IFRS 9 AND ITS BEHAVIOUR IN THE CYCLE: THE EVIDENCE ON EU COUNTRIES

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FFA Working Paper 3/2021

FACULTY OF FINANCE AND ACCOUNTING

Bibliographic information:

Pastiranová O., Witzany J. (2021). *IFRS 9 and its behaviour in the cycle: The evidence on EU countries*. FFA Working Paper 3/2021, FFA, Prague University of Economics and Business, Prague.

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IFRS 9 and its behaviour in the cycle: The evidence on EU Countries

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Abstract

The purpose of this paper is to empirically analyse the behaviour of expected loan loss provisions during the economic cycle. Provisioning rules under IFRS 9 require creation of the expected credit losses, which have been anticipated to behave countercyclically, and so replaced the rules under IAS 39 widely presumed to have procyclical impact. Observing the dynamics of the economic cycle during the economic downturn resulting from the COVID restrictions, a panel regression has been performed to test the hypothesis that loan loss provisioning rules under IFRS 9 have procyclical impact. The hypothesis was not rejected within the period of 1Q 2015 – 3Q 2020 on the sample of the member countries of the European Union.

AMS/JEL classification: G12, G21, G32

Keywords: IFRS 9, loan loss provisions, procyclicality

1. Introduction

After the global financial crisis in 2008, there has been a focus on the stability of the global financial system and its procyclicality. The term procyclicality can be described as positive interactions between the real sector and the financial sector of the economy. Such interactions exaggerate the fluctuations within the economic cycle. Procyclicality might have especially undesired impact during the economic downturn as it undermines the financial stability and intensifies the recession. Alongside the economic cycle, there occurs the credit cycle of the banking industry, which might deepen the fluctuations of the economic cycle and thus destabilize the financial system. The factors causing the procyclicality of the credit cycle are intrinsic to lending activities (for example expectations of economic subjects, predictions on economic development, information asymmetry or financial innovations. The accounting rules and financial regulation might, however, also play a significant role. Financial system facing high level of procyclical behaviour impacts the ability of banks to absorb the credit losses and provide liquidity to the system. The financial institutions might face difficulties obtaining the funding with possible harmful effect on the real economy. The negative effects of the procyclicality of the

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This paper has been prepared under financial support of a grant “Development trends in financial markets” IG102029 and GAČR 18-05244S “Innovation Approaches to Credit Risk Management”, which the authors gratefully acknowledge.

financial system might be particularly important for monetary unions, such as the EU Economic and Monetary Union facing the problem of effectively responding to different individual economic and financial cycles of the member countries of the union by the common monetary policy set by the European Central Bank.

After the financial recession in 2008, the regulatory and financial authorities have been emphasizing the role of provisioning rules and regulatory capital adequacy requirements during the recession. New set of rules, which would eliminate the procyclical behaviour has been introduced. A new international accounting standard, IFRS 9 – Financial instruments, has been one of them, effective since January 1st, 2018 and mandatory for all the financial institutions reporting under IFRS. The new standard requires implementation of expected credit loss model and thus replaces the previous standard IAS 39, based on the incurred credit loss model.

The aim of this paper is to analyse the cyclical behaviour of provisioning rules under IFRS 9 after the first years of its implementation. The purpose of the analysis is to find out if the forward-looking provisioning rules actually result in countercyclical behaviour as desired and to contribute to the discussion on impacts of the IFRS 9 standard. The empirical analysis involves data on GDP growth and impairment to assets ratio for 28 EU member countries for the period 1Q 2015 – 3Q 2020 put together as a comprehensive panel data set. The regression analysis has been performed on the whole data set including dummy variables to separate the data for IAS 39 period (1Q 2015 – 4Q 2017) and IFRS 9 period (1Q 2018 – 3Q 2020) and to differentiate the relation between the dependent variable and the independent variables for both periods separately.

