phase one were CU 6.83m. Altamuro and Beatty (2010) and Marton and Runesson (2017) argue that the validity of LLPs is defined by the ability to predict actual loan losses. As an additional analysis, I ran an ANOVA with the P1 Total LLP and Difference between P1 LLP and CU 6.83m variables for IAS 39 and IFRS 9 participants only.[44] I did not find evidence that there is a difference between IFRS 9 and IAS 39 LLPs (F = .061, p = .805). IFRS 9 group's P1 Total LLP (M = 5 532 018) is not significantly higher than IAS 39 group's P1 Total LLP (M = 5 647 582). No statistical difference between the accuracy (how close the total LLP decision came to the predetermined LLP of CU 6.83m in Phase one) of IFRS 9 and IAS 39 accounting standards is observed. The mean difference between the P1 total LLP was CU 1 182 418 less for IAS 39 and CU 1 297 982 less for IFRS 9 group compared to the predetermined LLP of CU 6.83m. I did not find evidence that the IFRS 9 better predicts actual loan losses compared to IAS 39. The mean for the Difference between P1 LLP and CU 6.83m for the control group, no accounting standard and no emi, was CU 108 048. The mean for IFRS 9 no emi and the mean for IAS 39 no emi was CU 1 069 517 and CU 899 931. This indicated that the control came the closest to the actual

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[44] Including the no accounting standard group does not change the result.

LLP, but there is no significant difference between the accounting standard treatment when the no emi only group is analysed.

I, therefore, did not find evidence to support Hypothesis 3 as no significant difference between the total LLP for IFRS 9 compared to IAS 39 is observed. This finding is in contrast with Gomaa et al. (2019) who found that participants who reported under IFRS 9 guidelines' LLP reserves were higher compared to participants who reported under IAS 39 guidelines. Instead, my findings imply that reported LLP numbers based on IFRS 9 do not reflect the economic reality better or worse. The accounting judgement and discretion available in IFRS 9 did not change the accuracy of the LLP compared to IAS 39.

In H4, I predicted that financial reporting standards that permit greater judgement and discretion in measurements and application lead to an increase in earnings management. An interaction effect between emi and accounting standard was tested. While the mean values in Table 21, Panel A are in the direction expected, the ANOVA results presented in Table 21 indicate that the interaction term is not statistically significant for the P1 CU 31–90 Days ($F = 1.994$, $p = 0.161$) and P1 Total LLP ($F = 0.127$, $p = 0.723$) dependent variables after controlling for Gender, Language, IFRS 9 Knowledge and Risk. I did not find evidence that IFRS 9 accounting guidelines is associated with greater earnings management relative to IAS 39 accounting guidelines.
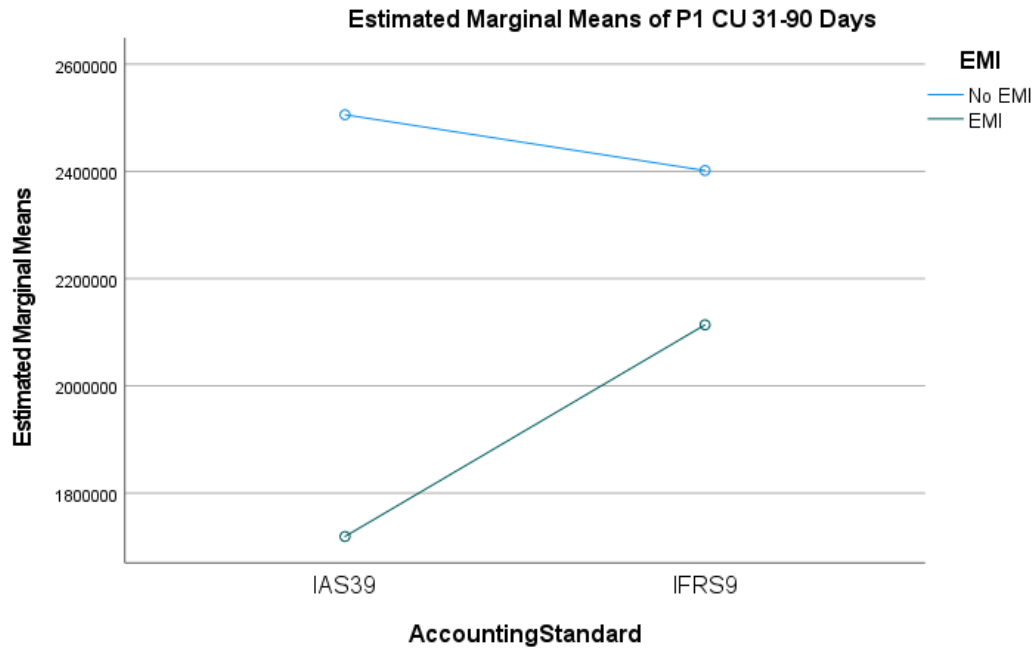
Figure 2: **Estimated mean for the P1 31–90 Days LLP variable per accounting standard for the emi and no emi groups**

Figure 2 indicates that the difference between the estimated marginal means for the 31–90 Days LLP for IAS 39 group that received emi and the group that received no emi is more than that for the IFRS 9 group.
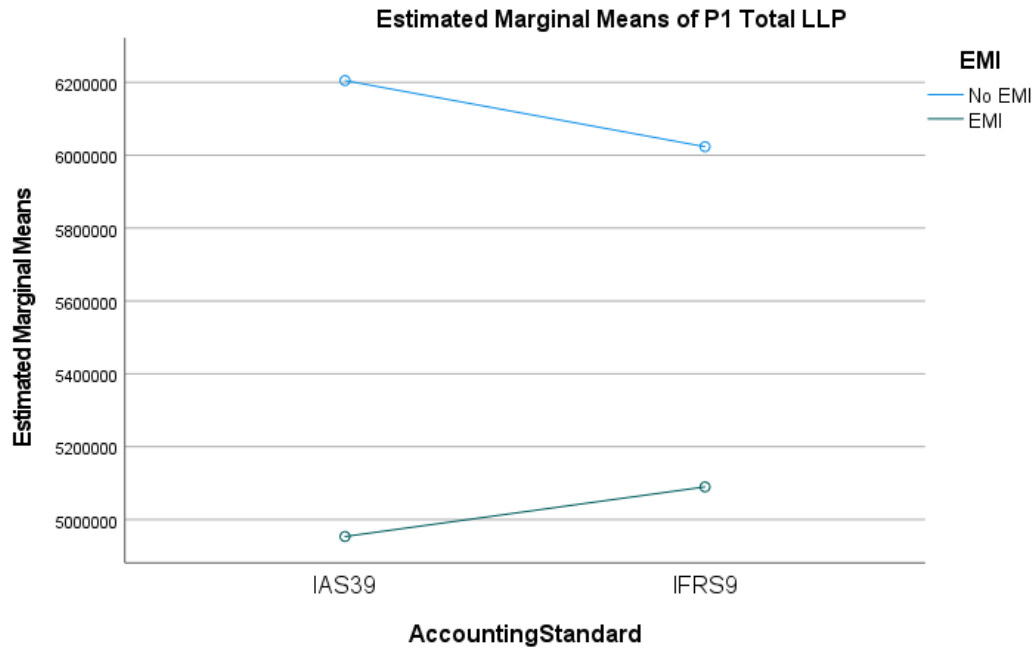
Figure 3: **Estimated mean for the P1 Total LLP variable per accounting standard for the emi and no emi groups**

Figure 3 indicates that the difference between the estimated marginal means for the P1 Final LLP amount for IAS 39 group that received emi and the group that received no emi is bigger than that of IFRS 9 group.

5.6.3.2   Further analysis for H4

Since the auditing trainees (in the process of becoming a CA(SA)) or CA(SA) members who qualified recently may behave differently from bank managers, I performed further analysis to determine if the results are sensitive to the experience level of the participant or the time devoted to completing the task.

To examine whether the results are sensitive to including participants who may have spent minimal time on the task, I identified participants that spent less than the average time minus standard deviation (SD) per experimental group as identified in table 5 as well as participants that spent less than 16 minutes and 56 seconds (half of the average time of 33 minutes and 51 seconds as documented in table 5) to complete a case study. A total of 14 participants were excluded from the further analysis changing the sample size to 98 participants. Excluding these participants from the analysis does not change the results. The interaction effect between emi and accounting standard was tested and the ANOVA results indicate

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that the interaction term is still not statistically significant for the P1 CU 31–90 Days (F = 1.345, p = 0.249) and P1 Total LLP (F = 0.007, p = 0.933) dependent variables after controlling for Gender, Language, IFRS 9 Knowledge and Risk.

The sample used to analyse if excluding participants that have low level of experience in the IFRS 9 LLP Experience and Number of Times Prepared Audited LLP Calculations makes a difference was determined by removing participants that have indicated they have no experience with IFRS 9 LLP and / or participants that indicated this was their first time they prepared an LLP calculation. The remaining sample size analysed was 75 participants. Again, excluding these participants from the analysis does not change the results. The interaction effect between emi and accounting standard was tested and the ANOVA results indicate that the interaction term is still not statistically significant for the P1 CU 31–90 Days (F = 2.185, p = 0.144) and P1 Total LLP (F = 0.840, p = 0.363) dependent variables after controlling for Gender, Language, IFRS 9 Knowledge and Risk.

The further analysis after removing participants with low levels of experience, indicates that the results remain the same as was found in the main analysis in table 21 panel B. This provides some assurance that using participants with higher levels of experience might not change the results obtained. However, the observed power may be too low to detect an effect due to small sample sizes after removing the participants (i.e., 26-29 participants per treatment group for time used to complete case study and 17-23 participants per treatment group after removing participants who have low levels of experience).

As part of the further analysis to establish whether financial reporting standards that permit greater judgement and discretion in measurements and application lead to an increase in earnings management, I analysed the post-experimental questions. Factorial ANOVA with covariates finds no evidence that participants in IFRS 9 emi group, compared to IAS 39 emi group, would have made a different LLP decision after the impact of the LLP on their bonus was revealed (F = .062, p = .804). Participants were also asked to indicate if they think their colleague would have made a different LLP decision compared to their own, measured on a five-point scale with 3 indicating 'No change'. Factorial ANOVA with covariates for the different LLP decisions compared to a colleague indicates a marginally significant difference between the Earnings Management Incentive and Accounting Standard interaction term (F

= 3.799, p = .054) in Phase one.[45] As illustrated in Figure 4, on average participants in the IAS 39 emi group indicated that their colleague would increase LLP moderately whereas participants in the IFRS 9 group indicated their colleague would not change the LLP. Participants in the no accounting standard control group also indicated that their colleagues would not change the LLP decision. A potential reason for the difference observed could be the lack of exposure to IAS 39 accounting standard and that participants do not believe that there could be different rules. When IAS 39 LLP Knowledge is added as an additional covariate in the analysis, the interaction term changes to p = .064. Another possible reason could be that as prior research indicated, people expect differences in the LLP decision. Participants reporting under the IAS 39 emi group expected their colleague's LLP to be different from their own. However, the actual data does not support this. The change in colleagues' decisions that is expected under IAS 39 could be because participants are not familiar with IAS 39 accounting standard and view the guidelines that they received as a change in accounting standard. Beatty (2007) argues that when there is a change in an accounting standard people expect management to change their behaviour. Interestingly, the results of this study suggest that no earnings management behaviour change in LLPs is detected when changing from IAS 39 to IFRS 9.

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[45] Welch robustness tests of equality of means does not find a significant difference between the experimental groups (p = .539).
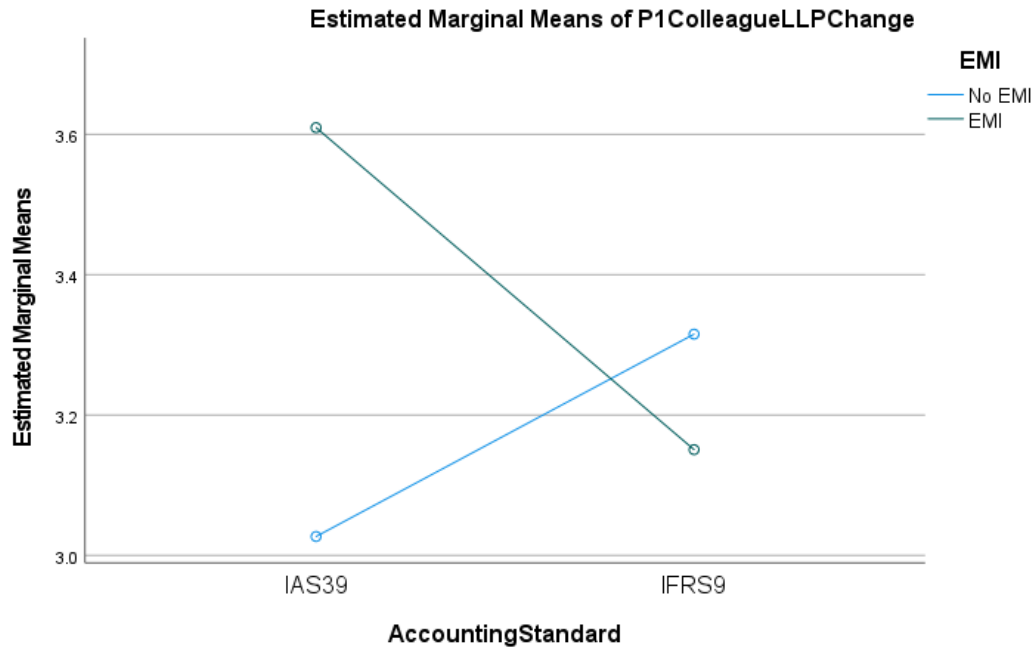
Figure 4: **Estimated mean for the difference in LLP decision a participant believes their colleague on a similar level as they would make per accounting standard for the emi and no emi groups**

A potential reason why I did not find evidence of differences between the IFRS 9 and IAS 39 accounting standard groups could be because the accounting standard manipulation was ineffective. As a further check to determine if the accounting standard manipulation was effective, I ran an ANOVA to determine if the differences in the means of the extent that the information provided in the case study in Phase one[46] impacted on participants' LLP decision for each accounting standard, as recorded in Table 22.

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[46] Analysis of information provided in Phase two reveals similar results except a significant difference is observed between the IFRS 9 and IAS 39 experimental groups' P2 Impact Analysts' Earnings Forecast. As discussed in Appendix 2 and illustrated by Figure 2.1, participants may think that forward-looking information should not be considered when reporting under IAS 39, due to the guidelines in IAS 39 that states 'Expected future loan loss events are not considered'.

Table 22: Test of how the information provided impacted the LLP decision for each accounting standard
Panel A: Mean for the extent the information provided impacted the LLP decision.

		N	Mean[b]	SD
P1 Impact Analysts' Earnings Forecast	IAS39	26	2.69	1.158
	IFRS9	28	2.89	1.100
P1 Impact Estimated reported earnings before LLP	IAS39	26	2.69	1.011
	IFRS9	28	2.71	0.897
P1 Impact Debtors book balance outstanding amounts	IAS39	55	4.22	1.100
	IFRS9	57	4.21	0.921
P1 Impact Country Accounting guidelines	IAS39	55	3.93	1.086
	IFRS9	57	4.18	0.848
P1 Impact LLP calculated end of previous financial year	IAS39	55	3.78	1.243
	IFRS9	57	3.63	1.080
P1 Impact Country economic environment	IAS39	55	3.98	0.991
	IFRS9	57	4.54	0.781
P1 Impact Expected future loan loss events	IAS39	55	2.89	1.583
	IFRS9	57	4.42	0.755

b. Responses were measured on a five-point Likert scale (1 – did not impact, 3 – limited impact and 5 – significant impact).

Panel B: ANOVA of the extent to which the information provided impacted the LLP decision for each accounting standard

	Sum of Squares	df	Mean Square	F	Sig.[a]
P1 Impact Analysts' Earnings Forecast	0.542	1	0.542	0.426	0.517
P1 Impact Estimated reported earnings before LLP	0.007	1	0.007	0.007	0.933
P1 Impact Debtors book balance outstanding amounts	0.002	1	0.002	0.002	0.968
P1 Impact Country Accounting guidelines	1.724	1	1.724	1.824	0.180
P1 Impact LLP calculated end of previous financial year	0.632	1	0.632	0.468	0.496
P1 Impact Country economic environment	8.842	1	8.842	11.164	**0.001**
P1 Impact Expected future loan loss events	65.537	1	65.537	43.106	**0.000**

a. Throughout this study, reported p-values are two-tailed, unless noted otherwise.

Participants reporting under IAS 39 indicated that the Country economic environment had a moderate impact on their LLP decision and participants reporting under IFRS 9 indicated that the Country economic environment had a significant impact on their LLP decision. Participants reporting under IAS 39 indicated that the Expected future loan loss events had

a limited impact on their LLP decision and participants reporting under IFRS 9 group indicated that the Expected future loan loss events had a moderate impact on their LLP decision. Table 22, Panel B indicates that there are significant differences in the extent to which the information provided to participants impacted their LLP decision between the accounting guidelines groups. In line with expectations, the information about the Impact of the Country economic environment ($F = 11.164$, $p < .05$) and the Impact of Expected future loan loss events ($F = 43.106$, $p < .05$)[47] influenced the participants' reporting under IAS 39 LLP decision less than the participants reporting under IFRS 9. IAS 39 guidelines in the case study stated that 'Expected future loan loss events are not considered, no matter how likely' as can be seen in Exhibit 2, Panel A and IFRS 9 guidelines stated that 'Expected future loan loss events are considered' as can be seen in Exhibit 2, Panel B, in line with actual accounting guidelines provided in the standard.

The results in Table 22 indicate that the Accounting standard experimental treatment provided was effective and that participants attended to the experimental treatment conditions. IAS 39 focuses on losses expected to result from events that have already happened. Therefore, anticipated future loan loss events are not expected to be considered.

The experimental groups also included a control group that did not receive any accounting guidelines or emi. This data was captured to observe if the participants behaved differently when no accounting guidelines are provided. Further analysis including the participants in the no accounting standard group indicated that participants who did not receive accounting guidelines did consider the expected future loss events and applied the information in line with guidelines as provided in IFRS 9. Participants in the no accounting standard group indicated that the Country economic environment had a significant impact on their LLP decision and indicated that the Expected future loan loss events had a significant impact on their LLP decision. This means that participants in the no accounting standard group did not determine their own accounting standard, but rather defaulted to report under IFRS 9. This is expected as the prior knowledge of LLP of participants who took part in this study is based on IFRS 9 accounting standard. Therefore, when no guidelines were provided, participants incorporated their prior LLP experience. I, therefore, did not expect differences between participants reporting under IFRS 9 and the no accounting standards group. The main

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[47] Welch's Robust Tests of Equality of Means tests support these results.

analysis in Table 21 was subsequently repeated including the control group (no accounting standard and no emi). Including the control group in the analysis does not change the results.

I did not find evidence to support Hypothesis4. I also did not find evidence that IFRS 9's ECL model of determining LLPs for financial firms is associated with greater earnings management relative to IAS 39's ICL model. Furthermore, I did not find evidence that financial reporting standards that permit greater judgement and discretion in measurements and application lead to an increase in earnings management.

This result is in contrast with the findings by Gomaa et al. (2019) who found that the increased flexibility under the IFRS 9 guidelines leads to greater earnings management compared to the IAS 39 guidelines in their laboratory environment. The results of Gomaa et al. (2019) indicate that managers might opportunistically abuse the increased discretion and judgement allowed in the IFRS 9 accounting guidelines to maximise their compensation through earnings management. They do, however, indicate that earnings management is less than expected and does not offset the potential positive effects of the ECL model. My results are in line with the findings by Jackson and Liu (2010) who found that firms will manage LLPs to meet or beat analysts' earnings forecasts. The results did not indicate a difference in the earnings management between the IFRS 9 and IAS 39 accounting guidelines. This finding is in line with early evidence provided by López-Espinosa et al. (2021) and Onali et al. (2021) who did not find evidence of opportunistic behaviour through the use of discretionary LLPs under IFRS 9. I found evidence that management uses the judgement allowed in the different LLP stages to manage earnings, rather than judgement allowed in the different accounting standards. This finding suggests that moving toward accounting standards that allow managers to apply more discretion and judgement will not necessarily open the door to more earnings management.

