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Frequency of Interim Reporting and Impairment Losses on Financial Assets

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ABSTRACT

This study investigates the impact that increasing the frequency of interim reporting has on the amount of impairment losses on financial assets for a sample of listed banks. The difference-in-differences method is applied for a paired sample of 36 banks of EU-15, between 2009 and 2018. The results suggest the existence of a negative and significant association between the increase in the frequency of interim reporting and the amount of impairment losses on financial assets recognised in the profit or loss. This study is useful for regulators and supervisors, since its conclusions are relevant for the definition of the frequency of interim reporting, showing the consequences of its increase.

KEYWORDS

Reporting, Frequency, Impairment, Financial Assets

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1. INTRODUCTION

Research about the interim financial reporting (IFR) and its consequences, in particular the investigation about the effects caused by the increase in the frequency of IFR is still very limited (Yee, 2004; King, 2018). Furthermore, previous research provides mixed results in terms of financial markets since, as stated by Van Buskirk (2012), more frequent disclosure of financial information results in more efficient share prices. On the other hand, King (2018) argues that a small gap between reports increases the incentives to practice earnings management to achieve the interim results predicted by analysts or firm's executives.

King (2018) adds that considering a longer interval between reports increases the risk of investors making investment decisions based on obsolete information. Thus, it is possible to verify the simultaneous existence of benefits and costs associated with the disclosure of the IFRS and the increase in its frequency, being the main costs associated with the fact that there is a greater incentive to carry out earnings management. This behaviour, and the great controversy of results associated with IFR, are largely due to: the subjectivity and need for judgement inherent to the accounting standard (Huu Cuong et al., 2013; King, 2018), the International Accounting Standard (IAS) 34 – *Interim Financial Reporting*. In addition, the fact that the IFR is not always subject to an external audit (Brown & Pinello, 2007) can create opportunities for managers to make decisions that can affect the reported results. Regarding IAS 34, it is also important to consider that it does not define the frequency with which these reports must be reported. In the context of the European Union, in 2004, the European Union Transparency Directive was issued, which required the reporting of management reports on a quarterly basis. This Directive was revised, in 2013, and since then it only requires the disclosure of the IFR every six months, as the quarterly disclosure created high costs for small and medium-sized firms (Gigler & Hemmer, 1998) and greater possibility of managing short-term results (Link, 2012).

In the disclosure of the IFR, there are some events and transactions, involving the calculation of estimates, whose disclosure is required by the standard, due to their relevance and the greater control needed. One of them is the amount of impairment losses on the financial assets (FA). In this way, considering the uncertainty and controversy regarding the disclosure of the IFR and the relevance of the amount of impairment losses on the FA in the banking sector (Gebhardt, 2008), the objective of this paper is to analyze whether the increase in the frequency of reporting has implications for the amount reported as impairment losses on FA in this sector. Until 2017, and through the application of IAS 39, the impairment losses were recognized only when a credit event occurs. As of 2018, and with the adoption of IFRS 9 – Financial Instruments,e banks began to recognize impairment losses in accordance with the expected credit loss model, recognizing impairment losses even before any credit event has occurred. Thus, at each reporting date, for the allowance for losses to be recognized at the amount required by the standards, the entity must recognize in its profit or loss, as an impairment gain or loss, the amount of expected credit losses or its reversals.

To carry out this study, and in order to isolate the effect that the increase in reporting frequency has on the amount of impairment losses on AF in the period, the difference-in-differences method was applied to a paired sample of 36 banks in the EU-15 from 2009 to 2018. The results confirmed the hypothesis formulated that there is a negative and significant association between the increase in the frequency of reporting and the amount of impairment losses on the FA in the period. When there is an increase in frequency of the report, there is a decrease in the amount recognized as an impairment loss, which supports the fact that there is a greater

incentive to achieve the expected results when the frequency of reporting is greater. The results remain the same even when the effect of the change in the accounting standards is introduced, from IAS 39 to IFRS 9.