The paper is structured as follows: the first section describes the existing empirical research and hypothesis development, followed by the section explaining the credit cycle and the role of provisioning rules within such a cycle. The following section introduces data and methodology used in the empirical analysis with the subsequent section presenting the core empirical analysis results and the discussion. The last section concludes and summarizes the findings of the paper.

2. Behaviour of loan loss provisions through the economic cycle

For a long time, there has been an effort to observe the relation between the economic cycle and the volume of provisioning. Prior to the financial crisis in 2008, the research often concluded on procyclicality of provisioning under the previous standard IAS 39. The negative relationship between macroeconomic variables during the downturn and the volume of provisions has been observed (Leaven and Majnoni, 2003, Bikker and Metzemakers, 2005). Negative relationship between GDP growth and the ratio of loan loss provisions to total loans under IAS 39 was also observed for the Czech Republic for the period 1998 – 2011 (Frait, Komárková, 2012).

In the light of the extent and consequences of the financial crisis in 2008, regulatory and financial authorities and standard setting bodies put emphasis on elimination of procyclicality of the financial sector through a change of accounting and regulatory standards. The requirement to shift from incurred loan loss provisioning models to forward-looking provisioning models has been emphasized (International Monetary Fund, 2009). Such change was expected to ensure elimination of procyclicality in the phase of economic recession. An appeal for earlier recognition of credit losses has been claimed (Financial Stability Forum, 2009), accentuating reassessment of incurred credit loss models within accounting standards and capital adequacy requirements.

The results of research after IFRS 9 became effective brings a variety of conclusions on expected behaviour of the provisioning rules under the new standard through the cycle. Huizinga and Leaven (2018) concluded on procyclicality of provisioning by estimating negative relation between GDP

growth and loan loss provisions in the euro area. Their estimate was based on projected data and was proved to be more significant for larger banks with higher volume of capital. The cyclical behaviour between provisions under standards IFRS 9, IAS 39 and US GAAP was tested by Buesa et al. (2020) by modelling the impact of loan loss provisions on P&L. The authors conclude that procyclicality of provisioning under IFRS 9 decreased in comparison with IAS 39, nevertheless the standard still appears to be procyclical – and more procyclical than US GAAP. Abad and Suarez (2018) observe that expected loan loss provisions intensify the contractionary phase of the economic cycle at the beginning of the phase. Thus, they show procyclical behaviour during that phase. Malovaná and Tesařová (2019) tested provisioning procyclicality on pre-2018 data for the Czech Republic and found out procyclical effect is strongest in the later contractionary phase. On the contrary, there is no evidence of procyclicality in the early contractionary phase. Therefore, the banks with higher credit risk behave more procyclical and such behaviour might under IFRS 9 delay transfers between stages and overstate the fluctuations. Borio (2019) noted that the new standard will bring forward some of the provisioning. However, to eliminate the procyclicality, it needs to be implemented properly and the effectiveness of the standard depends on implementation details and models used to forecast losses. Kund and Rugilo (2018) analysed the dataset of 43 banks from 15 different European countries from 2014 until 2018, including forecasts until 2020. Authors suggested that the procyclicality of impairments under IFRS 9 has been decreased, which in turn would benefit financial stability.

The latest research (mostly performed on estimations and projections) suggests various conclusions on the topic of behaviour of IFRS 9 provisions through the cycle. This paper aims to contribute to the discussion and findings on cyclical implications of IFRS 9 with empirical analysis of actual data available. As there are already certain findings indicating provisioning rules under IFRS 9 might not behave countercyclically, the hypothesis tested is the following: *Loan loss provisions under IFRS 9 show procyclical behaviour*.

3. The role of provisioning rules through the cycle

In order to reflect on the role of loan loss provisions during individual phases of the economic cycle and credit cycle, the aim of this section is to explain the interactions among them.

Empirically, the evidence proves the existence of credit cycle, indicating that excessive lending across developed countries may be considered as one of the triggers of financial crises. The relation between an increase in lending and following financial crisis has already been observed historically (Minsky, 1972). Impact of the credit cycle on the condition of the financial industry has been observed by Aikman et al. (2015). The authors found out, that the growth of the ratio of bank lending to GDP was correlated with bank crises.

