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The impact of IFRS 9 on the cyclicality of loan loss provisions

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Abstract

Through their procyclical behavior, loan loss provisions have been determined as one of the factors that contribute to financial instability during a crisis. IFRS 9 was introduced in 2018 with an expected credit loss model replacing the incurred loss model of IAS 39 to mitigate the effect in the future. Our study aims to analyze loan loss provisions of major banks in the Eurozone to determine for the first time if the implementation of IFRS 9, as intended by regulators, has a dampening effect on procyclicality, especially during the stressed situation under COVID-19. We analyze 51 banks from 12 countries of the European Monetary Union using 2856 firm-year observations. While no robust evidence of less procyclicality can be found after the implementation of IFRS 9 until the pandemic, we find evidence that loan loss provisions moved countercyclical during 2020, indicating an alleviating effect at the beginning of the exogenous shock.

KEYWORDS

eurozone, expected credit loss model, IFRS, loan loss provisions, procyclical effect

JEL CLASSIFICATION

M41, G21, G01

1 | INTRODUCTION

In the aftermath of the financial crisis 2008, one project gained particular urgency. For many years, researchers have pointed out the flawed nature of an incurred loss model for provisioning as it was used in IAS 39. One of the main critiques was that through the delayed recognition of provisions, procyclicality in the financial system was reinforced (Gomaa et al., 2019). Lower provisioning during an economic downturn increases the risk of actual credit losses exceeding expected losses, and the provisions recognized might need more to absorb the incurred losses. These losses, in turn, have a negative impact on a bank's income and regulatory capital, resulting in banks providing fewer loans to the real economy during a recession, putting financial stability at risk. After the Financial Stability Board (FSB) agreed that cyclical movements could have been dampened in the crisis of 2008 if loan losses had been recognized earlier (FSF, 2009), the IASB set out to reform the standard. The new standard IFRS 9 became effective on January 1st, 2018, and included an Expected Credit Loss (ECL) model, which in its scope is the first one of its kind.

The goal was to mitigate procyclicality through a provisioning model with calculations based on forward-looking information (Domikowsky et al., 2014). After its first introduction, IFRS 9 was criticized on various occasions, for

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example, for its principle-based nature, which leaves more choices to the preparer's judgment and reduces comparability (Huian, 2012). Still, the forward-looking concept was seen as a novel approach to addressing the "too little, too late problem" of the previous accounting standard in crises. However, being a relatively new standard issued by the IASB, there had not yet been an opportunity to test its effectiveness in an actual crisis (Bank for International Settlements, 2021). With the year 2020, the Coronavirus began spreading rapidly around the globe, resulting in lockdowns and stalled supply chains (Chowdhury et al., 2021). The subsequent strained situation of the economy resulted in a recession only 2 years after institutions officially started reporting under the new standard.

We use that exogenous shock in our study to analyze loan loss provisions of significant banking players in the eurozone to determine if the implementation of IFRS 9, as regulators intended, dampens procyclicality. With the emergence of the pandemic, for the first time since the performance of the new provisioning model, a period characterized by a stressed scenario was available for testing. We analyzed 51 banks from 12 countries of the European Monetary Union using 2856 firm-year observations to find evidence of whether the new forward-looking concept of IFRS 9 could unfold its countercyclical mechanism during the years of the pandemic 2020 and 2021.

While no significant evidence of mitigated procyclicality after introducing an ECL model can be found, the data does indicate countercyclical movement in loan loss provisions during 2020, when the effect of the crisis was the most prevalent.

This countercyclical movement could result from the more prudent provisioning approach of the ECL model under high uncertainty. While under the incurred loss model, provisions for losses are only recognized if there is objective evidence that the asset is credit impaired, the ECL model has a three-step approach, where step one already requires that 12 months of ECL have to be withheld. Once the risk exposure increases and an asset transitions to a higher stage, the lifetime of ECL has to be estimated and set aside.

Although future research should continue to examine the issue of cyclicality over more extended periods, the results of our work provide important implications. We recommend that standard setters continuously monitor the effects of IFRS 9's ECL model and whether its proclaimed countercyclical effects will materialize. Banks' risk managers need to monitor potential procyclical effects from loan loss provisioning, and both accountants and auditors, as well as standard setters, should be sensitive to the relatively large scope for discretion in applying the new provisioning model of IFRS 9.

The remainder of this study is organized as follows. Section 2 outlines the two contrasting accounting regimes for provisioning, develops the hypothesis for this research, and places this work in the context of the extant literature. Section 3 describes the research model and the sample. Section 4 presents the analysis and results. Section 5 provides the conclusion of the study and derives important implications.

2 | LITERATURE REVIEW

2.1 | Incurred and expected credit loss model

After 2008, the Financial Crisis Advisory Group (FCAG) issued a report identifying, among other factors, the delayed recognition of losses for financial instruments as well as varying impairment approaches for financial assets as key weaknesses that had contributed to the financial crisis (Edwards, 2014; Financial Crisis Advisory Group, 2009). Their recommendations included a call to "explore alternatives to the incurred loss model for loan loss provisioning that use more forward-looking information. These alternatives include an expected loss model and a fair value model" (Financial Crisis Advisory Group, 2009, p. 7). Following this, a reform of the old standard IAS 39 was imminent.

Under an incurred loss model as applicable under IAS 39, provisions for losses will only be recognized once a financial asset is impaired or there is objective evidence that a loss will be incurred, sometimes referred to as the "too little, too late problem" (Bank for International Settlements, 2021). This delay, caused by underestimating losses during positive cycles and extensive losses incurred during a recession, could generate procyclical effects (Risaliti et al., 2013). Therefore, if the credit risk of loans increases during an economic downturn and more loans default, the reserve for loan losses cannot adequately mitigate the effect. Consequently, both the bank's income and capital will be negatively affected. As seen during the crisis of 2008, with negative economic growth and low profitability, this can result in banks struggling to raise new capital, which in turn might threaten financial stability (Huizinga & Laeven, 2019).