This study is relevant as it presents several contributions to the literature. First, as far as it is known, there is no study in the literature that analyzes the relationship between these two topics, the increase in the frequency of reporting and the amount of impairment losses on the FA recognized in the period. Second, it contributes to literature that addresses the effects of increasing the frequency of IFR, which, as mentioned above, is still limited, and presents inconsistent conclusions (Yee, 2004; King, 2018). Third, by analyzing the effects of the increase in the frequency of reporting on the amount of impairment losses on the FA in the period, this study also contributes to the literature about impairment losses, reinforcing the subjectivity of this amount. In addition to the contributions to the literature, this study is also useful for regulators and supervisors, as it presents conclusions that may be relevant to the definition of interim reporting periods, helping to clarify some of the consequences caused by the increase in the frequency of this type of reports.

2. LITERATURE REVIEW

Although there are already some studies on the importance of IFR, they are still very limited (Yee, 2004; King, 2018) and provide mixed evidence. The topic about IFR raises great controversy, mostly due to the subjectivity inherent in the standard that regulates these reports, the IAS 34 (Huu Cuong et al., 2013; King, 2018). This standard presents the minimum content of the IFR and how IFR should be prepared. This standard is more based on principles than on rules (Morais, 2020). Therefore, its application requires judgment, and can create an opportunity for managers to make certain decisions that can affect the results reported. Additionally, the frequency of financial reporting has consequences for information asymmetry and capital cost (Fu et al., 2012; Van Buskirk, 2012; Kim & Verrecchia, 1994), stock market price volatility (Mensah & Werner, 2008), and reporting costs (Gigler & Hemmer, 1998).

Thus, determining the most adequate frequency of the IFR also creates very different opinions, partially because such reports may lead to inappropriate management behaviour (King, 2018). Such behaviour might result from the fact that, when the interim reports are released, there is a review of analysts' forecasts for expected results (Kubota et al., 2010). If analysts' forecasts are too high, the result will be below the expected level, which could have negative consequences on the capital market (Mindak et al., 2016). However, if analysts' expectations are below the result, there may be, on the one hand, interest on the part of management in lowering this result, but, on the other hand, analysts may be influenced to set higher future forecasts, causing greater difficulties in achieving expectations in the future (King, 2018). In addition, IAS 34 allows greater flexibility in the construction of IFR when compared to the annual report. As proven by Brown and Pinello (2007), Huu Cuong et al. (2013) and King (2018), there is a strong evidence that this flexibility is used, which represents a greater incentive for managers to manage the result that is presented in the IFR.

On the other hand, as evidenced in several studies, the impairment recognized in the period is an important tool that allows earnings management (Chen et al., 2009; Stępień, 2015; Abrigo & Ferrer, 2016). Namely the impairment of the FA that are also subject to high subjectivity in their recognition and measurement (Gebhardt, 2008; Curcio & Hasan, 2015; Gebhardt, 2016).

Thus, combining the high tendency to use the impairment on the FA in the earnings management and the subjectivity inherent to its calculation, with the greater flexibility that is allowed in the IFR, it is expected that the increase of this period's frequency, significantly influence the amount of impairment losses recognized in the period. In this sense, the first hypothesis is formulated:

- **H:** There is an association between the increased frequency of the interim financial report and the amount of impairment losses on the financial assets.

3. SAMPLE AND METHODOLOGY

3.1. Sample

The sample was initially composed by all observations from the period 2009 to 2018 available on Thomson Reuters Eikon for the listed banks of the EU-15 countries (1279 observations). The period was chosen to allow a 10-year analysis using the most recent data. All data was obtained from Thomson Reuters Eikon, except the frequency of reporting (obtained through Datastream/Worldscope), and the gross domestic product (GDP) (obtained from Eurostat).

The final sample consists of 318 observations distributed in 11 countries and is an unbalanced sample. Of these observations, 141 relate to 18 banks that increased the frequency of reporting during the period (study group) and 177 observations are related to 18 banks that maintained the frequency (control group) (Table 1).

