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Abstract

The aim of this paper is to examine whether banks engage in profit smoothing using loan loss provisions under the new provisioning rules according to IFRS 9. Due to relatively loose definitions of provisioning principles and use of macroeconomic predictions under IFRS 9, there is certain managerial discretion expected allowing banks to reduce the variability of profits over time using loan loss provisions. The hypothesis that banks use loan loss provisions to smooth their profits under IFRS 9 was tested with panel regression analysis on the panel of 27 EU member countries for period 1Q2015 – 2Q2021. The evidence of profit smoothing was not confirmed neither in IFRS 9, nor in IAS 39 period, therefore, the hypothesis was rejected on 1% significance level.

AMS/JEL classification: G12, G21, G32

Keywords: IFRS 9, loan loss provisions, profit smoothing

1. Introduction

Earnings are considered one of the fundamental indicators of companies' performance. In case of companies whose shares are publicly traded, the level of earnings also determines the attractiveness of the shares. Even one of the most common indicators for valuation of a company is the price-to-earnings ratio, which measures current price of share to earnings per share. Moreover, the stable level of earnings signals steadiness and financial strength. This is especially favoured in case of companies under regulation and oversight, among which the banks certainly belong.

For various reasons, the banking industry is in general more prone to manipulation with earnings, usually observed as earnings management. The motivation behind the earnings management might stem from several management incentives. There is also a variety of tools, which the banks might use to manage the level of earnings. One of the tools represent the accruals (differences between revenues or expenses and actual cash flows), which are involved in many accounting decisions. In case of banks, the biggest accruals represent loan loss provisions, which are an expense, directly affecting the income statement, used to cover for losses arising from loans, which are not expected to be repaid for various reasons. The subjective judgement of bank management is inherent in estimation of loan loss provisions. Bank management thus has discretion and maybe also motives to increase or decrease the earnings in order to eliminate volatility of earnings, cope with regulatory capital requirements, optimize tax expense, keep dividend policy stable, fulfil bonus schemes or reduce perceived risk, which ultimately impacts the quality of financial reporting in the banking industry. Loan loss provisions affect the profitability of banks directly, with impact on retained earnings. Loan loss provisions are reported

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in banks financial statements, which makes them easily traceable and represent a signal of credit risk of the bank. Thus, loan loss provisions are often investigated as a tool for profit smoothing and capital management (Greenawalt and Sinkey, 1988). The earnings might be managed upwards, downwards, or smoothed, depending on the motivation and incentives of bank management. This paper focuses on the type of behaviour when banks smooth the profit using loan loss provisions (banks increase loan loss provisions to decrease high profit and decrease loan loss provisions to increase low profit).

With the introduction of the new accounting standard IFRS 9 in 2018, the rules for creation of loan loss provisions have changed fundamentally. Instead of creation of provisions for incurred credit losses, which already occurred according to IAS 39 accounting standard, the banks had to implement the models for creation of provisions for expected credit losses, which are expected to occur within the next twelve months after the reporting date, or up to the maturity of the assets. Such shift involved development of relatively sophisticated models, which have to take into account all available information of the level of the exposure, including forecasted predictions on the macroeconomic environment, relying on vast data sets. One of the aims of the accounting standard was to simplify the provisioning rules. However, in reality, there are no exact rules for calculation of provisions defined by the standard. Instead, the principles and the implementation of those principles is in the full responsibility of each bank. Due to relatively vague definitions and use of future predictions on macroeconomic development the implementation is relatively complex, heterogeneous across the sector and might result in several undesired impacts. The loose definition of provisioning principles also leaves space for the managerial discretion and the provisions might eventually be less objective. As a result, the question arises whether banks engage in profit smoothing to reduce the variability of profits over time using loan loss provisions under the new accounting standard.

The aim of the paper is to analyse empirically, whether the banks engage in profit smoothing after the implementation of IFRS 9 using discretion over the estimates of loan loss provisions. The analysis is performed on the sample of 27 EU member countries within the period of 1Q2015 – 2Q2021. The empirical testing is based on panel regression analysis using fixed-effects model. Period dummy variable in the model allows us to observe the results for IAS 39 period (1Q2015 – 4Q2017) and IFRS 9 period (1Q2018 – 2Q2021). The findings of this paper complement and extend the earlier studies on the topic of profit smoothing in the banking industry after the implementation of IFRS 9 on a different data set and covers different time horizon.