To avoid the adverse effects of an incurred loss model, the FCAG recommended changing to a new approach considering forward-looking information (Edwards, 2014). By implementing an expected loss model for provisioning, among other inputs, forward-looking information is used to determine the reserves that have to be withheld to cover potential future losses on financial assets such as loans.

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The new accounting standard IFRS 9 uses a three-stage approach to classify financial assets depending on their credit risk. Stage one assets of the lower risk category require provisions set aside equal to 12 months of expected credit losses. Assets with a significant increase in credit risk are classified into stage two. At this stage, a loss allowance equal to the expected losses for the entire lifetime of the asset must be calculated and withheld. Credit-impaired assets are categorized into stage three, where provisioning for the lifetime of expected credit losses is also required. As IFRS 9 is principle-based, it is up to the banks to determine which models and forward-looking information will be applied to calculate their expected credit losses. The standard requires that credit losses reflect an "unbiased and probability-weighted amount that is determined by evaluating a range of possible outcomes" (International Accounting Standards Board, 2022).

Following the implementation, loss provisioning is expected to increase (Gomaa et al., 2019). Compared to IAS 39, IFRS 9 requires a minimum of 12 months of expected credit losses to be noted immediately after recognition of the financial asset. Further, an additional provision increase is expected if an economic downturn appears.

Surprisingly, in a survey conducted by EY among 29 "top-tier" banks worldwide, the majority of banks voiced the expectation that the provisions under IFRS 9 will be subject to procyclical movements through their nature of being calculated based on forward-looking information, macroeconomic scenarios, and probability weightings on those scenarios (EY, 2017). These expectations are noteworthy as they directly contradict the intention of the standard setters when developing the new standard.

2.2 | Managerial motives behind cyclicality of loan loss provisioning

The potential cause of cyclical behavior seen in loan loss provisioning might not necessarily result from accounting regulations. Managerial discretion is essential in all present provisioning methods, whether an incurred or an expected credit loss model is concerned. Managerial control has been widely researched and primarily focuses on the following motives: earnings, capital, risk, and taxation management, as well as signaling.

Earnings management or income smoothing is often associated with the work of Laeven and Majnoni (2003). To keep income more stable, banks will increase provisions once earnings are high during cyclical upswings and, in turn, draw from loan loss reserves once actual loan losses exceed expected losses. Earnings management could ideally lead to less procyclicality in provisioning if reserves and earnings move countercyclically with the business cycle.

The motive of capital management implies that banks will adjust the recognition of loan losses to meet the minimum regulatory capital requirements. Banks could further control and reduce provisions by delaying the losses once regulatory capital levels are low. This may result in less procyclicality provision as problematic capital levels are typically seen during economic downturns (Bank for International Settlements, 2021).

Huizinga and Laeven (2019) consider the volume of loans loan officers grant during the business cycle problematic if their compensation is linked to the volume of loans given and quality is disregarded over quantity. Research conducted, for example, by Ariccia et al. (2012) shows evidence that during sizeable economic growth, a decline in credit standards can be seen, and banks take on excessive risk while collateral requirements decrease.

Taxation management becomes relevant if the entity pays operating tax on the gains reported under the accounting framework. In this situation, a manager will likely understate income and overstate losses by using provisions as a tax shield (Moyer, 1990).

Last, signaling refers to banks using loan loss provisions to underline their financial strength. By keeping a high loan loss reserve, managers can show the strong earnings power of the institution and assure security should credit risk increase in the future (Bouvatier & Lepetit, 2008).

2.3 | Cyclicality of loan loss provisions

Even before the debate about incurred and expected credit loss models, there has been thorough research on the cyclicality of loan loss provisions. In 2002, Hoggarth and Pain researched the provisioning behavior at UK banks to examine risks to financial stability in the United Kingdom. Under an incurred loss model, they found indications of provisions moving procyclically with GDP growth (Hoggarth & Pain, 2002). However, they also stated that bank-specific factors, such as investing in risky sectors, influence provisions.

Also in 2002, Cavallo and Majnoni published their research on 1176 banks from 36 countries from 1988 to 1999. They found procyclical effects and robust evidence of earnings management (Cavallo & Majnoni, 2002). Income smoothing can be seen in loan loss provisioning, which is positively related to EBTDA in G-10 countries and negatively in non-G-10 countries. These non-G-10 countries had shown a significant increase in loan loss provisions during periods where losses had been incurred, indicating flawed provisioning during economic upturns. The authors recommend that provisioning be more regulated

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in capital management to dampen cyclical effects and improve financial stability (Cavallo & Majnoni, 2002).

Laeven and Majnoni (2003) sampled over 8.000 banks from 41 countries. They clustered them into five regions, finding empirical evidence of banks delaying loan loss provisions until a cyclical downturn appears, amplifying the negative effect on capital and income. Especially in the United States and Asia clusters, the data indicates little provisioning during high GDP growth. According to Laeven and Majnoni (2003), incentives or regulations should be implemented to motivate banks to provision more during cyclical upswings.

Procyclical behavior has also been found by Bouvatier and Lepetit (2008) while analyzing the relationship between loan loss provisions and the credit cycle of 186 European banks during the period of 1992−2004. Later in 2012, Bouvatier and Lepetit published evidence that a forward-looking provisioning approach, as called for by the Basel Committee in 2010, might be a solution to address procyclicality (Bouvatier & Lepetit, 2012). This conclusion is reached by utilizing statistical provisions to dampen fluctuations in loan loss provisions and thus alleviate cyclicality.

While testing for the cyclical behavior of bank provisioning, Bikker and Metzemakers (2005) strive to elaborate on the results of Cavallo and Majnoni (2002) and Laeven and Majnoni (2003). Their sample of banks from 29 OECD countries shows evidence of a negative relationship between loan loss provisions and GDP growth. They warn that this procyclicality might lead to a credit crunch as the incurred losses might exceed the expected losses. This, in turn, could lead to losses that the loan loss reserves cannot absorb. Consequently, the bank's capital is reduced, and lending could decrease when needed to stabilize the economy. Bikker and Metzemakers (2005) find that the procyclical effects are mitigated through either earnings management or dynamic provisioning. Surprisingly, while Cavallo and Majnoni (2002) and Laeven and Majnoni (2003) found a negative relationship between loan growth and provisioning, their sample provides evidence of the opposite. This aligns with the assumption that banks build credit risk during economic upswings.