The economic cycle and the credit cycle co-exist, and they operate with different magnitude and intensity during the phases. Through the expansion, banks usually take on riskier clients, the value of the collateral is convenient, the price of funding is acceptable (and often inexpensive) for the debtors, the general economic environment is favourable, the price of the assets rise, therefore there is no problem to get funding at desired price and of desired volume. Banks have tendency to provide funding excessively. Regulators might contribute to increasing volume of credit through loosen macroprudential policies.

In a such scenario, under the IAS 39 incurred credit loss models, there is usually no credit event triggering the decrease in the value of financial assets. Therefore, the banks are not obliged to create reserves for expected losses which could occur in the future. As a result, the value of banks´ assets does not change.

On the contrary, under the IFRS 9 expected credit loss models, the banks are obliged to consider the predicted future information regarding the macroeconomic environment and the individual debtor in the horizon covering the maturity of the asset. Banks should, therefore, at each reporting date record the provisions for expected credit losses and thus correct the value of the assets during the economic growth for expected credit events in the future.

Through the contractionary phase of the cycle, banks are more prudent and averse to risky debtors, the conditions for provision of funding are stricter, the value of the collateral might decrease, or bank might require higher value of collateral, the price of lending increases due to worse macroeconomic conditions and due to higher credit risk. Regulators might tighten the macroprudential policies, the conditions to obtain the credit are stricter and the funding is less available and the volume of lending decreases.

Under the IAS 39 incurred credit loss models, there is usually a credit default event and banks are obliger to reflect that through the creation of corresponding loan loss provisions. A large volume of provisions booked directly through the profit and loss affects bank´s results and the real value of the assets significantly, which might result in decreasing value of bank ´s shares. The effect of decrease in value of assets transfers to other subjects in the economy, which hold any open position with the bank. Or there might arise a problem within the whole banking industry threatening the stability of the financial sector and thus threatening the stability of the national, regional, or global economy. The excessive lending, overvaluations of the assets and interconnection of the global financial system have been generally considered as the triggers of the global financial recession in 2008.

Under the IFRS 9 expected credit loss models, it is expected that the provisions for expected losses were already recorded during the previous periods. No destabilizing effect is expected as banks are believed to be prepared for the worse times.

The essential remark is, that the economic cycle itself is not the source of instability or the threat. The cycle is an inherent part of the economy. Correspondingly, the credit cycle is a part of the banking industry and there is a certain link between the cycles. Nevertheless, the high fluctuations in volume of lending might intensify the peaks within the cycle and destabilize the economy. Therefore, it is essential to eliminate the procyclicality of the lending so that it is not disruptive during the fluctuations.

Among the means, through which the extensive credit fluctuations can be reduced belong macroprudential policies, the architecture of regulation of financial system corresponding to the globalized financial institutions, valuation techniques, risk assessment of banks and their provisioning rules.

As a matter of fact, the European households and companies use banking products (loans and deposits) as a main source of funding (or saving). Thus, it is particularly important to monitor the stability of the banking sector in EU.

4. Data and methodology

This section explains selection of data and methodology applied to testing the hypothesis that loan loss provisions under IFRS 9 behave procyclical. The empirical analysis is based on data on GDP growth obtained from Eurostat statistics database (Eurostat, 2021) and data on impairment as percentages of total assets of banks obtained from Statistical Data Warehouse - European Central Bank´s official statistics (ECB, 2021).

Data on quarterly GDP volumes for EU member countries for the period 1Q 2015 – 3Q 2020 were obtained from Eurostat database and quarterly GDP growth was calculated for each country, which

gives 644 observations on GDP growth in total (336 observations for IAS 39 period and 308 observations for IFRS 9 period). Quarterly data on impairment as percentages of total assets of banks were downloaded from ECB database for 28 EU member countries for the same period 1Q 2015 – 3Q 2020 (the maximum possible period with quarterly data available for all the countries), obtaining 644 observations on impairment ratio. (336 observations for IAS 39 period and 308 observations for IFRS 9 period). Source data on quarterly impairments were available as cumulative yearly net impairments (cost of risk), therefore quarterly impairments were calculated as differences between the quarters.