5.6.4   Phase two

After considering the actual loan losses for the 20X1 financial year and receiving information about their calculated CU bonus compared to what the potential maximum bonus could have been,[48] additional information about the next financial year was provided to participants.

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[48] Only applicable to participants in the emi group.

Table 23: Test of H2, H3 and H4 in Phase two
Panel A: Means for the LLP dependent variable in Phase two

Dependent Variable:		N	P2 CU LLP 31–90 Days		P2 Total LLP	
			Mean	SD	Mean	SD
IAS39	No EMI	29	2 766 124	1 113 862	8 205 483	2 557 096
	EMI	26	2 383 385	474 971	8 438 654	1 185 413
IFRS9	No EMI	29	2 881 655	812 005	8 280 172	3 268 928
	EMI	28	2 619 429	941 550	8 262 286	2 516 812

Panel B: Univariate analysis of variance with covariates of the effect of earnings management incentive and accounting guidelines on LLP decisions in Phase two

		P2 CU LLP 31–90 Days		P2 Total LLP	
Source	df	F	Sig.[a]	F	Sig.[a]
Intercept	1	29.751	0.000	25.797	0.000
Independent Variables					
Earnings Management Incentive	1	4.981	**0.028**	0.051	0.822
Accounting Standard	1	0.981	0.324	0.105	0.746
EarningsmanagementIncentive * AccountingStandard	1	0.152	0.697	0.001	0.975
Covariates					
Gender	1	0.731	0.395	0.225	0.636
Language	1	0.328	0.568	0.467	0.496
IFRS9LLPKnowledge	1	1.647	0.202	2.139	0.147
Risk	1	1.252	0.266	0.268	0.606
Corrected Model	7	1.273	0.271	0.555	0.790
Error	104				
Total	112				
Corrected Total	7	1.273	0.271	0.555	0.790

a. Throughout this study, reported p-values are two-tailed, unless noted otherwise.

The earnings management group's (M = 8 347 203) and no earnings management group's[49] P2 Total LLP (M = 8 476 392) were similar, as indicated in Table 18. The main univariate ANOVA statistical procedure, excluding the control group in Table 23, shows that the emi effect for Phase two was non-significant for the total LLP.[50] This indicates that even though participants still used discretion in Stage two of the LLP (P2 CU LLP 31–90 Days) to manage

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[49] Including the no accounting standard no emi group.
[50] Consistent results are obtained with a one-way ANOVA when the covariates are excluded.

earnings, the overall earnings management effect of the bonus and the analyst earnings forecast provided diminishes in Phase two.

Giner and Mora (2019) argue that the longer a loan is recognised in the accounting records of a bank, the greater the possibility of earnings management. The expectation was that providing feedback to participants would motivate them to manage earnings in Phase two. The difference between the LLPs for the emi and no emi experimental groups was only observed in Phase one and not Phase two. This could be because participants received feedback at the end of Phase one and decided to choose an LLP closer to the actual loss of CU 6,83m that was reported in the case study under an assumption that actual losses will be similar each year. The case study also communicated to participants that there was an audit adjustment to their LLP determined. High audit quality limits managers' ability to make opportunistic accrual choices as an audit is seen as an effective monitoring tool (Agoglia et al. 2011; Fonseca and Gonzalez 2008; Kim et al. 2003). Auditors can help limit managers' use of accruals-based earnings management (Commerford et al. 2018; Zang 2012). The audit adjustment could also be a reason why participants chose to reduce earnings management.

Ryan (2017) assumes that banks that provide more for loan losses in positive economic circumstances will provide less for loan losses in negative economic circumstances because the cumulative amount of credit losses that will be realised is set. This argument could explain why the emi participants who provided less in Phase one will increase their LLP more in Phase two to achieve the total cumulative amount of credit losses. The mean for the LLP in P2 for the emi group and the no emi group exceeded the actual loan loss of CU 6,83m that was reported for Phase one. Univariate analysis, including the no accounting standard group, shows that there is a significant change in LLP from Phase one to Phase two between the emi (M = 3 033 944) and the no emi groups (M = 2 398 075), $p < .05$. Both groups increased the LLP. I found evidence that the emi group increased the LLP more in Phase two after they received feedback because the emi group was further away from the actual loan loss. The LLP of the emi group was lower at the end of Phase one to obtain a higher bonus or to meet or exceed the analyst earnings forecast and to better estimate

actual credit losses the LLP increased more for the emi group.[51] This finding supports recent literature that indicates that accruals-based earnings management could be decreasing (Commerford et al. 2018).

Phase two results confirm the evidence found in Phase one and Hypothesis 4 is not supported as I did not find evidence that IFRS 9's ECL model of determining LLPs for financial firms is associated with greater earnings management relative to IAS 39's ICL model.

5.6.5   Alternative earnings management measures to test H4

5.6.5.1   Bonus calculated

The bonus calculated in the case study served two purposes. The first was to serve as an earnings management incentive, but at the same time prohibit earnings from being managed unrealistically without considering consequences. The bonus introduced rewards participants based on how close their determined LLP is to the real credit loss. The real credit loss for Phase one was unknown to participants at the point that they make the LLP decision, but is revealed to them at the start of Phase two. Participants in the emi experimental group are therefore encouraged to maximise their bonus by firstly reducing the LLP to increase reported earnings,[52] but at the same time ensuring that the LLP is sufficient to cover their expectation of actual credit losses. This is operationalised in the experiment by comparing the LLP of each participant to the predetermined amount of credit losses of R6,83m[53] revealed at the start of Phase two.[54] This two-part bonus creates inherent conflict as participants want an accurate LLP (higher bonus) but a higher LLP leads to lower earnings (lower bonus). The highest bonus is obtained by reporting the highest earnings for the Bank, without under-provisioning loan losses. As can be seen from Table 25, there is a

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[51] As part of a further analysis I ran a univariate analysis excluding the no accounting standard group to see if there is a difference in the change in the LLP amount from phase one to phase two between the IFRS 9 and IAS 39 groups. The analysis does not find a difference in the change in the LLP from phase one to phase two between participants that reported under IFRS 9 and IAS 39 (F = .012, p = .912). Both groups increased the LLP with similar amounts.

[52] Participants are informed that a percentage of the bonus pool based on the profit will be allocated to them, therefore, the higher the reported earnings the higher the bonus.

[53] Participants are told that the bonus is based on how well they estimated the LLP balance compared to actual impaired loans. Therefore, the more they increase the LLP from 20X0 and the closer they are to CU 6.83m, the lower the reported earnings but the higher this component of the bonus.

[54] Not only is this information not available to participants when they make their LLP decision, they cannot go back to change the decision. They can only change the LLP in Phase two after the results from actual loan loss in Phase one was revealed.

significant difference in the emi main effect for the P1 Calculated Bonus dependent variable
(F = 4.003, p = 0.048), providing comfort that the bonus variable was successful to
encourage higher earnings by managing the LLP.

Table 24: Descriptive statistics of the P1 calculated bonus variable per experimental treatment group

Accounting Standard	EMI	Mean	Median	SD	Minimum	Maximum
IAS39	No EMI (29)	116 655	122 000	27 742	34 000	183 000
	EMI (26)	121 654	119 500	22 344	74 000	177 000
	Total (55)	119 018	121 000	25 230	34 000	183 000
IFRS9	No EMI (29)	122 828	116 000	35 594	27 000	184 000
	EMI (28)	140 107	134 000	30 636	66 000	184 000
	Total (57)	131 316	123 000	34 087	27 000	184 000
Total	No EMI (58)	119 741	120 000	31 782	27 000	184 000
	EMI (54)	131 222	124 000	28 289	66 000	184 000
	Total (112)	125 278	122 000	30 561	27 000	184 000

The bonus is calculated by the software for all participants,[55] but only participants in the emi
group are informed that there is a bonus, how it will be calculated and what their bonus was.
The descriptive statistics reported in Table 24 indicate that the IFRS 9 emi experimental
group had the highest average bonus (M = 140 107). Untabulated results indicate that the
no accounting no emi experimental group had the lowest average bonus (M = 115 810).

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[55] The website calculated an 'as if' bonus for all participants including participants allocated to the no emi group
who were not aware that there is a bonus.

Table 25: Factorial ANOVA with covariates of the effect of earnings management incentive and accounting guidelines on bonus calculation

Dependent Variable: P1 Calculated Bonus	df	F	Sig.[a]
Intercept	1	62.388	0.000
Independent Variables			
Earnings Management Incentive	1	4.003	**0.048**
Accounting Standard	1	5.131	**0.026**
EarningsmanagementIncentive * AccountingStandard	1	0.704	0.403
Covariates			
Gender	1	0.012	0.911
Language	1	0.723	0.397
IFRS9LLPKnowledge	1	1.594	0.210
Risk	1	0.138	0.711
Corrected Model	7	1.708	0.115
Error	104		
Total	112		
Corrected Total	111		

a. Throughout this study, reported p-values are two-tailed, unless noted otherwise.

The difference between the bonus calculated based on the LLP decision by participants with an emi and the bonus calculated for participants with no emi reporting under different accounting standards were analysed in Table 25. An interaction effect between earnings management incentives and accounting standards was tested. There is a statistically significant difference between the accounting standards for the P1 Calculated Bonus dependent variable (F = 5.131, p < .05).[56]

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[56] Consistent results are obtained when the covariates are excluded with the earnings management incentive changing to (F = 4.055, p = .046) and accounting standard changing to (F = 4.683, p = .033).
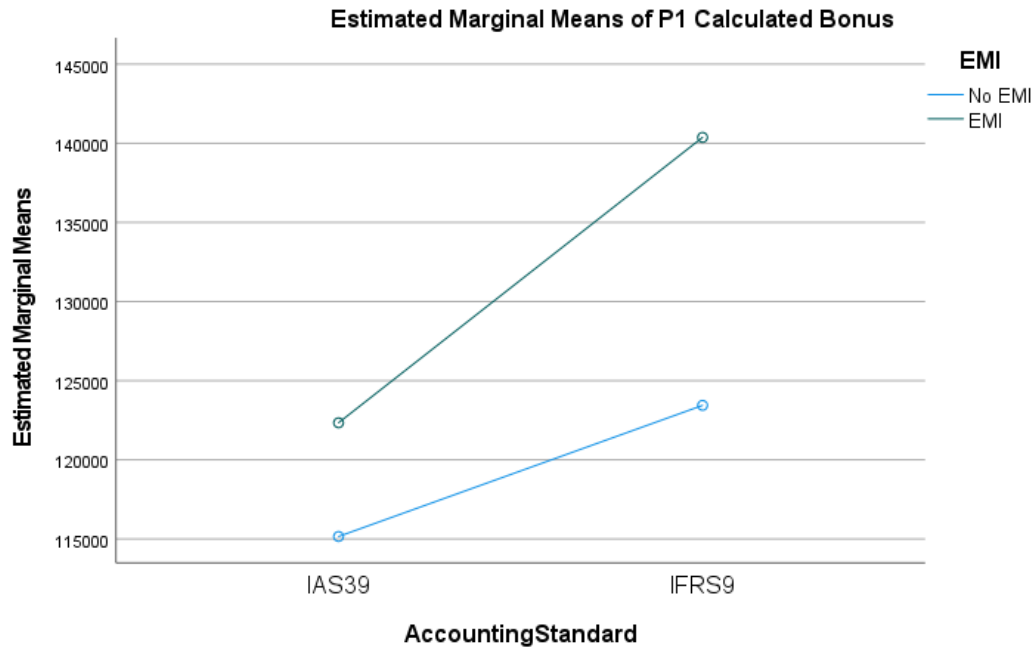
Figure 5: **Estimated marginal mean for the P1 calculated bonus variable per accounting standard for the emi and no emi groups**

Figure 5 indicates that the difference between the IFRS 9 group that received emi and the group that received no emi is bigger than the IAS 39 group.

An objective of the new ECL model is to increase the allowed flexibility of managers to calculate LLPs (Gomaa et al. 2019). I found evidence that the change from IAS 39 to IFRS 9 was successful in allowing more managerial discretion for managers to maximise their personal gain without excessively managing earnings. Participants in IFRS 9 experimental group were able to maximise their bonus by recording higher earnings by limiting the increase in the LLP, but still limit earnings management by calculating the LLP that was closer to the predetermined actual loan loss of CU 6.83m. Under IFRS 9 management has more perceived control and / or flexibility over their LLP behaviour to achieve a predetermined outcome, for example to achieve a bonus and / or higher earnings, without excessively managing earnings.

Managers can use the discretion in the accounting standards to either mislead shareholders about the entity's financial performance or to gain some private benefits at the expense of other stakeholders (Arun et al. 2015; Healy and Wahlen 1999). Participants in the emi group had an opportunity to increase both personal income (bonus) and the bank's earnings and

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the no emi group only had an opportunity to increase the bank's earnings. I tested the difference between the earnings after LLP and earnings after the LLP and the bonus for the emi and the no emi group. This was done to determine if there is a difference in the earnings calculated by these groups and to determine the outcome of earnings management (earnings after LLP and bonus = managed earnings). The results are documented in Table 26.

Table 26: Effect of emi and accounting guidelines on earnings
Panel A: Mean of the earnings after LLP

Dependent Variable:			P1 Calculated Earnings after LLP		P2 Calculated Earnings after LLP	
AccountingStandard		N	Mean	SD	Mean	SD
IAS39	No EMI	29	14 099 931	2 683 663	13 525 897	1 968 850
	EMI	26	14 697 500	1 859 668	12 695 000	1 989 229
IFRS9	No EMI	29	14 269 517	2 821 173	13 281 379	3 641 584
	EMI	28	14 734 607	2 370 528	12 834 107	2 937 140

Panel B: Factorial ANOVA with covariates of the effect of emi and accounting guidelines on earnings

		P1 Earnings after LLP		P1 Earnings after LLP and bonus	
Source	df	F	Sig.[a]	F	Sig.[a]
Intercept	1	114.757	0.000	113.443	0.000
Independent Variables					
Earnings Management Incentive	1	5.572	**0.020**	5.492	**0.021**
Accounting Standard	1	0.003	0.959	0.000	0.983
AccountingStandard * EarningsmanagementIncentive	1	0.127	0.723	0.136	0.713
Covariates					
Gender	1	6.597	0.012	6.656	0.011
Language	1	7.327	0.008	7.324	0.008
IFRS9LLPKnowledge	1	6.081	0.015	6.047	0.016
Risk	1	0.868	0.354	0.866	0.354
Corrected Model	7	3.319	0.003	3.315	0.003
Error	104				
Total	112				
Corrected Total	111				

a. Throughout this study, reported p-values are two-tailed, unless noted otherwise.

The average earnings after LLP for the emi group (M = 14 716 740) was statistically higher than the IFRS 9 and IAS 39 no emi groups (M = 14 184 724) as well as the no accounting standard group (M = 13 308 048) not included in the analysis above. The earnings after LLP and the bonus for the emi group (M = 14 585 519) are statistically higher compared to the IFRS 9 and IAS 39 no emi groups (M = 14 064 982) as well as the no accounting standard group (M = 13 401 810) not included in the analysis above. The results in Table 26 suggest that when there is an incentive to increase personal income or gain, participants increase earnings to obtain the benefit. I did not find evidence that earnings reported to shareholders (P1 Earnings after LLP and bonus) are differently managed depending on the accounting guidelines management is reporting under, including when no accounting guidelines are provided. This evidence supports the finding that the change from IAS 39 to IFRS 9 was successful in allowing more managerial discretion for managers to maximise their personal gain without excessively managing earnings which could have a negative impact for shareholders.

5.6.5.2   Number of calculations

In this case study, I developed an alternative earnings management measure. I created an opportunity in the experiment for participants to deliberatively change the LLP after observing the impact the LLP decision had on Bank X's earnings. By doing this, the experiment focused on the earnings management definition as described by Dutta and Gigler (2002). They define earnings management as 'a deliberative manipulative decision that management makes after observing the firm's true economic earnings'. The experiment measured earnings management by counting the number of times the participants changed their LLP decision after they had received feedback on the impact of the LLP on earnings.[57] This could also be referred to as the frequency of adjustments participants are making.

The inspection of the histograms in Figures 6 and 7 for the number of calculations for Phases one and two reveals that there are outliers in the data set for this dependent variable. The LLP amount and the number of calculations performed are separate and different dependent variables, which utilise different scales. Therefore, the outliers in these variables are identified separately and I used a different sample to analyse the number of calculations performed.

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[57] Counted each time a participant clicks calculate.
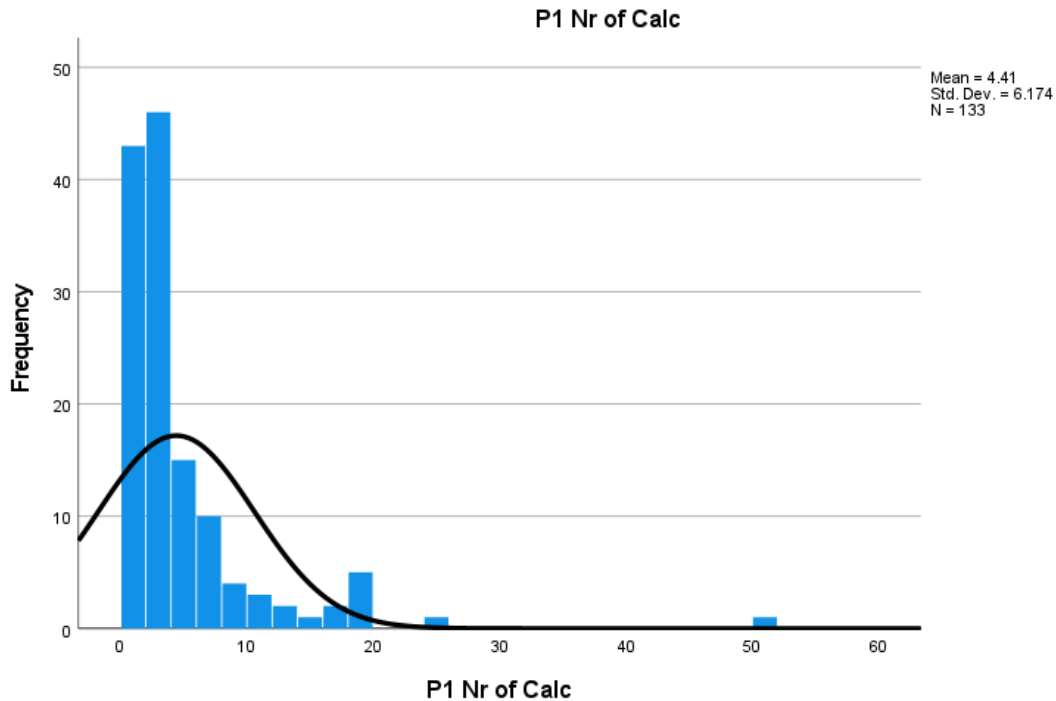
Figure 6: Histogram for Phase one number of calculations for the sample used to analyse the LLP dependent variables indicating possible outliers
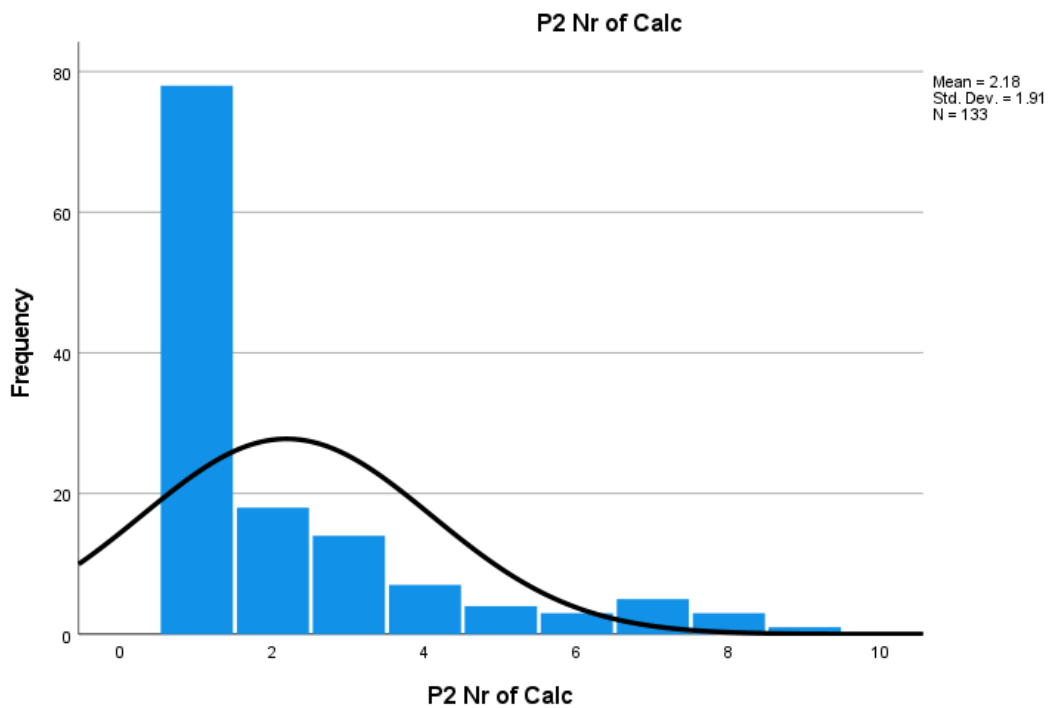
Figure 7: Histogram for Phase two number of calculations for the sample used to analyse the LLP dependent variables indicating possible outliers

The same process was followed to identify potential outliers in the P1 and P2 Nr of Calc dependent variables as described in section 5.3.2. To identify outliers, I calculated the Z-scores for the two new variables, P1 Nr of Calc and P2 Nr of Calc for each experimental

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treatment group (no_standard_no_emi, ias39_no_emi, ias39_emi, ifrs9_no_emi and ifrs9-emi) separately. Outliers were determined to be observations greater than 2.5 standard deviations from the mean (Hair 2010). I determined a new sample[58] as some participants could have continued to click the 'calculate' button on the website and therefore increased their number of calculations without observing the impact this has on their LLP or earnings.