Beatty and Liao (2011) use a time series model and data from US banks to analyze the relationship between provisions and bank lending. By examining the timeliness of loan loss provisions, they find that banks with less timely recognition tend to reduce lending during negative GDP growth, which drives cyclical behavior. As this evidence shows more insights into the shortcomings of the incurred loss model, it is argued that an expected credit loss model with forward-looking information may lead to less cyclical behavior.

In a study of banks from 27 countries over 12 years, analyzing discretionary loan provisioning practices and discipline in banks' risk-taking behavior, Bushman and Williams (2012) discovered that earnings management can increase a bank's risk propensity. Further, early recognition of loan losses leads to less cyclical behavior and relates to higher discipline in risk-taking. It is explicitly stated that the effect of managerial discretion on loan loss provisions highly depends on how managers decide to address provisioning. A warning is given that bank transparency could be sacrificed for the benefit of less procyclicality. Therefore, high emphasis is put on regulators not to disregard the effects of allowing more discretion in loan loss provisioning.

Management discretion in the context of loan provisioning is also researched by Oberson (2021). The study's results indicate that the shift from an incurred loss model to the ECL model in the context of introducing IFRS 9 has led to more aggressive accounting discretion to smooth earnings. However, the author also finds that the ECL improves the timeliness of loan loss recognition.

Bushman and Williams (2015) further investigate the effect of delayed loan loss recognition on banks' risk exposure. Consistent with their assumptions in Bushman and Williams (2012), they find delayed recognition of loan losses as a direct consequence of opportunistic loan loss provisioning, which also reduces overall transparency. Moreover, banks that engage in this behavior face more systematic risk during economic downturns, leading to constraints in accessing fresh capital.

Domikowsky et al. (2014) use a large sample of German banks reporting under the German commercial code (GAAP) to anticipate the cyclical implications of provisions under an expected credit loss model. Under German GAAP, these banks can consider anticipated future loan losses for specific loss provisions and have broader discretion in provisioning. They find countercyclical behavior for the specific loan loss provisions, which they mainly attribute to earnings management. While the German commercial code does encourage countercyclical provisioning, its greater managerial discretion may make accounting information harder to classify. The authors also point out that German GAAP focuses on creditor protection, whereas IFRS aims to provide an accurate and fair view. Last, regulators should keep the fact in mind that taxation in Germany is based on profit under German GAAP, which might be a motive for income smoothing.

Analyzing the cyclical behavior of banks' loan loss provisions in the eurozone, Huizinga and Laeven (2019) find a negative relationship to GDP growth, which can explain about two-thirds of the variation in bank capitalization over the business cycle. In particular, significantly better-capitalized banks in less competitive markets show explicit

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procyclical behavior. Unlike smaller, less well-capitalized banks, this heterogeneity will likely prevail after implementing IFRS 9. Therefore, more attention should be directed to uniform rules for loan loss provisions across European banks.

The first empirical insight into the cyclical behavior of provision rules under IFRS 9 is given by Pastiranová and Witzany (2022). For their research, data from the 28 EU member countries for 2015–2020 has been gathered to test for cyclical movement under the new standard. Their work uses a different methodology and a more diverse sample. Using each country's quarterly impairment ratio in a panel regression against GDP growth, they find significant evidence for procyclical movements under IFRS 9.

What can be taken from the previous studies about the incurred loss model are the possible implications of cyclicality and various issues arising from an unfavorable exercise of managerial discretion. For example, Bushman and Williams (2012) warn regulators about the impact that financial reporting might have on the willingness of banks to take on risks. The consensus in this field is to reduce the procyclicality of loan loss provisions to improve financial stability and lending during times of recession. Bouvatier and Lepetit (2012), and Beatty and Liao (2011), among others, consider a forward-looking approach as a possible solution.

Unsurprisingly, considering imminent losses for allocating provisions has been discussed for quite some time. Some countries like Germany and Australia already allow more managerial discretion and the use of certain forward-looking information. Furthermore, Spain introduced its dynamic provisioning approach in the 2000s (Jiménez et al., 2017). In 2016, the FASB published its version of a credit loss model with forward-looking information: the Current Expected Credit Losses (CECL). This model became effective for SEC filers in 2020 and non-SEC filers in 2021 and varied from IFRS 9 in several aspects, such as withholding lifetime credit losses for all loans (Chae et al., 2019). However, these few country-specific examples are unable to provide assuring insights or data on what to expect under IFRS 9 in terms of mitigating procyclical effects. This study is dedicated to shedding light on this still largely untapped field of research.

2.4 | COVID-19 and the expected credit loss model

Since the implementation of IFRS 9, only one natural stress scenario has allowed for the first empirical testing of the ECL model. During the first quarter of 2020, the COVID-19 virus, first detected in Wuhan, China, spread rapidly worldwide. In light of this global pandemic, supply chains were disrupted, countries-imposed lockdowns of varying severity, and prevailing uncertainty tremendously impacted the economy (Kostin et al., 2022; Wiedra et al., 2022). Following Neisen and Schulte-Mattler (2021), the extent to which the pandemic influenced the economy is still not completely clear, as both the real economy and the financial world were affected. Banks expect that their customers' creditworthiness will deteriorate, and in the long run, loan defaults might increase (Neisen & Schulte-Mattler, 2021).

Governments and regulators responded to COVID-19 through measures and recommendations to stabilize the economy and mitigate the overall effect. This also includes the provisions determined by the expected credit loss model. On March 27th, 2020, the IASB released a document to support institutions under IFRS 9 to consistently apply the standard during the pandemic (International Accounting Standards Board, 2020). It is pointed out that the standard requires judgment, and therefore it is up to the user when financial asset transitions to a higher stage or what kind of forward-looking scenarios are used to calculate ECL. Further, an extension in payment terms for borrowers need not necessarily be considered a significant increase in credit risk, and government support measures should be considered when determining provisions.