The accuracy of the data from ECB database were reconciled on the example of the Czech Republic by comparing the volume of total assets of the banking sector and the volume of provisions from P/L to data from ARAD – statistical warehouse of Czech National Bank (CNB, 2021).

The empirical testing was performed on the comprehensive cross-sectional time series data set. Panel regression analysis was performed on the whole data set using period dummy variable to distinguish the IAS 39 period (1Q 2015 – 4Q 2017) and IFRS 9 period (1Q 2018 – 3Q 2020).

The relative variables were used for both GDP growth (an independent variable) and the ratio of impairment to total assets (a dependent variable) to eliminate the possible concern on non-stationarity of data.

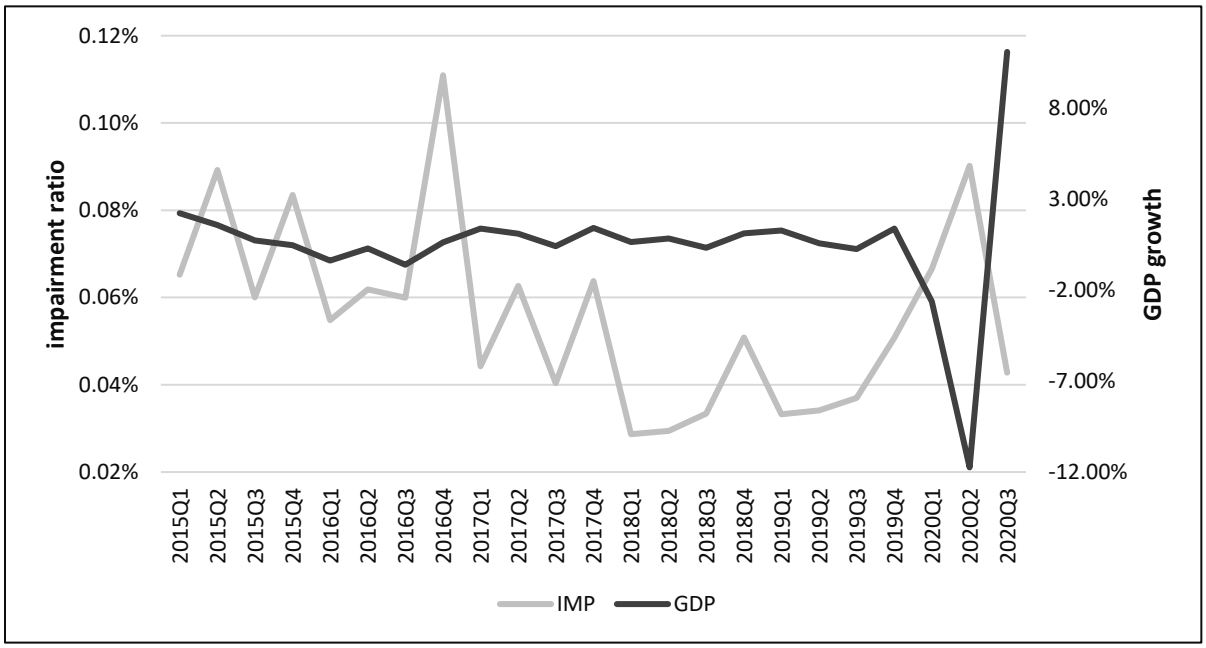
The panel data regression model was estimated with both fixed effects and random effects. The regression can be expressed as:

$$imp_{it} = \alpha + \beta_0 gdp_{it} \times dummy_t + \beta_1 gdp_{it} \times (1 - dummy_t) + \mu_i + \varepsilon_{it}$$

where imp_{it} represents the dependent variable, gdp_{it} represents the independent variable, $dummy_t$ represents 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 relation between the dependent and independent variable can be observed in **Chyba! Nenalezen zdroj odkazů.**. The vertical axis on the left-hand side represents the scale for the overall impairment ratio and the vertical axis on the right-hand side represents the scale for the EU28 GDP growth.