Table 1
Sample selection

	Number of observations
Banks listed in EU-15 countries between 2009 and 2018	1279
Invalid information regarding the frequency of the report	(286)
Entities that do not report in accordance with IFRS	(90)
No valid information on impairment losses on the financial assets	(62)
With invalid data for pairing	(107)
Entities not used in pairing	(416)
Paired final sample	318

Source: elaborated by the authors.

Table 2 shows the distribution of observations by countries in the study group and in the control group, as well as the distribution of the total paired sample. The United Kingdom has strong representativeness in the study group (61.70% of observations), followed by Germany (10.64%). On the other hand, in the control group, the countries with the highest number of observations are Italy and France, both with 22.60%.

3.2. Sample pairing process

To analyse the effect that the increase in the frequency of IFR has on the amount of impairment losses on the FA, an analysis based on a paired sample is performed. Thus, the differences in the

amount of impairment losses on the FA of entities that increased the frequency of IFR (study group) are compared, with the differences of this same amount in entities whose frequency of the IFR did not change (control group).

To build the paired sample, for each entity that increases the frequency of IFR, an entity that does not increase the frequency is included in the sample, such that the entity included is similar to the first one on certain characteristics. Thus, both the study and control groups in the sample have the same number of entities. To make this pairing, Propensity Score Matching (PSM) is used. PSM creates a score that represents the probability of an entity being from the study group, considering a set of characteristics. Then, entities with similar scores are paired.

Table 2
Sample by country

Country	Study Group		Control Group		Final sample	
	Obs.	Percentage	Obs.	Percentage	Obs.	Percentage
Germany	15	10,64%	10	5,65%	25	7,86%
Austria	3	2,13%	10	5,65%	13	4,09%
Denmark	6	4,26%	30	16,95%	36	11,32%
Spain	6	4,26%	17	9,60%	23	7,23%
France	0	0,00%	40	22,60%	40	12,58%
The Netherlands	6	4,26%	10	5,65%	16	5,03%
Ireland	10	7,09%	0	0,00%	10	3,14%
Italy	8	5,67%	40	22,60%	48	15,09%
Portugal	0	0,00%	10	5,65%	10	3,14%
United Kingdom	87	61,70%	0	0,00%	87	27,36%
Sweden	0	0,00%	10	5,65%	10	3,14%
Total	141	100,00%	177	100,00%	318	100,00%

Source: elaborated by the authors.

To perform the pairing between the entities of the two groups, and similar to Fu et al. (2012), Ernstberger et al. (2017), Iyer et al. (2014) and Cutura (2021), the size (natural logarithm of total assets), performance (ratio of return on assets) and capital adequacy ratio (quotient between banks' own funds and risk-weighted assets) are considered.

For the pairing procedure, since the analysis period is between 2009 and 2018, the variables' mean for the 2007-2009 period are considered, to perform the pairing based on the amounts prior to the increase in the frequency of reporting. Entities are associated using a logit model in which pairing is performed from one to one without replacement. Thus, each entity in the study group is associated with only one control group entity and for each entity in this group to be used as a pair of only one study group entity.

Through the analysis performed, it is possible to conclude that the pairing process allows a reduction of the percentage of deviation between the variables used, in the two groups, from about 15.4% to 3.2% after pairing (non-tabulated results), being 5% the value considered acceptable by

most empirical studies (Caliendo & Kopeinig, 2008). In addition, the median of the differences between the scores of the paired pairs is close to 0.001 (untabulated results), which is presented by Ernstberger et al. (2017) as a criterion for evaluating pairing.

3.3. Methodology

To analyse whether the increase in the frequency of IFR influences the recognized amount of impairment losses on the FA, the difference-in-differences method is applied to the paired sample according to the characteristics mentioned above. In this sample, the study group consists of entities that, during 2009 to 2018, increased the frequency of the report. In turn, for each entity of the study group, another entity similar to the first but that did not change the frequency of IFR is added to the sample.

