



Research article

The effect of fair valuation on banks' earnings quality: empirical evidence from developed and emerging European countries

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ABSTRACT

This study investigates average earnings quality (AEQ) and its determinants in the European banking sector based on data of 409 European banks from the period 2006–2018. We utilize the intensity of fair valuation, average annual interest change, and firm size as explanatory variables for AEQ, with special attention to differences between developed and emerging countries. We split the total time period into a pre-IFRS 13 and a post-IFRS 13 period to examine how the renewed regulation of fair valuation (IFRS 13) has affected the earnings quality of banks. We find that, while the interest change observed in the total period and the banks' size significantly and negatively affect AEQ, the proportion of fair value assets has a significant positive effect. We show that the latter is only valid for developed countries. We find clear evidence that the introduction of IFRS 13 resulted in a measurable improvement in fair value regulation.

1. Introduction

One of the main indicators of corporate performance is earnings, which is generally interpreted as the net income, profit after interest and tax, presented in income statements. This performance measure is given special attention by all stakeholders of the firm. High quality of presented earnings provides a true indication of the company's real economic performance and profit-generating ability. High earnings quality (EQ) may lead to more accurate measurement of management performance and returns realized by shareholders and may lower risk of investors' decisions. Thus, the presented profit is a key factor in decision-making (Schipper and Vincent 2003). In the last decades, the issue of EQ has received attention not just by corporate experts, but also by scholars and standard-setters.

Generally, authors agree that high quality of earnings provides an accurate and reliable picture about the company's performance, so it is informative and useful for decision-making (Dechow and Schrand 2004; Dechow et al., 2010; An 2017). According to several scholars, high EQ also means that earnings are predictable, so current earnings are reliable predictors of later periods' earnings (Penman 2003; Hodge 2003; Mikhail et al., 2003). Others mention the usefulness of net income for valuing the

firm's shares (Kirschenheiter and Melumad 2004) or its strong correlation with operating cash flows (Cohen 2003) as a sign of high EQ. Many studies define EQ as a combined indicator, taking all above-mentioned factors into consideration (Francis et al., 2004).

However, a thorough definition of EQ only serves as a basis for consistent measurement. For stakeholders, what factors influence EQ and how is an important question. The related literature reports that long-term interest rates influence earnings quality (Takacs and Szucs 2019). Firm size is another frequently used predictor of EQ (Gaio and Raposo 2014; Cohen 2003), with mixed empirical findings. Finally, we mention fair valuation as a potential predictor of the quality of earnings, although results are not unanimous. Yao et al. (2018) conclude that the use of fair valuation enhances earnings persistence and thus, earnings quality, while Sodan (2015) shows a negative relationship between the two variables. A few studies investigate the relationship between IFRS-based fair valuation and some components of EQ in emerging countries (Mongrut and Winkelried 2019; Pelucio-Grecco et al., 2014). However, no studies were found that presented an in-depth comparison of the determinants of earnings quality between developed and emerging countries.

In this research, we use an approach in which fair valuation, interest rate change, and firm size are utilized together to explain earnings

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quality using a database that contains 409 European banks' data from the period between 2006 and 2018. During our analysis, we examine the differences between developed and emerging European countries, and we also investigate how the improvement in the regulation of fair valuation affected banks' EQ. We believe that analyzing the relationship with a comprehensive approach and a thorough comparison between the two types of countries may contribute to the existing literature with new empirical findings.

