

What drives discretionary loan loss provisions? The role of banks' business model, listing status and COVID-19 crisis in the European banking sector

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Abstract

Purpose: This study examines whether banks' business models and listing status drive the discretionary use of loan loss provisions (LLPs) under the International Financial Reporting Standard (IFRS) 9 "Financial Instruments".

Design/methodology/approach: Ordinary least squares regression is performed on a sample of 5,147 listed and unlisted European banks for the 2018-2021 period.

Findings: The main results show that after Expected Credit Loss (ECL) implementation, banks are prone to manage their earnings via LLPs. In detail, originate-to-hold and listed banks use LLPs to manage their earnings more strongly than originate-to-distribute and unlisted banks. Further, during the financial crisis due to the COVID-19 pandemic, European banks tended to manage earnings more than during the pre-crisis period.

Originality/value: This study contributes to the existing literature by expanding research on LLPs and highlighting *ex-ante* factors that might influence banks' provisioning behavior, such as their listing status and business model.

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Practical implications: This study provides useful insights for regulators and accounting setters in making informed decisions regarding provisioning policies, even during periods of turmoil.

Keywords: loan loss provisions, business model, listing status, earnings management.

JEL: M40, M41

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1. Introduction

Banks' loan loss provisions (LLPs) have received much attention from regulators and international accounting setters, especially during the 2007-2008 financial crisis (e.g. Financial Stability Forum, 2009; International Accounting Standards Board [IASB], 2014; Basel Committee on Banking Supervision, 2021). This is because accounting for loan losses under the incurred loss model (ICL) of the International Accounting Standard (IAS) 39 in force at that time has been criticized for exacerbating procyclicality by providing “*too little, too late*” provisioning (e.g. Gaston and Song, 2014; Giner and Mora, 2019; Dong and Oberson, 2021).

Therefore, with the aim of mitigating procyclical provisioning and overcoming the “*too late*” problem of the ICL (Novotny-Farkas, 2015; Mechelli et al., 2020), in July 2014, the IASB issued IFRS 9 to replace IAS 39, definitely switching from the ICL model to the new expected credit loss (ECL) model. While the previous accounting regime (i.e. the ICL under IAS 39) allowed banks to recognize provisions only when there was evidence of incurred losses of a certain financial asset, the new ECL model under IFRS 9 requires banks to include an ECL in the *phase-in* of the initial recognition of financial assets. In particular, it requires accounting for *stage 1* for a loss allowance that results from default events that are expected within the next 12 months (i.e. 12-month ECLs), irrespective of the objectivity of events that trigger credit losses. After that, the asset might be shifted to *stage 2* if it suffers from a significant increase in credit risk since its initial recognition and finally be transferred to *stage 3* if it becomes definitely impaired. In this regard, banks do not consider only historical information but also forward-looking information to estimate ECL. Consequently, the new impairment model is much more flexible and implies that managers incorporate more discretion into loan loss estimates.

Scholars commonly highlight that the forward-looking nature incorporated into the ECL model provides room for bank managers' judgment. In particular, some scholars (e.g. Ozili, 2017; Hashim et al., 2019; Di Martino et al., 2020; Du et al., 2022) argue that IFRS 9 could have a higher impact on earnings management by European banks because the intensity of judgmental nature and wider discretion incorporated by the new model may be a great incentive for banks' income-smoothing behaviour.

Nevertheless, there is no deep evidence of the effect of the ECL model on changing provisioning policies aimed at banks' earnings management. Thus, this study aims to fill this gap in the literature by examining whether European banks manipulate their LLPs more discretionally for income management purposes and whether this behaviour might vary across banks with different features, especially their business models (BMs) and listing statuses (LSs).

According to previous literature (e.g. Purnanandam, 2011; Bord and Santos, 2012; Giner and Mora, 2019), bank BMs may be classified as "originate-to-distribute" (OTD) and "originate-to-hold" (OTH). Banks that rely on the OTD BM tend to sell loans to third investors, while those that rely on the OTH model are inclined to hold loans in their balance sheets until maturity. Hence, it is likely that banks inclined to keep loans until their natural duration (i.e. OTH banks) may incur more earnings management behaviour via LLPs (Giner and Mora, 2019). Moreover, according to Bushman and Williams (2012), considering that OTH are high risk-taking banks, they are more inclined to smooth earnings to obscure excessive risk-taking behaviour. However, to date, there are no existing empirical findings on the role of the bank BM in the discretionary use of LLPs to manipulate earnings, and this study aims to fill this literature gap.

Moreover, consistent with Curcio et al. (2017), banks have different approaches to managing LLPs according to their LSs. Listed banks may have stronger incentives to smooth their earnings compared to unlisted banks since they are expected to be more sensitive to financial markets' risk perception (Nichols et al., 2009). However, findings about the effect of banks' LSs on their discretionary behaviour are still mixed, and this study intends to empirically address this issue.

We also provide early evidence on how the COVID-19 pandemic affects bank managers' discretionary behaviour for LLPs, consistent with previous studies suggesting that crisis periods may further force managers to engage in earnings manipulation (Morris et al., 2016; Curcio et al., 2017).

Based on these issues and prompted by the opportunity to investigate the new accounting model under IFRS 9, we empirically analyse a sample of 5,147 listed and unlisted European banks in the period 2018-2021.

We perform two ordinary least squares (OLS) regressions, and the results confirm our expectations. We find evidence supporting earnings management practices for European banks to be particularly intensive after the implementation of the ECL model under IFRS 9. We also show that BMs and LSs are two drivers of discretionary provisioning policies in the banking sector. Our study also confirms that such behaviour is particularly pronounced in the early years of the COVID-19 pandemic compared to the pre-crisis periods.