The rest of the paper is structured as follows: The second section presents the existing literature and develops the hypothesis. The subsequent section describes the data set and methodology applied to test the hypothesis empirically, followed by the section presenting and discussing the results of the analysis. The last section concludes and sums up the main findings of this paper.

2. Literature review and hypothesis development

Empirical literature provides evidence of strong incentives of banks to use loan loss provisions to smooth profit, while the main motivation behind the profit smoothing is seen in using loan loss provisions to decrease the earnings in good times and increase the earnings in bad times. Peterson and Arun (2018) examine 231 European banks within the period 2004 to 2013 and find out that global systemically important banks exhibit income smoothing when they report considerable non-performing loans, apply forward-looking provisioning methodology and are profitable and exceeding minimum regulatory capital ratios. Income smoothing is greater during recessionary periods. Bouvatier et al. (2014) observe the influence of regulatory environment and ownership concentration on the use of loan loss provisions to smooth the income on the panel of European commercial banks. Authors

suggest that more concentrated ownership of banks is positively related with the use of discretionary loan loss provisions to smooth their income. Sood (2012) finds evidence of strong income smoothing behaviour on the sample of 878 US bank companies in the period 2001 – 2009. The results are significant for banks that reach the regulatory minimum target, are more profitable and during the crisis period the banks smooth the income upward.

Beatty et al. (2002) examine whether there is any difference between publicly and privately held US banks in engaging earnings management. They suggest that public banks report steadily increasing earnings, more likely use the loan loss provisions to reduce decreases in earnings and report longer periods of earnings increases. Skala (2021) also concludes profit smoothing is also affected by ownership of banks. Banks with foreign ownership report higher loan loss provisions than state and privately-owned domestic banks. However, they use the higher provisions for profit smoothing. Author also finds out that foreign banks have a significant role in credit policies of their subsidiaries. Norden and Stoian (2014) investigate the role of loan loss provisions for bank earnings management on the sample of 85 Dutch banks in the period 1998 - 2012. The authors find out that banks use loan loss provisions to eliminate the volatility of their earnings, and that there is a positive relationship between loan loss provisions and discretionary earnings and regulatory capital requirements. They also conclude that banks which pay out dividends tend to increase their earnings. Fonesca and Gonzáles (2008) examine the income smoothing by managing loan loss provisions on the panel of 40 banks around the world. The authors suggest that income smoothing increases with market-orientation and the level of development of the financial system, while it decreases with investor protection, supervision and restrictions on bank activities and extent of accounting disclosures.

Fabio et al. (2021) find the positive relationship with prudential supervision and bank profit smoothing, with the underlying idea that banks are motivated to signal stability by managing earnings in regimes with strict supervision. Leventis et al. (2010) investigate whether adoption of IFRS for listed banks in 2005 as compared to previously applied local GAAP impacts the use of loan loss provisions to manage earnings and capital, on the sample of 91 EU listed banks. Authors conclude that implementation of IFRS accounting standards instead of local GAAP mitigated the tendency of banks to manage earnings and capital using loan loss provisions. Anandarajan et al. (2007) conclude that Australian banks use loan loss provisions to manage earnings. The results are stronger for listed banks and in the post-Basel period. Ozili (2019) examines on the sample of European banks in the period 2005 – 2013 whether the banks engage in profit smoothing under IAS 39 accounting standard. The author does not find the evidence of use of loan loss provisions to smooth the profit.

In the context of the new accounting standard setting the rules for creation of loan loss provisions, the question arises, whether IFRS 9 provides the space for managerial discretion or whether it eliminates the possibilities for profit smoothing using loan loss provisions. Novotny-Farkas (2016) examines how the new standard interacts with bank regulation and supervision and concludes that the ECL model might increase volatility of regulatory capital and leaves space for managerial discretion. Kund and Neitzert (2020) investigate the impact of IFRS 9 on earnings management and capital management analysing yearly data from EBA bank stress tests. Authors confirm the existence of earnings management and that banks proactively manage the regulatory capital in stress tests irrespective of an accounting standard. Authors presume that banks seem to want to appear as resilient as possible for the purposes of the stress testing. Oberson (2021) argues based on a sample of 69 banks worldwide for the period 2014 – 2019 that under IFRS 9 the managerial discretion over estimation of loan loss provisions is used more aggressively to smooth earnings.