2. Literature survey

An (2017) approaches the definition of EQ from the viewpoint of usefulness and decision-relevance. This means that the quality of profits is high if the presented numbers are useful for managers and investors for decision-making purposes. Based on a survey conducted among Japanese CFOs, Nakashima (2019) defines earnings quality as "earnings accurately reflecting economic reality". According to Dechow and Schrand (2004), high EQ means that current earnings give a true indication of the firm's operating performance and can be used to predict future earnings and to value the firm. Furthermore, the actual share price reflects the intrinsic value of the share. Kirschenheiter and Melumad (2004) state that earnings are of high quality if they are informative and provide an indication of the long-term firm value. Another interpretation is that the quality of current earnings is high if it is a reliable predictor of future earnings (Penman 2003) or it is strongly correlated with future operating cash flows (Cohen 2003). Schipper and Vincent (2003) define EQ as a measure of correlation between presented and real earnings. Yee (2006), as well as Mikhail et al. (2003), show that EQ depends on the relationship between fundamental and presented earnings, so it shows how quickly presented earnings can react to the changes of fundamental earnings. Hodge (2003) defines EQ based on the proximity of the current net profit to future earnings. Similarly, Mikhail et al. (2003) interpret earnings quality as the extent to which historical earnings can contribute to current earnings. Penman (2003) suggests that investors buy future earnings when purchasing shares. Therefore, earnings is the dominant input for stock valuation. The higher the quality of earnings, the more accurate and reliable the valuation will be. These thoughts are confirmed by Dechow et al. (2010).

Beyond providing definitions, the literature pays significant attention to discovering the components of earnings quality. Francis et al. (2004) identify seven factors that they believe together are able to properly indicate the given company's EQ. These factors are accounting quality (AQ), persistence (PERS), predictability (PRED), smoothing (SMOOTH), value relevance (RELEV), timeliness (TIMEL), and conservatism (CONSER) of earnings. Gaio (2010) divides these seven factors into two categories, labelling the first four (AQ, PERS, PRED, and SMOOTH) as accounting-based components and the remaining three (RELEV, TIMEL, and CONSER) as market-based components. On the other hand, Demerjian et al. (2013) identify managerial ability as a key factor of EQ, while Trombetta and Imperatore (2014) draw attention to the effect of financial crises on earnings quality.

Another direction of research in the literature are those works that study fair valuation and its effect on different performance and market indicators of companies. From the viewpoint of our research, the relevance of reviewing these studies lies in that many of them identify fair valuation as a dominant explanatory variable of earnings quality.

Under the system of International Financial Reporting Standards (IFRS), the practice of fair valuation was regulated by the IAS 39 standard in the 2000s. The global financial crisis, reaching its peak in 2008–2009, highlighted several shortcomings of this standard. As a result, IAS 39 was replaced by a new fair value standard (IFRS 13), which contained several improvements of definitions and practical instructions relative to its predecessor. The objective of both IAS 39 and IFRS 13 has been to encourage the use of fair valuation against traditional cost-based approaches, as a correctly determined fair value can better reflect the actual market value of assets and liabilities found in financial statements. The

requirements of disclosing information about financial instruments and procedures used for measuring fair value are set by the IFRS 7 standard. The importance of fair valuation was confirmed by the study of Takacs and Szucs (2017) which detailed an investigation into the influence of the 2008–2009 financial crisis upon the relevance of fair valuation in the European banking sector. The authors concluded that, despite several changes in the financial industry, fair valuation has maintained its importance in investor decision-making after the crisis.

We also review studies that investigate the relationship between accounting regulation and earnings quality. Ewert and Wagenhofer (2005), Barth et al. (2008), as well as Dichev et al. (2013) examined the effect of accounting regulation on earnings quality. They all concluded that high quality standards may lower the role of manipulative income-management and, as a result, increase the quality of presented profits which indicates that the continuous improvement of accounting standards should be a priority for standard-setters. This is confirmed by Barth (2000) who showed that any changes in the fair valuation methods and in non-realized income originating thereof do not only influence the current performance, but also the future performance of the firm. Paoloni et al. (2017) examined the relationship between the application of fair valuation and earnings quality on European banks' data. In their models, firm size and financial leverage were also included as control variables. According to their results, banks using fair valuation intensively have significantly higher earnings quality. Nevertheless, they point out that the application of fair valuation is only reasonable in developed markets and the reliability, relevance, and integrity of fair value decreases together with liquidity and effectiveness of the market. In addition to the range of literature supporting fair value, Sodan (2015) published empirical results about adverse effects of fair valuation on EQ, stating that the fair value based return on assets (ROA) ratio is a less significant explanatory variable of earnings quality than the ROA computed with a traditional cost-based approach.