The use of this method will allow the analysis of the difference between the amount of financial assets' impairment losses, before and after the increase in frequency, in the study group, and allow to compare this difference with that of the control group. Thus, it is possible to control different factors that, if not controlled, can cause endogeneity in the model (Bertrand et al., 2004; Crown, 2014). Thus, to test the hypothesis, the following model was built:

$$PPI_{i,t} = \beta_0 + \beta_1 Trat_{i,t} + \beta_2 Dep_{i,t} + \beta_3 Trat * Dep_{i,t} + \beta_4 ROA_{i,t} + \beta_5 \Delta PIB_{i,t} + \beta_6 PPI_{i,t-1} + \beta_7 CAR_{i,t} + \beta_8 ln(TA)_{i,t} + \beta_9 Pais_{i,t} + \beta_{10} Ano_{i,t} + v_i + \varepsilon_{i,t}$$

The dependent variable that is intended to be explained through the independent/explanatory variables, $PPI_{i,t}$ represents the amount of financial assets impairment loss, in millions of euros, recognized by entity i in year t.

For the explanatory variables, to implement the difference-in-difference method, $Trat_{i,t}$ is used. This variable assumes the value 1 if the entity is from the study group and 0 if it is from the control group. Thus, its coefficient will show the difference in the value of PPI between entities of the study and control groups. The model also uses $Dep_{i,t}$, which takes the value 1 if the observation is relative to one year after the increase in the frequency of the report and 0 otherwise. Finally, the interaction between the two previous variables $Trat * Dep_{i,t}$ is also used, which shows whether the increase in the frequency of IFR has a significant influence on the dependent variable, allowing testing of the hypothesis formulated.

The remaining explanatory variables presented in the model are control variables. For these variables, it is not possible to predict the signal of the coefficient. To control for the performance, return on assets is included in the model, $ROA_{i,t}$, which is the ratio between earnings before interest and taxes and average total assets in t (Ernstberger et al., 2017). The growth rate of GDP per capita at constant prices was also included, to control the cyclical effect of the economy that affects the amount recognised as impairment losses, while capturing other macroeconomic effects that may influence this amount (Laeven & Majnoni, 2003; Fonseca & Gonzalez, 2008; Leventis et al., 2011; Curcio & Hasan, 2015).

Entities are expected to reduce impairment losses to increase earnings when there is a slowdown in the economy, because there is a lag between the moment when impairment losses are recognised, which are potential losses, and the moment when losses occur. $PPI_{i,t-1}$ represents the variable from the previous year that will control its expected amount and the adjustment costs that restrict the complete adaptation to an equilibrium level (Fonseca & Gonzalez, 2008; Norden & Stoian, 2014), reducing the potential problems related to omitted variables (Laeven & Majnoni, 2003), with a positive amount expected for the coefficient.

According to Ahmed et al. (1999), Fonseca and Gonzalez (2008), Leventis et al. (2011), when studying the behaviour of financial assets' impairment losses, it is necessary to control the potential use of this value in capital management because it influences the amount of own funds. As such, the model also includes $CAR_{i,t}$ which represents the capital adequacy ratio consisting of the quotient between tier 1 and 2 own funds and risk-weighted assets. The variable $ln(TA)_{i,t}$ is also included in the model and consists of the natural logarithm of total assets and that will allow for control of the influence that the size of the entities exerts on the dependent variable (Beatty & Harris, 1999; Kanagaretnam et al., 2003; Leventis et al., 2011; Ernstberger et al., 2017).