This study makes a threefold contribution to the literature. First, it extends the recent strand of literature on the ECL model and earnings management practices in the bank setting (e.g. López-Espinosa et al., 2021; Dong and Oberson, 2021; Du et al., 2022).

Second, our results provide useful insights for both bank regulators and accounting setters. While the former actors are interested in provisioning policies, as well as during turmoil periods, since they affect financial stability in general, the latter can benefit from a better understanding of how banks react to financial crises under the ECL model to improve adequately accounting standards.

Third, our study is beneficial for potential investors, whereas understanding managerial behaviours based on key determinants of the BMs and LSs can result in a more aware evaluation to support their investment decisions.

Overall, the paper is structured as follows: Section 2 deals with the literature review and the development of hypotheses, Section 3 covers the research design, Section 4 describes the results, Section 5 treats robustness and additional tests, and Section 6 presents the conclusions.

2. Literature review and hypotheses development

2.1. Banks' earnings management and ECL

Generally speaking, scholars recognize that the banking industry is prone to engage in earnings manipulation practices more than other industries, despite its regulatory and supervisory oversight. In particular, extant literature has attempted to demonstrate that banks smooth their income by manipulating LLPs to reduce earnings volatility and improve investors' perceptions of maintaining stable dividend flow over time (i.e. Hasan and Wall, 2004; Liu and Ryan, 2006; Bushman and Williams, 2012; Giunta et al., 2014; Azzali et al., 2014; Novotny-Farkas, 2016; Andreou et al., 2017; Curcio et al., 2017; Peterson and Arun, 2018; Osma et al., 2019; Oberson, 2021).

Scholars have argued that accounting rules drive managers' abilities to engage in earnings management (Anandarajan et al., 2007). Therefore, the new

IFRS 9 suggests a model to estimate LLPs that should take into account all reasonable and supportable information, including forward-looking information. This model has been suggested to provide more reliable LLPs. This is consistent with the reasoning that higher discretionary behaviour might allow bank managers to incorporate reliable information about expected future losses, leading to a more prudent approach to loss-recognition practices (e.g. Bushman and Williams, 2012). However, other scholars opined that LLP estimation using ECL, which is based on forward-looking information, provides bank managers with a higher opportunity to manipulate expected loan losses (e.g. Gomaa et al., 2019; Giner and Mora, 2019).

Empirically, there is scant evidence of this issue after the ECL model became mandatory in Europe. A few recent studies have demonstrated that, compared to the ICL model, the adoption of ECL increases provisions (i.e. Gaffney and McCann, 2018) and leads to more timely recognition of credit loss and larger reserves in banks' financial statements (Oberson, 2021). Other researchers have documented that the inclusion of forward-looking information in the new ECL model allows managers too much discretion in income management (e.g. Ozili, 2017; Krüger et al., 2018; Gomaa et al., 2019; Du et al., 2022). For instance, Gomaa et al. (2019) tested the ECL model's impact on earnings management in a controlled laboratory environment. Their results revealed that the more flexible ECL rule increased earnings manipulation, as participants maximized their short-term compensation targets over long-term profits. However, Taylor and Aubert (2022) confirmed the increased use of discretionary LLPs for earnings management across a subsample of European listed banks. Du et al. (2022) investigated how bank managers incorporate forward-looking information and evaluated the reasonableness of different forecast horizons to project lifetime ECL. Their results revealed that the ECL model allows for unintentional biases when managers incorporate such information.

Given the recent introduction of ECL, it is still difficult to assert whether flexibility under the ECL model allows managers to manipulate earnings opportunistically or allows them to exercise prudence due to the timely recognition of losses (Hashim et al., 2019; Du et al., 2022). Empirical evidence about the impact of the ECL model on bank managers' behaviour is mixed and needs to be further clarified to support a clearer relationship between LLPs and earnings management.

In this study, consistent with the argument that the new ECL model allows managers greater discretion (e.g. Giner and Mora, 2019), we believe that its introduction entails an excessive allowance at the initial recognition of loans, which in turn leads to earnings management. Thus, we expect bank managers to exploit the forward-looking and stochastic nature of this model in an oppor-

tunistic manner to implement earnings manipulation practices. To address this, we tested the following hypothesis:

HP₁: Following the introduction of ECL, bank managers are more prone to managing their earnings through the discretionary use of LLPs.

2.2. Earnings management and banks' BMs

Several research studies have examined the factors that influence the estimation of LLPs, including bank size, earnings volatility, targeted level of income, ownership structure and risk profile, which play an important role (e.g. Hasan and Wall, 2004; Kanagaretnam et al., 2005; Leventis et al., 2011; Bushman and Williams, 2012; Azzali et al., 2016; Caporale et al., 2018).

We extend previous studies on the determinants of LLPs' policies after the implementation of IFRS 9 when the ECL model becomes effective. Particularly, as opined by Giner and Mora (2019), we argue that the bank BM may explain divergences in provisioning policies. However, to date, there is no empirical evidence on this issue. Novak (2014) focused on the potential usefulness of discriminating banks from BMs whose objective is to hold assets collecting cash flows from other banks' BMs after IFRS 9 implementation.