Other factors may influence the quality of companies' earnings beyond fair valuation. According to Takacs and Szucs (2019), the intensity of interest rate changes is a potential predictor of EQ. By examining European banks and dividing the European countries in their sample into three clusters based on the extent of interest rate change between 2007 and 2015, they conclude that EQ is generally higher for banks located in countries with less intensive interest rate changes than that of banks from countries with higher relative interest changes. Furthermore, firm size is frequently used as an explanatory variable on earnings quality, though results are contradictory. In some of the published research, earnings quality increases in conjunction with the firm's size (Gaio and Raposo 2014). In other studies, authors show a negative impact of size on EQ (Cohen 2003).

Problems of earnings quality are discussed in some studies concentrating on emerging countries, but results are mixed. Pelucio-Grecco et al. (2014) finds that the adoption of IFRS in Brazil was successful in restricting earnings management, while Mongrut and Winkelried (2019) report clear evidence against the effectiveness of IFRS adoption on transparency in Latin-American markets.

3. Data and methodology

Our research is based on a database containing data of 409 European banks for the period between 2006 and 2018. This period was chosen for investigation based on the following reasons: On one hand, the IFRS 7 standard (titled "Financial Instruments: Disclosures"), which defines the requirements for presenting fair value instruments, was issued in 2005. Therefore, 2006 was the first year from which we could collect data in the structure described by IFRS 7. On the other hand, when closing the data collection phase of our research in early 2020, published annual financial data for the examined banks were available until 2018.

The database contains data of 225 banks from 19 developed countries and data of 184 banks from 21 emerging European countries.

Table 1. Composition of the sample.

Developed countries		Emerging countries	
Country	Contribution to the sample (No. of banks)	Country	Contribution to the sample (No. of banks)
Italy	50	Russia	16
Spain	22	Turkey	14
Great Britain	18	Poland	13
Sweden	17	Czech Republic	12
Germany	16	Slovenia	12
France	15	Serbia, Slovakia	11
The Netherlands	15	Slovakia	11
Austria	11	Bosnia-Herzegovina	10
Norway	11	Croatia	10
Denmark	9	Portugal	10
Ireland	7	Bulgaria	9
Belgium	6	Latvia	9
Switzerland	6	Hungary	8
Finland	6	Romania	7
Luxemburg	5	Ukraine	7
Malta	5	Greece	6
Iceland	3	Montenegro	5
Cyprus	2	Lithuania	5
Liechtenstein	1	Albania	4
		Estonia	4
		Belarus	1
Total:	225	Total:	184

To distinguish between developed and emerging countries, we used a GDP per capita-based classification. After collecting the GDP per capita figures for the 40 selected countries, we determined the median, which created two groups with 20-20 countries. However, reviewing the results, we judged that the GDP per capita for Slovenia, the first country above the median, was much closer to Portugal (the country with the highest value below the median) than to Cyprus (the country with the second lowest value above the median). Therefore, we concluded that it is more realistic to consider Slovenia the leader of emerging countries rather than the last one among developed ones. As a result, we classified countries as presented in Table 1.

For each year of each bank, altogether 5,317 bank-years, we collected all necessary data from the IFRS-based balance sheets, income statements, and cash flow statements published on the banks' websites. In all cases, we worked with consolidated statements. The financial statement figures were determined in EUR. Where the reporting currency was different from EUR, the figures presented in the financial statements were converted to EUR using the exchange rates published by the European Central Bank¹ for the relevant dates.