Based on the existing academic literature and industry studies, which mostly provides evidence of strong incentives of profit smoothing and the principles of IFRS 9, the following hypothesis has been formulated: *Banks use loan loss provisions to smooth their profits under IFRS 9*.

The hypothesis is tested empirically with panel regression analysis on the panel of 27 EU member countries. Dependent variable is ratio of impairment standardized to total assets and explanatory variables are profit before tax and provisions standardized to total assets, NPL change and GDP growth. It is expected that there is a positive relationship between profit before tax and provisions and dependent variable. Banks use the loan loss provisions to decrease the higher profit and to increase the lower profit to signal stability over time. The value of the positive coefficient would display the strength of the profit smoothing behaviour. The higher the coefficient, the greater the smoothing of profits. The relationship between NPL change and dependent variable is expected to be positive. The higher NPL, the greater credit risk realized and the more provisions are created. Non-performing loans can be considered as an ex-post measure of the quality of the loan portfolio. The relationship between GDP growth and dependent variable is expected to be negative. Deterioration of macroeconomic conditions might threaten the ability of the borrowers to repay the debt, which triggers creation of loan loss provisions, while the economic boom eliminates the probability of default of the borrowers and the provisions decrease.

3. Data and methodology

This section describes the data set and methodology applied to test the hypothesis empirically. The source data have been obtained from the European Central Bank database – Statistical Data Warehouse and Eurostat. The data set forms a comprehensive panel on 27 EU member countries for periods from 1Q2015 to 2Q2021. The period is determined by the dataset from ECB, which provides the data from the first quarter 2015. Prior data are available only as discontinued data series using different methodology. The data population provides a total of 702 observations for each variable. The observations are divided into IAS 39 period (1Q2015 – 4Q2017) and IFRS 9 period (1Q2018 – 2Q2021), which represent 324 observations in IAS 39 period and 378 observations in IFRS 9 period for each variable.

The dependent variable of quarterly impairment as a ratio to total assets and independent variables of quarterly profit before tax and non-performing loans were downloaded from the ECB database (ECB, 2021). The independent variable of quarterly volume of GDP was downloaded from Eurostat database (Eurostat, 2021). Profit before tax and provisions and non-performing loans allow us to observe bank-specific factors and GDP allows us to observe systemic factors.

All the variables have been used in relative values. Variable IMP has been obtained as relative to total assets from the source data. Variable GDP has been used as the quarterly GDP growth - calculated from quarterly GDP volumes for each EU country. Variable PBTP has been calculated as follows: quarterly impairment volume has been added to profit before tax to calculate the profit before tax and provisions variable. Then, PBTP has been deducted by total assets in respective quarter to get a relative variable. Variable non-performing loans has been used as a quarterly change in non-performing loans. Table 1 provides descriptive statistics of the data population used in the model, divided into IAS 39 and IFRS 9 period.

Table 1 Descriptive statistics of the data set

						IAS 39 period
Variable	**No. of observations**	**Mean***	**Median**	**Min**	**Max**	**Standard Deviation**

IMP	324	0.12%	0.05%	-0.52%	2.34%	0.11%
PBTP	324	18.97%	20.11%	-196.75%	81.96%	24.83%
NPL	324	-6.10%	-6.08%	-40.81%	80.03%	11.16%
GDP	324	1.27%	1.10%	-6.03%	26.43%	2.01%

IFRS 9 period

Variable	No. of observations	Mean*	Median	Min	Max	Standard Deviation
IMP	378	0.07%	0.04%	-0.13%	0.85%	0.11%
PBTP	378	20.00%	19.00%	-122.62%	62.17%	16.18%
NPL	378	-4.67%	-5.80%	-62.83%	231.02%	21.98%
GDP	378	0.94%	1.06%	-17.12%	17.62%	4.29%

Data source: ECB, Eurostat + authorial computation

Note: Arithmetic mean was used, geometric mean could not be calculated due to negative values of variables.