According to Giner and Mora (2019), bank BMs can be classified into OTD and OTH. It is noteworthy that OTD banks do not hold loans until their natural maturity. Therefore, their BMs are based on securitization, which allows risky loans to shift to the secondary loan market (Bruno et al., 2018). Zhao (2019) confirmed that banks with a BM based on strong securitization (i.e. OTD banks) do not rely heavily on earnings management purposes via LLPs. Instead, for OTH banks, earnings management might be considered a relevant aspect since loans may be undervalued between the initial recognition of all-life expected losses and their maturity. In such circumstances, the provisions might be used to further manage reported earnings since OTH banks incur higher risk-taking behaviour than OTD banks, whereas the former are more prone to maintain higher risk-weighted assets (Beatty and Liao, 2014; Giner and Mora, 2019).

This aspect might constrain OTH banks from managing LLPs for smoothing earnings purposes because of the greater scrutiny of outside investors interested in monitoring risk-taking behaviour (Bushman and Williams, 2012). This finding is also consistent with the argument that these banks use LLPs to signal potential investors' earnings performance and portfolio quality (Kanagaretnam et al., 2005; Tran et al., 2020). Thus, we reasonably expect OTH

banks to engage more in managing their earnings via LLPs. Although we are not aware of any previous literature that investigates the links between banks' BMs and the discretionary use of LLPs for earnings management purposes, we address this empirical question, advancing the idea that banks based on the OTH BM incur upstream in earnings management practices; hence, we formulate the following hypothesis:

HP_{1a}: Following the introduction of ECL, originate-to-hold banks are more prone to managing their earnings through LLPs than banks relying on the originate-to-distribute business model.

2.3. Earnings management and banks' LSs

Banks' behaviours in managing LLPs are also expected to differ according to whether they are listed or not (i.e. Anandarajan et al., 2007; Nichols et al., 2009; Curcio et al., 2017). Specifically, the literature on the relationship between discretionary provisioning policies for loan losses and LS relies strongly on earnings management reasoning. In this regard, Fonseca and González (2008) suggested that unlisted banks are less diversified, and such aspects could easily accentuate the risk-shifting conflict caused by their higher leverage, thereby increasing the incentives to offset such risk with the recognition of LLPs to smooth their reported income. It might also be argued that listed banks are less engaged in earnings management practices via LLPs because they are subject to stricter supervision by regulators. For instance, European listed banks are under the scrutiny of the European Central Bank to control and supervise capital and liquidity ratio requirements within the Single Supervisory Mechanism (Ceccobelli and Giosi, 2019).

However, the prediction of the impact of banks' LSs on discretionary behaviour regarding LLP policies is not obvious. Beatty et al. (2002) showed that publicly traded banks are more likely to smooth their income compared to privately held banks. They adopt this behaviour with the aim of raising capital from the public stock market (e.g. Leventis et al., 2011). Similarly, other authors suggest that listed banks usually have stronger incentives to smooth their earnings, with the aim of reducing the earnings volatility and risk perception of investors compared to privately traded banks (Nichols et al., 2009; Vishnani et al., 2019). In addition, it has been argued that listed banks subject to stricter supervision by regulators may tend to engage more in smoothing their reported income in order to avoid the costs associated with failing supervisory scrutiny (e.g. Curcio et al., 2017).

In this study, consistent with the argument that listed banks have higher incentives to manipulate their earnings to reduce earnings volatility and meet market expectations, we believe that managers of such banks engage more opportunistically in LLPs. Thus, we empirically address this issue and formulate the following hypotheses:

HP_{1b}: Following the introduction of ECL, listed banks are more prone to managing their earnings through LLPs compared to non-listed banks.

2.4. Earnings management during financial crises

Previous literature has also explored the use of LLPs during adverse financial market conditions because managers' provisioning decisions under stressed economic events could not be explicit and may represent an interesting area of investigation. For instance, Pinto and Picoto (2018) found evidence of earnings management practices via LLPs during the 2008 financial crisis. In addition, El Sood (2012) found that during the 2007-2008 crisis, US banks used provisions to smooth income upward. More recently, Araujo et al. (2021) underlined that accounting standard setters reiterated the inherent flexibility in LLP determination following the outbreak of the COVID-19 pandemic, which encouraged banks to provide more discretion for loan losses. In addition, Danisman et al. (2021) examined the impact of economic policy uncertainty on banks' LLPs, providing evidence that banks used loan loss provisions to smooth income during crisis periods. For this reason, we expect that during downturns, banks are more prone to manipulating income through LLPs because they are more exposed to earnings volatility caused by turmoiled events. The current COVID-19 distressed period represents the first important test for the ECL model since IFRS 9 became mandatory across the European banking sector. Hence, considering this novel scenario of uncertainty, this study aimed to test the following additional hypothesis:

HP_{1c}: During the years of the COVID-19 pandemic crisis, banks are more prone to managing their earnings through LLPs compared to the pre-crisis period.

3. Research design

3.1. Sample

The sample comprises listed and unlisted European banks from 2018 to 2021, the last year available. The starting sample is composed of 5,258

banks, but due to missing data, we exclude 111 financial institutions, obtaining a final sample of 5,147 banks, resulting in 20,588 observations.

In Table 1, Panel A shows the number of banks and, simultaneously, the number of OTH and listed banks in each European country in the sample.