To measure earnings quality, we use the accounting-based earnings attributes defined by Francis et al. (2004) as a basis. Thus, we use *average earnings quality* (AEQ) as the dependent variable, determined as a combination of four components, namely the persistence (PERS), predictability (PRED), volatility (VOL), and smoothing (SMOOTH) of earnings.

Earnings persistence (PERS) is computed as the absolute value of one minus the maximum likelihood estimate for the $\phi_{1,i}$ coefficient from the $X_{i,t} = \phi_{0,i} + \phi_{1,i}X_{i,t-1} + v_{i,t}$ autoregressive model. Here $X_{i,t}$ and $X_{i,t-1}$ express the current and the previous year's earnings respectively, $\phi_{0,i}$ is the intercept, while $v_{i,t}$ is the error adjustment. Persistence is the indicator of future sustainability of earnings, where values nearer to 0 (that is, the $\phi_{1,i}$ coefficient closest to 1) indicate higher persistence and, thus, higher quality of earnings. The second component of AEQ is predictability (PRED), which is computed as the standard deviation of the error

adjustment ($v_{i,t}$) in the same autoregressive model. Lower values refer to better predictability and better earnings quality. The VOL component expresses the volatility of the firm's net profits, calculated as the standard deviation of earnings in the examined period. Lower volatility indicates higher earnings quality.

As the fourth element of AEQ, we use earnings smoothing (SMOOTH). Smoothing is a technique often used by companies to artificially decrease the natural fluctuation of earnings. Adopting the approach of Leuz et al. (2003), we measure the extent of smoothing as the ratio of standard deviation of earnings and operating cash flows. As a result, high values of the SMOOTH variable refer to earnings fluctuating more than cash flows, meaning that the firm is applying little earnings smoothing. In some authors' opinions smoothing is a tool of manipulative earnings management (Jeanjean and Stolowy 2008), which has the purpose of producing the desired financial statements in order to mislead shareholders about the underlying economic performance of the firm (Vishnani et al., 2019; Agustia et al., 2020). Nevertheless, we rather accept the view of Francis et al. (2004), who regard smoothing as a desirable earnings attribute. This is derived from the viewpoint that managers use their private information to smooth out transitory fluctuations of earnings and thereby achieve presented numbers that are more representative and useful for investors. Therefore, high SMOOTH values indicate low earnings quality in our concept. The four components of AEQ are summarized in Table 2.

As written above, lower values of PERS, PRED, VOL, and SMOOTH refer to better quality of earnings. After calculating the raw values of the four components for each bank, we created rankings of all 409 banks in our sample by each component, giving the highest rank (409) for the bank showing the best (lowest) value from the viewpoint of earnings quality and giving the lowest rank (1) for the worst (highest) value. Average earnings quality (AEQ) was then determined by calculating a simple average of the four ranks and then dividing this average by the number of banks in the sample (409). Consequently, AEQ ranges between 0 and 1.

The independent variables incorporated in our models include factors that may influence the AEQ of a given bank. The independent variables are listed in Table 3.

¹ https://www.ecb.europa.eu/stats/policy_and_exchange_rates/euro_reference_exchange_rates.

Table 2. Components of average earnings quality (AEQ).

AEQ component	Denotation	Definition
Earnings persistence	PERS	absolute value of one minus the estimated value of the $\Phi_{1,i}$ coefficient in the autoregressive model $X_{i,t} = \Phi_{0,i} + \Phi_{1,i} X_{i,t-1} + v_{i,t}$ where $X_{i,t}$ and $X_{i,t-1}$ stand for the current and the previous year's net income, respectively
Earnings predictability	PRED	standard deviation of the error adjustment in the autoregressive model $X_{i,t} = \Phi_{0,i} + \Phi_{1,i} X_{i,t-1} + v_{i,t}$ $PRED = \sigma(v_{i,t})$
Earnings volatility	VOL	standard deviation of net income ($X_{i,t}$) within the examined period $VOL = \sigma(X_{i,t})$
Earnings smoothing	SMOOTH	ratio of the standard deviations of net income ($X_{i,t}$) and operating cash flows ($CFO_{i,t}$) $SMOOTH = \sigma(X_{i,t}) / \sigma(CFO_{i,t})$