Table 27: Reconciliation of the number of participants used in the additional Nr of Calc earnings management analysis

	no standard no emi	ias39 no emi	ias39 emi	ifrs9 no emi	ifrs9 emi	Total nr of participants
Number of participants with valid case study responses excluding full-time students deleted	23	30	29	31	30	143
Outliers identified and deleted in P1 Nr of Calc and P2 Nr of Calc	(2)	(3)	(4)	(3)	(1)	(13)
Remaining sample used to analyse the Nr of Calc	21	27	25	28	29	130

Untabulated results show that P1ConfidencetodetermineLLP and P2ConfidencetodetermineLLP are significantly correlated with P1 Nr of Calc.[59] A new variable 'LLPconfidence' that is the average of P1ConfidencetodetermineLLP and P2ConfidencetodetermineLLP was included as an additional covariate in the analysis.

I investigated whether IFRS 9's ECL model of determining LLPs for financial firms is associated with greater earnings management relative to IAS 39's ICL model. An interaction effect between earnings management incentive and accounting standard was tested using an alternative dependent variable namely the number of times a participant changed his or her calculation.

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[58] One participant was identified and was deleted as an outlier for the LLP sample as well as the number of calculations sample.

[59] Correlation is significant at the 0.01 level (two-tailed) and P2 Nr of Calc Correlation is significant at the 0.05 level (two-tailed).

Table 28: Descriptive statistics for the number of calculations dependent variables

Dependent Variable:	Accounting Standard	No acc std	IAS39			IFRS9			Total		
		No EMI (21)	No EMI (27)	EMI (25)	Total (52)	No EMI (28)	EMI (29)	Total (57)	No EMI (76)	EMI (54)	Total (130)
	Mean	2.19	3.19	3.20	3.19	2.46	5.52	4.02	2.64	4.44	3.39
	Median	1.601	4.095	2.63	2.00	1.856	6.231	2.00	2.00	2.00	3.958
	SD	0.349	0.788	0.526	3.436	0.351	1.157	4.842	2.813	5.001	0.347
	Minimum	1	1	1	1	1	1	1	1	1	1
P1 Nr of Calc	Maximum	6	19	11	19	7	19	19	19	19	19
	Mean	1.38	1.37	2.28	1.81	1.36	2.10	1.74	1.37	2.19	1.71
	Median	0.865	0.688	1.458	1.00	0.731	1.718	1.00	1.00	1.00	1.235
	SD	0.189	0.132	0.292	1.205	0.138	0.319	1.370	0.746	1.591	0.108
	Minimum	1	1	1	1	1	1	1	1	1	1
P2 Nr of Calc	Maximum	4	3	6	6	4	7	7	4	7	7

As indicated in Table 28, the total number of calculations performed decreased from Phase one to Phase two. One of the possible reasons for the decrease in the number of calculations could be that participants' confidence increased. In Phase one, 17.7% of participants indicated that they were mostly confident and 3.8% indicated that they were very confident. In Phase two, 22.3% of participants indicated that they were mostly confident and 6.2% indicated that they were very confident. Another reason why the number of calculations decreased could be due to participant knowledge and experience since they have completed the LLP calculation before and, therefore, require fewer calculations to achieve the desired answer. Participant boredom or fatigue could also explain the decrease in the number of calculations from Phase one to Phase two. Another reason could be simply because participants' frequency of adjustment decreased from Phase one to Phase two.

As indicated in Table 28, the IFRS 9 group's mean number of calculations is the highest in Phase one and the IAS 39 experimental group's mean number of calculations is the highest in Phase two.

Table 29: Alternative earnings management measure for H4
Panel A: Means for the number of calc

Dependent Variable:			P1 Nr of Calc		P2 Nr of Calc	
AccountingStandard		N	Mean	SD	Mean	SD
IAS39	No EMI	27	3.19	4.095	1.37	0.688
	EMI	25	3.20	2.630	2.28	1.458
IFRS9	No EMI	28	2.46	1.856	1.36	0.731
	EMI	29	5.52	6.231	2.10	1.718

Panel B: Factorial ANOVA of the effect of emi and accounting guidelines on the number of calculations performed

		P1 Nr of Calc		P2 Nr of Calc	
Source	df	F	Sig.[a]	F	Sig.[a]
Intercept	1	7.771	0.006	5.63	0.02
Independent Variables					
Earnings Management Incentive	1	2.380	0.126	10.631	**0.002**
Accounting Standard	1	1.217	0.273	0.144	0.706
EarningsmanagementIncentive * AccountingStandard	1	3.221	**0.076**	0.146	0.703
Covariates					
Gender	1	1.069	0.304	0.013	0.91
Language	1	0.010	0.920	0.012	0.914
IFRS9LLPKnowledge	1	0.188	0.665	0.072	0.789
Risk	1	0.000	0.989	0.041	0.84
LLPconfidence	1	2.423	0.123	0.024	0.878
Corrected Model	8	1.581	0.140	1.498	0.167
Error	100				
Total	109				
Corrected Total	108				

  a. Throughout this study, reported p-values are two-tailed, unless noted otherwise.

The ANOVA results presented in Table 29 indicate that the interaction term is marginally significant for the P1 Nr of Calc (F = 3.221, p < 0.076) dependent variable.[60]

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[60] Another way to deal with outliers is to change the number to the next highest number plus one (Field 2012). To check the robustness of the results in Table 29, outliers in the Phases one and two Number of Calculations variable in the sample, that were used with the LLP dependent variables (112 number of participants as was analysed in the main analysis in Table 21), were identified following the same process to identify the outliers as was described in 5.3.2, but these responses were winsorized rather than deleted. The number of calculations were winsorized by changing the number to the next highest number of calculations +1 in that treatment group. The results are inconsistent with the results found in Table 29 and I did not find evidence of a significant interaction effect between emi and accounting standard for the Winsorized P1 Nr of Calc (F = 1.723, p = .192) when controlling for Gender, Language, IFRS9LLPKnowledge, Risk and LLPconfidence. Results for the Winsorized P2 Nr of Calc are consistent with results presented in Table 29.
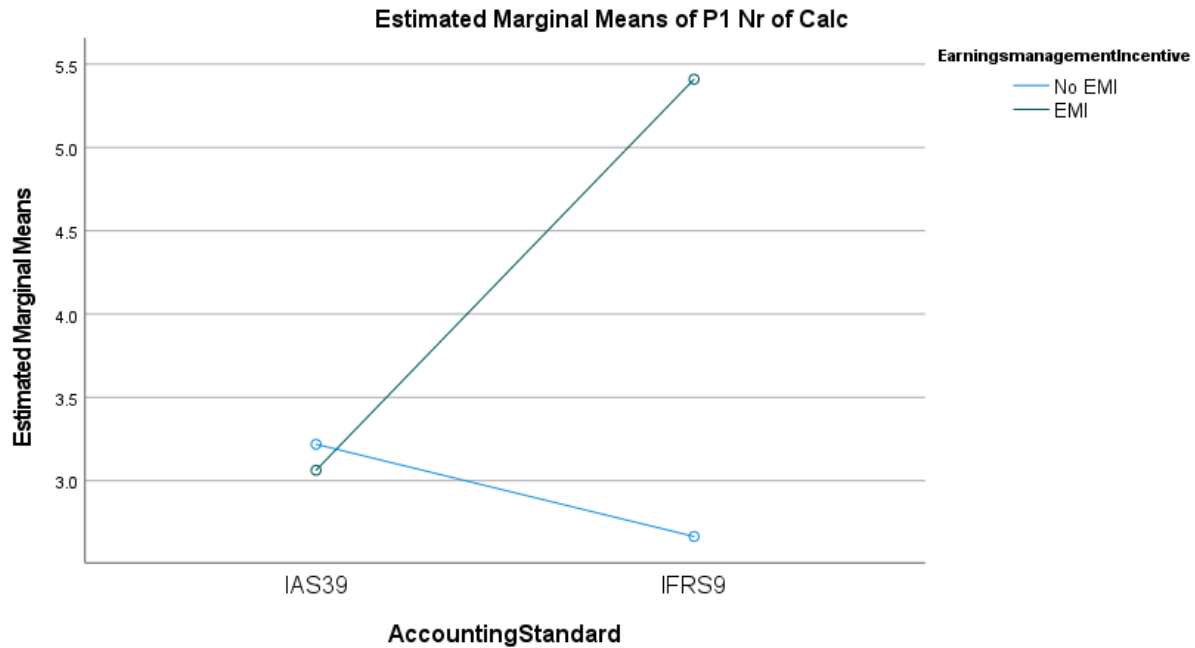
Figure 8: **Estimated mean for the P1 number of calculations performed variable per accounting standard for the emi and no emi groups**

Table 29 indicates that the means for the number of calculations for a participant in the IAS 39 emi and no emi group is similar, However, the IFRS 9 emi or no emi experimental condition reported a different number of calculations. Results from Table 29 indicate that there is a marginally significant difference[61] in the interaction term between the accounting standard and emi. Table 28 reported the means for the number of calculations that indicate that the mean for the Phase one number of calculations for the IFRS 9 emi group is 5.52, the mean for the IAS 39 emi group is 3.20 and the mean for the no accounting standard no emi group is 2.19. This indicates that when IFRS 9 participants have an incentive to manage earnings, there is a marginally significant difference between the number of calculations performed. This indicates that the change in accounting standards changes management behaviour.

Further analysis was performed with the 130 participants including the no accounting standards group with the Welch robustness test for the equality of means that indicates that

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[61] Because the result in the analysis is approaching significance, a power analysis was performed. The analysis revealed that there was only a 42.8% chance of detecting a main effect of emi and Accounting Standard interaction when the analyses included 109 participants. This may indicate that the observed power is too low to detect an effect due to smaller sample sizes (i.e., 25-29 participants per treatment group) or due to a lack of knowledge and experience by participants completing the task. Future research could further analyse whether the frequency of the adjustment is an earnings management indicator and if individuals that receive more discretion increase their frequency of the adjustment.

there is a marginal statistical difference between the experimental groups for the P1 Nr of Calc performed (p = .064). Games-Howell post hoc tests indicate that a significant difference is observed between the IFRS 9 emi and the no accounting standards no emi groups for P1 Nr of Calc performed.

The difference between the emi groups P2 Nr of Calc is statistically significant (F = 10.6310, p < .01) as reported in Table 29, Panel B. It indicates that earnings management is observed in the number of calculations variables in Phase two. I found evidence that individual managers change their LLP after observing the impact the LLP has on earnings. The alternative is that the frequency of the adjustment is less when participants are not concerned about reported earnings or the bonus. The Welch robustness test for the equality of means indicates that there is a statistically significant difference between the experimental groups for the P2 Nr of Calc performed (p < .05). In Phase two the accounting standard does not influence the emi decision and the difference is only observed between the emi and no emi groups.

When using an alternative earnings management measure, namely the number of times a participant changed their calculation, I found evidence that there is a marginally significant difference between the accounting standard and emi interaction term.[62] This result could indicate that earnings management through LLPs is more for managers reporting under IFRS 9 compared to managers reporting under IAS 39.

I am cautious when interpreting the results for the number of calculations. The P2 Total LLP did not identify any earnings management, however, the Nr of Calc variable in Phase two did identify earnings management. The number of calculations could be a proxy for the measurement of participants' LLP knowledge and experience. Rather than measuring earnings management, the Nr of Calc could capture participants' level of confidence or doubt to determine the LLP since they increased the number of calculations as they were uncertain of the answer. This could be supported by the fact that the Nr of Calc variables are correlated

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[62] The significant interaction term is only observed in Phase one and not Phase two. This could be because participants received feedback at the end of Phase one and therefore had more experience to determine an LLP in line with expectations without numerous calculation clicks or that the frequency of adjustment decreased. The case study also communicated to participants that there was an audit adjustment to their LLP determined. Auditors can help limit managers' use of accruals-based earnings management (Commerford et al. 2018; Zang 2012). The audit adjustment could also be a reason why participants chose to not manage earnings.

with the Confidence to determine the LLP. It could also be a proxy for the frequency of adjustment (i.e., how comfortable they are with making adjustments), rather than trying to achieve a different outcome to increase and thereby manage earnings.

5.6.6   Conclusions about earnings management

The results indicate that financial reporting standards that permit greater judgement and discretion in measurements and application do not lead to an increase in earnings management. This conclusion was reached through the lack of evidence that indicates that IFRS 9's ECL model of determining LLPs for financial firms is associated with greater earnings management relative to IAS 39's ICL model. Even though IFRS 9 incorporates more forward-looking information in determining the LLP and this increases flexibility, judgement and discretion, I did not find evidence that IFRS 9 changes participants' earnings management behaviour. Participants are not prone to manage earnings more under a flexible accounting standard that allows greater leeway for earnings management. This supports the notion that the standard setting process is effective in guarding against earnings management as highlighted by Hoogervorst (2014) and potentially unfairly criticised. I, however, did find evidence that, due to the level of judgement that is required for the Stage two LLP (31–90 days bucket), earnings management most likely takes place in Stage two, irrespective of the accounting standard.

These results support the argument that moving towards accounting standards that allow managers to apply more judgement and discretion will not necessarily open the door to more earnings management. The results further support the argument that the change from IAS 39 to IFRS 9 was successful in allowing more managerial discretion for managers to maximise their personal gain without excessively managing earnings.

These results are in contrast with the findings by Gomaa et al. (2019) who found that managers might opportunistically abuse the increased discretion and judgement allowed in IFRS 9 accounting guidelines to maximise their compensation through earnings management. My experiment differed from Gomaa et al. (2019) in several ways. I used participants with more relevant experience to determine the LLP and I used the LLP calculations for a bank rather than a hypothetical provision for manufacturing. I also included a no emi experimental group to determine if the LLP is as the result of management applying their best judgement versus aggressively managing earnings. The Gomaa et al. (2019)

study implemented three different management compensation schemes that provided all participants with a bonus. It is, therefore, difficult to determine if the provision is a result of management applying their best judgement versus aggressively managing earnings to optimise their incentive. These differences could explain the divergent findings. My results support the findings by López-Espinosa et al. (2021) who found no evidence of an increase in managed earnings under IFRS 9 when management has more discretion available to determine LLPs. According to López-Espinosa et al. (2021), their study found that the change in stock returns and higher changes in credit default swap spreads between IAS 39 and IFRS 9 do not appear to be driven by an increase in opportunistic reporting.

Consistent with prior research, I found evidence that when there is an incentive to manage earnings, management will use this to maximise their profit, irrespective of the accounting guidelines provided. I also found evidence that providing specific earnings management incentives to managers encourages individuals and / or firms to engage in earnings management. When management has an incentive to postpone the recognition of losses in financial statements, they underprovide for the LLPs. These results suggest that when there are earnings management incentives, the guidelines in the accounting standard do not influence the earnings management likelihood through the use of LLPs.

5.6.7   Manager characteristics and earnings management

As discussed in Tables 20 and 21, there is a significant difference between the earnings management treatment condition for the P1 CU 31–90 Days, P1 Total LLP and P2 CU LLP 31–90 Days LLP dependent variables. It is valid to perform tests across the different accounting standards since no difference between the accounting standards was observed. I performed further analysis of the data to determine if gender in this sample increased the likelihood of a participant managing earnings. My results suggest that there is a significant interaction between gender and earnings management.

5.6.7.1   *Gender*

As discussed in section 4.2.8, previous research found conflicting evidence on whether gender plays a role in earnings management behaviour. In Table 19 the Spearman's rho correlations identified that gender is correlated with the P1 CU 31–90 Days and P1 Total LLP variables. I performed further analysis to determine if gender is one of the characteristics of managers that increases the likelihood of earnings management.

I investigated whether males are more likely to engage in aggressive earnings management behaviour relative to females when an emi is provided. An interaction effect between emi and gender was tested after controlling for Accounting Standard, Language, IFRS 9 Knowledge and Risk. One participant was excluded from the analysis as the participant indicated their gender as 'Prefer not to disclose' and can therefore not be included in the analysis since there is missing information for the gender variable.

Table 30: Descriptive statistics for the earnings management dependent variables per gender

Dependent Variable:	Gender	Male			Female			Total		
		No EMI	EMI	Total	No EMI	EMI	Total	No EMI	EMI	Total
	N	31	29	60	47	25	72	78	54	132
P1 CU 31–90 Days	Mean	284 485 161	208 659 310	247 836 000	220 257 702	196 444 800	211 989 333	245 784 000	203 004 444	228 283 273
	SD	92 180 280	81 795 912	94 635 759	95 415 326	94 291 347	95 047 986	98 742 746	87 169 285	96 181 928
	Mean	7 390 677	5 378 724	6 418 233	5 263 617	5 237 320	5 254 486	6 108 987	5 313 259	5 783 462
P1 Total LLP	SD	2 698 389	1 874 020	2 529 238	1 997 260	2 411 764	2 133 258	2 513 466	2 119 993	2 384 515
P2 CU LLP 31–90 Days	Mean	296 361 290	254 565 517	276 160 000	272 905 532	245 952 000	263 546 667	282 227 692	250 577 778	269 280 000
	SD	84 703 049	71 431 847	80 704 800	103 019 675	81 497 347	96 375 151	96 275 821	75 644 398	89 483 226
	Mean	9 082 097	8 067 931	8 591 917	8 149 574	8 671 160	8 330 681	8 520 192	8 347 204	8 449 424
P2 Total LLP	SD	2 012 210	2 026 585	2 066 184	3 106 458	1 900 591	2 745 130	2 748 357	1 974 253	2 454 391

There is an assumption that participants are decreasing the LLPs in an attempt to increase profit. The mean values in Table 30 are not in the direction expected as I expected the male participants to decrease the LLP in an attempt to manage earnings. For the P1 CU 31–90 Days, P1 Total LLP and P2 CU LLP 31–90 Days variables the mean is the lowest for females in the emi group.