Based on the table above, we can observe that the mean and median value of all the variables do not differ significantly in the two periods. Number of observations is relatively proportional – 324 observations for each variable in IAS 39 period and 378 observations for each variable in IFRS 9 period. Impairment ratio has lower minimal value and higher maximal value in IAS 39 period (minus representing release of loan loss provisions, plus representing creation of loan loss provisions), while standard deviation is the same for both observed periods (0.11%). Profit before tax and provisions ratio indicates bigger losses, higher gains, and higher standard deviation in IAS 39 period. NPL has lower minimal value, higher maximal value and higher standard deviation in IFRS 9 period, indicating greater volatility of changes in loan portfolio quality in IFRS 9 period. GDP growth exhibits lower minimal value in IFRS 9 period (-17.12%) due to decrease of GDP due to COVID- related restrictions, while maximal value is higher in IAS 39 period (26.43%), which covers the years in general considered as economic growth period. The standard deviation of GDP growth is more than doubled in the IFRS 9 period (4.29%).

Besides the statistics above, the correlation coefficient among the variables has been calculated for the whole period and also separately for both IAS 39 and IFRS 9 period – see Table 2.

Table 2 Correlation matrix of the data set

IAS 39 period

	IMP	PBTP	NPL	GDP
IMP	1			
PBTP	-0.72	1		
NPL	0.07	-0.04	1	
GDP	-0.07	0.10	-0.02	1

IFRS 9 period

	IMP	PBTP	NPL	GDP
IMP	1			
PBTP	-0.51	1		
NPL	-0.08	0.09	1	
GDP	-0.23	0.19	-0.10	1

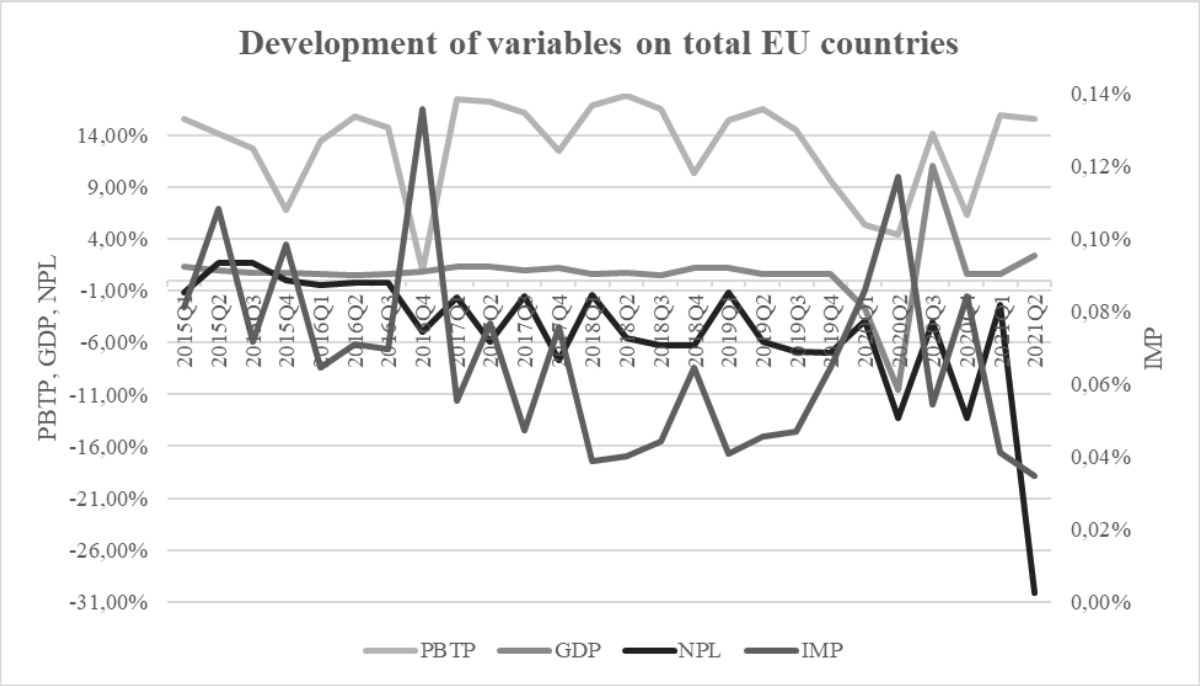
Data source: authorial computation

The correlation coefficient between IMP and PBTP is -0.66 for the whole observed period and -0.72 and -0.51 for IAS 39 period and IFRS 9 period, respectively. The coefficient therefore indicates rather negative correlation between the impairment ratio and profit before tax and provisions. The negative correlation, however, seems to be stronger in the IAS 39 period. The correlation coefficient between IMP and GDP is -0.11 in case of the whole period and -0.07 and -0.23 for IAS 39 period and IFRS 9 period, respectively. The coefficient also indicates slightly negative correlation between the variables, while for the IAS 39 period the correlation is more or less neutral and for the IFRS 9 period slightly

negative. Correlation coefficient between PBTP and GDP is in both periods only slightly positive and can be considered almost neutral. There is no strong correlation between NPL and other variables in either period observed. Correlation coefficients can be deemed very weak, nearly neutral.