Table 1 – Sample description

Panel A. Sample composition. Country, business model and listing status						
Counties	n	%	originate-to-hold	%	listed banks	%
Austria	653	12.69%	557	15.14%	9	3.09%
Belgium	88	1.71%	40	1.09%	5	1.72%
Bulgaria	29	0.56%	23	0.63%	4	1.37%
Cyprus	39	0.76%	29	0.79%	3	1.03%
Czech Republic	35	0.68%	20	0.54%	3	1.03%
Germany	1,695	32.93%	1,350	36.69%	33	11.34%
Denmark	83	1.61%	61	1.66%	25	8.59%
Estonia	9	0.17%	5	0.14%	1	0.34%
Spain	163	3.17%	130	3.53%	9	3.09%
Finland	205	3.98%	191	5.19%	6	2.06%
France	359	6.97%	184	5.00%	30	10.31%
United Kingdom ¹	477	9.27%	124	3.37%	58	19.93%
Greece	15	0.29%	7	0.19%	7	2.41%
Croatia	34	0.66%	16	0.43%	7	2.41%
Hungary	34	0.66%	22	0.60%	3	1.03%
Ireland	52	1.01%	28	0.76%	4	1.37%
Italy	470	9.13%	384	10.44%	32	11.00%
Lithuania	7	0.14%	6	0.16%	1	0.34%
Luxembourg	116	2.25%	67	1.82%	1	0.34%
Latvia	15	0.29%	14	0.38%	-	-
Malta	21	0.41%	11	0.30%	5	1.72%
Netherlands	81	1.57%	30	0.82%	11	3.78%
Poland	160	3.11%	149	4.05%	13	4.47%
Portugal	130	2.53%	110	2.99%	3	1.03%
Romania	29	0.56%	22	0.60%	5	1.72%
Sweden	114	2.21%	80	2.17%	8	2.75%
Slovenia	14	0.27%	8	0.22%	1	0.34%
Slovakia	20	0.39%	11	0.30%	4	1.37%
Tot	5,147	100.00%	3,679	100.00%	291	100.00%

Panel B. Mean values of riskiness variables for different business models (%)

¹ We consider the United Kingdom in the sample because Brexit transition period ended on 31 December 2020. However, we have done all the analyses excluding the United Kingdom and the results do not change.

	OTH	OTD	TOT
NPL	11.6%	6.0%	10.0%
LCR	154.9%	297.3%	195.5%
NSFR	121.6%	170.3%	135.5%
RWA	47.0%	39.0%	44.7%

Note. Table 1, Panel A reports the sample composition and bank distribution by European country. The sample consists of 5,147 banks, of which 3,679 are originate-to-hold banks and 291 are listed. Table 1, Panel B depicts some descriptive statistics on the riskiness of OTH and OTD banks, relying on liquidity ratio measures as required by Basel III. *NPL* is the total of non-performing loans on total assets, *LCR* is the liquidity cover ratio, *NSFR* is the net stable funding ratio and *RWA* is risk weighted assets, and it is computed as the ratio of risk-weighted assets to total assets. All variables were taken from Bureau Van Dijk for each bank-year observation.

It is possible to observe that the majority of banks are located in Germany (32.93%), while smaller numbers are from Estonia (0.17%) and Lithuania (0.14%). Most of the listed banks are located in the United Kingdom (19.93%).

Panel B of Table 1 offers helpful insights into the different risk-taking behaviours of the two bank BMs, relying on the mean values of liquidity ratios as required by Basel III (Khan et al., 2017). OTH banks appear riskier than OTD banks, whereas the liquidity cover ratio (LCR) and the net stable funding ratio (NSFR) measures are worse for banks that rely on the OTH model. Furthermore, the levels of non-performing loans (NPL) and risk-weighted assets (RWA) are higher for the former, showing that such banks incur more risk-taking behaviours.

3.2. Measurement of variables

We adopt the amount of LLPs as our dependent variable (i.e. Bushman and Williams, 2012; Ozili, 2017; Andreou et al., 2017; Peterson and Arun, 2018). Consistent with past studies, we measure the amount of banks' LLPs as loan loss provisions over total assets at time t . This variable has been widely used to prove the discretionary use of LLPs (i.e. Anandarajan et al., 2007; Beatty and Liao, 2011; Curcio et al., 2017). Both academics and practitioners recognize the general and specific components of LLPs (Anandarajan et al., 2007; Fonseca and González, 2008; Bouvatier and Lepetit, 2012). The former can be discretionally managed by banks because it is related to unidentified losses, whereas the latter depends on credit losses that managers can identify. Following previous scholars (i.e. Curcio et al., 2017), we control the generic component with the variable LOAN, which is equal to customer loans divided by total assets, whereas the specific component is proxied by the variable NPL, which is equal to the ratio of NPLs divided by total

assets. These variables are expected to be positively related to LLPs (Fonseca and González, 2008; Bouvatier and Lepetit, 2012; Morris et al., 2016; Curcio et al., 2017).

Since banks are sensitive to deteriorating financial market conditions, we control for gross domestic product (GDP), which measures the annual growth rate of the GDP for country j in year t . Such a proxy is expected to capture the procyclicality of LLPs due to macroeconomic conditions (Laeven and Majnoni, 2003; Anandarajan et al., 2007; Fonseca and González, 2008). Considering that banks are expected to reduce provisions to increase their earnings during an economic downturn, we hypothesize a negative coefficient for GDP.

Earnings before interest and taxes (EBIT) refers to earnings before taxes and loan loss provisions divided by total assets and is widely adopted in earnings management studies (Anandarajan et al., 2007; Curcio et al., 2017; Kim et al., 2019). If banks are likely to engage in earnings manipulation, the relationship between LLPs and EBIT is expected to be positive, meaning that when banks' incomes are low (high), managers discretionally decrease (increase) LLPs with the scope of smooth earnings.