In a press release in March 2020, the European Central Bank (ECB) recommended that banks "avoid excessively procyclical assumptions in their IFRS 9 models to determine their provisions" (European Central Bank, 2020, p. 1) and stated that supervisors would allow flexibility when classifying non-performing loans (NPL), a debtor's creditworthiness, or the stage of financial assets.

Next, the Basel Committee on Banking Supervision (BCBS) announced in April 2020 that the burden of ECL on regulatory capital requirements would be relieved (Basel Committee on Banking Supervision, 2020). In May 2021, the Bank for International Settlements (BIS) stated that all previously conducted research is not addressing an exogenous shock originating from a public health emergency, emphasizing that the impact of the COVID-19 recession on the procyclicality of provisions is still uncertain (Bank for International Settlements, 2021).

2.5 | Contribution to research and hypotheses

The past decades of research have shown that provisioning and explicitly loan loss provisions are undesirable if procyclical. For financial stability and credit supply to the real economy, banks worldwide have adopted the ECL model under IFRS 9. While there is existing research on

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the shortcomings of the incurred loss model or provision models that only partially allow for considering forward-looking information, the actual ECL model under IFRS 9 has barely been considered. This is attributed to the short period of only very few annual reporting cycles since the standard was implemented in 2018. Still, there seems to be a consensus that an ECL model might help mitigate procyclicality (Bank for International Settlements, 2021). Therefore, the first hypothesis to be tested is the following:

H1. *Banks' loan loss provisions show less procyclical behavior after adopting IFRS 9.*

In the first 2 years after the introduction of IFRS 9, the standard and its ECL model were not challenged, as the economic development was not exposed to any particular risks in these 2 years. This changed abruptly with the 2020 fiscal year. The COVID-19 recession that hit the economy in 2020 and the following year of uncertainty, 2021, constitutes a stress test for the newly implemented ECL model. A bank's loan portfolio is exposed to more credit risk during an economic downturn. This, in turn, will result in loans moving to higher-risk classes under the ECL model, thus requiring lifetime loan loss recognition. Therefore, the second hypothesis is as follows:

H2. *During the COVID-19 recession, the relationship between loan loss provisions and GDP growth is less procyclical when applying the ECL model under IFRS 9.*

This contrasts the prospects of an incurred loss model during a recession. Since procyclical movement resulting from banks reducing provisions during times of crisis to cushion the effect on income and capital is expected, more income smoothing and negative loan growth should be the consequences (Curcio et al., 2017; Laeven & Majnoni, 2003). While this is not part of the hypotheses, terms will be included in the model as control variables to measure these effects.

The geographic focus of this work lies on banks in the eurozone. Huizinga and Laeven (2019) state that provisioning procyclicality in a monetary union with one monetary policy is especially problematic as it is challenging to address and only leaves fiscal and (macro) prudential policies to relieve the issue.

This study seeks to contribute to research by giving insights into the cyclicality of loan loss provisioning at major European banks from 2015 to 2021 and taking a closer look at provisioning behavior following the COVID-19 pandemic to the best of our knowledge for the first time. We complement the existing literature on risk provisioning with the ECL model by presenting some of the first empirical results using a stress scenario.

3 | METHODOLOGY

3.1 | Data

This research is focused on public and private banks headquartered in the eurozone that the government does not majorly own. The minimum requirements in our sample are total assets of at least 20 billion euros as of 2020. The bank data are collected from the balance sheets and income statements available on the FactSet database and annual reports for additional data, respectively, missing values. The macroeconomic data to measure cyclicality is taken from the World Development Indicators.

The initial sample consisted of 427 major banks in the eurozone before applying several filters: (1) the government does not majorly hold the banks' stock; (2) a reference is made in the notes that ensure compliance with IFRS. Consequently, all banks in the dataset explicitly state that IFRS 9 is used for their annual financial statements from 2018 onwards; (3) all information required to calculate the variables used in this research is available at the financial data provider FactSet and from annual reports; and (4) the bank's fiscal year-end does not change during the sample period.

This research focuses on the 7 years between 2015 and 2021. After applying the filters and eliminating all entities with insufficient data, the final sample includes 51 banks from 12 countries.

3.2 | Research method

To answer both hypotheses, a panel regression was conducted. The models and variables used in this research align with previous literature (Adzis et al., 2016; Domikowsky et al., 2014).

We performed five regressions. The first model used is a base model looking at all the variables while focusing on the introduction of IFRS 9 without the notion of the economic shock occurring in 2020 and 2021. First, a Hausman (1978) specification test was conducted to determine the use of fixed effects or random effects model. According to the test results, the fixed effects model was chosen. This confirms the assumption of Das (2019) that a fixed effects model will be more adequate for macro panel analysis. Further, a Wald test yielded the result that, for this analysis, a two-way error component fixed effects model is appropriate. While no serial correlation was detected in the model,

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the presence of heteroskedasticity is mended through clustered standard errors. After no multicollinearity is caught, the first model is stated as follows:

$$\begin{aligned} LLP_{it} = {} & \alpha + \beta_1 GDPg_{ct} + \beta_2 EBPT_{it} + \beta_3 LLA_{it} + \beta_4 NPL_{it} \\ & + \beta_5 Loan_{it} + \beta_6 Loan_{i,t-1} + \beta_6 Cap_{i,t-1} + \beta_8 IFRS9 \\ & \times GDPg_{ct} + \beta_9 IFRS9 \times EBTP_{it} + \mu_i + \lambda_t + \varepsilon_{it} \end{aligned} \tag{1}$$

in which LLP_{it} is bank i's loan loss provisions in year t scaled by average total assets; $GDPg_{ct}$ is the annual GDP growth rate per capita of country c in year t; $EBPT_{it}$ is the banks' earnings before provisions and taxation, scaled by average total assets; LLA_{it} is the loan loss allowance at the beginning of the year scaled by average total assets; NPL_{it} is capturing the non-performing loans scaled by average total assets; $Loan_{it}$ is the change in total loans of the bank scaled by average total assets; $Loan_{i,\,t-1}$ captures the value of a bank's total loans at the beginning of the period, scaled by average total assets; $Cap_{i,t-1}$ is the lagged ratio of equity to total assets; IFRS 9 is a dummy variable that takes the value 1 for the years after 2018 once IFRS 9 is applied and 0 for the years before; IFRS 9 × GDPg is an interaction term that captures cyclical behavior after the implementation of IFRS 9; IFRS 9 × EBPT is an interaction term that captures the influence of provisioning in income smoothing after IFRS 9 became applicable.