The Figure 1 below depicts the development of impairment ratio, profit before tax and provisions ratio, NPL change and GDP growth on the total of 27 EU member countries during the observed period. The vertical axis on the left-hand side represents the scale for PBTP ratio, GDP growth and NPL change for the total of 27 EU countries and the vertical axis on the right-hand side represents the scale for the total IMP ratio.

Figure 1 Development of variables in total of 27 EU countries



Data source: authorial preparation

Based on the figure, we can observe the negative relationship between IMP and PBTP during both IAS 39 period and IFRS 9 period. No particular relationship is noticed between NPL and IMP in IAS 39 period, however, from 2020 – in IFRS 9 period the relationship obviously seems to be negative. There is no specific relationship between IMP and GDP in IAS 39 period visible, while in IFRS 9 period (since 2018), the relationship is negative – observable mostly from 2020. This result is consistent with the conclusions of Pastiranová, Witzany (2021).

The methodology applied to test the hypothesis was panel regression analysis performed on the comprehensive cross-sectional time series data set. The period dummy variable has been applied to differentiate the impact for IAS 39 period and IFRS 9 period. To eliminate any possible concern about the non-stationarity of the data, the relative variables have been used, as already mentioned above.

The stationarity of the times series was tested for a presence of a unit root with panel unit root tests: Levin, Lin & Chu test, Im, Pesaran and Shin W-stat, Augmented Dickey-Fuller test and Phillips–Perron test. The null hypothesis of all tests assumes presence of the unit root. The results of panel unit root tests are presented in the Table 3 below.

Table 3: Panel unit root tests

		IMP			PBTP
Test	**t-Statistic**	**P-value**	**Test**	**t-Statistic**	**P-value**

Levin, Lin & Chu	-10.6450	0.0000
Im, Pesaran and Shin W-stat	-11.8887	0.0000
ADF - Fisher Chi-square	245.581	0.0000
PP - Fisher Chi-square	269.707	0.0000

Levin, Lin & Chu	-13.2074	0.0000
Im, Pesaran and Shin W-stat	-12.5981	0.0000
ADF - Fisher Chi-square	255.066	0.0000
PP - Fisher Chi-square	294.971	0.0000

	NPL	
Test	**t-Statistic**	**P-value**
Levin, Lin & Chu	-16.3746	0.0000
Im, Pesaran and Shin W-stat	-16.1250	0.0000
ADF - Fisher Chi-square	350.354	0.0000
PP - Fisher Chi-square	394.213	0.0000

	GDP	
Test	**t-Statistic**	**P-value**
Levin, Lin & Chu	-28.4693	0.0000
Im, Pesaran and Shin W-stat	-26.9061	0.0000
ADF - Fisher Chi-square	561.678	0.0000
PP - Fisher Chi-square	658.493	0.0000

Data source: authorial computation

In the case of all the variables, the null hypothesis was rejected. The existence of panel unit root was rejected, and the results are significant at 1% significance level. The time series of variables can be considered (weakly) stationary (the mean and autocovariances of the series do not depend on time). Complementary, the variables were tested for individual unit roots (27 cross sections) to support the panel unit root tests. The existence of unit root was rejected for 22 countries in case of variable IMP, for 22 countries in case of variable PBTP, for 23 countries in case of variable NPL and for all 27 countries in case of variable GDP (presented in detail in Table 1 in Annex). The times series were also tested for autocorrelation with Durbin-Watson statistics. The value of statistics is 1.991618, which can be considered close to 2, indicating no serial correlation.