We conduct an analysis considering variables that capture banks' BMs (Giner and Mora, 2019) and LSs (Curcio et al., 2017) and interact them with EBIT. Both the dummy variables BM and LS assume a value of 1 for OTH and listed banks and 0 for OTD and unlisted banks. Hence, we create the interaction terms BM*EBIT and LS*EBIT to explore how different banks' BMs and LSs can influence the discretionary behaviour of bank managers for earnings manipulation. We expect these variable coefficients to be positive.

Finally, we consider an indicator variable, COVID, equal to 1 for the observations across the period 2020–2021 and 0 for the observations across the years 2018–2019. Thus, we generate the interaction term COVID*EBIT to investigate the differences in banks' use of LLPs in the two subperiods. Based on the earnings management aims, this variable's coefficient is expected to be positive.

3.3. Regression models

To test HP_1 for earnings management behaviour, consistent with previous literature (Ahmed et al., 1999; Anandarajan et al., 2007; El Sood, 2012; Morris et al., 2016; Curcio et al., 2017), we adopt the following model to capture the discretionary use of LLPs for earnings smoothing purposes:

$$LLP_{s,t} = \alpha + B_1 NPL_{i,t} + B_2 LOAN_{i,t} + B_3 GDP_{i,t} + B_4 EBIT_{i,t} + \varepsilon_{i,t} \quad (1)$$

Thus, potential determinants of banks' earnings management (i.e. LS and BM) are estimated through the model presented in the following equations, adding the interaction terms with LS and BM (Eq. 2) to test HP_{1a} and HP_{1b}. In addition, to test our HP_{1c}, similar to Curcio et al. (2017), who investigated the 2007–2008 financial crisis, we interact the variable COVID with EBIT to determine any potential difference in discretionary use of LLPs during the COVID-19 pandemic, as follows:

$$LLPs_{i,t} = \alpha + B_1NPL_{i,t} + B_2LOAN_{i,t} + B_3GDP_{j,t} + B_4EBIT_{i,t} + B_5COVID + B_6LS + B_7BM + B_8LS*EBIT_{i,t} + B_9BM*EBIT_{i,t} + B_{10}COVID*EBIT_{i,t} + \varepsilon_{i,t} \quad (2)$$

Overall, Table 2 resumes the aforementioned variables.

Table 2 – Variables description and measurement

Variables	Definition	Measurement	Source
Dependent variable			
LLPs _{i,t}	Loan loss provisions	Loan loss provision on total assets for the bank i at the year t	Bureau Van Dijk
Test variables			
EBIT _{i,t}	Earnings before taxes and loan loss provisions	Earnings before taxes and loan loss provision on Total Assets for the bank i at the year t	Bureau Van Dijk
BM	Business model	Dummy variable that assume the value of 1 for originate-to-hold banks and 0 for originate-to-distribute banks	Bureau Van Dijk
LS	Listing status	Dummy variable that assume the value of value 1 for listed banks and 0 for unlisted banks	Bureau Van Dijk
COVID	Covid-19 pandemic crisis	Dummy variable that assume the value of 1 for the period 2020-2021 (Covid-19 period) and 0 for the period 2018-2019 (pre-crisis period)	-
Control variables			
GDP _{j,t}	GDP per capita	Annual growth rate of the gross domestic product for the country j at year t	Heritage Foundation (https://www.heritage.org/index/explore)
NPL _{i,t}	Non-performing loans	Total non-performing loans over total assets for the bank i at the year t	Bureau van Dijk
LOAN _{i,t}	Loans	Customer loans divided by total assets for the bank i at the year t	Bureau van Dijk

4. Results

4.1. Descriptive statistics

Table 3 reports the descriptive statistics. The dependent variable $LLPs_t$ ranges from a minimum of 0 to a maximum of 1, with a mean of 0.05. The NPL varies from a minimum of 0% to a maximum of 94%, with a mean of 10%, while LOAN has a mean of 0.55. EBIT ranges from 0.03 to 0.81, with a mean of 0.63. With regard to the BM, 72% of banks are classified as OTH and 6% are listed. Lastly, the mean GDP per capita is 4.66.

Table 3 – Descriptive statistics

Variables	Minimum	Maximum	Mean	Std. Deviation
$LLPs_t$	0	1	0.05	0.11
NPL	0	0.94	0.10	0.20
LOAN	0.30	0.70	0.55	0.52
GDP	4.34	5.03	4.66	0.10
EBIT	0.03	0.81	0.63	1.71
COVID	0	1	0.50	0.49
BM	0	1	0.72	0.45
LS	0	1	0.06	0.23

Note. Table 3 reports the descriptive statistics (minimum, maximum, mean and standard deviation) for the main variables. All continuous variables were winsorized at the 1st and 9th percentiles.

Table 4 reports the correlation coefficients, suggesting that multicollinearity is not a problem in this study. LLPs are positively correlated with LOAN and LS and negatively correlated with NPL, GDP, EBIT, COVID and BM. We also perform the variance inflation factor (VIF) in the regression analysis so that this aspect does not affect the analysis.