Finally, the model also integrates the variable for the country and for the year, to control specific differences in the level of impairment losses between countries and to capture the unobservable effects that vary over time and not between banks. For the country, a variable dummy, $País_{i,t}$, is inserted which divides countries according to the classification of Nobes (1998, 2011) that divides the countries according to their accounting system—Continental and Anglo Saxon. This classification is relevant because Ball et al. (2000) show that countries with Anglo-Saxon system are more conservative in the preparation of financial statements so they tend to perform greater recognition of impairment losses. In addition, Nobes (2011) concludes that, despite the accounting harmonization process that occurred with the adoption of IFRS, the classification of countries into two groups, Continental and Anglo-Saxon, remains adequate. Thus, the variable will be 0 for countries with Anglo-Saxon system, Ireland and the United Kingdom, and 1 for the countries that have a Continental accounting system, with a negative coefficient expected. For the year, a dummy variable is included, $Ano_{i,t}$, which assumes the value 0 for observations for years prior to 2014 and 1 for observations of 2014 or later. The inclusion of this dummy is justified by the fact that the Single Supervisory Mechanism (SSM) in the European banking sector was implemented in 2014. The main objective of this Mechanism is to ensure the most efficient and harmonised regulation and supervision of banks, and its introduction has caused supervisory responsibilities to be transferred from the national supervisory authorities to the European Central Bank, with the main objective of ensuring the stability and robustness of this sector (Fiordelisi et al., 2017).

While the increase in harmonisation of regulation and supervision of banks could contribute to an improvement in the quality of financial information, the reduction in the tasks of national supervisory authorities could have a negative impact on regulation and supervision at national level. Thus, it is expected that the introduction of the SSM could have an impact on the quality of financial information and, in particular, on one of the banks' main estimates, the impairment losses.

Since panel data will be analysed, because there are observations for several years and for several banks, it was necessary to perform a Hausman test. For the model (1), the p-value is 0.3322, which allows us to conclude that the AE estimator is the most appropriate for the model under study, because it is consistent and efficient. For model (2), the p-value is 0.0000, so the EF estimator should be used.

Table 3 describes the variables.

4. EMPIRICAL RESULTS

4.1. Descriptive statistics

As can be seen through the analysis of Table 4, the average amount of impairment losses on the financial assets is 1,307.28 million euros. On the other hand, the median has a significantly lower value of 314.27 million euros, suggesting that there are observations with very high amounts

that influence the mean, with the majority of observations being concentrated in the amounts below it. The same is valid for $RAIP_t$, with a mean of 3,025.98 million euros and a median of 565.96 million euros. For the control variables, it can be concluded that, on average, the asset has an average return of 1.13%.

With regards to capital, tier 1 and 2 own funds represent, on average, about 16.86% of the amount of risk-weighted assets, considerably higher than the 8% required. The results also show that the average size is 77,481,109,871.3 euros ($e^{25,0733}$), that 69.5% of the observations are related to countries with continental accounting system and that 55.97% are relative to years after 2013.

Table 3
Variables description

Variables	Description
Ano_t	Assumes the value 1 for observations from years from 2014 onwards and 0 otherwise.
CAR_t	Capital adequacy ratio, in percentage.
Dep_t	Assumes the value 1 if the observation is from a year after the increase in IFR and 0 otherwise.
$\ln(TA)_t$	Natural logarithm of total assets.
$País_t$	Assumes the value 1 if the country belongs to the Continental accounting systems and 0 otherwise.
PPI_t	Amount of impairment losses on the financial assets recognised as a loss in the period, in millions of euros.
PPI_{t-1}	Amount of impairment losses on the financial assets recognised as a loss in the previous period, in millions of euros.
ROA_t	Ratio between earnings before interest and taxes and average total assets.
$Trat_t$	Assumes the value 1 if the bank belongs to the study group and 0 otherwise.
$Trat * Dep_t$	Interaction between $Trat_t$ and Dep_t
$Trat * Dep * RAIP_t$	Interaction between $Trat_t$, Dep_t and $RAIP_t$
ΔPIB_t	GDP growth rate per capita, at constant prices.

Source: elaborated by the authors.