The panel data regression model was estimated with both fixed effects and random effects applied. The regression equation can be defined as follows:

$$imp_{it} = \alpha + \beta_0 pbtp_{it} \times dummy_t + \beta_1 pbtp_{it} \times (1 - dummy_t) + \beta_2 gdp_{it} \times dummy_t + \beta_3 gdp_{it} \times (1 - dummy_t) + \beta_4 npl_{it} \times dummy_t + \beta_5 npl_{it} \times (1 - dummy_t) + \mu_i + \varepsilon_{it}$$

where imp_{it} denotes the dependent variable, $pbtp_{it}$, npl_{it} and gdp_{it} represent the independent variables, $dummy_t$ corresponds to the IAS 39 period dummy variable, μ_i the country specific fixed or random effects, and ε_{it} is the unobserved idiosyncratic error term.

The panel data methodology has the great advantage of allowing unobservable or unmeasurable heterogeneity through individual cross-sectional units to be controlled for. It also allows us to observe the dynamics of the data among the cross-sections and over a period of time. Therefore, it was selected as a methodology suitable for the available data set.

4. Results and Discussion

The panel regression analysis has been performed on with fixed and random effects, using period dummy variables to distinguish results for IAS 39 and IFRS 9 period. The regression has been estimated using the EViews program. To choose the model with a better fit for the data set, the Hausman test was performed, with null hypothesis: There is no correlation between unique errors and the regressors in the model. The initial proposed model is the one with random effects. The Hausman test p-value was 0.0026, considered low. At the 1% significance level, the null hypothesis can be rejected, and the

alternative hypothesis is accepted that the model with fixed effects is preferred. The choice of the model has been supported by the cross-sectional F-test and cross-sectional Chi-square test, both resulting with p-value 0.0000. The null hypothesis that the cross-sectional effects are redundant has been rejected at the 0.1% significance level and the choice of the model with fixed effects has been confirmed.

Variables NPL and GDP were statistically insignificant in IAS 39 period, therefore they were excluded from regression and the regression was performed again without those variables. The change in credit quality of loan portfolio or macroeconomic conditions have no impact on the level of impairment in IAS 39 period. The results of the panel regression with fixed effects after removal of statistically insignificant variables are presented in the Table 4 below.

Table 4 Estimation output of the panel regression with fixed effects

Variable	Coefficient	Std. Error	t-Statistic	P-value
C	0.002085	5.48E-05	38.03765	0.0000
PBTP_IAS39	-0.005656	0.000220	-25.72731	0.0000
PBTP_IFRS9	-0.005786	0.000283	-20.46156	0.0000
NPL_IFRS9	0.000477	0.000213	2.235743	0.0257
GDP_IFRS9	-0.002432	0.001100	-2.210715	0.0274

Data source: authorial computation

The model explains approximately 72% of variability of explained variable IMP (R^2 = 0.724784; Adjusted R^2 = 0.712479). The model is statistically significant at 1% significance level (model F-statistic: 58.90283; P-value: 0.000000).

The results of the regression show a negative impact of PBTP on the impairment ratio in both the IAS 39 and IFRS 9 period, statistically significant at the 1% significance level in both cases. A one-percent increase in PBTP leads to a -0.005656 basis point decrease in the impairment ratio in IAS 39 period and vice versa. The strength of the relationship is very similar for both periods. Such results are in line with correlation coefficient calculated between dependent and explanatory variable. Negative relationship indicates no profit smoothing before or after the implementation of IFRS 9 has been observed. Based on the results, the null hypothesis that IFRS 9 allows for profit smoothing is rejected and an alternative hypothesis is accepted. Instead, however, the results indicate that the European banks, in the good times with relatively higher profits, tend to create relatively provisions. This can be explained by lower default rates and credit losses (incurred and expected) reflected by lower provisioning in the good years.

The NPL variable in IFRS 9 period indicates positive impact on IMP, statistically significant at 5% significance level. The relationship is relatively weak, though. A one-percent increase in NPL leads to a 0.000477 basis point increase in the impairment ratio. The impairment seems to be sensitive to the quality of loan portfolio in IFRS 9 period. Such results are also in line with the graphical observation.

There is a negative relationship between GDP growth and IMP in IFRS 9 period, indicating that a one-percent increase in GDP growth leads to a -0.002432 basis point decrease in the impairment ratio and vice versa. The variable is statistically significant at 5% significance level. Such results are also signalled by a slightly negative correlation coefficient between the two variables and the graphical observation, suggesting the macroeconomic environment has an impact on impairment. With decline of the macroeconomic environment, the ability of the borrowers decreases, which triggers creation of impairments.