Thus, after detecting procyclical behavior through GDPg, this model also tests for income smoothing through EBPT. Income smoothing is seen as a part of managerial discretion and is most commonly found in studies about the cyclical behavior of loan loss provisions (Bikker & Metzemakers, 2005; Bouvatier & Lepetit, 2008; Cavallo & Majnoni, 2002; Huizinga & Laeven, 2019; Laeven & Majnoni, 2003; Oberson, 2021). Similar to EBPT, the variable Cap_{t-1} will control for capital management resulting from managerial discretion. To control for the non-discretionary part of LLP, the variables LLA and NPL will be used to analyze the credit risk to which banks are exposed. Both loan loss allowance and non-performing loans directly influence provisioning. While a high allowance for loan losses might result in less provisioning during the year, the credit risk of non-performing loans on a bank's balance sheet should be covered by loan loss provisions. The variable Loan indicates the development of the loan portfolio of a bank. Growth in total loans should directly relate to more credit risk, as under IFRS 9, a minimum of 12 months of expected credit losses have to be recognized immediately. Likewise, $Loan_{i,t-1}$ is a proxy for credit risk and will capture the bank's credit risk exposure.

Since the incurred loss model has been proven procyclical, the interaction term IFRS 9 × GDPg should be less negative or positive to indicate that IFRS 9 effectively mitigates procyclicality (Huizinga & Laeven, 2019). A coefficient like this would indicate either less procyclical or even countercyclical behavior.

The second interaction term, IFRS 9 × $EBPT_{it}$, serves as a control variable for income smoothing, as seen in the research of Adzis et al. (2016). Especially during the COVID recession, income smoothing could be detected, hinting that provision cyclicality is influenced by more than just accounting standards. A negative relationship between $EBPT_{it}$ and LLP could result from income management.

The second and third models are constructed to gather evidence for the second hypothesis. The second model uses the same variables as the first while including three more interaction terms to capture the crisis effect initiated by the outbreak of COVID-19. After pretesting the model, it can be expressed as:

$$\begin{aligned} LLP_{it} = {} & \alpha + \beta_1 GDPg_{ct} + \beta_2 EBPT_{it} + \beta_3 LLA_{it} + \beta_4 NPL_{it} \\ & + \beta_5 Loan_{it} + \beta_6 Loan_{i,t-1} + \beta_6 Cap_{i,t-1} + \beta_8 IFRS9 \\ & \times GDPg_{ct} + \beta_9 IFRS9 \times EBTP_{it} + \beta_{10} COVID \\ & \times GDPg_{ct} + \beta_{11} COVID \times EBPT_{it} \\ & + \beta_{12} COVID \times Loan_{it} + \mu_i + \lambda_t + \varepsilon_{it} \end{aligned} \tag{2.1}$$

where COVID is a dummy variable taking the value of 1 for 2020 and 2021 and 0 for all other years, $COVID \times GDPg_{ct}$ and $COVID \times EBPT_{it}$ are new interaction terms that indicate the effect of the COVID-19 pandemic for both cyclical movement and implications on income smoothing; $COVID \times Loan_{it}$ serves as an indicator to better understand the relationship between loan growth and LLP during a recession.

The third model is constructed similarly to the second model. However, the dummy variable COVID, which grouped the periods of 2020 and 2021 in the first two models, will now be split into dummy variables with their respective years. This model is used to examine the 2 years more in-depth, as the economic shock unfolded rapidly in early 2020, while in 2021, the economy was gradually progressing toward recovery. Therefore, it is especially of interest to highlight the year 2020 with its high uncertainty.

$$\begin{aligned} LLP_{it} = {} & \alpha + \beta_1 GDPg_{ct} + \beta_2 EBPT_{it} + \beta_3 LLA_{it} + \beta_4 NPL_{it} \\ & + \beta_5 Loan_{it} + \beta_6 Loan_{i,t-1} + \beta_6 Cap_{i,t-1} + \beta_8 IFRS9 \\ & \times GDPg_{ct} + \beta_9 IFRS9 \times EBTP_{it} + \beta_{10} COVID20 \\ & \times GDPg_{ct} + \beta_{11} COVID20 \times EBPT_{it} \\ & + \beta_{12} COVID20 \times Loan_{it} + \beta_{13} COVID21 \times GDPg_{ct} \\ & + \beta_{14} COVID21 \times EBPT_{it} + \beta_{15} COVID21 \times Loan_{it} \\ & + \mu_i + \lambda_t + \varepsilon_{it} \end{aligned} \tag{2.2}$$

The first two regressions are conducted using the first model. For regression 1, the period 2015 until 2021 is

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TABLE 1 Descriptive statistics.

		IAS 39 (2015-2017)		IFRS 9 (2018-2021)		Mean difference (diff = 0)	
Variable	**N**	**Mean**	**SD**	**Mean**	**SD**	**difference**	***p*-value**
LLP	357	.0047262	.010499	.0030989	.0060119	.0016273*	(.0872)
GDPg	357	1,977,286	2,841,511	.5777103	5,354,869	1,399,576***	(.0016)
EBPT	357	.0090884	.0088897	.0081666	.0055223	.0009218	(.2598)
LLA	357	.0342479	.0523796	.0229355	.03401	.0113124**	(.0207)
NPL	357	.0329281	.0040199	.0236598	.0027949	.0092683*	(.0594)
Loan	357	−.00642	.0709384	−.0433277	.5520246	.0369078	(.3459)
$Loan_{t-1}$	357	.5752677	.1438015	.6787789	.4209171	−.1035113***	(.0012)
Cap_{t-1}	357	.0793967	.0397166	.079863	.0330252	−.0004663	(.9063)

Note: Coefficient (*p*-value); (*, **, *** indicate the level of significance at 10%, 5%, 1%).

considered and tested for effective change after implementing IFRS 9. To run a robustness test, regression 2 investigates whether our findings are driven by the selected period, including the COVID-pandemic. The regression was tested for the period between 2015 and 2019. This is motivated by the idea that we may get a more robust result by leaving out the unknown impact of COVID-19.