Table 4 – Matrix correlation

Variables	1	2	3	4	5	6	7	8
1 LLPs	a1							
2 NPL	a-0.06***	a1						
3 LOAN	a0.14***	a-0.03**	a1					
4 GDP	a-0.22***	a0.03**	a-0.41***	a1				
5 EBIT	a-0.12***	a-0.07***	a-0.22***	a0.61***	a1			
6 COVID	b-0.12***	b-0.31***	b-0.03***	b0.22***	b0.17***	c1		
7 BM	b-0.28**	b-0.05***	b0.11**	b-0.14***	b-0.09***	c0.35***	c1	
8 LS	b0.07**	b-0.17***	b-0.08*	b0.42*	b0.10**	c0.27**	c0.25***	c1

Note. Table 4 presents the correlation coefficients for the selected variables. The variables were coded with numbers ranging from 1 to 8. Symbols ***, ** and * denote two-sided significance at the 1%, 5% and 10% levels, respectively. (a) Pearson's correlation coefficient indicating the level of association between the two continuous variables. (b) The point-biserial correlation coefficient indicating the level of association between one continuous variable and one dichotomous variable. (c) Chi-square coefficient indicating the level of association between the two dichotomous variables.

4.2. Regression results and discussion

Table 5 provides the results of the OLS regressions.² The reported VIF values confirmed the absence of multicollinearity problems. Similar to other studies (Tran et al., 2020; Liu and Sun, 2022), the level of the R² coefficient is supported by the significance of the coefficients of our test variables.

Table 5 – OLS Regression results

Variables	Model 1	VIF	Model 2	VIF
Const.	1.09 (3.67) ***	-	1.10 (3.65) ***	-
NPL	0.08 (4.50) ***	4.50	0.08 (4.33) ***	3.07
LOAN	0.01 (0.44)	1.03	0.01 (0.43)	1.03
GDP	-0.02 (-3.61) ***	1.22	-0.02 (-3.65) ***	1.22
EBIT	0.10 (3.95) ***	1.41	0.10 (3.88) ***	1.44
COVID	-	-	0.31 (4.78) ***	1.25
BM	-	-	0.34 (2.88) **	2.15
LS	-	-	0.09 (2.79) **	2.16
COVID*EBIT	-	-	0.33 (3.59) ***	2.11
LS*EBIT	-	-	0.14 (3.66) ***	3.24
BM*EBIT	-	-	0.16 (2.98) ***	3.18
F	126.13 ***		104.57 ***	
Adj R²	0.28		0.34	
Obs.	20,588			

Note. Table 5 reports the regression results estimated using Eq. (1) and Eq. (2). The dependent variable was LLPs. Symbols ***, ** and * denote two-sided significance at the 1%, 5% and 10% levels, respectively.

² The assumptions of normality and homoskedasticity are respected.

Consistent with previous studies (i.e. Ozili, 2017; Pinto and Picoto, 2018; Krüger et al., 2018; Hong et al., 2020; Macchioni et al., 2021; Taylor and Aubert, 2022), we find the overall existence of earnings management for European banks after the introduction of the ECL model under IFRS 9. The coefficient of EBIT is statistically positive and significant, with a p-value < 1%. This result confirms our expectation that IFRS 9 stimulates discretionary behaviour in European banks. This corroborates previous findings of scholars who found that under the ECL model, managers are more prone to manipulate earnings via LLPs because of the forward-looking nature of this model, which encourages much more discretion among bank managers (e.g. Gomaa et al., 2019; Du et al., 2022). Thus, our findings suggest that IFRS banks tend to smooth income to reduce earnings variability and that the ECL model is inherently subjective and represents a high potential for earnings management practices. Therefore, we accept H_1 .

The regression results from Model 2 also confirm hypothesis H_{1a} ($BM*EBIT$ has a p-value < 1%). BMs affect the discretionary use of LLPs for earnings management purposes, and OTH banks are more likely to manage their income (the coefficient of $BM \times EBIT$ is greater than the coefficient of EBIT). This result empirically confirms that banks' BMs entail dissimilarity in provisioning policies, leading to earnings management practices, as suggested by Giner and Mora (2019). A possible explanation is that such banks use LLPs more intensively to manage income, with the scope of communicating potential investors with better earnings performance and loan portfolio quality (Kanagaretnam et al., 2005; Tran et al., 2020). This appears to be reasonable since external capital providers pay special attention to high-risk-taking banks, such as OTH banks.

In addition, this evidence can lead to enriched explanations of managers' actions that the extant literature previously only recognized in *ex-post* discretionary behaviour (e.g. Jin et al., 2019; Danisman et al., 2021). Indeed, although managers could determine provisions discretionally for income management purposes based on the incentives given by banks' expected earnings outcomes, our results suggest that such provisioning policies can also be affected *ex ante* based on the BM on which banks rely.

Another important aspect is listed banks, whose variables are statistically significant in our model. Table 5 shows that LS has a positive and significant impact on the relationship between EBIT and LLPs (the coefficient of $LS*EBIT$ is greater than the coefficient of EBIT); hence, hypothesis H_{1b} is accepted. LLPs can be manipulated to improve the market's perception of banks' earnings (e.g. Beatty and Liao, 2011; Curcio et al., 2017; El Sood, 2012). Our results corroborate the studies of Anandarajan et al. (2007) and

Vishnani et al. (2019) because we find that banks listed on stock exchanges use LLPs more extensively than unlisted banks for earnings management purposes, probably because they intend to reduce earnings volatility and risk perception by investors. Hence, banks' LSs can be regarded as another *ex-ante* driver factor for the discretionary use of LLPs.

Moreover, we accept our H_{1c} , confirming that European banks are more inclined to incur earnings management practices under the recent COVID-19 turmoil ($B_{10}[\text{COVID}*\text{EBIT}] > B_4[\text{EBIT}]$). This is consistent with existing research that mainly focused on the 2007-2008 financial crisis (Morris et al., 2016; Curcio et al., 2017). The results suggest that during downturns, banks are more prone to maintain smooth income numbers to face deteriorating market conditions with respect to good economic periods; thus, they are more encouraged to exploit accounting manipulation behaviour. This finding confirms that European bank managers press on LLPs to contrast the more likely economic losses during the COVID-19 pandemic, taking advantage of uncertain economic conditions to discretionally adjust reported earnings.