The regression was also performed on the level of individual EU countries in the sample to observe sensitivity of the results among the countries. The results of individual regressions are presented in Table 1 in Annex, with highlighted statistically significant regression coefficients. Also, individual unit root tests were performed, which rejected unit root presence in the majority of countries. In the case of a few countries, not all the variables passed the stationarity test (marked grey in the table). The regression coefficients and the significance of those variables should be therefore interpreted with reserve, as the results of the regression might be affected. Therefore, the interpretation of the results presented in the table is partly limited and requires further detailed analysis.

The results of individual regressions are largely consistent with the results of the panel regression. Most of the countries have statistically significant negative regression coefficients of PBTP, while the strength of the coefficient is greatest for Cyprus, Slovenia and Bulgaria in IAS 39 period and Bulgaria, Slovenia and Croatia in IFRS 9 period. In case of NPL variable, the regression coefficients in IFRS 9 period are statistically significant in case of 9 countries, out of which the highest positive coefficient (strongest relationship) is observed for Slovenia, Germany and Belgium. In case of GDP growth variable, there is statistical significance of regression coefficients observed for 7 countries in IFRS 9 period, while the greatest strength of the negative relationship is noted for Slovenia, Estonia and Finland.

5. Conclusion

Earnings management is a frequently discussed topic and empirical literature provides evidence of earnings management incentives in the banking industry. However, there are also contradictory results finding no evidence of earnings management engaged by the banks. Smoothing of profit can be considered a subset of earnings management and is historically observed within the banking industry. Due to regulation and oversight, the banks have incentives to decrease the variability of their profits in order to appear stable and to signal the financial strength through the stable profits. One of the tools to smooth the profit is represented by the loan loss provisioning, which are, to certain extent, under subjective judgement and management discretion of bank management.

The introduction of the new accounting standard IFRS 9 in 2018 brought a significant change in the principles of provisioning. Banks had to adopt models to estimate expected credit losses, taking into account macroeconomic development up to the maturity of their financial assets instead of creation of provisions for incurred credit losses based on the evidence of the default. IFRS 9 is more principles based and does not contain specific definitions or rules for creation of loan loss provisions. Additionally, it requires involvement of forward-looking predictions for long periods in estimation of the provisions. This leaves space for certain discretion which might lead to profit smoothing practices.

The aim of this paper was to test the hypothesis, whether banks use loan loss provisions to smooth the profit under IFRS 9 accounting standard. The hypothesis was empirically tested with panel regression analysis on the data set of 27 EU member countries in period from 1Q2015 to 2Q2021, with impairment ratio as dependent variable and profit before tax and provisions ratio, NPL change and GDP growth as independent variables. The dummy period variable was used to differentiate the results for IAS 39 period (1Q2015 – 4Q2017) and IFRS 9 period (1Q2018 – 2Q2021). The model with fixed effects was chosen as a better fit to actual data based on the Hausman test, cross-sectional F-test, and cross-sectional Chi-square test.

The relationship between dependent variable and profit before tax and provisions as explanatory variable was observed significantly negative in both tested periods, statistically significant at 1% significance level. The hypothesis that banks use loan loss provisions to smooth their profits was rejected as data provide strong evidence against the null hypothesis. The findings might signal that

IFRS 9 provides transparency and reliability of disclosure information over loan loss provisions in financial reporting of the European banks, for the observed period. However, the results might also signal that the banks might possibly use other tools to smooth the profit.

Variable NPL demonstrates positive relationship in IFRS 9 period, which is statistically significant at 5% significance level. The result indicates a positive impact of credit quality of loan portfolio on the level of impairment in IFRS 9 period. The level of impairment increases with increase in non-performing loans, suggesting higher sensitivity of the new accounting standard to the quality of loan portfolio.

Dependent variable and GDP growth exhibit negative relationship in IFRS 9 period, which is statistically significant at 5% significance level. Such results suggest procyclical behaviour of loan loss provisions in IFRS 9 period (as the economic environment deteriorates, the ability of borrowers to repay the debt decreases and more provisions are recorded).