Regressions 3 and 4 cover 2015–2021; this time, an additional focus is directed at the shock resulting from the COVID crisis. By considering the stressed period as a whole (model 2.1) and, subsequently, as two individual years (model 2.2), we aim to gain insight into the individual effects on the economy each of them holds.

Finally, regression 5 serves as another robustness test for the results gathered in regression 4, giving insights by removing data from the year 2021 from the sample while highlighting 2020.

4 | ANALYSIS

Table 1 presents the descriptive statistics. It comprises 2856 firm-year observations (of the treatment and the control samples, overall eight variables) covering 2015–2021. The mean of the variable LLP, a bank's loan loss provisions divided by average total assets, is lower after implementing IFRS 9. The result is significant at the 10% level, indicating that banks recognize fewer loan loss provisions after implementing IFRS 9. This goes against the expectations of the banks surveyed by EY, who expected increased provisions after applying IFRS 9 (EY, 2017). The mean difference for both variables, LLA and $Loan_{t-1}$, is significant at 5% and 1%, respectively. However, as both variables are defined by the beginning value of loan loss allowance and total loans, the line between IAS 39 and IFRS 9 is blurred, and the information value is limited. Finally, the variable NPL is significant at the 5% level showing a slight decrease after implementing IFRS 9. This is an interesting indicator that although an economic crisis occurred in 2020 and 2021, the effect on NPL seems limited, showing that banks did see the criteria for impairment fulfilled.

The regression results are shown in Table 2. While model (1) for the entire period between 2015 and 2021 does not show a significant result for GDPg, regression 2, covering 2015 until 2019, leaving out the economic shock, shows a significant result at the 5% level displaying procyclical movement in the data. This trend can be further observed in the regressions using models 2.1 and 2.2, where a particular emphasis is put on the effects of COVID-19. Here, the regressions employing data for the entire period until 2021 indicate procyclical behavior at the 10% level, whereas regression 5, excluding 2021, implies procyclical behavior at the 5% level. These results suggest that the sample data exhibits a procyclical behavior that is disrupted during 2020 and 2021 (Table 2). This finding of procyclical behavior in the first 2 years is consistent with major studies in the field of loan loss provisions, such as Bikker and Metzemakers (2005), Laeven and Majnoni (2003), and Beatty and Liao (2011).

The variable EBPT is insignificant across all regressions, which is inconsistent with Bikker and Metzemakers (2005), Huizinga and Laeven (2019), and Bouvatier and Lepetit (2008), who all find income smoothing behavior across European banks. The variable LLA is also insignificant, indicating that the sample shows no sign that the size of a bank's loan loss reserve affects the amount of loan loss provisions recognized in the next period. The variable NPL is also insignificant in all regressions, showing that the sample does not allow any conclusions to be drawn about the effect of non-performing loans on a bank's provisioning behavior.

While the variable Loan is insignificant in regression 1, a positive significant coefficient can be seen in regression 2 ($p = < .05$) and regression 5 ($p = < .10$). This indicates that until 2019 more loan loss provisions are recognized if the loan portfolio grows. Regression 5, using model 2.2 and covering the additional year of 2020, shows a

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TABLE 2 Regression results.

Independent variables	Exp.	Dependent variable LLP				
		Model (1) (2015-2021)	Model (1) (2015-2019)	Model (2.1) (2015-2021)	Model (2.2) (2015-2021)	Model (2.2) (2015-2020)
		Regression 1	Regression 2	Regression 3	Regression 4	Regression 5
GDPg	-	-.0002199 (.222)	-.0003186 (.012)**	-.0002924 (.081)*	-.0002891 (.076)*	-.000338 (.012)**
EBPT	+	.1989898 (.329)	-.1483582 (.467)	.1837477 (.362)	.1810987 (.372)	.1719598 (.401)
LLA	-	-.0045187 (.738)	-.0139274 (.501)	-.0058677 (.670)	.0043475 (.756)	-.0110761 (.558)
NPL	+	.0202166 (.180)	.0000447 (.996)	.018907 (.222)	.0191496 (.246)	.0015066 (.910)
Loan	+	.0002386 (.792)	.0036103 (.049)**	.0022745 (.138)	.0024318 (.118)	.0028849 (.093)*
$Loan_{t-1}$	+	.00216 (.342)	.0066269 (.031)**	.0046822 (.099)*	.0049272 (.086)*	.0054618 (.075)*
Cap_{t-1}	+	-.0128866 (.591)	-.0271144 (.237)	-.0125758 (.582)	-.0146356 (.522)	-.0213274 (.305)
IFRS 9 × GDPg	?	.0006852 (.043)**	-.0329811 (.833)	-.0010344 (.901)	-.0011082 (.281)	-.001585 (.199)
IFRS 9 × EBPT	-	.0985858 (.615)	-.0019108 (.197)	.018492 (.307)	-.343792 (.822)	.0344807 (.820)
Covid × GDPg	?			.0018443 (.107)		
Covid × EBPT	-			.1915115 (.406)		
Covid × Loan	-			.0079057 (.196)		
Covid20 × GDPg	?				.0020952 (.081)*	.0025522 (.071)*
Covid20 × EBPT	-				.1442783 (.450)	.0943384 (.620)
Covid20 × Loan	-				.0024786 (.724)	.004462 (.495)
Covid21 × GDPg	?				.001451 (.220)	
Covid21 × EBPT	-				.2784857 (.387)	
Covid21 × Loan	-				.0128844 (.166)	
Wald test IFRS 9 × GDPg		4.31 (.0430)**	1.71 (.1971)	1.06 (.3073)	1.19 (.2814)	1.69 (.1993)
Wald test IFRS 9 × EBPT		.26 (.6154)	.04 (.8331)	.02 (.9014)	.05 (.8221)	.05 (.8201)
Wald test Covid × GDPg				2.70 (.1069)		
Wald test Covid × EBPT				.70 (.4061)		
Wald test Covid × Loan				1.72 (.1960)		
Wald test Covid20 × GDPg					3.17 (.0810)*	3.40 (.0710)*
Wald test Covid20 × EBPT					.58 (.4504)	.25 (.6196)
Wald test Covid20 × Loan					.13 (.7242)	.47 (.4950)
Wald test Covid21 × GDPg					1.54 (.2197)	
Wald test Covid21 × EBPT					.76 (.3868)	
Wald test Covid21 × Loan					1.197 (.1663)	
R^2		.1776	.2054	.2010	.2068	.2064
F-Statistic		4.79 (.000)	2.58 (.0082)	5.85 (.000)	6.04 (.000)	3.79 (.0001)
Year effects included		Yes	Yes	Yes	Yes	Yes
No. of banks		51	51	51	51	51
Observations		375	255	357	357	306
Standard errors		Clustered	Clustered	Clustered	Clustered	Clustered