Regarding the other control variables used in our models, we find that GDP is negative and significantly affects provisioning policies for loan loss (at the 1% confidence level) for all models. This result indicates that banks set aside a greater number of LLPs during an economic recession (i.e. lower GDP in year t), capturing procyclicality. The procyclical nature of bank behaviour is consistent with extant empirical research (Andries et al., 2017; Ozili, 2017; Olszak et al., 2017). Additionally, the coefficient for NPL is positive and statistically significant across all models (at the 1% confidence level), corroborating the direct relationship between LLPs and credit quality. Finally, despite our results showing that customer loans are positively correlated with LLPs, the coefficient of the LOAN variable is neither statistically nor economically significant.

5. Robustness test

We conduct a robustness test by adopting two-stage least squares regression (2-SLS) to correct for endogeneity (Gippel et al., 2015). Indeed, potential endogeneity problems may arise in cross-country studies, and variable LS can be regarded as endogenous. Moreover, Fonseca and González (2008) claimed the potential endogeneity of political-economic variables. Hence, it is plausible that LS, GDP and LLPs are determined endogenously, which might bias the regression results. We address endogeneity by using an instrumental variable in 2-SLS. Assuming that macroeconomic factors might in-

fluence LS,³ we formulate a logit regression and obtain the predicted value of LS (Eq. 3).⁴ Similarly, we obtain the predicted GDP values (Eq. 4).

$$\text{Logit}(LS_{i,t}) = \alpha + B_1NPL_{i,t} + B_2LOAN_{i,t} + B_3GDP_{i,t} + B_4EBIT_{i,t} + B_5COVID + B_6BM + B_7BM*EBIT_{i,t} + B_8COVID*EBIT_{i,t} + \varepsilon_{i,t} \quad (3)$$

$$\text{Logit}(GDP_{i,t}) = \alpha + B_1NPL_{i,t} + B_2LOAN_{i,t} + B_3EBIT_{i,t} + B_4COVID + B_5LS + B_6BM + B_7LS*EBIT_{i,t} + B_8BM*EBIT_{i,t} + B_9COVID*EBIT_{i,t} + \varepsilon_{i,t} \quad (4)$$

In the second stage (Eq. 5 and Eq. 6), we used the predicted values of LS ($\widehat{LS}_{i,t}$) and GDP ($\widehat{GDP}_{i,t}$) instead of the actual values in the regression model (Jaggi et al., 2018).

$$LLPs_{i,t} = \alpha + B_1NPL_{i,t} + B_2LOAN_{i,t} + B_3\widehat{GDP}_{i,t} + B_4EBIT_{i,t} + \varepsilon_{i,t} \quad (5)$$

$$LLPs_{i,t} = \alpha + B_1NPL_{i,t} + B_2LOAN_{i,t} + B_3\widehat{GDP}_{i,t} + B_4EBIT_{i,t} + B_5COVID + B_6\widehat{LS}_{i,t} + B_7BM + B_8\widehat{LS}_{i,t}*EBIT_{i,t} + B_9BM*EBIT_{i,t} + B_{10}COVID*EBIT_{i,t} + \varepsilon_{i,t} \quad (6)$$

The regression results are presented in Table 6, and the main results are listed in Table 5.

Table 6 – Two-stages least squares (2SLS) results

Variables	Model 1	VIF	Model 2	VIF
Const.	1.32 (5.39)***	-	1.30 (5.50)***	-
NPL	0.02 (0.44)	4.50	0.10 (4.30)***	3.07
LOAN	0.01 (0.50)	1.03	0.01 (0.43)	1.03
GDP	-0.12 (-6.02)***	1.22	-0.12 (-3.60)***	1.22
EBIT	0.10 (3.67)***	1.41	0.10 (3.88)***	1.44
COVID	-	-	0.30 (4.18)***	1.25
BM	-	-	0.34 (2.80)**	2.15

³ Macroeconomic factors that may affect banks listing status can be inflation, loan growth, GDP growth and stock-market volatility (e.g. Fonseca and González, 2008; Tinoco and Wilson, 2013).

⁴ The adoption of a logit regression depends on the fact that LS and GDP, which are the dependent variables in the first step of the 2LS, are dichotomous.

Variables	Model 1	VIF	Model 2	VIF
LS	-	-	0.10 (2.91) ^{***}	2.16
COVID*EBIT	-	-	0.30 (3.60) ^{***}	2.11
LS*EBIT	-	-	0.15 (3.63) ^{***}	3.24
BM*EBIT	-	-	0.15 (2.98) ^{***}	3.18
F	116.11 ^{***}		114.73 ^{***}	
Adj R²	0.29		0.35	
Obs.	20,588			

Note. Table 6 presents the results of the two-stage least squares method with the predicted LS and GDP values. Symbols ^{***}, ^{**} and ^{*} denote two-sided significance at the 1%, 5% and 10% levels, respectively.

5.1. Additional test

We address two additional issues. First, we explore whether European banks enforce earnings management behaviour during the switch from the ICL to the ECL model. This comparison would enhance our main analysis that banks were less prone to managing their incomes through LLPs during the ICL period compared to the ECL post-implementation period.

Second, we investigate the role of banks' BMs and LSs during the ECL pre-implementation period. Overall, in this period, we expect these two banks' characteristics to drive bank managers' behaviours. Again, this finding strengthens the main results.