The first independent variable we use is the intensity of applying fair valuation, which is measured by the fair value instruments' average proportion in the balance sheets (FVPBS) of the given bank in the observed period. Second, we use the average relative change (INTCHANGE) in the long-term interest rate as a predictor, explained by the assumption that significant interest changes may influence AEQ. Third, we use firm size, expressed by the natural logarithm of total assets (LGTA), which is a common explanatory variable of AEQ. This comes from the expectation that banks with various sizes have differences in their accounting systems in terms of effectiveness and quality as well as complexity, which may have an impact on their earnings quality. Finally, one of our main research questions is whether any significant difference in earnings quality can be found between developed and emerging countries. Therefore, we use a binary variable (DVSE) to distinguish banks from developed and emerging countries. Our research concept is summarized by Figure 1.

After computing all values of the independent variables, it became visible that there are extreme outliers. This phenomenon was especially present in the FVPBS and LGTA variables, where the total range of values was close to 2 and 1.5 times as high, respectively, as the range of values between the 5th and 95th percentiles. Therefore, in order to limit the

possible distortive effect of such outliers, we applied winsorization for these variables, where the upper and lower 5 percent of data were substituted with the 95th and 5th percentile, respectively.

According to the concept presented above, we built the following regression model:

$$AEQ_i = \alpha + \beta_1 FVPBS_i + \beta_2 INTCHANGE_i + \beta_3 LGTA_i + \beta_4 DVSE_i + u_i \quad (1)$$

where i expresses the number of the observed bank. Note that although both the dependent variable and the independent variables are computed from time series, our sample behaves as a cross-sectional database, given that for each bank, the variables represent a single average value describing the observed period.

4. Results and discussion

4.1. Findings for the total period (2006–2018)

First we tested the regression model written in Eq. (1) on the total sample, including all banks and values computed from the total period of 2006–2018. Results are presented in Table 4.

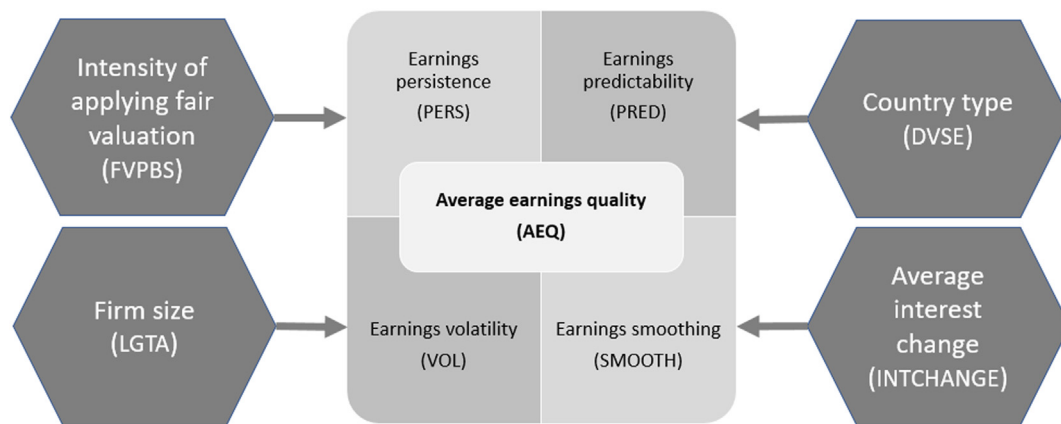


Figure 1. Summary of the research concept.

Table 3. Potential explanatory variables of average earnings quality (AEQ).