Note: Coefficient (*p*-value); (*, **, *** indicate the level of significance at 10%,5%,1%).

smaller positive coefficient. Both regressions do not cover the entire sample period, displaying a tendency until 2019 that is eventually attenuated during the economic crisis. This result contrasts the findings of Laeven and Majnoni (2003), who find a negative relationship between loan growth and provisions, which they attribute to a bank's imprudent behavior. This change may be directly influenced by IFRS 9, which requires that for every loan, at least 12 months of loan losses be set aside upon recognition. However, the real influence of the new standard remains uncertain, as no regression covering 2021 shows a significant coefficient. Consequently, we either observed a trend resulting from the disruption caused by COVID-19 or the consequence of adapted regulation.

As seen with the variable Loan, $Loan_{t-1}$ also shows no significance in regression 1 but a positive coefficient at the

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5% (regression 2) and 10% (regression 3, 4, and 5) significance levels. This variation might very well result from the disregard of the COVID-19 recession under model 1. Through the sample, it can be deduced that during normal conditions, a bank's current loan portfolio risk results in higher loan loss provisions. This can be explained by a bank's greater exposure to credit impairment if the loan portfolio is extensive.

The variable Cap_{t-1} is insignificant across all five regressions, giving no signs of capital management in the sample. This contradicts the preliminary results of Oberson (2021), who reports more aggressive managerial discretion after adopting IFRS 9. In our sample, which covers a significantly extended sample period since the adoption of IFRS 9, we find no evidence of discretionary profit smoothing.

Considering the interaction term IFRS 9 × GDPg, regression 1 shows a significant coefficient of .0006852 ($p = < .05$). Thus, the results provide evidence in favor of the research hypothesis H1 that the banks in the sample show countercyclical behavior after the adoption of IFRS 9. However, this result has to be seen in the context of the covered period, as the data includes the impact of the COVID-19 pandemic. For regressions using models 2.1 and 2.2 (regressions 3, 4, and 5), considering COVID-19, the data does not provide significant evidence to support the hypothesis of less procyclicality or countercyclical movement. Furthermore, the second interaction term, IFRS 9 × EBPT, is not significant across all regressions and therefore provides insufficient evidence of earnings management after implementing IFRS 9.

For a more differentiated view of the impact of the COVID-recession, the results of regression 3 (model 2) and regression 4 and 5 (model 2.2) are considered. The interaction term COVID × GDPg of regression 3, which is essential for the second hypothesis, shows no significance if the years 2020 and 2021 are grouped. After diverting the focus on the 2 years individually, regressions 4 and 5 (model 2.2) show a slightly significant coefficient for COVID20 × GDPg at the 10% level while demonstrating a positive relationship between LLP and GDP growth per capita. This indicates the countercyclical movement of loan loss provisions in the year 2020. The fact that a countercyclical effect can be demonstrated in 2020, but not if 2021 is included, can be explained by the fact that 2020 was the year with the greatest shock and uncertainty. In 2020, the crisis came with full force, lock-downs of public life, business closures and other severe constraints on the economy (Wiedra et al., 2022). In 2021, by contrast, businesses had already adapted, vaccines were available in Europe, and the economy was already recovering. This finding supports hypothesis H2 and may result from the new accounting standard and the ECL model. Thus, unlike IAS 39, its successor IFRS 9, seems to better cope with the problem of "too little, too late" provisioning during times of crisis.

Our findings partially contradict the recent work of Pastiranová and Witzany (2022), who report procyclical effects during the entire period of IFRS 9, including the pandemic. While the work of Pastiranová and Witzany (2022) addresses a similar research question, their sample period, sample scope, and methodology differs. Our sample focuses on major banks in the monetary union rather than all member countries in the EU. This, by default, excludes smaller countries that are not home to a bank falling into the sample criteria. Further, they consider the entire period of IFRS 9 without distinguishing a potentially changed provisioning behavior during the COVID period. In addition, their sample covers only 2020, that is, the first year of the pandemic, while our research doubles the sample period by also considering the second year of the crisis. This allows us to take a more differentiated look at the years of the shock, which nevertheless differ greatly in their impact on the economy. Finally, regarding the methodology, with an impairment ratio, they use an indirect variable rather than observing the provisioning itself. By examining loan loss provisions as the dependent variable, our work can shed additional insights into the provisioning behavior over the cycle.

Finally, regression 2 gives one more insight into the behavior of loan loss provisions before 2020. Excluding the pandemic shock period, the variable GDPg indicates cyclical behavior that is more procyclical than regressions 3 and 4, including 2020 and 2021. This shows that the overall transition to IFRS 9, without external shock, still seems to lead to procyclical behavior. An explanation might be that procyclicality is higher in the European Union than in stand-alone countries (Huizinga & Laeven, 2019). This suggests that more influential factors might be relevant than the credit loss model applied, which lead to procyclical behavior.

This analysis is subjected to several limitations. Most notably, the actual data available for the ECL model is very limited, as only four reporting periods have passed since its implementation. With data from 2 years representing "normal" times and 2 years of crisis, it is difficult to determine the full impact, especially regarding cyclical movements.