Table 31: Factorial ANOVA with covariates of the effect of emi and participant's gender on LLP decisions

Dependent Variable:		P1 CU 31–90 Days		P1 Total LLP		P2 CU LLP 31–90 Days		P2 Total LLP	
Source	df	F	Sig.[a]	F	Sig.[a]	F	Sig.[a]	F	Sig.[a]
Intercept	1	20.597	<.001	22.007	<.001	53.681	<.001	58.160	<.001
Independent Variables									
Gender	1	3.124	**.080**	4.201	**.043**	1.865	.175	.008	.930
Earnings Management Incentive	1	11.166	**.001**	7.525	**.007**	6.552	**.012**	.023	.880
Gender * EarningsmanagementIncentive	1	3.490	**.064**	7.470	**.007**	.648	.422	3.172	**.077**
Covariates									
Accounting Standard	1	.038	.845	.132	.717	1.339	.249	.766	.383
Language	1	5.228	.024	6.021	.016	.274	.602	.511	.476
IFRS9LLPKnowledge	1	4.782	.031	6.710	.011	.534	.466	3.212	.076
Risk	1	.433	.512	.893	.346	2.316	.131	.257	.613
Corrected Model	7	3.657	.001	4.738	<.001	1.427	.200	1.249	.281
Error	124								
Total	132								
Corrected Total	131								

a. Throughout this study, reported p-values are two-tailed, unless noted otherwise.

Table 31 indicates that the Gender * Earnings management incentive interaction term for P1 Final Total LLP (F = 7.470, p < .05) is statistically significant. The interaction term for P1 CU 31–90 Days (F = 3.490, p = .064) and P2 Total LLP (F = 3.172, p = .077) is marginally

significant.[63] There is a statistically significant difference in the P1 Total LLP variable (F = 4.201, p < .05) and a marginally significant difference in the P1 CU 31–90 Days variable (F = 3.124, p = .080) between the genders of participants.[64]

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[63] Univariate ANOVA excluding the covariates supports the results except for the P1 CU 31–90 Days dependent variable interaction term that is no longer significant (F = 2.518, p = .115).
[64] Welch's Robust Tests of Equality of Means test for gender supports this result.

Figure 9: Estimated mean for the P1 31–90 Days LLP variable per gender for the emi and no emi groups

Figure 10: Estimated mean for the P1 Final Total LLP variable per gender for the emi and no emi groups

Figures 9 and 10 illustrate that the difference between females who received emi versus no emi is smaller compared to males.

Estimated Marginal Means of P2 Total LLP
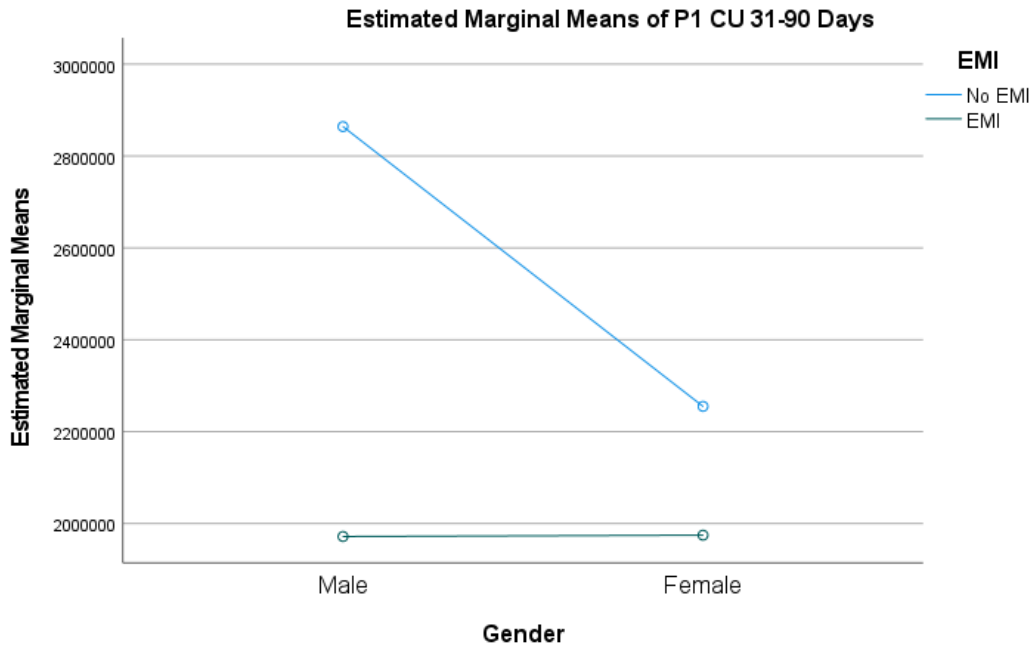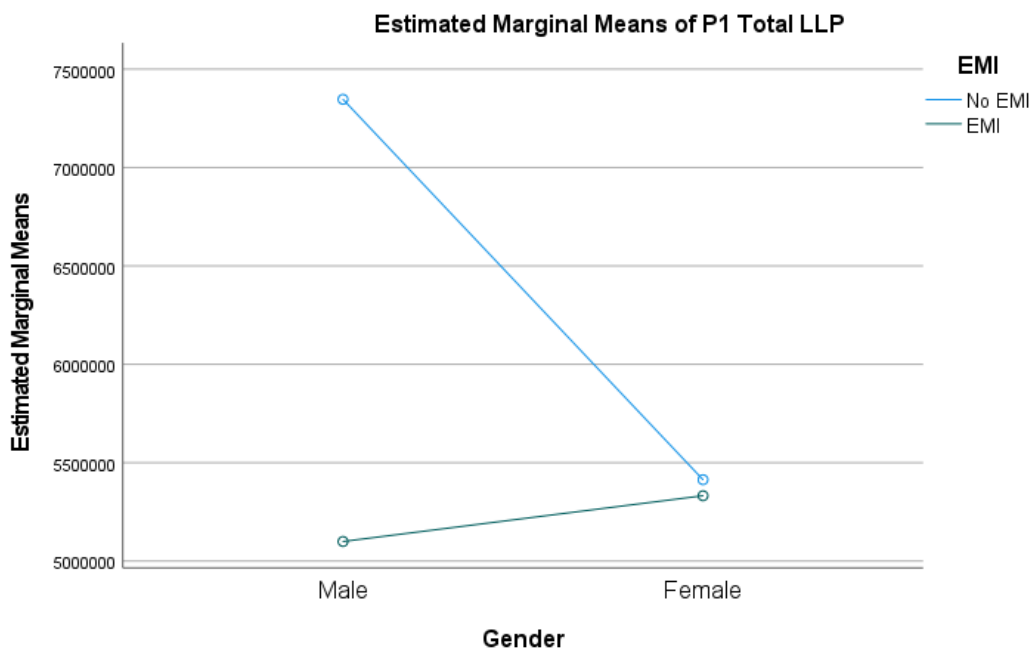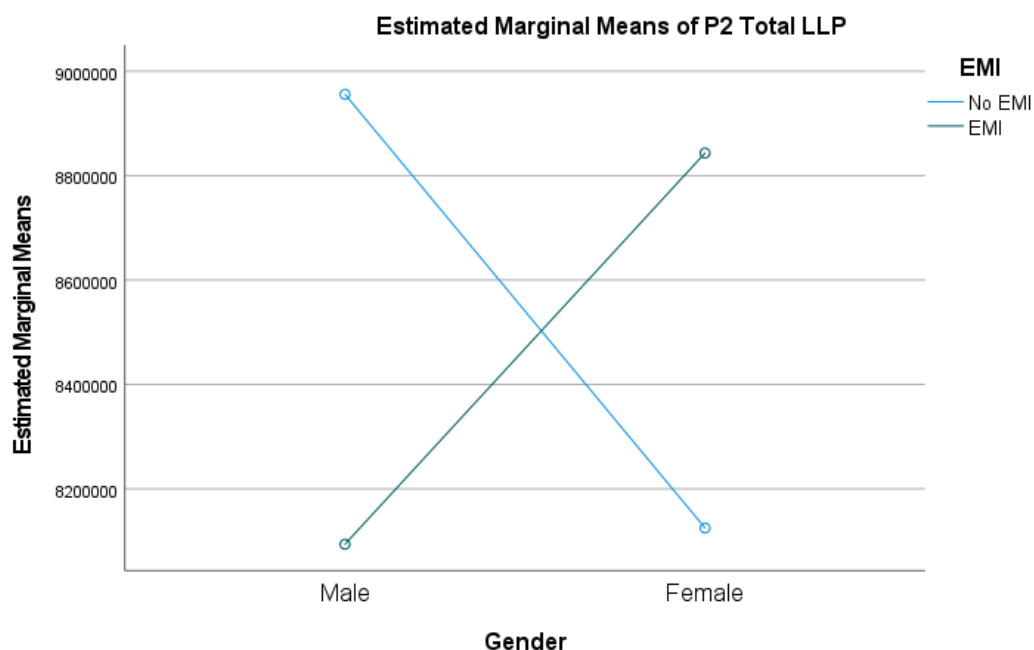
Covariates appearing in the model are evaluated at the following values: AccountingStandard = 1.27, Language = 2.41, IFRS9 Knowledge = 2.98, Risk = 3.3327

Figure 11: Estimated mean for the P2 Final Total LLP variable per gender for the emi and no emi groups

Figure 11 indicates that the average total LLP in Phase two for the female emi group is more than the no emi group and that for the male emi group is lower than the no emi group. The P2 Final Total LLP variable indicates that male participants in the emi group are more aggressive in managing up earnings by under-providing for LLP while female participants in the emi group were more aggressive in managing down earnings by increasing LLP to determine a more accurate LLP. In Phases one and two, illustrated by Figures 9 and 10, LLP's of males in the no emi group were higher than the emi group.

The literature distinguishes between different types of earnings management behaviour. The evidence obtained in Phase two of this study indicates that men and women engage in different types of earnings management. The results in Phase two indicates that when the entity's earnings are low, females manage earnings downward by increasing LLP, even if they have an incentive to decrease the LLP to increase earnings. When the entity's earnings are low, males manage earnings upward when they have an incentive to decrease the LLP to increase earnings.

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I found a relationship between participants' gender and earnings management behaviour. The results indicate that males are more likely to respond to incentives provided and take real action to achieve the desired outcome compared to females. In line with the findings by Na and Hong (2017), I also found evidence that males tend to take real action to achieve earnings increases and are more aggressive in managing earnings. The findings are in contrast with the evidence presented by Shawver and Clements (2015) who found no significant differences between ethical evaluation involving earnings management for male and female professional accountants. I found evidence that, when males have an incentive to change earnings, they tend to use the opportunity.

This study makes an important contribution to the earnings management literature by providing evidence of the influence of gender on earnings management behaviour. It contributes to the existing literature by providing empirical evidence on gender and earnings management in South Africa. The ongoing accounting scandals (Steinhoff, Tongaat Hulett, VBS Bank and KPMG) in South Africa make this finding particularly timely. Many prior studies focused on CFO or CEO gender, whereas I examined the effect of trainee accountants at an entry-level, which reflects the impact of gender at lower levels of management.

5.7   Conclusion

I conclude that all things being equal, managers manage earnings when there is an incentive to manage earnings, irrespective of the level of flexibility, managerial discretion and judgement allowed by the accounting standard. Managers seek opportunities to maximise profit for their own benefit. This study confirms prior literature by providing evidence that a bonus incentive and analyst earnings forecasts are potential incentives for managers to manipulate earnings. The results support the argument that the change from IAS 39 to IFRS 9 achieved the objective of allowing more managerial discretion without excessively managing earnings.

This study provides important evidence that financial reporting standards that permit greater latitude and flexibility in measurements and application do not lead to an increase in earnings management. I, however, did find evidence that if management is inclined to or has the incentive to manage earnings, this will take place in IFRS 9 Stage two LLP due to the level of judgement that is required for the Stage two LLP.

Prior accounting research has largely relied on archival methods to examine the relationship between earnings management and LLP. This study uses an experiment to address the concern that IFRS 9's ECL model of determining LLPs is associated with greater earnings management relative to IAS 39's ICL model. The results suggest that the IASB was successful in limiting opportunities for earnings management when developing the ECL model in the IFRS 9. This study implies that auditors who are concerned about earnings management should focus their time and resources on auditing Stage two of IFRS 9 LLP because this could help reduce the risk of earnings management in bank financials. This study also supports current accounting literature by providing evidence that males are more likely to respond to typical incentives provided compared to females.

6.   SUMMARY AND CONCLUSION

6.1   Introduction

This study investigated whether financial reporting standards that permit greater judgement and discretion in measurements and application lead to an increase in earnings management. It builds on recent advances in the international accounting earnings management literature by demonstrating that accounting standards that permit greater latitude and flexibility and more discretion in measurement do not increase earnings management. Specifically, the study focused on the increased level of managerial judgement IFRS 9 allows and the impact this has on earnings management. The move from IAS 39 to IFRS 9 gave me a unique opportunity to test earnings management behaviour when more judgement and discretion are required. This behavioural study of earnings management complements the findings in the archival literature by addressing some shortcomings for example data limitations mentioned by López-Espinosa et al. (2021) in their research. Given the significant amount of time that was spent revising IAS 39 to be replaced by IFRS 9 and how important loan loss provisions (LLPs) are for banks' financial statements, this study's contribution to the literature to evaluate if the deficiencies in IAS 39 were addressed without increasing opportunities for earnings management, is critical. For many banks, the adoption of the expected credit loss (ECL) model will be the most significant accounting change they have experienced (Limani and Meta 2017; López-Espinosa et al. 2021). This study examined the individual's earnings management decision while much of the previous research has used archival data that examined firm-level impacts.

6.2   Summary of the main findings

This study contributes to and builds on recent advances in the international accounting earnings management literature. It demonstrated that accounting standards that permit greater latitude and flexibility and more discretion in measurement do not lead to an increase in earnings management. I did not find evidence that earnings management is easier under accounting standards requiring more judgement and discretion. This study complements archival earnings management research through this experiment in which I manipulated the accounting standard and earnings management incentives (emi) while holding all else constant. This was done to evaluate if the different levels of judgement and discretion in the different stages when determining an LLP lead to earnings management whether there is an incentive or not. In this experiment, I examined earnings management decisions that

individuals made, while much of the previous research used archival data that examined firm-level impacts. This study contributes to recent literature since limited research is available comparing the impact of allowing more managerial discretion in accounting standards, focusing on how a change in measurement requirements changes management's behaviour.

I first investigated if earnings management takes place in all the LLP stages or if earnings management takes place as a result of the different levels of judgement and discretion provided in the different stages. Management needs to apply the highest level of judgement and discretion in Stage two loan portfolios where Stage three loan portfolios are considered to be non-discretionary and non-performing loans. I found evidence that the different levels of judgement and discretion that are required influence the earnings management decision. Earnings management more likely takes place in Stage two LLP rather than in Stages one and three. I did not observe participants managing earnings when a loan is considered non-discretionary and non-performing and allocated to Stage three (represented by the more than 90–days age bucket in this study). I found evidence that management uses the judgement and discretion allowed in the different stages differently to manage earnings, irrespective of the accounting guidelines provided. This provides support that the level of judgement and discretion does influence the earnings management decision.

Next, I investigated how management uses LLPs differently when there is an incentive to manage earnings versus no incentive to manage earnings. I specifically examined if management will under-provision LLPs when there is upward earnings management pressure. Consistent with prior research, I found evidence that when earnings are low, participants with an incentive to increase earnings, increase LLPs less than participants who do not have an incentive to increase earnings. I found evidence that participants understate LLPs to obtain a higher bonus or to meet or beat analysts' earnings forecasts. I also found evidence that a bonus incentive and / or the analyst's forecasts are instruments that entice earnings management.

I, furthermore, investigated if the LLPs reported under IFRS 9 will be higher and more accurately predict the actual loan losses incurred than IAS 39, due to the increased judgement and discretions and the fact that IFRS 9 allows forward-looking information to be incorporated in the LLP decision. There is an expectation that the recognition of LLPs under

IAS 39's ICL model is delayed until after the losses have occurred. I did not find evidence that LLPs under IFRS 9 are higher compared to IAS 39. I also did not find a difference between IFRS 9 and IAS 39 in how close the total LLP prediction came to the real credit loss. My findings imply that reported LLP numbers based on IFRS 9 do not better reflect the economic reality.

Finally, I investigated whether, in the presence of upward earnings management pressure, earnings management through LLPs is more for managers reporting under an accounting standard that allows more managerial judgement and discretion compared to an accounting standard that allows less judgement and discretion. I did not find evidence that IFRS 9's ECL model, that increases the flexibility, judgement and discretion for determining LLPs for financial firms, is associated with greater earnings management relative to IAS 39's incurred credit losses (ICL) model. This finding suggests that moving toward accounting standards that allow managers to apply more discretion and judgement will not necessarily open the door to more earnings management. When analysing the bonus calculated under IAS 39 compared to IFRS 9, I found evidence that the change from IAS 39 to IFRS 9 was successful in allowing more managerial discretion for managers to maximise their personal gain without excessively managing earnings that could have a negative impact for shareholders. This finding in part addresses the concern raised by the Chairman of the IASB, that the changes in IFRS 9 do not create opportunities for earnings management. These results support the results by López-Espinosa et al. (2021). López-Espinosa et al. (2021)'s early evidence from analysing the data from a sample of systemically important banks in 74 countries suggests that the change to IFRS 9 did not increase opportunistic reporting. Taylor and Aubert (2022) found further evidence that income smoothing through LLPs decreased when reporting under IFRS 9.

When analysing the frequency of adjustment performed by participants reporting under IFRS 9 when compared to IAS 39, I found evidence that participants reporting under IFRS 9 emi and no emi experimental condition, frequency of adjustment was different. There was evidence that managers change their LLP calculation after observing the impact that the LLP has on earnings. The results appear to indicate that earnings managers reporting under IFRS 9 are more comfortable making adjustments to the LLP decision.

This study also contributes to the psychological aspects of earnings management research by focusing on the individual trainee accountant's earnings management decision, rather than at the firm level. As part of additional analysis and supporting prior research, I found a relationship between participants' gender and earnings management behaviour. I also found evidence that males are more likely to respond to incentives provided and take real action to achieve desired outcomes compared to females.

6.3 Limitations

The results of this study should be interpreted considering its limitations. This study focused on LLPs in a banking environment and the results may not be generalisable beyond the particular provision or industry examined. This study manipulated specific variables in a controlled hypothetical setting. Therefore, the data generated in this experiment may not be generalisable to actual business practice where several factors affect the banking industry. While the case study used was crafted to reflect a realistic banking environment, it still reflects a simplified version of the real world where managers may have access to more information to determine LLPs. As banks disclose more data, future empirical examinations of the change in the discretion allowed in determining LLPs will become possible.

The use of a website forfeited some experimental control that would have otherwise been available in a laboratory setting. Participants may therefore have been distracted, interrupted, or performed other tasks while completing the study, which may influence earnings management behaviour.

This experiment measured individual judgements in a hypothetical setting in only two different experimental years and the results may be different if tested over a longer period. In the real world, bank managers can spend more time using their judgement to determine the LLP decision and carefully apply their judgement to decide whether or not to manage earnings and the effect earnings management will have on their reputation. I have not accounted for the effect earnings management may have on the reputation of a participant in the design of this study. Future research may wish to investigate whether time and / or reputation may impact on the likelihood of earnings management.

The study includes two earnings management incentives, the bonus as well as analysts' earnings forecast. As the two incentives occur together in the treatment, it limited the study's

ability to say if one of the incentives has a stronger influence on the likelihood of management to manage earnings. It also limits the study's ability to say if either one of the incentives is enough to cause earnings management. This study did not investigate other earnings management reasons that might influence the earnings management decision. However, this may be a question of interest to researchers. Future researchers may wish to investigate which incentives have a stronger influence on the likelihood of management to manage earnings.

Participants may have lacked the knowledge and / or experience necessary to make LLP decisions. Rosman et al. (2012) found that individuals who lack experience do not engage in earnings management behaviour to maximise their bonus. The demographical analysis included in Tables 3 and 4 indicated that 50.4% of participants had average IFRS 9 LLP knowledge and 44.3% of participants had some experience with IFRS 9 LLPs. Audit trainees and supervisors as subjects may not respond in the same way as bank managers in their natural setting since auditors may have a different mindset. However, any effect of difference in participants to managers would be the same for both scenarios (fixed effect). This does not prevent meaningful comparisons between accounting standards. Earnings management was present as predicted by prior research. Even if participants manage earnings less than bank managers, the study still detects earnings management and therefore actual outcomes can only be more significant, not less. Future research may wish to investigate whether participants' level of knowledge and / or experience influence earnings management decisions when an accounting standard allows more judgement and discretion. For example, future research may also wish to replicate the study with bank managers as participants.