Independent variable	Denotation	Definition
Intensity of applying fair valuation	FVPBS	average proportion of fair value instruments to total assets in the balance sheets of the examined period
Average interest change	INTCHANGE	annual average relative change (average chain index minus one) in the long-term interest rate in the host country in the examined period
Firm size	LGTA	natural logarithm of average total assets in the examined period
Country type (developed versus emerging)	DVSE	0 for developed countries' banks and 1 for emerging countries' banks

Table 4. Regression results (all banks, 2006–2018).

Dependent variable: AEQ_i Model: (1)				Period: 2006–2018 (total period) Sample: all banks (n = 409)
Variable	Coefficient	Std. error	t value	p value
$FVPBS_i$	0.1451	0.0668	2.1718	0.0305**
$INTCHANGE_i$	−0.5513	0.1923	−2.8670	0.0044***
$LGTA_i$	−0.1888	0.0105	−17.9407	0.0000***
$DVSE_i$	−0.0568	0.0196	−2.8993	0.0039***
Constant	1.2545	0.0480	26.1132	0.0000***

** means that the variable is significant at a 5% level.

*** means that the variable is significant at a 1% level.

Results indicate that, utilizing the total sample, all independent variables are significant at a 5 percent level. The negative coefficient of the $INTCHANGE$ variable refers to the fact that interest rate cuts may have an advantageous effect on banks' AEQ , which is in line with the findings of Takacs and Szucs (2019). The $LGTA$ variable's negative coefficient leads to the conclusion that earnings quality will lessen as size increases, as stated by Cohen (2003). This can be a sign that although bigger banks' accounting systems may be more sophisticated, the increasing complexity caused by the larger size leads to lower AEQ values. From the viewpoint of our research questions, the two most important results are the following: First, we find a positive relationship between the fair value instruments' proportion ($FVPBS$) and earnings quality, confirming the preliminary expectation that the more intensively a bank applies fair valuation, the better earnings quality it can achieve. Second, the $DVSE$ variable turns out to be significant with a negative coefficient, which indicates that there might be significant differences in earnings quality between developed and emerging countries. Therefore, to deepen the investigation, we separately tested our model on the subsamples of developed and emerging countries' banks by eliminating the $DVSE$ variable, as stated in Eq. (2):

$$AEQ_i = \alpha + \beta_1 FVPBS_i + \beta_2 INTCHANGE_i + \beta_3 LGTA_i + u_i \quad (2)$$

Table 5 summarizes the regression results obtained.

Results show that the only variable significantly explaining AEQ in both country types is size ($LGTA$), while a statistically proven relationship between fair valuation and earnings quality and between interest change and earnings quality only exist in the developed countries subsample. Furthermore, the positive coefficient of $FVPBS$ is slightly higher in the developed subsample as in the total sample, indicating a stronger effect of an intensive use of fair valuation on AEQ in developed countries compared to the results obtained for the total sample.

4.2. The effectiveness of improvements in the regulation of fair value accounting (IFRS 13)

A question yet to be answered is whether the significant positive effect of $FVPBS$ on AEQ shows any differences between the periods of 2006–2012 (when fair value accounting was regulated by the IAS 39 standard) and 2013–2018 (when the new IFRS 13 standard was in effect). The answer for this question may confirm or deny the hypothesis that, in terms of banks' earnings quality, IFRS 13 was an effective improvement in the regulation of fair value accounting. For this investigation, we recalculated all variables' values for each bank based on the pre-IFRS 13 (2006–2012) and post-IFRS 13 (2013–2018) periods' data and re-tested Model (2). Results are presented in Tables 6 and 7.