Further, the influence of a recession triggered by a pandemic is unlike any previous modern economic crisis. To minimize the spread of the virus, countries-imposed lockdowns, which disrupted supply chains and influenced the retail, travel/tourist, and manufacturing industries. To protect banks and preserve financial stability, governments intervened. At the same time, institutions and regulators pointed towards the principle-based nature of IFRS 9 and the high level of individual judgment required

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while applying the standard. This lack of uniform application of IFRS 9 makes it difficult to compare individual banks, which has been criticized before (Gornjak, 2017). Each bank must be considered individually to capture the full effect, or future research must find common ground.

Further, the data considering the incurred loss model under IAS 39 includes the transition period to IFRS 9. Banks could have prepared for applying the new standard and made changes to guarantee a smooth transition. This would blur the line between the two standards, which is unfavorable considering the short timeframe of this study. However, this may explain some of the insignificant results of the variables in this study, which contradict previous research findings, like income smoothing in European banks.

To conclude, our results are the first evidence of a countercyclical effect of the ECL model during a stressed scenario. Accounting for all these factors, the results of this research might be an indication. However, they should further be tested with more in-depth analysis considering the personal effects of IFRS 9 and other stress scenarios individually over a more extended period. Thus, future research may revisit this question, using more data that would then be available.

5 | CONCLUSION

While there is a strong strand of literature supporting the disadvantages and the procyclicality of the incurred loss model, there have so far been mainly qualitative studies on the ECL model of IFRS 9 that advocate a countercyclical effect. However, empirical studies are scarce to date. The weak empirical data basis is primarily rooted in the fact that there have been few opportunities to test the ECL model of IFRS 9, which is based on two circumstances. First, there have only been four reporting cycles since implementing IFRS 9, severely limiting the overall database. Second, the ECL model could not yet be stress tested in the first two fiscal years since the introduction of IFRS 9. With the COVID-19 pandemic, which began in 2020, there is now the first opportunity since the introduction of IFRS 9 to test the new accounting scheme under a crisis scenario for its proclaimed countercyclical effect. Thus, our study provides valuable empirical evidence to shed light on the ECL accounting model's effects in regular and challenging times.

The findings of our study indicate procyclical behavior in banks' loan loss provisions across Europe, in alignment with previous literature (Beatty & Liao, 2011; Bikker & Metzemakers, 2005; Laeven & Majnoni, 2003). This relationship is considered undesirable as, during negative economic growth, the actual credit losses might exceed the expected losses. A bank's income and regulatory capital will be negatively affected if the loan loss reserve is insufficient to mitigate the effect. This could lead to banks providing the economy with less debt capital when needed during a recession, contributing to financial instability.

To counter this threat, the standard IFRS 9, with a new approach to calculating provisions, became effective in 2018. However, the sample of banks in this research did not provide significant evidence that, from the introduction of IFRS 9 until the outbreak of the pandemic, provisioning under an ECL model has reduced the procyclical movement of loan loss provisions. Further, the data did not provide evidence of the effects of managerial discretion on the procyclical movement of loan loss provisions like capital management or income smoothing.

Concerning the two crisis years from 2020 to 2021, the data shows low significant evidence of countercyclicality in loan loss provisions especially in 2020 during the height of the pandemic's impact. These 2 years are marked as the first stress test for the new standard, and this finding supports the hypothesis that loan loss provisions are less procyclical under the ECL model in highly strained conditions.

An explanation for our results could be that large banks, as concerned in the sample, have the advantage of portfolio diversification over small banks. This risk diversification might initially require less provisioning at regular times (Domikowsky et al., 2014) since more loans can be granted that classify as stage 1 assets. Once an economic downturn influences credit risk, loans might move from 1 year ECL in stage 1 to stage 2 or 3 and require a lifetime of ECL to be withheld. This adjustment of loan loss provisions will result in countercyclical movement, as found in the data, especially for the first COVID year 2020, when the most substantial economic adverse effects were experienced.

This research provides novel insights into the behavior of loan loss provisions in large European banks. First, looking at the data outside times of crisis, procyclical movement of loan loss provisions can be seen. The data does not show evidence that this has changed after the ECL model was introduced, which might be detrimental to financial stability (Pastiranová & Witzany, 2022). Given that banks could have started the transitioning process away from the incurred loss model years before 2018, this could be even more problematic. However, since the new application of the ECL model covers only 4 years, it is still uncertain how provisioning will develop over time. Second, banks' behavior during the COVID recession shows prudent countercyclical traits for the first time since adopting IFRS 9. The economy has mostly recovered, and the full impact will be seen in the upcoming reporting cycles when normality will ultimately return. However,

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the impact of political and military conflicts between Russia and the Western economies could be the next litmus test.

Despite the preliminary nature of our findings, this research has important implications. Standard setters and regulators should further closely monitor the cyclicality of loan loss provisioning of banks that apply IFRS 9. Despite positive results during the first "stress test," marked by the COVID period, the proclaimed countercyclical effect of the ECL model has not yet been fully demonstrated. The coming reporting cycles, and especially future crises will provide further opportunities to test the model's countercyclicality. If loan provisioning continues to exhibit procyclical effects, as in the previous incurred loss model, the IASB could initiate a standard revision. Further, in alignment with the bank's risk management, bank managers should continue to control for credit risk by investigating the models and macroeconomic forecasts used and considering potential procyclical effects resulting from the reporting side. Likewise, accountants determining loan loss provisions should critically examine this aspect of IFRS 9. Finally, auditors overseeing compliance with the provisioning requirements of IFRS 9 should keep an eye on the scope for interpretation and be mindful of potential procyclical effects.

Future research should focus on capturing further economic stress tests and observing the behavior of loan loss provisions over a long period to fully determine whether the change from an incurred to an expected credit loss model has brought the desired effects. By looking into the models used by banks and the different ways managers execute discretion in provisioning, more insight can be gained that might further explain the cyclical behavior in loan loss provisioning.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author, Michel Charifzadeh (michel.charifzadeh@reutlingen-university.de), upon reasonable request.

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