Table 4
Descriptive statistics

Variable	Obs.	Mean	Median	Standard deviation	Minimum	Maximum
PPI_t	316	1307,28	314,27	2761,55	-1352	26488
$Trat_t$	318	0,4434	0	0,4976	0	1
Dep_t	318	0,5660	1	0,4964	0	1
ROA_t	317	0,0113	0,0103	0,0130	-0,0442	0,0944
ΔPIB_t	318	0,0073	0,0110	0,0246	-0,0596	0,2402
PPI_{t-1}	305	1455,634	343,098	2988,822	-1352	26488
CAR_t	273	16,8646	16,1000	4,0639	5,5	31
$\ln(TA)_t$	318	25,0733	25,0234	2,1453	18,5673	28,6215
$País_t$	318	0,6950	1	0,4611	0	1
Ano_t	318	0,5597	1	0,4972	0	1

All variables are described in Table 3.

Source: elaborated by the authors.

4.2. Pearson Correlation Matrix

Table 5 presents the Pearson correlation matrix. The analysis of the relationship between PPI_t and $Trat * Dep_t$, shows a negative association between these two variables, $r_{PPI\ Trat*Dep}$ =-0,0048 (untabulated result), not being, however, statistically significant.

Table 5
Pearson Correlation Matrix

	PPI_t	$Trat_t$	Dep_t	ROA_t	ΔPIB_t	PPI_{t-1}	CAR_t	$\ln(TA)_t$	$País_t$	Ano_t
PPI_t	1,0000									
$Trat_t$	0,1540***	1,0000								
Dep_t	-0,0999*	0,1301**	1,0000							
ROA_t	-0,2042***	0,0537	0,0867	1,0000						
ΔPIB_t	-0,2457***	0,1712***	0,3425***	0,0148	1,0000					
PPI_{t-1}	0,7795***	0,2003***	-0,0366	-0,2190***	-0,0324	1,0000				
CAR_t	-0,1227**	0,2686***	0,0891	0,3707***	0,1616***	-0,1073*	1,0000			
$\ln(TA)_t$	0,4996***	-0,0141	-0,0597	-0,2528***	-0,0281	0,5145***	0,0593	1,0000		
$País_t$	-0,2853***	-0,7423***	-0,1529***	-0,0201	-0,1163**	-0,3252***	-0,2114***	-0,1226**	1,0000	
Ano_t	-0,2672***	0,1157**	0,4760***	0,1115**	0,4380***	-0,2456***	0,3056***	-0,0339	-0,0097	1,0000

All variables are described in Table 3.

*** 1% level of significance; ** 5% level of significance; * 10% level of significance

Source: elaborated by the authors.

4.3. Results analysis

4.3.1. Univariate analysis

Table 6 presents the results of the *difference-in-differences* univariate analysis, which consists in carrying out several t-tests on equality of means between the study group and the control group, before and after the increase in frequency of IFR. These results show the association between the increase in the frequency of the report and the amount recognized as impairment losses on the financial assets. For this analysis, 316 observations are considered, and two observations have been eliminated because they do not show values for PPI_t.

Table 6
Univariate analysis of the model (1)

PPI_t	Before the increase in frequency of IFR (PPI_t=0)		After the increase in frequency of IFR (Dep_t=1)		Differences	
Control group ($Trat_t$=0)	1016,586		848,354		-168,231	(0,75)
Study group ($Trat_t$=1)	2649,593		1286,095		-1363,498	(2,08)**
Differences	1633,008	(3,42)***	437,741	(1,08)	-1195,267	(1,91)*

All variables are described in Table 3.

*** 1% level of significance; ** 5% level of significance; * 10% level of significance

Source: elaborated by the authors.

Considering the period prior to the increase in the frequency of the report, it is possible to verify that the amount of the PPI_t of the study group is higher than the one presented by the control group, and this difference is statistically significant (at 1% level of significance). The analysis of the period after the increase in the frequency of IFR shows that the difference in the amount of impairment losses on the financial assets between the two groups is no longer significant. Regarding the control group, comparing the amount of the dependent variable before and after the increase in the frequency of IFR, there is a decrease in its value, and this difference is not significant. Similarly, in the study group, there is a decrease in the amount recognized before and after the increase in frequency, but in this group the difference is significant (at 5% level of significance).