To run our additional tests, we add back data from the IFRS 9 pre-implementation period (2014-2017) for the subsample of ICL banks and compare this subsample with the results from Model 2 (IFRS 9 implementation period 2018-2021). Thus, we run an OLS regression in accordance with previous studies (Beatty and Liao, 2011; Tran et al., 2020) and match the variable coefficients between the two subsamples. Table 7 presents the coefficient estimations for the additional test.

Table 7 – OLS results for additional test

Variables	ICL	VIF	ECL	VIF
Const.	1.23 (4.15)***	-	1.30 (5.50)***	-
NPL	0.12 (3.69)***	3.07	0.10 (4.30)***	3.07
LOAN	0.03 (0.40)	1.03	0.01 (0.43)	1.03
GDP	-0.08 (-3.40)***	1.22	-0.12 (-3.60)***	1.22
EBIT	0.02 (3.80)***	1.44	0.10 (3.88)***	1.44
COVID	-	-	0.30 (4.18)***	1.25
BM	0.24 (2.16)**	2.15	0.34 (2.80)**	2.15
LS	0.12 (2.11)**	2.16	0.10 (2.91)***	2.16
COVID*EBIT	-	-	0.30 (3.60)***	2.11
LS*EBIT	0.09 (3.45)***	3.24	0.15 (3.63)***	3.24
BM*EBIT	0.10 (3.51)***	3.18	0.15 (2.98)***	3.18
F	102.65***		114.73***	
Adj R²	0.31		0.35	
Obs.	20,588			

Note. Table 7 presents the results of the additional tests presented in Section 5.1. Symbols ***, ** and * denote two-sided significance at the 1%, 5% and 10% levels, respectively.

The estimated coefficients in Table 7 confirm our hypothesis. In fact, the coefficient for EBIT is significantly positive under ICL but lower when compared to the coefficient from the ECL post-implementation subsample (0.02 < 0.10). Hence, owing to the increasing and significant trend of the EBIT coefficient, this result suggests that bank managers enforce their discretionary behaviours in estimating LLPs during the switch between the two impairment models. This is consistent with previous studies (Ozili, 2017; Tran et al., 2020; Macchioni et al., 2021) and corroborates our main analysis that ECL elicits more discretion in bank managers for income smoothing.

Our additional test also confirms that banks' BMs and LSs positively influence attitudes towards earnings management practices. In fact, consistent with Model 2, during the ECL pre-implementation period (2014-2017), listed and OTH banks enforced income-smoothing actions ($B[LS*EBIT]_{ICL}$ and

$B[BM*EBIT]_{ICL}$ are greater than $B[EBIT]_{ICL}$). This outcome validates the main analysis.

6. Conclusions

This study explores the discretionary use of LLPs by European banks over the 2018–2021 period. In particular, we examine banks' behaviour during the implementation of the ECL model under IFRS 9. Consistent with previous studies (Ozili, 2017; Krüger et al., 2018; Giner and Mora, 2019; Taylor and Aubert, 2022), we find that European banks rely more strongly on LLPs for earnings management purposes compared to the years prior to ECL implementation. This result suggests that the forward-looking and stochastic nature of ECL leads to more discretionary behaviour by bank managers (i.e. Du et al., 2022). We also find evidence of additional factors affecting *ex-ante* earnings management practices. In particular, we highlight that the OTH bank BM and publicly held banks engage more in earning discretionary policies. Lastly, similar to previous studies (Morris et al., 2016; Curcio et al., 2017), our research provides early evidence that during the recent turmoil due to the COVID-19 pandemic, banks enhanced their discretionary behaviour for income smoothing purposes.

Overall, we contribute to the existing literature by expanding research on the discretionary use of LLPs and welcoming the call of López-Espinosa et al. (2021), who recommended more research on this topic after the implementation of ECL. We also confirm Giner and Mora's (2019) expectations about how earnings management intensity can vary across different bank BMs, contributing to the first empirical study addressing this issue. Therefore, this study provides original insights into the theoretical argument that estimation of LLPs to smooth income is expected to vary across banks depending on their BMs, LSs and decline in macroeconomic variables, among others. Understanding how banks' loan loss provisioning reacts to different factors is pivotal because banks play a key role in the economic system, and the manipulation of LLPs could impair both bank lending and economic growth (Ng et al., 2020).

Our analysis also provides useful insights for regulators and international accounting setters in making informed decisions regarding loan loss provisioning policies, especially during the current turmoil period, to promulgate *ad hoc* interventions to ensure that stability lasts over time. Our study might also be valuable for investors, given that recognizing further determinants of opportunistic

behaviour (i.e. BM, LS and economic downturns) leads to more aware judgment in their investment decisions.

However, this study has some limitations. First, we consider fiscal year data rather than quarterly data. This might result in a biased analysis, considering that bank managers move the provisions differently during the same fiscal year. Second, although we demonstrate that OTD does not rely on LLPs for earnings management purposes, they could incur such practices through a different channel, such as gains from securitization activity (Dechow et al., 2010), and this issue deserves investigation. Lastly, our main analysis might be biased because of the early years of the pandemic crisis, while other factors may influence bank managers' behaviour. In this regard, future research could investigate the role of banking regulation and supervision in earnings management behaviour more deeply, relying on the recent set of measures from the "Bank Regulation and Supervision Survey" developed by the World Bank (Anginer et al., 2019). Future research can analyse the more exhaustive consequences of these banks' accounting practices, taking into account such caveats as more data become available.

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