Figure 1: Development of GDP growth and impairment in EU28



Data source: ECB, Eurostat, 2021 + authorial computation

Based on **Chyba! Nenalezen zdroj odkazů.**, we can observe there was no specific relation between the impairment ratio and the GDP growth in IAS 39 period (1Q2015 – 4Q2017). The correlation coefficient calculated for this period is 0.13, which we can interpret as neutral or slightly positive. In contrast to findings of research discussed in previous sections and general perception of IAS 39 provisioning rules as procyclical, there is no such evident relation between the variables. However, due to limited availability of data, the IAS 39 period begins in 2015, which was in general considered the phase of economic boom and there was no serious downturn in Europe during this period. Thus, the interpretation of their relation and the correlation coefficient is limited due to restriction on data availability.

By contrast, the development of variables in IFRS 9 period (1Q2018 – 3Q2020) indicates an inverse relation between the variables suggesting provisioning rules under IFRS 9 show procyclical behaviour. The graphic relation is supported by the correlation coefficient for this period (-0.66), representing relatively strong negative correlation. The IFRS 9 period includes current economic downturn due to COVID restrictions (visible significant decrease in GDP growth in 2Q2020).

5. Results and discussion

We have performed the panel regression analysis with both random and fixed effects on the whole data set, including dummy variable to separate the results for both tested periods. The regression was estimated in Eviews. The results of the regression are given in Table 1 and in Table 2.

Table 1: Panel regression with fixed effects – estimation output

Variable	Coefficient	Std. Error	t-Statistic	P-value
C	0.000937	0.00000	16.72456	0.0000
GDP_IAS39	0.002509	0.003261	0.769506	0.4419
GDP_IFRS9	-0.005534	0.001526	-3.625429	**0.0003**

Data source: authorial computation

Table 2: Panel regression with random effects - estimation output

Variable	Coefficient	Std. Error	t-Statistic	P-value
C	0.000939	0.000189	4.954627	0.0000
GDP_IAS39	0.002293	0.003252	0.704998	0.4811
GDP_IFRS9	-0.005604	0.001526	-3.672147	**0.0003**

Data source: authorial computation

Both fixed and random effects provide very similar results, however, to confirm the effects and to choose the model with better fit, the Hausman test was performed (H0: there is no correlation between unique errors and the regressors in the model, preferred model is the one with random effects). The p-value of Hausman test was 0.0552, which can be considered low. Therefore, we can reject the null hypothesis (on the 10% significance level), accept the alternative hypothesis and prefer the model with fixed effects, which gives a better fit of the data. To support the choice of the model with fixed effects, we have also performed the cross-section F-test (p-value 0.0000) and cross section Chi-square test (p-value 0.0000). In this case, the associated p-values strongly reject the null hypothesis that the cross-section effects are redundant, and the statistics is certainly in favour of keeping fixed effects in the model.