6.4   Summary and conclusion

When IFRS 9 was developed to replace IAS 39, the Chairman of the IASB warned that we must be careful that we do not introduce changes in IFRS 9 that address IAS 39 criticism but create opportunities for earnings management (Hoogervorst 2014). There is a concern that adopting accounting standards that require more judgement and discretion in measurement will allow greater earnings management.

I conducted an experiment to examine whether IFRS 9's ECL model of determining LLPs for financial firms was associated with greater earnings management relative to IAS 39's

ICL model. Given the significant amount of time that was spent revising IAS 39 to replace it with IFRS 9 and how important LLPs are for banks' financial statements, this study contributes to the literature by evaluating if the deficiencies in IAS 39 were addressed without increasing opportunities for earnings management. This study focused on the increased level of managerial judgement and the impact this has on earnings management.

By comparing LLP calculations for participants reporting under IFRS 9 versus IAS 39 who received earnings management incentive versus no earnings management incentive, this study provided important evidence that financial reporting standards that permit greater latitude and flexibility in measurements and application do not lead to an increase in earnings management. I found evidence that the change from IAS 39 to IFRS 9 was successful in allowing more managerial discretion for managers to maximise their personal gain without excessively managing earnings which could have a negative impact for shareholders. The results, therefore, suggest that the IASB was successful in limiting opportunities for earnings management, even when management is allowed more judgement and discretion in determining amounts. More broadly, this study contributes to and builds on recent advances in the international accounting earnings management literature by demonstrating the role that accounting standards, which permit greater latitude and flexibility and more discretion in measurement, play as a driver of earnings management. This study provides important evidence that financial reporting standards, which permit greater latitude and flexibility in measurements and application, do not lead to an increase in earnings management.

This study does show that, when given sufficient discretion within an accounting standard and providing participants with personal incentives, bank managers use such discretion to achieve personal gains. The ongoing accounting scandals (Steinhoff, Tongaat Hulett, VBS Bank and KPMG) in South Africa make this finding particularly timely to assist auditors in focusing audit effort on Stage two LLPs.

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APPENDIX 1: CASE STUDIES PRESENTED TO THE TREATMENT GROUPS

1. General instructions and research study consent form

1.1 <u>EMI</u>

Research Study Consent Form

Dear Prospective Participant,

You were specifically selected to participate in an academic research study conducted by Maryke Scheun, doctoral student from the Department of Accounting at the University of Pretoria. If you choose to participate, you will receive a participation fee.

This study uses a case study to examine how individuals make loan loss provision decisions and judgements. The focus of the study is on how the decisions and judgements are made, and there is a variety of acceptable answers (i.e. you need not focus on calculating a single correct answer). Your participation will take approximately 30 minutes. The case study consists of 3 stages. Stage 1 and 2 relate to one another and stage 3 consists of background information questions.

Your participation fee will be based on the bonus you receive in the case study. Your bonus determined in Currency Units (CU) will be converted into a Rand amount and will be paid in the form of a Takealot voucher. The estimated amount is anything between R150 and R220 depending on your outcome. To be eligible to collect the voucher you need to correctly answer a series of attention related questions during the case study.

Please note the following:
- The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings upon request.
- Please contact the supervisors, Dr W Badenhorst (wessel.badenhorst@up.ac.za) or Prof T Rupert (t.rupert@northeastern.edu) if you have any questions or comments regarding the study.
- Your participation in this research is very important to us. You may, however, choose for your answers/responses not to be included in the results used for publication in an academic journal, without having to explain why and without any negative consequences.
- The answers you give when completing the loan loss provision estimate decision will be treated as strictly confidential, and may be published in an academic journal. You will not be identified in person, in any resultant output or published academic journal, as a consequence of your participation and the answers/responses you have given. Please answer the questions as completely and honestly as possible.

In research of this nature, the supervisors may wish to contact respondents to verify the authenticity of data gathered by the researcher. It is understood that any personal contact details that you may provide will be used only for this purpose, and will not compromise your anonymity or the confidentiality of your participation.

Please sign the form to indicate that:
- ☐ You have read and understand the information provided above.
- ☐ You give your consent to participate in the study on a voluntary basis.

Next

1.2   No EMI

Research Study Consent Form

Dear Prospective Participant,

You were specifically selected to participate in an academic research study conducted by Maryke Scheun, doctoral student from the Department of Accounting at the University of Pretoria. If you choose to participate, you will receive a participation fee.

This study uses a case study to examine how individuals make loan loss provision decisions and judgements. The focus of the study is on how the decisions and judgements are made, and there is a variety of acceptable answers (i.e. you need not focus on calculating a single correct answer). Your participation will take approximately 30 minutes. The case study consists of 3 stages. Stage 1 and 2 relate to one another and stage 3 consists of background information questions.

Your participation fee will be paid in the form of a R200 Takealot voucher. To be eligible to collect the voucher, you need to correctly answer a series of attention related questions during the case study.

Please note the following:
- The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings upon request.
- Please contact the supervisors, Dr W Badenhorst (wessel.badenhorst@up.ac.za) or Prof T Rupert (t.rupert@northeastern.edu) if you have any questions or comments regarding the study.
- Your participation in this research is very important to us. You may, however, choose for your answers/responses not to be included in the results used for publication in an academic journal, without having to explain why and without any negative consequences.
- The answers you give when completing the loan loss provision estimate decision will be treated as strictly confidential, and may be published in an academic journal. You will not be identified in person, in any resultant output or published academic journal, as a consequence of your participation and the answers/responses you have given. Please answer the questions as completely and honestly as possible.

In research of this nature, the supervisors may wish to contact respondents to verify the authenticity of data gathered by the researcher. It is understood that any personal contact details that you may provide will be used only for this purpose, and will not compromise your anonymity or the confidentiality of your participation.

Please sign the form to indicate that:
- ☐ You have read and understand the information provided above.
- ☐ You give your consent to participate in the study on a voluntary basis.

[Next]

Phase one

2.   Specific instructions

Assume that you are the financial manager that has to calculate the loan loss provision using the information provided. You will be required to estimate what an appropriate loan loss provision should be. The information included in this case study for a fictitious bank is not necessarily all the information that you would use in an actual scenario. Please read all of the available information carefully so that you can make the best possible loan loss provision estimate based on the information you do have available. However, note that you are calculating a loan loss provision estimate and that there is therefore no exact (right or wrong) answer.

We want you to form an opinion based on the economic conditions described in the case study as would be the case during normal times.

The case study runs over two fictitious financial years (referred to as "stage 1" and "stage 2").

You may refer back to the information provided in the case study when making your decision in stage 1. However, once you continue with stage 2, you will not be able to go back to change your answers for stage 1.

In the next screen you will receive information about a medium size financial institution, Bank X, located in Country Y. Note that your estimated loan loss provision balance will be audited.

[Next]

3.   Company and salary information

Assume you are the financial manager that has to calculate the loan loss provision at a medium sized financial institution, Bank X, located in Country Y. Bank X's policy to determine loan loss provisions is in line with the accounting guidelines applicable in Country Y.

Your annual **salary** excluding your bonus is **CU 750 000**. Your bonus is calculated in two parts. The first part of your bonus is based on how well you estimated the loan loss provision balance compared to actual impaired loans (loan losses) suffered. The second part of your bonus will be determined by your manager.

Back   Next

4.   LLP information

4.1   IFRS 9

A loan loss provision is a provision for expected credit losses, also called a loss allowance. This provision is for uncollected loans and loan payments in order to cover potential loan losses, including bad loans and customer defaults, ensuring that loan losses are recorded when they occur.

Bank X recognises a loan loss provision when the **credit risk has increased significantly**.

When determining whether a significant increase in credit risk occurred, Bank X will investigate whether, at reporting date, the risk of default of the debtors has increased significantly compared to initial recognition.

Bank X takes into account **past events**, **current conditions** and **reasonable and supportable forward-looking information** that is available to determine the amount of the loan loss provision. **Expected future loan loss events** are **considered**.

Back   Next

4.2   IAS 39

A loan loss provision is a provision for expected credit losses, also called a loss allowance. This provision is for uncollected loans and loan payments in order to cover potential loan losses, including bad loans and customer defaults, ensuring that loan losses are recorded when they occur.

Bank X recognises a loan loss provision when there is **objective evidence of impairment as a result of a past event that occurred.**

When determining whether a past event occurred, Bank X will investigate whether, at reporting date, the debtors face liquidity problems, or are at risk to default, or are otherwise likely to be delinquent with their payments.

Bank X takes into account **past events**, **current conditions** and **historical loss experience** to determine the amount of the loan loss provision. Expected **future loan loss events** are **not considered**, no matter how likely.

Back   Next

4.3   No accounting standard

A loan loss provision is a provision for expected credit losses, also called a loss allowance. This provision is for uncollected loans and loan payments in order to cover potential loan losses, including bad loans and customer defaults, ensuring that loan losses are recorded when they occur.

Back   Next

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5.   Audit information

Bank X is audited by one of the big auditing firms with an excellent reputation and they have been the auditors for the past four years. All audit committee members of Bank X are independent with no disclosed relationship with the bank, all qualify as financial experts with broad experience and they meet frequently.

Back   Next

6.   Consensus analysts' earnings forecast and preliminary reported earnings

6.1   EMI

The consensus analysts' earnings forecast, **after the loan loss provision**, for Bank X was **CU 13,25** million for the 20X1 financial year as determined at 31 December 20X0. The preliminary reported earnings, **before the loan loss provision**, for Bank X based on the information in the financial reporting system for the year ending 31 December 20X1 is **CU 16,63** million.

Back   Next

7.   Debtors' book

Bank X has a total outstanding debtors' book balance as at 31 December 20X1 of CU 380 million, which mainly consists of loans to individuals. The total debtors' book is made up of the following outstanding amounts:

0 – 30 days	31 – 90 days	Over 90 days	Total
CU m	CU m	CU m	CU m
(75%) 285	(24%) 91,2	(1%) 3,8	(100%) 380

It is Bank X's policy to calculate the loan loss provision for outstanding debtor amounts as follows:

0 – 30 days	31 – 90 days	Over 90 days
0 – 0,5%	0,5 – 3,0%	3,0 – 100%

According to Bank X there is an increase in credit risk when debtors are 31 days past due. When contractual payments are 90 days past due, the account is considered to be in default. The loan loss provision calculated at the end of 31 December 20X0 (previous financial year) was CU 3,4 million of the total debtors' book of CU 360 million. The actual impaired loans (loan losses) for the 20X0 financial year was CU 3,21 million.

Back   Next

8.   Economic expectations

Bank X has been profitable for the last few years. At interim reporting date management estimated that Bank X's earnings will decrease with 2.5%.

Country Y's economy is expected to shrink and all indicators suggest that Country Y will be in a recession. Forward-looking economic expectations in Country Y as at the end of the current financial reporting period, 31 December 20X1, are pessimistic. Business and consumer confidence are decreasing and a negative economic growth trajectory is expected. The current unemployment rate is 29,0% and estimates available in Country Y at the reporting date suggest that the unemployment rate will increase to 31,0%, including a decline in personal income. The gross domestic product (GDP) growth is negative for the current year and is likely to remain negative in future.

Back   Next

9. Bonus information

9.1 EMI

As the financial manager your bonus for the year will be calculated in two parts based on your loan loss provision balance calculation. Your bonus will be determined after the financial statements were finalised, based on the option you qualify for, and will be paid during the next financial year.

	Option 1	Option 2	Option 3
Part one: if the actual loan loss write-off (uncollected debtors in the next financial year) is	between 0% – 5% different from the estimated loan loss provision you will receive a bonus of 0,5% of profit for the year	between 5,01% – 10% different from the estimated loan loss provision you will receive a bonus of 0,3% of profit for the year	more than 10% different from the estimated loan loss provision you will not receive the first part of your bonus
Part two: determined by your manager based on the allocated bonus pool.	The allocated bonus pool is based on the earnings growth of the bank and the profit in the current financial year. A percentage of the bonus pool will be allocated to you at the discretion of your manager based on your performance.		
Total bonus	**0,5% of profit** + % of **bonus pool** based on the profit	**0,3% of profit** + % of **bonus pool** based on the profit	% of **bonus pool** based on the profit

Back   Next

10. Journals and task

The following are possible journals that will be processed when you make a change to the loan loss provision. An increase in the loan loss provision balance will be recognised by debiting profit or loss (expense) and crediting the loan loss provision (statement of financial position) thereby decreasing profit for the year. A decrease in the loan loss provision balance will be recognised by debiting the loan loss provision balance (statement of financial position) and crediting profit or loss (income) thereby increasing profit for the year.

Your objective is to determine an appropriate loan loss provision based on the information provided. Please note that the loan loss provision balance will be audited.

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11. Questions

11.1 EMI

In line with the accounting guidelines applicable in Country Y, indicate the loan loss provision as a percentage of the debtors' book in each age category that you, as the financial manager of Bank X in Country Y, will provide in the current year (20X1) given the economic circumstances. When you click "calculate" the computer will automatically calculate the total loan loss provision in Currency Units as well as the reported earnings, after the loan loss provision for the year ending 31 December 20X1. When you are satisfied with your calculation, click "submit".

	0-30 Days	31-90 Days	Over 90 Days	Total
	CU m	CU m	CU m	CU m
	(75%) 285	(24%) 91,2	(1%) 3,8	(100%) 380
Loan loss provision	[ ] %	[ ] %	[ ] %	

`Calculate`

Case Study Information

Use below links to review the case study info

Salary
Loan loss provision guidelines
Audit Information
Analysts' earnings forecast and preliminary reported earnings
Debtors' book
Economic expectations
Bonus
Journals

Please indicate how confident you felt determining the loan loss provision for Bank X?

1 Not at all confident	2 Slightly confident	3 Fairly confident	4 Mostly confident	5 Very confident

The unemployment rate in Country Y was expected to

1 Increase	2 Decrease

The profit for the year after the loan loss provision was CU 15 527 000 . The loan loss provision you determined was CU 4 503 000 . The actual impaired loans (loan losses) for the 20X1 financial year was CU 6 830 000. Based on your determination of the loan loss provision compared to the actual impaired loans and the percentage of the bonus pool that was allocated to you by your manager, your bonus for the 20X1 financial year was determined as CU 116 000 . If you knew what the impact of the loan loss provision on your bonus was before you made your decision, would you have made a different loan loss provision decision?

1 Decrease LLP significantly	2 Decrease LLP moderately	3 No change	4 Increase LLP moderately	5 Increase LLP significantly

Do you think your colleague on a similar level as you, completing the same task, would make a different loan loss provision decision? If yes, how would it be different?

1 Decrease LLP significantly	2 Decrease LLP moderately	3 No change	4 Increase LLP moderately	5 Increase LLP significantly

The accounting guidelines applicable in Country Y when recognising a loan loss provision requires Bank X to take into account

○ objective evidence of impairment as a result of a past event that occurred. This includes historical loss experience. Expected future loan loss events are not considered.

○ credit risk that has increased significantly. This includes reasonable and supportable forward-looking information. Expected future loan loss events are considered.

Amounts indicated in the yellow blocks are determined by the participant's input.

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Please indicate the extent to which the information provided had an impact on your loan loss provision decision:

Information	Did not impact	Insignificant	Limited	Moderate	Significant
Analysts' earnings forecast for Bank X for the 31 December 20X1 year	1	2	3	4	5
Preliminary reported earnings before the loan loss provision for Bank X	1	2	3	4	5
Debtors' book balance outstanding amounts	1	2	3	4	5
Accounting guidelines applicable in Country Y	1	2	3	4	5
Loan loss provision calculated at the end of previous financial year	1	2	3	4	5
Country Y's economic environment	1	2	3	4	5
Expected future loan loss events	1	2	3	4	5

Submit

11.2   No EMI IFRS 9 and IAS 39

In line with the accounting guidelines applicable in Country Y, indicate the loan loss provision as a percentage of the debtors' book in each age category that you, as the financial manager of Bank X in Country Y, will provide in the current year (20X1) given the economic circumstances. When you click "calculate" the computer will automatically calculate the total loan loss provision in Currency Units as well as the reported earnings, after the loan loss provision for the year ending 31 December 20X1. When you are satisfied with your calculation, click "submit".

	0-30 Days	31-90 Days	Over 90 Days	Total
	CU m	CU m	CU m	CU m
	(75%) 285	(24%) 91,2	(1%) 3,8	(100%) 380
Loan loss provision	%	%	%	

Calculate

Case Study Information

Use below links to review the case study info

Salary
Loan loss provision guidelines
Audit Information
Debtors' book
Economic expectations
Journals

Please indicate how confident you felt determining the loan loss provision for Bank X?

1 Not at all confident	2 Slightly confident	3 Fairly confident	4 Mostly confident	5 Very confident

The unemployment rate in Country Y was expected to

1 Increase	2 Decrease

Do you think your colleague on a similar level as you, completing the same task, would make a different loan loss provision decision? If yes, how would it be different?

1 Decrease LLP significantly	2 Decrease LLP moderately	3 No change	4 Increase LLP moderately	5 Increase LLP significantly

The accounting guidelines applicable in Country Y when recognising a loan loss provision requires Bank X to take into account

○ objective evidence of impairment as a result of a past event that occurred. This includes historical loss experience. Expected future loan loss events are not considered.

○ credit risk that has increased significantly. This includes reasonable and supportable forward-looking information. Expected future loan loss events are considered.

Please indicate the extent to which the information provided had an impact on your loan loss provision decision:

Information	Did not impact	Insignificant	Limited	Moderate	Significant
Debtors' book balance outstanding amounts	1	2	3	4	5
Accounting guidelines applicable in Country Y	1	2	3	4	5
Loan loss provision calculated at the end of previous financial year	1	2	3	4	5
Country Y's economic environment	1	2	3	4	5
Expected future loan loss events	1	2	3	4	5

Submit

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11.3   No EMI no accounting standard

In line with the accounting guidelines applicable in Country Y, indicate the loan loss provision as a percentage of the debtors' book in each age category that you, as the financial manager of Bank X in Country Y, will provide in the current year (20X1) given the economic circumstances. When you click "calculate" the computer will automatically calculate the total loan loss provision in Currency Units as well as the reported earnings, after the loan loss provision for the year ending 31 December 20X1. When you are satisfied with your calculation, click "submit".

	0-30 Days	31-90 Days	Over 90 Days	Total
	CU m	CU m	CU m	CU m
	(75%) 285	(24%) 91,2	(1%) 3,8	(100%) 380
Loan loss provision	[ ] %	[ ] %	[ ] %	

[Calculate]

Case Study Information

Use below links to review the case study info

Salary
Loan loss provision guidelines
Audit Information
Debtors' book
Economic expectations
Journals

Please indicate how confident you felt determining the loan loss provision for Bank X?

1 Not at all confident	2 Slightly confident	3 Fairly confident	4 Mostly confident	5 Very confident

The unemployment rate in Country Y was expected to

1 Increase	2 Decrease

Do you think your colleague on a similar level as you, completing the same task, would make a different loan loss provision decision? If yes, how would it be different?

1 Decrease LLP significantly	2 Decrease LLP moderately	3 No change	4 Increase LLP moderately	5 Increase LLP significantly

Please indicate the extent to which the information provided had an impact on your loan loss provision decision:

Information	Did not impact	Insignificant	Limited	Moderate	Significant
Debtors' book balance outstanding amounts	1	2	3	4	5
Loan loss provision calculated at the end of previous financial year	1	2	3	4	5
Country Y's economic environment	1	2	3	4	5
Expected future loan loss events	1	2	3	4	5

[Submit]

Phase two

For the next part of the study, assume that it is now the following year (20X2) and you continue to work as a financial manager for Bank X.