Comparing the results to those of other researchers, the conclusion on no evidence of profit smoothing is similar to the findings of Ozili (2019) and Leventis et al. (2010), though analysed over different standards, data populations and time horizons. The findings of this paper are, however, contradictory to those of Kund and Neitzert (2020), who performed testing on different data set and during a different period. The paper thus contributes to the debate on the impacts of the new accounting standard IFRS 9 and on the widely discussed topic of earnings management in the banking industry.

The hypothesis that banks use loan loss provisions to smooth the profit under IFRS 9 was rejected. Nevertheless, due to certain limitations on data availability, the new testing should be carried out to confirm or reject the findings of this paper, with more observations for IFRS 9 period available. If the profit smoothing was rejected on longer data periods in further studies, the policy recommendation would be to maintain and eventually strengthen the regulatory oversight over the quality of disclosures to sustain the informativeness of the financial reporting for the users of the financial information from the financial system.

Further research might investigate the sensitivity of the findings on the level of individual countries in more detail, examine the validity of the findings for different data sets or under other accounting regimes. Besides, other earnings management techniques that could be employed by the banks, might be investigated.

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7. Annex

7.1. Annex 1: Individual regressions

Table 5: Individual regressions

Country	PBTP_IAS39	PBTP_IFRS9	NPL_IAS39	NPL_IFRS9	GDP_IAS39	GDP_IFRS9
Austria	-0.002764*	-0.004710***	0.003413**	0.002708*	0.007610	0.001075
Belgium	-0.001441*	-0.000780	0.001425	0.001269*	0.009374	-0.003242***
Bulgaria	-0.003077**	-0.005788***	0.008441*	-0.001159	0.029551*	-0.004126
Cyprus	-0.009329***	-0.002290	0.005231	-0.005514	0.156861*	0.000106
Czech Republic	-0.001087	-0.002760**	0.000112	0.001307*	-0.017950**	-0.003761*
Germany	-0.000964	-0.002478***	0.000812	0.001075**	-0.002391	-0.001264
Denmark	-0.002727***	-0.002801***	-0.000416*	0.000046	0.000413	-0.000751
Estonia	-0.000770	-0.001063	-0.000236	-0.000126	-0.006919	-0.007496**
Spain	-0.001283	-0.001891**	-0.000216	-0.000162	0.013086	-0.000052
Finland	-0.001471**	-0.000823	0.000044	0.000166	-0.002562	-0.006769***
France	-0.002352***	-0.003675***	0.000536	-0.000833	-0.011467	-0.000748
Greece	-0.009230***	-0.006175*	-0.011819	0.002229	-0.042094	-0.010762
Croatia	-0.000527	-0.005158***	0.002799*	0.000436	-0.031263	-0.003217
Hungary	-0.007629***	-0.006562***	-0.007543**	-0.002658	-0.017577	-0.002567
Ireland	-0.001397	-0.003184	0.014464***	0.004567	0.004590	-0.009186
Italy	-0.004838***	-0.007116***	-0.005684***	0.003753**	-0.055695	0.002834
Lithuania	-0.001106	-0.001271*	-0.000406	0.000722	-0.017096**	-0.000654
Luxembourg	-0.001713***	-0.001877**	-0.000421*	0.000088	0.005608*	-0.002109**
Latvia	-0.001437*	-0.002218*	0.000800	-0.001462***	0.006317	-0.003823
Malta	-0.001247	0.000566	-0.000871	0.002489	-0.002007	-0.002094
Netherlands	-0.002945**	-0.002132**	-0.001161	0.002637**	-0.008570	-0.002009
Poland	-0.001311	-0.001088	0.001143	0.000211	-0.001149	-0.003030*
Portugal	-0.007874***	-0.006272***	-0.002677	0.003415**	-0.003757	0.002156
Romania	-0.002185*	-0.003792**	-0.002079	0.002835	-0.001682	-0.000192
Sweden	-0.000984	-0.000607	0.000107	0.000055	-0.000355	0.000261
Slovenia	-0.004200***	-0.005408***	-0.000100	0.003858**	-0.079090**	-0.010384**
Slovakia	-0.001949*	-0.004305***	0.005708***	0.000228	-0.004170	-0.001770

Note: *statistically significant at 10% significance level,
**statistically significant at 5% significance level,
***statistically significant at 1% significance level,
grey: not all regression variables (including IMP) passed the stationarity test.

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