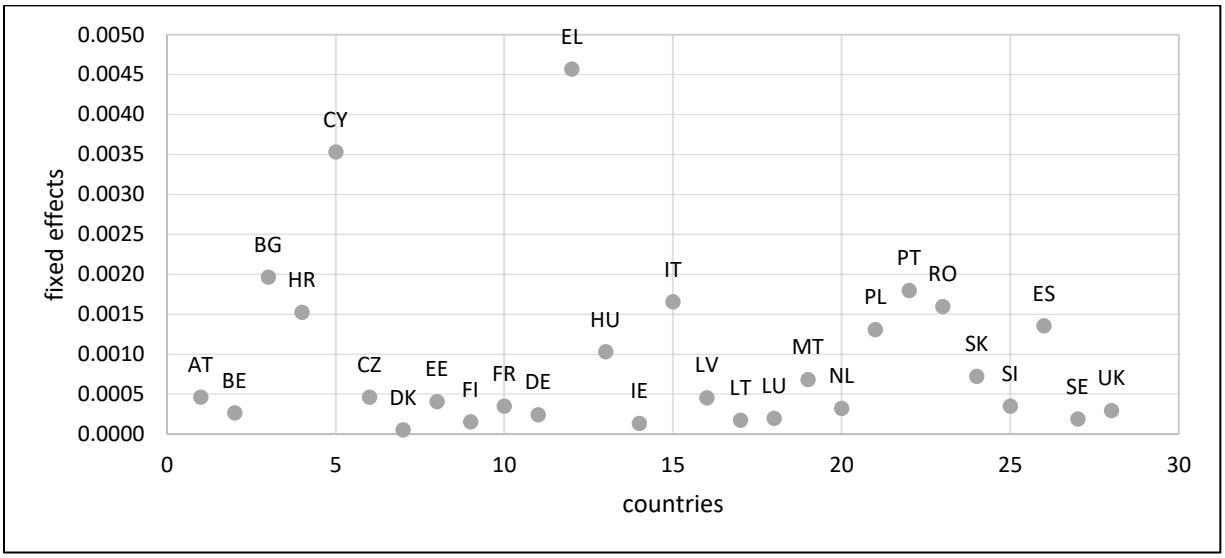
Based on the results of the regression, it is apparent that there is a positive impact of GDP growth on impairment ratio in the IAS 39 period. One percent increase in GDP leads to 0.2509 basis point increase in impairment ratio and vice versa. This result is in line with graphical observation described in previous section and with slightly positive correlation between the dependent and explanatory variables. The relation, however, is not statistically significant.

The results for the IFRS 9 period are remarkable. The value of the coefficient represents negative relation between GDP growth and impairment ratio. One percent increase in GDP leads to 0.5534 basis point decrease in the impairment ratio and vice versa. This relation is proved to be statistically significant on 1 % significance level. The result of the regression also corresponds to the graphical development of the variables and to the negative correlation coefficient. Furthermore, the results do not reject our hypothesis that loan loss provisions under IFRS 9 behave procyclical, despite the intention of standard setting bodies and regulatory and financial authorities which believed expected credit loss models would have countercyclical impact.

The model with fixed effects also allows us to distinguish specific effects on the level of individual EU countries. These effects are visible in Figure 2.

Figure 2: Cross-section fixed effects - 28 EU member countries

First panel



Second panel

Data source: authorial computation

The fixed effects shown in Figure 2 can be interpreted as the average quarterly impairment ratios of particular countries. Based on the figure, we can observe that the highest level of credit risk has Greece (EL) and Cyprus (CY), followed by Bulgaria (BG) and Portugal (PT). The lowest level of credit risk has Denmark (DK), Ireland (IE) and Finland (FI). It is interesting to note that the level of credit risk is generally higher on the South and East of Europe and lower in the North-West Europe (see the second panel in Figure 2).

The conclusions of the empirical analysis are noteworthy, nevertheless, it is important to note that there are certain limitations to the conclusions due to data availability already mentioned above. As there are no quarterly data on impairment ratio in ECB database prior to 1Q 2015 (the time series is discontinued), the IAS 39 period unfortunately does not capture the economic recession in 2008. It would certainly be interesting to observe the development of impairment under IAS 39 rules during the recession. After all, the call for new provisioning model based on expected credit loss resulted from

the impacts of the global recession. On the other hand, the IFRS 9 period captures currently ongoing economic downturn due to COVID restrictions and the results interpret the procyclicality based on data covering whole economic cycle, including recession. This is in terms of data availability more important for the purpose of our research, due to our focus on IFRS 9 and it´s impacts. The advantage of data periods also lies in the fact that both tested periods are about the same length (336 observations for the IAS 39 period and 308 observations for the IFRS 9 period).