Next

12.   Information

12.1   EMI

The loan loss provision calculated for 20X1 (previous financial year) as determined by you the financial manager after an audit adjustment was **CU 4 504 000** . The **actual impaired loans** (loan losses) for the 20X1 financial year was **CU 6 830 000** . Based on your determination of the loan loss provision compared to the actual impaired loans and the percentage of the bonus pool that was allocated to you by your manager, your **bonus** for the 20X1 financial year was determined as **CU 116 000** . The maximum bonus that you could have obtained was CU 185 000.

The consensus analysts' earnings forecast, **after the loan loss provision**, for Bank X for the 20X2 financial year as determined at 31 December 20X1 was **CU 13,2** million. The preliminary reported earnings, **before the loan loss provision**, is **CU 15,8** million for Bank X based on the information in the financial reporting system for the year ending 31 December 20X2.

Bank X has a total outstanding debtors' book balance as at 31 December 20X2 of CU 400 million, which mainly consists of loans to individuals. The total debtors' book is made up of the following outstanding amounts:

0 – 30 days	31 – 90 days	Over 90 days	Total
CU m	CU m	CU m	CU m
(74,5%) 298	(24%) 96	(1,5%) 6	(100%) 400

It is Bank X's policy to calculate the loan loss provision for outstanding debtor amounts as follows:

0 – 30 days	31 – 90 days	Over 90 days
0-0.5%	0.5-3.0%	3.0 - 100%

Country Y's economy is currently shrinking and all indicators suggest that Country Y is in a recession. Forward-looking economic expectations as at the end of the current financial reporting period, 31 December 20X2, remain pessimistic. Business and consumer confidence decreased in the current year with a negative economic growth trajectory. The current unemployment rate is 30,2% and estimates available in Country Y at the reporting date suggest that the unemployment rate will increase to 31,0%, including a decline in personal income. The gross domestic product (GDP) growth is negative for the current year and is likely to remain negative in future.

Your objective is to determine an appropriate loan loss provision based on the information provided. Please note that the loan loss provision balance will be audited.

Back   Next

Amounts indicated in the yellow blocks are determined by the participant's input.

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12.2   No EMI

The loan loss provision calculated for 20X1 (previous financial year) as determined by you the financial manager after an audit adjustment was CU 5 119 000 . The **actual impaired loans** (loan losses) for the 20X1 financial year was **CU 6 830 000** .

Bank X has a total outstanding debtors' book balance as at 31 December 20X2 of CU 400 million, which mainly consists of loans to individuals. The total debtors' book is made up of the following outstanding amounts:

0 – 30 days	31 – 90 days	Over 90 days	Total
CU m	CU m	CU m	CU m
(74,5%) 298	(24%) 96	(1,5%) 6	(100%) 400

It is Bank X's policy to calculate the loan loss provision for outstanding debtor amounts as follows:

0 – 30 days	31 – 90 days	Over 90 days
0-0.5%	0.5-3.0%	3.0 - 100%

Country Y's economy is currently shrinking and all indicators suggest that Country Y is in a recession. Forward-looking economic expectations as at the end of the current financial reporting period, 31 December 20X2, remain pessimistic. Business and consumer confidence decreased in the current year with a negative economic growth trajectory. The current unemployment rate is 30,2% and estimates available in Country Y at the reporting date suggest that the unemployment rate will increase to 31,0%, including a decline in personal income. The gross domestic product (GDP) growth is negative for the current year and is likely to remain negative in future.

Your objective is to determine an appropriate loan loss provision based on the information provided. Please note that the loan loss provision balance will be audited.

Back   Next

Amounts indicated in the yellow blocks are determined by the participant's input.

13.   Questions

In line with the accounting guidelines applicable in Country Y, indicate the loan loss provision as a percentage of the debtors' book in each age category you, as the financial manager of Bank X in Country Y, will provide in the current year (20X2) given the economic circumstances. When you click calculate the computer will automatically calculate the total loan loss provision in Currency Units as well as the reported earnings after the loan loss provision for the year ending 31 December 20X2. When you are satisfied with your calculation, click submit.

	0-30 Days	31-90 Days	Over 90 Days	Total
	CU m	CU m	CU m	CU m
	(74,5%) 298	(24%) 96	(1,5%) 6	(100%) 400
Loan loss provision	[ ] %	[ ] %	[ ] %	

Back   Calculate

13.1 EMI

Based on the information provided in the case study, the forward-looking economic expectations in Country Y is currently

1 Positive	2 Negative	3 Don't Remember

How important was the information about the economic environment the bank is experiencing, when you made your loan loss provision decision?

1 Not sure	2 Not important	3 Slightly important	4 Important	5 Very important

Do you think your colleague on a similar level as you, completing the same task, would make a different loan loss provision decision? If yes, how would it be different?

1 Decrease LLP significantly	2 Decrease LLP moderately	3 No change	4 Increase LLP moderately	5 Increase LLP significantly

In the coming financial (20X3) year, indicate how you would change (grant more loans by increasing or grant fewer loans by decreasing) the total debtors' book compared to the CU 400 million current debtors' book in the current financial year (20X2)?

Decrease   CU 400M   Increase

Please indicate how confident you felt determining the loan loss provision for Bank X?

1 Not at all confident	2 Slightly confident	3 Fairly confident	4 Mostly confident	5 Very confident

Please indicate the extent to which the information provided had an impact on your loan loss provision decision:

Information	Did not impact	Insignificant	Limited	Moderate	Significant
Analysts' earnings forecast for Bank X for the 31 December 20X2 year	1	2	3	4	5
Preliminary reported earnings before the loan loss provision for Bank X	1	2	3	4	5
Debtors' book balance outstanding amounts	1	2	3	4	5
Accounting guidelines applicable in Country Y	1	2	3	4	5
Loan loss provision calculated at the end of previous financial year	1	2	3	4	5
Country Y's economic environment	1	2	3	4	5
Expected future loan loss events	1	2	3	4	5

Submit

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13.2   No EMI IFRS 9 and IAS 39

Based on the information provided in the case study, the forward-looking economic expectations in Country Y is currently

1 Positive	2 Negative	3 Don't Remember

How important was the information about the economic environment the bank is experiencing, when you made your loan loss provision decision?

1 Not sure	2 Not important	3 Slightly important	4 Important	5 Very important

Do you think your colleague on a similar level as you, completing the same task, would make a different loan loss provision decision? If yes, how would it be different?

1 Decrease LLP significantly	2 Decrease LLP moderately	3 No change	4 Increase LLP moderately	5 Increase LLP significantly

In the coming financial (20X3) year, indicate how you would change (grant more loans by increasing or grant fewer loans by decreasing) the total debtors' book compared to the CU 400 million current debtors' book in the current financial year (20X2)?

Decrease   CU 400M   Increase

Please indicate how confident you felt determining the loan loss provision for Bank X?

1 Not at all confident	2 Slightly confident	3 Fairly confident	4 Mostly confident	5 Very confident

Please indicate the extent to which the information provided had an impact on your loan loss provision decision:

Information	Did not impact	Insignificant	Limited	Moderate	Significant
Debtors' book balance outstanding amounts	1	2	3	4	5
Accounting guidelines applicable in Country Y	1	2	3	4	5
Loan loss provision calculated at the end of previous financial year	1	2	3	4	5
Country Y's economic environment	1	2	3	4	5
Expected future loan loss events	1	2	3	4	5

Submit

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13.3 No EMI no accounting standard

Based on the information provided in the case study, the forward-looking economic expectations in Country Y is currently

1 Positive	2 Negative	3 Don't Remember

How important was the information about the economic environment the bank is experiencing, when you made your loan loss provision decision?

1 Not sure	2 Not important	3 Slightly important	4 Important	5 Very important

Do you think your colleague on a similar level as you, completing the same task, would make a different loan loss provision decision? If yes, how would it be different?

1 Decrease LLP significantly	2 Decrease LLP moderately	3 No change	4 Increase LLP moderately	5 Increase LLP significantly

In the coming financial (20X3) year, indicate how you would change (grant more loans by increasing or grant fewer loans by decreasing) the total debtors' book compared to the CU 400 million current debtors' book in the current financial year (20X2)?

Decrease   CU 400M   Increase

Please indicate how confident you felt determining the loan loss provision for Bank X?

1 Not at all confident	2 Slightly confident	3 Fairly confident	4 Mostly confident	5 Very confident

Please indicate the extent to which the information provided had an impact on your loan loss provision decision:

Information	Did not impact	Insignificant	Limited	Moderate	Significant
Debtors' book balance outstanding amounts	1	2	3	4	5
Loan loss provision calculated at the end of previous financial year	1	2	3	4	5
Country Y's economic environment	1	2	3	4	5
Expected future loan loss events	1	2	3	4	5

Submit

14. Post-experimental questions

Birth Year

Gender

Options: Male, Female, Other and Prefer not to disclose

Home Language

Options: English, Afrikaans, isiNdebele, isiXhosa, isiZulu, Sepedi, Sesotho, Setswana, siSwati, Tshivenda, Xitsonga and Other

What is the highest degree or level of education you have completed?

- ○ Bachelor's degree
- ○ Post graduate diploma
- ○ Initial Test of Competence (Part I - Qualifying Examination) – SAICA
- ○ Assessment of Professional Competence (Part II - Qualifying Examination) – SAICA
- ○ Professional qualification (CA(SA))
- ○ Master's degree / Master of Business Administration
- ○ Doctorate degree
- ○ Other

University

[dropdown ▾]

Options: Nelson Mandela University, North West University, Rhodes University, Stellenbosch University, University of Cape Town, University of the Free State, University of Johannesburg, University of KwaZulu Natal, University of Pretoria, University of South Africa (Unisa), University of the Western Cape, University of the Witwatersrand and Other

Current Employment Status

[dropdown ▾]

Options: Full-time student, First-year article clerk, Second-year article clerk, Third-year article clerk, Supervisor/assistant manager, Manager, Senior manager, Associate director and Other

What type of client / business are you spending most of your time working on?

- ○ Agribusiness
- ○ Automotive
- ○ Banking and financial services
- ○ Chemicals, energy, power and utilities and mining
- ○ Engineering and construction
- ○ Government and public services
- ○ Healthcare
- ○ Hospitality and leisure
- ○ Infrastructure
- ○ Manufacturing
- ○ Medical schemes, insurance and retirement funds
- ○ Non-profit organisations
- ○ Pharmaceuticals
- ○ Real estate
- ○ Retail and consumer
- ○ Small / private company
- ○ Technology, media and telecommunications
- ○ Transportation and logistics
- ○ Other

[Next]

How many times have you prepared and / or audited loan loss provision calculations (as part of your university studies or as part of your job description)?

▾

Please indicate your level of <u>knowledge</u> about IFRS 9 loan loss provisioning.

▾

Please indicate your level of <u>experience</u> with IFRS 9 loan loss provisioning.

▾

Please indicate your level of <u>knowledge</u> about IAS 39 loan loss provisioning.

▾

Please indicate your level of <u>experience</u> with IAS 39 loan loss provisioning.

▾

Back   Next

Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?

(Unwilling to take risks) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Fully prepared to take risks)

For each of the following statements, please indicate your likelihood of engaging in each activity or behaviour.

Information	Extremely Unlikely	Moderately Unlikely	Somewhat Unlikely	Not Sure	Somewhat Likely	Moderately Likely	Extremely Likely
Investing 5% of your annual income in a very speculative stock.	1	2	3	4	5	6	7
Betting a day's income on the outcome of a sporting event.	1	2	3	4	5	6	7
Investing 10% of your annual income in a new business venture.	1	2	3	4	5	6	7
Investing 10% of your annual income in bitcoin.	1	2	3	4	5	6	7
Starting your own business without any financial guarantee or support.	1	2	3	4	5	6	7

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APPENDIX 2: PILOT STUDY

1.   Introduction

The case studies were reviewed by several experienced researchers to ensure realism, relevance, accuracy and consistency. The case studies were pilot tested with a group of first to third-year audit trainees at an audit firm. The purpose of the pilot study was to gather preliminary data and evaluate the feasibility, duration and adverse events of the study, and improve the study's design. The pilot study also assisted to confirm if the accounting guidelines and economic environment manipulations had their intended effect. The pilot study further provided information about the time that a participant requires to complete the study. The instrument was revised based on this feedback.

2.   Research design (pilot study)

The pilot study employed a 2 × 2 × 2 (economic environment x accounting standard x earnings management incentive (emi)) factorial between-subjects design with two additional control conditions (economic environment only). Participants received the same case study information. However, the two additional control conditions did not receive any accounting guidelines (what information to take into account when determining a loan loss provision (LLP)) or emi (bonus and analyst earnings forecast). The purpose of the control group was to gather knowledge about LLPs without providing participants with any accounting guidelines. This enabled me to distinguish if the accounting guidelines caused the earnings management. This would help me get a clearer idea of whether participants were naturally more inclined to include forward-looking information (as is prescribed in IFRS 9) or if they based their LLP balance more on backward-looking evidence (as is prescribed in IAS 39) when no guidance was provided. This would help me to understand participants' assessments of the case-specific information. Participants were randomly assigned to one of ten treatment conditions and completed the case study on the website following the link https://phd-accounting.sudotech.co.za/web/signup. The experimental procedures of the pilot study were similar to the procedures of the final experiment. Table 2.1 provides a summary of the different experimental treatment groups participants were allocated to in the pilot study.

Table 2.1: Treatment groups in the pilot study

	Negative economic cycle			Positive economic cycle		
	IFRS 9	**IAS 39**	**No accounting standard**	**IFRS 9**	**IAS 39**	**No accounting standard**
No EMI	Neg-IFRS9-No EMI	Neg-IAS39-No EMI	Neg-No Acc-No EMI	Pos-IFRS9-No EMI	Pos-IAS39-No EMI	Pos-No Acc-No EMI
EMI	Neg-IFRS9-EMI	Neg-IAS39-EMI		Pos-IFRS9-EMI	Pos-IAS39-EMI	

To motivate participants to complete the pilot study, initially, five lucky participants were randomly selected to receive a Takealot voucher of R300[65] each. After two weeks, the response rate was very low with only 11% of the participants contacted who had completed the study and another incentive was added to give the first 100 participants who completed the pilot study a R50 Takealot voucher.

3.   Participants (pilot study)

Participants in the pilot study were 53 first to third-year audit trainees at an audit firm. The detailed breakdown of the participants in each experimental group can be seen in Table 2.2. One hundred and forty-three trainees started the case study, of which 70 completed the case study. One participant was removed as the same participant completed the study twice. Of the remaining 69 who completed the case study, 7 were removed because they failed the attention check questions and another 9 participants were removed as they failed the manipulation check questions. Fifty-three participants completed the study successfully by passing all the manipulation and attention checks. Audit trainees were selected for the pilot study because they have similar knowledge to the participants who would be used in the final study. I included first-year audit trainees to establish an appropriate sample size.

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[65] The dollar value of the Takealot voucher is $17.33 based on the average Rand to Dollar exchange rate as published by Oanda Currency Converter on 19 June 2020, the date the vouchers were emailed to the participants.

Participants in the pilot study had an average age of 25.8 years and were predominantly male (58%). Sixty percent of the participants had some experience preparing and / or auditing LLP calculations with the majority (92%) indicating that they had at least average knowledge of IFRS 9 LLPs. Thirty-four percent of the participants reported spending most of their time auditing banking and financial services clients.

Table 2.2: Reconciliation of number of participants who successfully completed the pilot study

Number of participants	Total	Neg-IAS39-EMI	Neg-IFRS9-EMI	Neg-IAS39-No EMI	Neg-IFRS9-No EMI	Neg-No Acc-No EMI	Pos-IAS39-EMI	Pos-IFRS9-EMI	Pos-IAS39-No EMI	Pos-IFRS9-No EMI	Pos-No Acc-No EMI
Registered for the case study	142	14	13	13	13	15	16	15	16	13	14
Did not complete the case study	(72)	(6)	(5)	(6)	(5)	(9)	(10)	(9)	(9)	(6)	(7)
Completed the case study more than once	(1)							(1)			
Failed the attention check question	(7)	(1)	(2)			(1)	(2)				(1)
Failed the manipulation check questions	(9)	(3)	(1)	(1)	(2)				(1)	(1)	
Completed successfully	53	4	5	6	6	5	4	5	6	6	6

To better understand the results of the pilot study, I conducted limited data analyses based on the observations.

4.   Results from the pilot study

4.1   Time

On average, participants took 3 hours and 17 minutes to complete the case study. There was no time limit for the participants and upon further investigation, 11 participants were identified who spent more than 3 hours on the case study as indicated in Table 2.3. It is unlikely that these participants spent 3 consecutive hours completing the case study and therefore they were removed from further analysis for time spent on the case study.

Table 2.3: Reconciliation of the number of participants used to analyse time spent on the pilot case study

	Nr of participants
Successfully completed the case study	53
Spent more than 3 hours completing the case study	(11)
Sample size for time spent completing case study	42

After the above participants were removed from the analysis, participants took an average of 54 minutes to complete the case study. On average, participants in the Pos-IAS39-No EMI group took the longest to complete the study in an average time of 1 hour and 39 minutes. On average, participants in the Neg-IAS39-EMI group spent the shortest time to complete the study in an average time of 21 minutes. I identified the Positive versus Negative economic environment as the biggest contributor to the difference in time between the different case studies. Students spent on average 22 minutes longer on the Positive economic environment case studies. It took participants 10 minutes longer to complete a case study where no accounting guidance was provided compared to IFRS 9 case studies, which participants completed in an average time of 51 minutes. Based on the above analysis and the low response rate, it was decided to exclude the positive economic environment experimental group from the final study.

Qualitative analyses of the participants' answers to the questions were conducted. I used open-ended questions in the pilot study to provide participants with an opportunity to explain their LLP decision as well as the decision to change the total debtors' book. The purpose of the open-ended questions was to determine if participants expected any additional

information that was not provided to assist them with making an LLP decision in the case study. Six participants mentioned that they did not feel they had enough information provided to them in Phase one to make an accurate LLP decision as the prior year's actual impaired loans were not part of the information provided. An LLP is a Statement of Financial Position calculation and only the change in the LLP balance is recorded in the Statement of Profit or Loss and Other Comprehensive Income. The actual impaired loan expense recognised in the Statement of Profit or Loss and Other Comprehensive Income is not included in the scope of the study and therefore was not previously mentioned in the provided information. To ensure participants do not spend an excessive amount of time searching for information that they feel is required to make the LLP decision, the prior period actual impaired loans amount was added to the case study. This also assisted participants in the emi group to estimate what their bonus will be, given the decision they made.

All open-ended questions were removed after the pilot study as the open-ended questions do not add any further value to the study (reasons why participants made LLP decisions are not part of the scope of this study). The above changes were expected to assist in reducing the amount of time a participant required to complete the case study.

4.2   Calculated bonus

The overall average bonus that was calculated in the case study for all participants was CU 33 622. Two participants' LLP calculations were unusually high and this caused their bonus to be negative as their earnings after LLP was a loss. The website was modified to limit the bonus calculation to R0, i.e., a participant cannot receive a negative bonus. Table 2.4 illustrates the changes in the number of participants used to analyse the bonus information.

Table 2.4: Reconciliation of number of participants used to analyse the bonus calculated

	Nr of participants
Successfully completed the case study	53
Negative bonus	(2)
Completed the case study after the website was updated with the new bonus calculation	(4)
Sample size for average bonus calculation	47

After the participants with a negative bonus calculation were removed from the analysis, the average bonus that was calculated in the case study for the remaining 47 participants was CU 51 170.

The bonuses in the negative economic cycle were on average higher than the positive economic cycle. The maximum bonus a participant obtained in the negative economic cycle was CU 82 000 and in the positive economic cycle CU 49 000. Table 2.5 provides a description of how the range of the difference between the participant's LLP calculation, compared to the actual pre-determined LLP to calculate the bonus, was changed.