Finally, analysing the difference-in-differences, which compares the changes in the study group with the changes in the control group, there is a decrease in the value of PPI_t of approximately 1,200 million euros. This difference is significant at a 10% level of significance, which represents the initial evidence confirming the hypothesis formulated, since there is a significant relationship between the increase in the frequency of the report and the amount of the PPI_t. However, this value is influenced by other factors included in the model (1) that are not considered in this analysis, so it is necessary to perform a multivariate analysis to test the hypotheses under study.

4.3.2. Multivariate Analysis

Table 7 presents the results for the estimators of the model (1) that allows to analyse the influence that the increase in the frequency of reporting causes on the amount of impairment losses on the financial assets, considering at the same time other factors that may also influence this amount. The results obtained came from the application of random effect estimators. The standard deviation value is calculated according to its robust value to avoid heteroscedasticity problems and the analysis is performed considering clusters per bank. In this analysis, only 263 observations from 36 banks were considered due to the existence of missing values

The joint significance test indicates that the regressors are jointly significant and relevant to explain the dependent variable, PPI_t, presenting a high explanatory power as it is possible to conclude by the R2 values (untabulated results). Considering the individual statistical significance of the regressors, it is possible to verify that the variables Dep_t, ROA_t and ΔPIB_t are statistically significant at a 10% level of significance. The variables $Trat_t$, $Trat * Dep_t$ and $\ln(TA)_t$ are significant at a 5% level. Finally, the PPI_{t-1} has statistical significance at 1% level.

Regarding the variable of interest of the model (1), $Trat*Dep_t$ is significant, which confirms the hypothesis formulated, thus existing a significant association between the increase in the frequency of the IFR and the amount of impairment losses on the financial assets. It is also important to highlight that this relationship is negative; that is, the increase in the frequency of the report causes a decrease in the amount recognized as impairment losses. This conclusion is in accordance with Mindak et al. (2016) and Halaoua et al. (2017). These authors argue that there is a greater incentive to achieve the expected results when the frequency of the report is higher, which, combined with the fact that there is high subjectivity in the calculation of impairment losses on the financial assets (Gebhardt, 2008; Curcio & Hasan, 2015; Gebhardt, 2016), justifies the relationship that is obtained. Furthermore, as advocated by Brown and Pinello (2007), Huu Cuong et al. (2013) and King (2018), there is greater flexibility in the construction of the IFR when compared to the annual report, which also supports achieving this significant relationship. These conclusions support the results obtained earlier in the univariate analysis of the model (1).

Table 7
Multivariate analysis of the model (1)

Variable	Expected sign	Coefficient	Robust standard deviation	p-value
Constant	+/-	-1013.608	833,289	0,224
$Trat_t$	+/-	673,968**	335,487	0,045
Dep_t	+/-	322,104*	185,235	0,082
$Trat * Dep_t$	+/-	-897,926**	382,280	0,019
ROA_t	+/-	-21073,13*	11798,420	0,074
ΔPIB_t	+	-16106,02*	9505,899	0,090
PPI_{t-1}	+	0,6396***	0,0846	0,000
CAR_t	+/-	-1,418	12,681	0,904
$\ln(TA)_t$	+/-	69,986**	31,187	0,025
$País_t$	-	-328,988	195,196	0,092
Ano_t	+/-	-24,692	204,119	0,904
	R^2: *Within*=0,5008		Number of observations=263	
	Between=0,9468		Number of groups=36	
	Overall=0,7228			
			Wald χ^2 (11)=364,88	
	Corr(v_i, X)=0 (assumed)		*p-value*=0,0000	

All variables are described in Table 3.

*** 1% level of significance; ** 5% level of significance; * 10% level of significance

Source: elaborated by the authors.