6. Conclusions

Historically, there has been an evidence of positive relation between macroeconomic variables and financial system. Especially during the fluctuations, the positive interactions might deepen the cycle and thus have a destructive impact on economy. Alongside the economic cycle, the credit cycle co-exists, within which the provisioning rules play an important role. Since the great financial recession in 2008, the financial and regulatory authorities and standard setting bodies emphasized the importance of elimination of procyclicality of the financial system. One of the means reducing the procyclicality were the rules for provisioning. The authorities called for replacement the incurred loss models under IAS 39 with expected loss models, adopted as a new accounting standard IFRS 9. The models, which include forward-looking information on macroeconomic forecasts and debtors, were believed to behave countercyclically.

Due to recent macroeconomic development, we tested the hypothesis that provisioning rules under IFRS 9 show procyclical behaviour. The empirical testing was based on a panel regression analysis of 28 EU member countries, with quarterly impairment ratio as a dependent variable and quarterly GDP growth as an independent variable. The model included period dummy variables to differentiate the IAS 39 period (1Q 2015 – 4Q 2017) and IFRS 9 period (1Q 2018 – 3Q 2020). Based on the Hausman test, cross-section F-test cross-section Chi-square test we chose the model with fixed effects to be more suitable. For the IAS 39 period, we observed slightly positive relation, which was not statistically significant. For the IFRS 9 period, however, the results indicate negative relation, statistically significant on 1 % significance level. Therefore, we can conclude our hypothesis was not statistically rejected and that the findings of this paper support the existing estimates on procyclical effects of IFRS 9. Such findings are, nevertheless, in contrast to the countercyclical impact the new standard has been believed to have. Furthermore, we could distinguish the fixed effects on the level of individual EU member countries, which indicate Greece and Cyprus as the countries with highest level of credit risk and Denmark and Ireland as countries with the lowest level of credit risk.

Even though we focused on the effect of provisioning rules, it is of course not the only factor contributing to the strength and stability of the banking sector and the financial system. Certainly, there are other factors as relevant capital adequacy requirements, relevant macroprudential policy, architecture of regulatory supervision corresponding to the architecture of the financial system and thoughtful behaviour of all the economic subject that should mutually cooperate so that the stability of the global financial system is not threatened.

To compare our results with other researchers' results, we came to similar conclusions as Huizinga and Leaven (2018), Abad and Suarez (2018) and Malovaná and Tesařová (2019), suggesting that there is procyclicality observed in relation to IFRS 9 provisioning rules. In comparison with mentioned authors, our analysis is based on actual, non-predicted data. In terms of sample, we used EU member countries, unlike Huizinga and Leaven (2018) who worked with eurozone countries or Malovaná and Tesařová (2019) who analysed the impact within the Czech Republic. On the other hand, our conclusions indicate opposite results in comparison with Buesa et al. (2020) and Kund and Rugilo (2018), who worked with

a selected sample of 43 European banks and presented expected decrease in procyclicality of loan loss provisions under IFRS 9.

We have not rejected the hypothesis that IFRS 9 provisioning rules report procyclical behaviour, however, due to certain restriction on data availability, a new empirical study should be carried out to confirm (or reject) the findings of this paper after more data observations for IFRS 9 period are available. If the procyclical behaviour of IFRS 9 provisioning rules was confirmed by further studies our recommendation would be to investigate in more detail the IFRS 9 models applied by banks. Such investigation could clarify whether there are potential triggers of procyclical behaviour of loan loss provisions rooted in the models used by banks. In this case, our policy recommendation would be to issue regulatory guidance documents mitigating the procyclical behaviour of the IFRS 9 models. Further research might also investigate whether these findings hold in other geographical regions or under other accounting standards. Separate analysis could be conducted to observe the procyclicality for EU member countries under IAS 39 during years around the great financial crisis in 2008 to capture the effect of a global economic downturn.

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