Table 2.5: Changes made to how the bonus is calculated in the case study

Bonus information in negative economic environment in the pilot study	Bonus information in negative economic environment in the final study
A difference of CU 34 153 from the actual LLP will earn a bonus of 0,95% of the reported earnings after the LLP.	A difference of CU 340 000 from the actual LLP will earn a bonus of 1,36% of the reported earnings after the LLP.
A difference of between CU 34 836 to CU 68 305 from the actual LLP will earn a bonus of 0,75% of the reported earnings after the LLP.	A difference of between CU 340 001 to CU 680 000 from the actual LLP will earn a bonus of 1,1% of the reported earnings after the LLP.
A difference of more than CU 68 305 from the actual LLP will earn a bonus of 0,45% of the reported earnings after the LLP.	A difference of more than CU 680 001 from the actual LLP will earn a bonus of 0,75% of the reported earnings after the LLP.
Bonus information in positive economic environment in the pilot study	Bonus information in positive economic environment in the final study
A difference of CU 17 566 from the actual LLP will earn a bonus of 0,75% of the reported earnings after the LLP.	A difference of CU 175 000 from the actual LLP will earn a bonus of 1,1% of the reported earnings after the LLP.
A difference of between CU 17 917 to CU 35 131 from the actual LLP will earn a bonus of 0,55% of the reported earnings after the LLP.	A difference of between CU 175 001 to CU 350 000 from the actual LLP will earn a bonus of 0,9% of the reported earnings after the LLP.
A difference of more than CU 35 131 from the actual LLP will earn a bonus of 0,25% of the reported earnings after the LLP.	A difference of more than CU 350 001 from the actual LLP will earn a bonus of 0,6% of the reported earnings after the LLP.

When running the data on the updated bonus calculation values, the average bonus in the negative economic cycle is CU 78 875 and in the positive economic cycle CU 87 695. The maximum bonus a participant obtained in the negative economic cycle was CU 127 000 and

in the positive economic cycle CU 150 000. The positive economic cycle was, however, excluded from the final study.

4.3   Manipulation check questions

Fifty-three (77%) out of 69 participants who completed the case study passed the attention and manipulation checks. Seven (78%) out of 9 participants who failed the manipulation checks did so because they identified the incorrect accounting standard that was applicable in their scenario. Information relating to the accounting standard applicable in the scenario was changed to be displayed in bold in the final study to ensure a participant reads this information attentively. Unnecessary words in the question were deleted to avoid any confusion.

An attention check question requiring the participants to indicate the change in the unemployment rate included the following options: increase, decrease and stay the same. None of the scenarios included an option where the unemployment rate stayed the same and therefore this distractor was deleted. A manipulation check question[66] required that the participants indicate what the forward-looking economic expectations in Country Y would be. Options included positive, negative and neutral. Some of the participants in the positive economic environment indicated neutral as they felt that the positive economic environment information provided indicated a neutral economic expectation. The neutral option was removed.

4.4   Interpretation of the analyst earnings forecast and the estimated reported earnings information

A difference was identified between how the analyst earnings forecast information in Phase one, as indicated in Figure 2.1, and Phase two as indicated in Figure 2.2 as well as the estimated reported earnings before the LLP information provided in Phase one, as indicated in Figure 2.3, and Phase two as indicated in Figure 2.4, impacted on participants' LLP decision when reporting under IFRS 9 versus IAS 39. A potential reason for this could be due to the words 'forecast' or 'estimate' included in the question. IAS 39 case study states that 'Expected future loan loss events are not considered' and the word expected may

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[66] This was changed to an attention check question in the final study as only a negative economic environment was included in the final study.

therefore have caused confusion. Participants might have read the words and thought that forward-looking information should not be considered when reporting under IAS 39, even though the information relates to the current year.
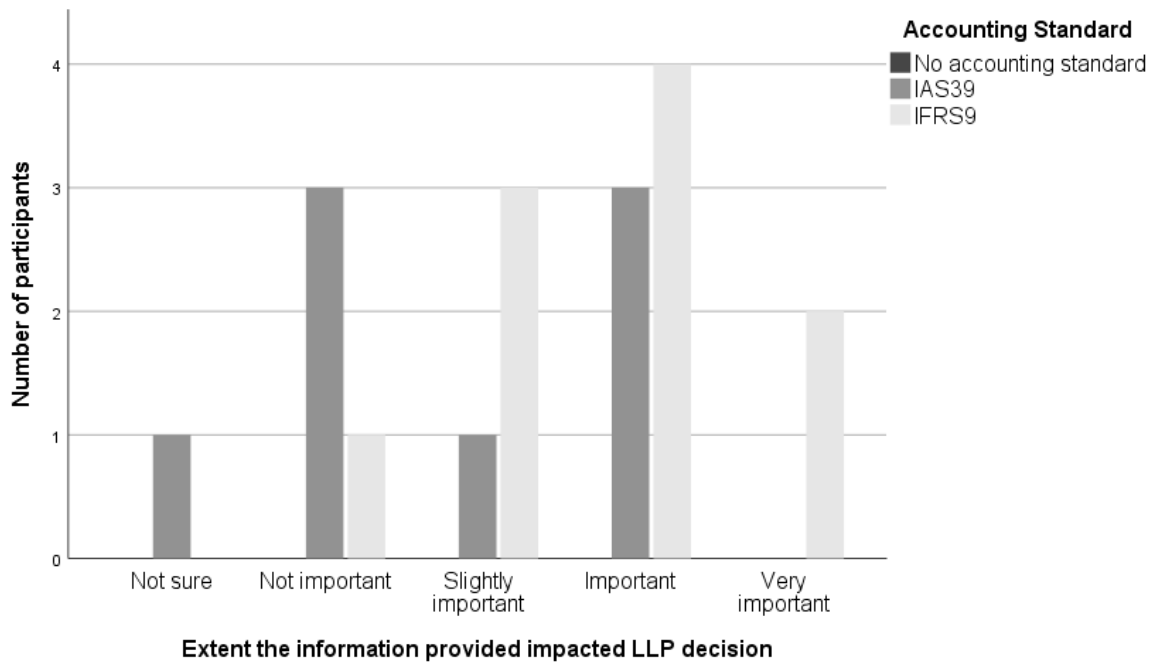
Figure 2.1: Bar chart illustrating how the analysts' earnings forecast information provided impacted on the LLP decision in the pilot study Phase one by accounting standard
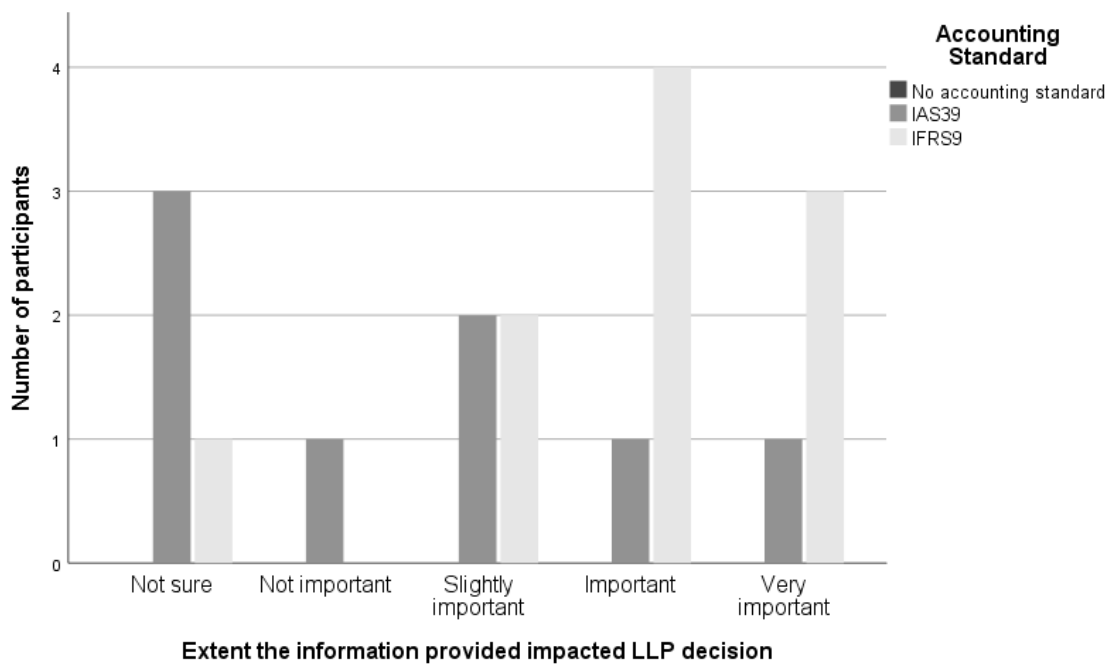
Figure 2.2: Bar chart illustrating how the analysts' earnings forecast information provided impacted on the LLP decision in the pilot study Phase two by accounting standard
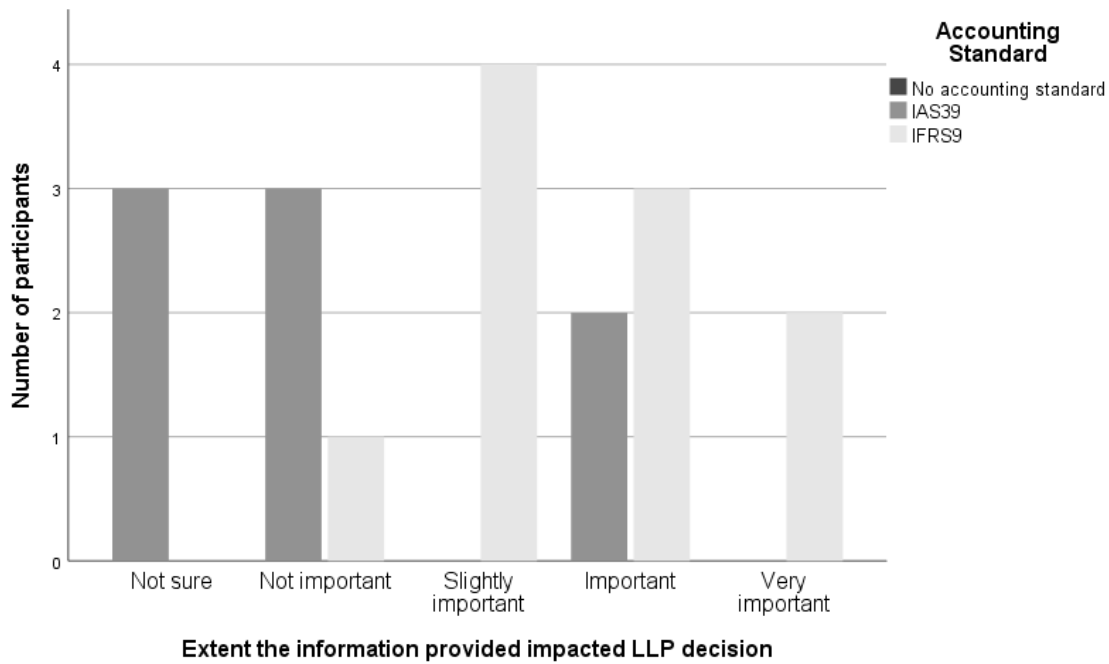
Figure 2.3: Bar chart illustrating how the estimated reported earnings before LLP information provided impacted on the LLP decision in the pilot study Phase one by accounting standard
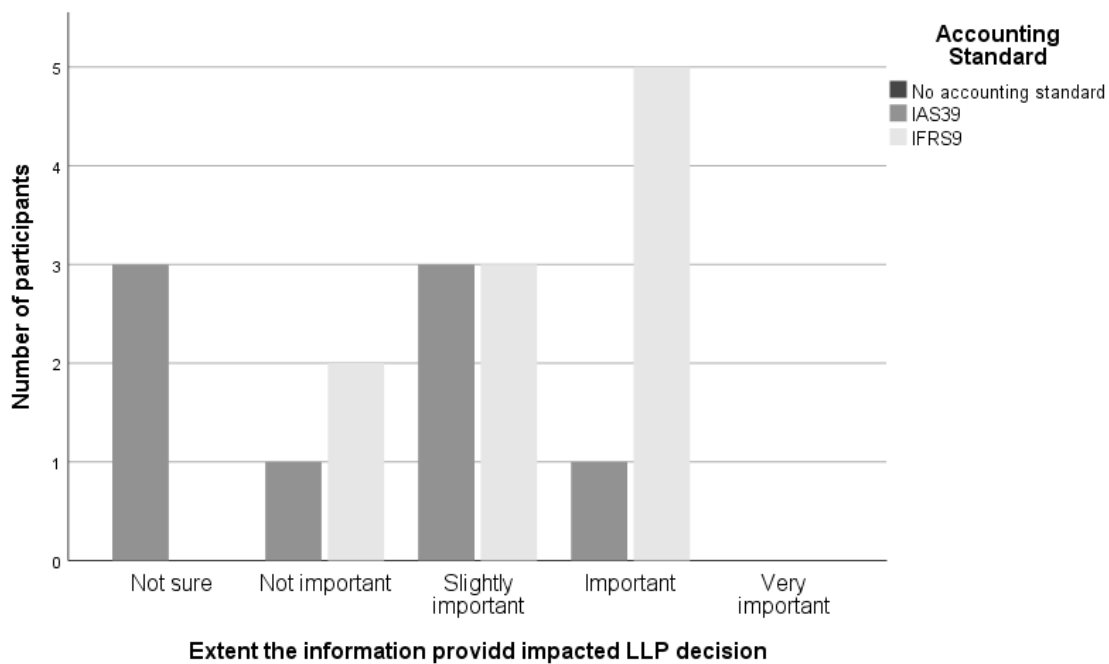
Figure 2.4: Bar chart illustrating how the estimated reported earnings before LLP information provided impacted on the LLP decision in the pilot study Phase two by accounting standard

I, therefore, provided participants with the date for the analysts' earnings forecast and changed the word 'estimated' reporting earnings to 'preliminary' reported earnings in the final case study and questions.

5. Risk preference measure

An individual's propensity to take risks was measured in the pilot study using three different sets of questions: a general risk question, an adjusted set of 13 risk-behaviour questions extracted from the Domain-Specific Risk-Taking Scale and a standard gambling question. The general risk question was measured on a 10-point scale ranging from 'Unwilling to take risks' (1) to 'Fully prepared to take risks' (10). For the Risk-Behaviour scale, respondents evaluated their likelihood of engaging in risky behaviours on a seven-point rating scale ranging from 'Extremely unlikely' (1) to 'Extremely likely' (7). The last question I used to measure participants' propensity to take risks in the pilot study is a standard gambling question where participants are given certain options in an investment decision where they can either double their money or lose half. This lottery experiment is often used in the literature to measure risk-taking behaviour (Adams and Funk 2012; Dohmen et al. 2006, 2011a; Dohmen et al. 2011b). Participants have the opportunity to invest nothing, 20%, 40%, 60%, 80% or everything. The currency was changed to make it relevant to South African participants. The higher (lower) the amount invested in the lottery, the riskier (safer) the option and the higher the participants' risk tolerance (perceived-risk aversion).

Table 2.6 indicated that of the 69 participants who completed the case study, seven participants who failed the attention check questions were removed when performing the analysis. As these participants may also have answered the risk questions inappropriately the remaining sample size used to evaluate the risk questions was 62,[67] as indicated in Table 2.6. The Cronbach's alpha for the individual's propensity to take risks was .736, indicating good reliability.

Table 2.6: Reconciliation of the number of participants used to analyse the risk-behaviour questions

	Nr of participants
Completed the case study	69
Failed the attention check question	(7)
Sample size for risk behaviour	62

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[67] The statistical inferences remain unchanged when I exclude participants who failed the manipulation checks.

An analysis was performed to determine the most appropriate risk-measure questions to include in the final study. Questions that correlate well with all of the other questions, as well as questions that correlate well with the overall questionnaire, were identified. A question that decreased the Cronbach's Alpha was identified and removed.

5.1   Factor analysis of risk preferences

Based on the exploratory factor analysis five factors were identified. Based on a further parallel analysis included in Table 2.7, two factors were identified, investment risk-taking behaviour and other (general) risk-taking behaviour. Loadings ranged from -0.514 to 0.646 with an eigenvalue of 1.887 and explained 35% of the total variance in responses.

Table 2.7: Variance explained based on a two-factor extraction

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3,345	22,300	22,300	3,345	22,300	22,300	3,173
2	1,887	12,577	34,877	1,887	12,577	34,877	2,236
3	1,369	9,128	44,006				
4	1,234	8,228	52,234				
5	1,202	8,011	60,245				
6	0,942	6,281	66,526				
7	0,887	5,912	72,438				
8	0,814	5,427	77,865				
9	0,730	4,869	82,733				
10	0,666	4,440	87,174				
11	0,489	3,258	90,432				
12	0,451	3,008	93,440				
13	0,370	2,465	95,905				
14	0,331	2,209	98,114				
15	0,283	1,886	100,000				
Extraction Method: Principal Component Analysis.							
a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.							

Because investment risk preference is a more likely driver of participants' decision to manage earnings, I chose to measure a participant's risk preference using the questions that loaded on the investment risk preference. Other (general) risk-taking behaviour

questions in the adjusted set of 13 risk-behaviour questions that loaded together on one factor, as well as the standard gambling question and the questions 'Going on a vacation in a third-world country without pre-arranged travel and hotel accommodations' and 'Speeding on the highway when you know there is traffic police officer present', were subsequently excluded from the risk-preference measure in the final study. These questions do not relate to investment or financial risk, as they do not measure what I intended to measure, namely the investment risk-taking behaviour of participants.

All the above analyses were performed again. The Cronbach's alpha for the individual's propensity to take risks on the remaining six questions was .665, still indicating good reliability.

6. Limitations

The pilot study also had a low response rate as indicated in Table 2.2. A total of 53 participants completed the pilot study successfully and the number of participants range from 4 to 6 in each experimental treatment group. I was not able to perform further analysis on the data obtained as small sample sizes lead to low statistical power as well as an inflated effect size estimation.

7. Conclusion from the pilot study

The pilot study helped identify potential issues with the case study that has since been updated on the website and in the dissertation to improve the study's design.