For the control variables, it is verified that the PPI_{t-1} is relevant in explaining the value of the period t, which corroborates the values obtained by Fonseca and Gonzalez (2008) and Norden and Stoian (2014). The variable GDP has a significant negative coefficient, which confirms what is advocated by Laeven and Majnoni (2003), Fonseca and Gonzalez (2008), Leventis et al. (2011) and Curcio and Hasan (2015). In turn, the ROA_t has a negative relationship with the dependent variable and the variable $\ln(TA)_t$ has a positive relationship with the same variable. These conclusions indicate a tendency to recognize higher amount of impairment losses in banks with lower asset profitability and larger size. Thus, it is concluded that, with the increase in the frequency of reporting, there is a decrease for impairment losses on the financial assets recognised in the period.

In 2018, IFRS 9 – Financial instruments replaced IAS 39 – Financial instruments: recognition, measurement, and introduced substantial changes in the impairment loss model of financial asset. One of the main changes consists in the transition from a model of incurred impairment loss, provided for in IAS 39, to the expected credit loss model, contemplated in IFRS 9. In the model of incurred impairment loss, impairment loss is only recognized if an event occurs (credit event). In the expected credit loss model, banks must calculate the amount of expected credit losses even before any credit event has occurred. Thus, the model of expected credit losses anticipates the moment of recognition of impairment losses. To test whether the adoption of IFRS 9 has an impact

on the results presented in Table 7, a dummy variable, IFRS, was included in model 1, which assumes the value 1, if the year of observation is 2018, and 0 otherwise. The results (untabulated results) remain the same. *Trat* and *Dep* present positive and statistically significant coefficients, with a significance level of 5% and 10%, respectively. The interaction of the *Trat* variable with the *Dep* variable continues to present a negative and statistically significant coefficient, for a 5% significance level. The IFRS variable has a negative coefficient, but is not statistically significant.

Finally, model 1 was changed to consider, as a dependent variable, the variable PPI_t deflated by total asset. The results (untabulated results) show that the *Trat* variable maintains the positive and statistically significant coefficient, for a 10% significance level which means that the banks in the study group have a *PPI* amount higher than those of the control group. However, the variable *Dep* is no longer statistically significant. The variables *PPIt-1* deflated by total asset and *País* present positive coefficients and statistically significant for a 1% significance level.

5. CONCLUSION

To isolate the effect that the increase in the frequency of the report has on the amount of impairment losses on the financial assets, the difference-in-difference method was applied to a paired sample of 36 European banks from 2009 to 2018. The results obtained show that, when increasing the frequency of the report, there is a decrease in the value recognized as impairment losses on the financial assets. These results support Mindak et al. (2016) and Halaoua et al. (2017) which demonstrate that there is a greater incentive to achieve the expected results when the frequency of reporting is higher. These results are also supported by the additional analysis performed. These results also show the high subjectivity to which the calculation of impairment losses on the financial assets is subject (Gebhardt, 2008; Curcio & Hasan, 2015; Gebhardt, 2016), such that it allows the decrease in the amount of impairment losses recognized when there is an increase in the frequency of the report.

Thus, the present study contributes to the literature that analyses the effects of the presentation of IFR, namely the effects caused by the increased frequency of this type of reports, a literature that is still very limited according to Yee (2004) and King (2018). The results also support the existing studies that show the subjectivity inherent in the calculation of impairment losses on the financial assets. This study, as far as it is known, is a pioneer in the analysis of the relationship between the increase in the frequency of the report and the amount of impairment losses on the financial assets, which on one hand makes it difficult to obtain theoretical support for the conclusions, but on the other hand, represents an opportunity to conduct a relevant study.

The main limitation of this study focuses on the small number of observations analysed, due, on the one hand, to the difficulty in obtaining valid data regarding the frequency of the report, and on the other hand to the process of pairing the sample. As a result, some EU-15 countries are no longer represented in the final sample.

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AUTHOR'S CONTRIBUTION

ACF: Main contribution with the definition of the research objective, literature review, development of hypotheses, methodology and results. AM: Main contribution with the definition of the objective of research, development of hypotheses, method, results and conclusions.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.