APPENDIX 3: PARTICIPANT-RELATED DESCRIPTIVE STATISTICS

Table 3.1: Participant-related descriptive statistics

Type	no_standard-no_emi (n=21) Mean or count	SD or percent	IAS39-no_emi (n=29) Mean or count	SD or percent	IAS39-emi (n=26) Mean or count	SD or percent	IFRS9-no_emi (n=29) Mean or count	SD or percent	IFRS9-emi (n=28) Mean or count	SD or percent	Total (n=133) Mean or count	SD or percent	p-values[a]
Gender	1.38	0.498	1.62	0.494	1.42	0.504	1.83	0.602	1.50	0.509	1.56	0.542	**0.017**
Male	13	61.9%	11	37.9%	15	57.7%	7	24.1%	14	50.0%	60	45.1%	
Female	8	38.1%	18	62.1%	11	42.3%	21	72.4%	14	50.0%	72	54.1%	
Prefer not to disclose	0	0.0%	0	0.0%	0	0.0%	1	3.4%	0	0.0%	1	0.8%	
Age	25.43	2.063	26.00	3.082	26.35	2.799	25.72	2.086	25.68	2.894	25.85	2.621	0.786
Employment status	3.86	1.108	4.07	1.412	4.27	1.614	4.14	1.481	4.14	1.458	4.11	1.421	0.907
First-year article clerk	1	4.8%	1	3.4%	1	3.8%	1	3.4%	0	0.0%	4	3.0%	
Second-year article clerk	9	42.9%	9	31.0%	6	23.1%	11	37.9%	12	42.9%	47	35.3%	
Third-year article clerk	5	23.8%	14	48.3%	13	50.0%	8	27.6%	8	28.6%	48	36.1%	
Supervisor	4	19.0%	1	3.4%	3	11.5%	5	17.2%	4	14.3%	17	12.8%	
Manager	2	9.5%	2	6.9%	1	3.8%	2	6.9%	2	7.1%	9	6.8%	
Senior manager	0	0.0%	1	3.4%	0	0.0%	1	3.4%	1	3.6%	3	2.3%	
Other	0	0.0%	1	3.4%	2	7.7%	1	3.4%	1	3.6%	5	3.8%	
Highest qualification	4.05	1.532	3.83	1.891	3.92	1.495	4.24	1.596	4.36	2.129	4.08	1.745	0.782
Matric	1	4.8%	2	6.9%	1	3.8%	0	0.0%	4	14.3%	8	6.0%	
Bachelor's degree	4	19.0%	9	31.0%	6	23.1%	7	24.1%	2	7.1%	28	21.1%	
Postgraduate diploma	1	4.8%	1	3.4%	2	7.7%	1	3.4%	3	10.7%	8	6.0%	
Initial Test of Competence (Part I - Qualifying Examination) – SAICA	6	28.6%	4	13.8%	5	19.2%	8	27.6%	6	21.4%	29	21.8%	
Assessment of Professional Competence (Part II - Qualifying Examination) – SAICA	5	23.8%	9	31.0%	9	34.6%	6	20.7%	3	10.7%	32	24.1%	
Professional qualification (CA(SA))	4	19.0%	3	10.3%	3	11.5%	5	17.2%	6	21.4%	21	15.8%	
Master's degree / Master of Business Administration	0	0.0%	0	0.0%	0	0.0%	2	6.9%	3	10.7%	5	3.8%	
Certificate in Accounting	0	0.0%	1	3.4%	0	0.0%	0	0.0%	1	3.6%	2	1.5%	

Type	no_standard-no_emi (n=21)		IAS39-no_emi (n=29)		IAS39-emi (n=26)		IFRS9-no_emi (n=29)		IFRS9-emi (n=28)		Total (n=133)		
	Mean or count	SD or percent	Mean or count	SD or percent	Mean or count	SD or percent	Mean or count	SD or percent	Mean or count	SD or percent	Mean or count	SD or percent	p-values[21]
University obtain your highest qualification	9.19	2.786	9.79	2.569	9.42	2.671	8.55	3.960	8.93	4.371	9.17	3.370	0.694
Language	2.38	2.539	2.62	2.274	1.81	1.201	3.24	3.008	1.89	2.043	2.41	2.326	0.130
English	10	47.6%	8	27.6%	12	46.2%	11	37.9%	16	57.1%	57	42.9%	
Afrikaans	8	38.1%	16	55.2%	12	46.2%	7	24.1%	10	35.7%	53	39.8%	
isiXhosa	0	0.0%	0	0.0%	0	0.0%	4	13.8%	0	0.0%	4	3.0%	
isiZulu	1	4.8%	0	0.0%	1	3.8%	2	6.9%	0	0.0%	4	3.0%	
Sepedi	0	0.0%	3	10.3%	1	3.8%	2	6.9%	1	3.6%	7	5.3%	
Setswana	0	0.0%	1	3.4%	0	0.0%	1	3.4%	0	0.0%	2	1.5%	
siSwati	1	4.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.8%	
Tshivenda	1	4.8%	1	3.4%	0	0.0%	1	3.4%	0	0.0%	3	2.3%	
Xitsonga	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	3.6%	1	0.8%	
Shona	0	0.0%	0	0.0%	0	0.0%	1	3.4%	0	0.0%	1	0.8%	
Client / business spending most time	9.24	6.204	11.07	5.663	10.81	6.381	9.97	6.500	11.82	6.074	10.65	6.133	0.624
Knowledge IFRS9 LLP	2.86	0.854	2.72	0.841	3.04	0.916	3.31	0.930	3.00	0.861	2.99	0.892	0.142
Experience with IFRS9 LLPs	2.52	0.814	2.07	0.961	2.31	0.884	2.55	0.910	2.29	0.763	2.34	0.878	0.240
Number of times prepared / audited LLP calculations	1.90	0.700	1.90	0.939	2.27	1.002	2.03	0.731	1.71	0.659	1.96	0.829	0.160
Knowledge IAS39 LLP	2.00	0.894	1.97	0.865	2.27	0.827	2.21	1.048	1.93	0.813	2.08	0.893	0.530
Experience with IAS39 LLPs	1.81	0.873	1.48	0.688	1.58	0.758	1.62	0.728	1.43	0.690	1.57	0.741	0.446
General willingness to take risks	5.43	1.748	4.97	1.899	5.62	2.080	5.93	2.034	4.93	2.176	5.37	2.013	0.272
Investing 5% of your annual income in speculative stock	3.76	1.895	4.10	1.915	3.77	2.178	4.14	2.013	3.54	1.934	3.87	1.975	0.765
Betting income on the outcome of a sporting event	1.38	0.740	1.76	1.300	2.08	1.742	1.72	1.386	1.96	1.644	1.80	1.424	0.517
Investing 10% of income in a new business venture	3.95	1.746	4.07	1.944	4.35	1.788	4.21	1.934	3.79	1.950	4.08	1.865	0.838
Investing 10% of income in bitcoin	2.52	1.601	3.07	2.017	2.35	1.599	3.48	1.805	3.04	2.009	2.92	1.849	0.167

Type	no_standard-no_emi (n=21)		IAS39-no_emi (n=29)		IAS39-emi (n=26)		IFRS9-no_emi (n=29)		IFRS9-emi (n=28)		Total (n=133)		p-values[21]
	Mean or count	SD or percent	Mean or count	SD or percent	Mean or count	SD or percent	Mean or count	SD or percent	Mean or count	SD or percent	Mean or count	SD or percent	
Starting business without financial guarantee or support	3.00	2.049	3.48	2.148	3.92	1.831	3.45	2.293	3.25	2.205	3.44	2.108	0.647
Sense of loyalty to the accounting profession	3.38	1.746	3.86	1.827	3.46	1.749	4.17	1.794	4.71	1.802	3.95	1.825	0.051
Sense of responsibility to the accounting profession	3.76	2.022	3.97	1.918	3.65	2.077	4.41	2.044	4.11	2.025	4.00	2.004	0.669
Sense of guilt to leave the accounting profession	2.90	1.758	3.00	2.053	2.65	1.719	3.17	1.891	3.21	2.097	3.00	1.903	0.830
Sense of commitment and responsibility to stay in profession	2.86	1.740	2.69	1.815	2.96	1.865	2.93	1.710	3.32	1.982	2.95	1.813	0.772
Time used to complete case study (dd:hh:mm:ss)	2 07:00:20	8 09:43:55.4	4 07:39:47	11 13:02:03	1 02:30:38	4 09:18:53.7	3 09:46:10	8 18:51:07.8	5 22:59:32	17 14:15:04	3 12:24:14	11 04:25:54	0.573

a. Throughout this study, reported p-values are two-tailed, unless noted otherwise.

APPENDIX 4: TESTING FOR BASIC ASSUMPTIONS

To ensure that ANOVA is a valid test procedure I can use, I performed tests for basic assumptions on the loan loss provision (LLP) dependent variables.

1.   Normality

Table 4.1: Tests of normality of the distribution

			Kolmogorov-Smirnov[a]		Shapiro-Wilk	
Dependent variable	Treatment group	df	Statistic	Sig.	Statistic	Sig.
P1 CU 31–90 Days	negative-no_standard-no_emi	21	0.328	**0.000**	0.797	**0.001**
	negative-IAS39-no_emi	29	0.177	**0.020**	0.908	**0.015**
	negative-IAS39-emi	26	0.173	**0.044**	0.947	0.200
	negative-IFRS9-no_emi	29	0.233	**0.000**	0.891	**0.006**
	negative-IFRS9-emi	28	0.145	0.139	0.950	0.198
P1 Total LLP	negative-no_standard-no_emi	21	0.177	0.083	0.918	0.080
	negative-IAS39-no_emi	29	0.201	**0.004**	0.816	**0.000**
	negative-IAS39-emi	26	0.154	0.117	0.922	0.051
	negative-IFRS9-no_emi	29	0.200	**0.004**	0.851	**0.001**
	negative-IFRS9-emi	28	0.150	0.108	0.936	0.086
P2 CU LLP 31–90 Days	negative-no_standard-no_emi	21	0.285	**0.000**	0.893	**0.025**
	negative-IAS39-no_emi	29	0.252	**0.000**	0.916	**0.025**
	negative-IAS39-emi	26	0.168	0.058	0.884	**0.007**
	negative-IFRS9-no_emi	29	0.328	**0.000**	0.725	**0.000**
	negative-IFRS9-emi	28	0.248	**0.000**	0.910	**0.020**
P2 Total LLP	negative-no_standard-no_emi	21	0.145	.200[*]	0.942	0.242
	negative-IAS39-no_emi	29	0.120	.200[*]	0.964	0.412
	negative-IAS39-emi	26	0.141	0.198	0.904	**0.019**
	negative-IFRS9-no_emi	29	0.188	**0.010**	0.858	**0.001**
	negative-IFRS9-emi	28	0.191	**0.010**	0.861	**0.002**
*. This is a lower bound of the true significance.						
a. Lilliefors Significance Correction						

To test normality, I used two statistical tests, the Kolmogorov-Smirnov and Shapiro-Wilk tests. As seen in Table 4.1, both tests indicate that the distribution of the P1 Final LLP 31–90 Days, P1 Final Total LLP, P2 Final LLP 31–90 Days and P2 Final Total LLP variables

are statistically different from a normal distribution for some of the treatment groups. Field (2012) does warn that when interpreting the results, care needs to be taken since it is easy to get significant results from small deviations from normality with big samples. Violations of the assumption of normality have less of an impact when the sample size is bigger (Hair 2010). It can be assumed that the sample distribution's approach approximates normality when the sample consists of 30 or more (Field 2009). As can be seen from Table 4.1, the sample sizes are close to 30 in each group, except for the negative-no_standard-no_emi control group. When the sample size is moderate, modest violations can still be accommodated if the differences are due to skewness rather than outliers (Hair 2010). As discussed in section 5.3.2, outliers were deleted from my sample.

To determine if the distribution of the dependent variables is approximately normal, I also looked at the skewness and kurtosis (the further the value is from zero, the more likely the data is not normally distributed) (Field 2009).

Table 4.2: Determination of normal distribution

Dependent variable	Treatment group	Skewness	Kurtosis
P1 CU 31–90 Days	negative-no_standard-no_emi	1.290	1.800
	negative-IAS39-no_emi	0.573	0.563
	negative-IAS39-emi	0.265	-0.783
	negative-IFRS9-no_emi	0.247	**1.961**
	negative-IFRS9-emi	-0.289	1.141
P1 Total LLP	negative-no_standard-no_emi	-0.624	**2.015**
	negative-IAS39-no_emi	1.648	**4.462**
	negative-IAS39-emi	0.822	0.157
	negative-IFRS9-no_emi	1.671	**6.821**
	negative-IFRS9-emi	-0.257	0.996
P2 CU LLP 31–90 Days	negative-no_standard-no_emi	0.536	0.910
	negative-IAS39-no_emi	0.691	0.313
	negative-IAS39-emi	-0.634	-0.749
	negative-IFRS9-no_emi	-0.542	**5.278**
	negative-IFRS9-emi	0.101	**2.367**
P2 Total LLP	negative-no_standard-no_emi	-0.519	1.871
	negative-IAS39-no_emi	0.199	0.670
	negative-IAS39-emi	-1.258	1.879
	negative-IFRS9-no_emi	0.773	**5.047**
	negative-IFRS9-emi	-0.228	**5.323**

I take comfort in the fact that the LLP dependent variables are not highly skewed as indicated in Table 4.2, since the skewness is below the upper threshold of 1.96. For all the LLP dependent variables, the tails of the distribution differ from the tails of a normal distribution in certain experimental groups (at $p < .05$).

I also relied on Q-Q Plots to assess normality for the dependent variables. Visual inspection of the data revealed a fairly straight line for P1 Final LLP 31–90 Days, P1 Final Total LLP, P2 Final LLP 31–90 Days and P2 Final Total LLP. I therefore will be able to perform an ANOVA procedure with fixed factors even though the assumption of normality is violated as indicated in Table 4.2. This is possible as I have sufficient observations in each sample, my sample sizes are fairly equal and the distributions are not highly skewed. Recent studies have found that the F-test is robust, even if data has a non-normal distribution (Blanca Mena et al. 2017).

2. Heteroscedasticity

Table 4.3: Test of homogeneity of variance of dependent variables

Dependent variable		Levene Statistic	df1	df2	Sig.
P1 CU 31–90 Days	Based on Median	0.923	4	128	0.453
P1 Total LLP	Based on Median	0.997	4	128	0.412
P2 CU LLP 31–90 Days	Based on Median	1.970	4	128	0.103
P2 Total LLP	Based on Median	1.502	4	128	0.205

As presented in Table 4.3, Levene's Test for Equality of Variances indicates that LLP dependent variables of the P1 Final LLP 31–90 Days, P1 Final Total LLP, P2 Final LLP 31–90 Days and P2 Final Total LLP have approximately equal variances in the sample groups. I can, therefore, assume that the samples have 'homogeneity of variance'. I used the Levene statistic based on the median. The median is considered robust (Brown and Forsythe 1974).

3. Independence

Independence of the observations was achieved by the website randomly assigning participants to one of five treatment groups. Participants completed the case study online, in their own time, minimizing the risk of participants influencing each other in a business or classroom setting or a specific treatment group being exposed to distractions. Participants

had different levels of experience and 12 different accounting and auditing firms in South Africa participated in the study to help establish the independence of the observations.

Table 4.4: Homogeneity of variances test to determine if responses are independent across groups

Participant responses	Levene Statistic	df1	df2	Sig.
Age	0.698	4	128	0.595
Gender	0.881	4	128	0.477
Employment Status	0.238	4	128	0.917
Highest Qualification	1.549	4	128	0.192
University	1.698	4	128	0.154
Language	3.631	4	128	**0.008**
Type of Client	0.229	4	128	0.922
IFRS9LLPKnowledge	0.408	4	128	0.802
IFRS9LLPExperience	0.268	4	128	0.898
Times Prepared or Audited LLP Calculations	1.798	4	128	0.133
IAS39 LLP Knowledge	1.765	4	128	0.140
IAS39 LLP Experience	1.130	4	128	0.345
Risk Taking	0.363	4	128	0.835
Investing 5% of your annual income in a very speculative stock	0.718	4	128	0.581
Betting a day's income on the outcome of a sporting event	4.184	4	128	**0.003**
Investing 10% of your annual income in a new business venture	0.161	4	128	0.958
Investing 10% of your annual income in bitcoin	1.493	4	128	0.208
Starting your own business without any financial guarantee or support	1.374	4	128	0.247
I am in the accounting profession because of a sense of loyalty to it	0.159	4	128	0.959
I feel a responsibility to the accounting profession to continue in it	0.116	4	128	0.977
I would feel guilty if I left the accounting profession	0.658	4	128	0.622
I believe people who have been trained in a profession have a responsibility	0.119	4	128	0.975

Homogeneity of Variances documented in Table 4.4 was tested based on the demographic information about the participants to determine if responses are independent of one another and equally distributed across the different samples. The means of the absolute differences

of variables Language and Betting a day's income on the outcome of a sporting event are not equal across the five treatment groups. To deal with this Language and Betting a day's income on the outcome of a sporting event were added as a covariate in the further analysis as discussed in section 5.6.1.2.

4. Test for basic assumptions on other variables

Further analysis was performed on other dependent variables that are not part of the main LLP dependent variables analysis, but part of the alternative earnings management measure discussed in section 5.6.4. These alternative measures include the outcome of the LLP dependent variables (bonus) and the number of calculation clicks, also referred to as the frequency of adjustment. I also performed tests for basic assumptions with the sample used in the main analysis (indicated in Table 15) on these variables to ensure that ANOVA is a valid test procedure I can use.

4.1 Normality and heteroscedasticity of other earnings management variables

Table 4.5: Tests of normality of other variables (not LLP)

Dependent variable	Treatment group	df	Kolmogorov-Smirnov[a]		Shapiro-Wilk	
			Statistic	Sig.	Statistic	Sig.
P1 Calculated Bonus	negative-no_standard-no_emi	21	0.261	0.001	0.843	0.003
	negative-IAS39-no_emi	29	0.189	0.010	0.926	0.044
	negative-IAS39-emi	26	0.210	0.005	0.911	0.028
	negative-IFRS9-no_emi	29	0.188	0.010	0.893	0.007
	negative-IFRS9-emi	28	0.158	0.070	0.917	0.029
P1 Nr of Calc	negative-no_standard-no_emi	21	0.297	0.000	0.775	0.000
	negative-IAS39-no_emi	29	0.327	0.000	0.504	0.000
	negative-IAS39-emi	26	0.248	0.000	0.695	0.000
	negative-IFRS9-no_emi	29	0.268	0.000	0.765	0.000
	negative-IFRS9-emi	28	0.322	0.000	0.705	0.000
P2 Nr of Calc	negative-no_standard-no_emi	21	0.420	0.000	0.619	0.000
	negative-IAS39-no_emi	29	0.352	0.000	0.588	0.000
	negative-IAS39-emi	26	0.185	0.022	0.845	0.001
	negative-IFRS9-no_emi	29	0.360	0.000	0.511	0.000
	negative-IFRS9-emi	28	0.288	0.000	0.731	0.000
a. Lilliefors Significance Correction						

To test normality, I used two statistical tests, the Kolmogorov-Smirnov and Shapiro-Wilk tests. As seen in Table 4.5, both tests indicate that the distribution of the variables is statistically different from a normal distribution for the treatment groups.

Table 4.6: Determination of normal distribution

Dependent variable	Treatment group	Skewness	Kurtosis
P1 Calculated Bonus	negative-no_standard-no_emi	1.045	0.037
P1 Calculated Bonus	negative-IAS39-no_emi	-0.520	**2.229**
P1 Calculated Bonus	negative-IAS39-emi	0.722	1.889
P1 Calculated Bonus	negative-IFRS9-no_emi	0.066	1.057
P1 Calculated Bonus	negative-IFRS9-emi	-0.063	-0.389
P1 Nr of Calc	negative-no_standard-no_emi	1.247	0.387
P1 Nr of Calc	negative-IAS39-no_emi	**3.778**	**16.377**
P1 Nr of Calc	negative-IAS39-emi	**2.397**	**6.273**
P1 Nr of Calc	negative-IFRS9-no_emi	1.846	**4.255**
P1 Nr of Calc	negative-IFRS9-emi	1.390	0.371
P2 Nr of Calc	negative-no_standard-no_emi	1.884	**3.013**
P2 Nr of Calc	negative-IAS39-no_emi	**2.395**	**5.383**
P2 Nr of Calc	negative-IAS39-emi	1.029	0.139
P2 Nr of Calc	negative-IFRS9-no_emi	**2.969**	**8.885**
P2 Nr of Calc	negative-IFRS9-emi	1.499	1.323

As discussed previously, the ANOVA procedure with fixed factors and equal sample sizes will still work well even when the assumption of normality is violated, unless one or more of the distributions are highly skewed. As can be seen from Table 4.6 the P1 Nr of Calc and P2 Nr of Calc dependent variables are highly skewed for negative-IAS39-no_emi, negative-IAS39-emi and negative-IFRS9-no_emi treatment groups, since the skewness is above the upper threshold of 1.96.

The inspection of the histograms in Figures 6 and 7 for the number of calculations for Phases one and two reveal that there are outliers in the data set used with the LLP dependent variable. Outliers were not previously deleted for the number of calculations performed since the LLP and the number of calculations performed are separate dependent variables and the number of calculations was not part of the main analysis. One way to deal with outliers is to remove the observations (Field 2009). Therefore, the outliers in the number of calculation variables are identified separately and will be used in a separate sample to

analyse the number of calculations performed data as documented in Table 27. Refer to section 5.6.4.2 for further discussion on procedures followed to identify outliers and how the new sample was determined for the number of calculations analyses.

The test of Homogeneity of Variance for the updated sample (Table 27) for the number of participants used in the additional Nr of Calc earnings management analysis is documented in Table 4.7.

Table 4.7: Test of homogeneity of variance

Dependent variable		Levene Statistic	df1	df2	Sig.
P1 Nr of Calc	Based on Median	2.974	4	125	.022
P2 Nr of Calc	Based on Median	3.988	4	125	.004

Results in Table 4.7 indicate that Levene's test is significant and homogeneity of variance cannot be assumed. However, the ANOVA is generally robust to violations of multivariate normality as long as group sizes are equal. Equal group sizes may be defined by the ratio of the largest to the smallest group being less than 1:5. As indicated in Table 27, this is true for this sample and an ANOVA can be performed for the analysis of the number of calculations performed.