In the pre-IFRS 13 period (2006–2012), a significant relationship is not found between the intensity of using fair valuation and earnings quality in developed or emerging countries. This signals that the earlier fair value regulation (IAS 39) was not effective in driving earnings quality. In the pre-IFRS 13 period, the only variable found to significantly influence earnings quality was bank size ($LGTA$). In the post-IFRS 13 subsample, there is no change in the results for emerging countries. A likely explanation for this is that the majority of countries labelled as emerging are outside the European Union, and thus, they do not have the liability to follow IFRS standards. However, a finding of great importance is that *the $FVPBS$ variable is significant in the post-IFRS 13 period for developed countries* (as highlighted with bold on the right top in Table 7). The accounting practices of banks in these (with minor exceptions, all EU member) countries are highly affected by IFRS, including the fair value regulation stated in the IAS 39 until 2012 and in the IFRS 13 thereafter. The fact that no significant association was found in the IAS 39 era but a significant and positive relationship was shown in the IFRS-13 era leads to the conclusion that the introduction of IFRS 13 resulted in a measurable improvement in fair value regulation. This provides a strong reason

Table 5. Comparison of results for developed and emerging countries (total period, 2006–2018).

Dependent variable: AEQ_i Model: (2)				Period: 2006–2018
Developed countries' banks (n = 225)				
Variable	Coefficient	Std. error	t value	p value
$FVPBS_i$	0.1653	0.0763	2.1670	0.0313**
$INTCHANGE_i$	−0.8566	0.3111	−2.7533	0.0064***
$LGTA_i$	−0.1881	0.0137	−13.7197	0.0000***
Constant	1.2309	0.0616	19.9731	0.0000***
Emerging countries' banks (n = 184)				
Variable	Coefficient	Std. error	t value	p value
$FVPBS_i$	0.0354	0.1510	0.2346	0.8148
$INTCHANGE_i$	−0.3406	0.2457	−1.3864	0.1673
$LGTA_i$	−0.1909	0.0170	−11.2238	0.0000***
Constant	1.2201	0.0600	20.3219	0.0000***

** means that the variable is significant at a 5% level.

*** means that the variable is significant at a 1% level.

Table 6. Comparison of results for developed and emerging countries (pre-IFRS 13 period, 2006–2012).

Dependent variable: AEQ_i				
Model: (2)				
Developed countries' banks (n = 225)				
Variable	Coefficient	Std. error	t value	p value
$FVPBS_i$	0.0319	0.0699	0.4567	0.6483
$INTCHANGE_i$	-0.1744	0.1277	-1.3654	0.1735
$LGTA_i$	-0.1685	0.0126	-13.3252	0.0000***
Constant	1.1935	0.0536	22.2818	0.0000***
Emerging countries' banks (n = 184)				
Variable	Coefficient	Std. error	t value	p value
$FVPBS_i$	-0.1999	0.1378	-1.4508	0.1486
$INTCHANGE_i$	-0.1089	0.1147	-0.9495	0.3437
$LGTA_i$	-0.1680	0.0167	-10.0835	0.0000***
Constant	1.1759	0.0550	21.3984	0.0000***

*** means that the variable is significant at a 1% level.

Table 7. Comparison of results for developed and emerging countries (post-IFRS 13 period, 2013–2018).

Dependent variable: AEQ_i				
Model: (2)				
Developed countries' banks (n = 225)				
Variable	Coefficient	Std. error	t value	p value
$FVPBS_i$	0.1573	0.0705	2.2312	0.0267**
$INTCHANGE_i$	-0.1706	0.1044	-1.6336	0.1038
$LGTA_i$	-0.1326	0.0131	-10.1208	0.0000***
Constant	1.0213	0.0611	16.7081	0.0000***
Emerging countries' banks (n = 184)				
Variable	Coefficient	Std. error	t value	p value
$FVPBS_i$	-0.0932	0.1243	-0.7493	0.4546
$INTCHANGE_i$	0.0094	0.0934	0.1006	0.9200
$LGTA_i$	-0.1874	0.0158	-11.8807	0.0000***
Constant	1.2490	0.0626	19.9530	0.0000***

** means that the variable is significant at a 5% level.

*** means that the variable is significant at a 1% level.

for banks located in developed European countries to further strengthen the intensity of applying fair valuation. According to our results, this offers the opportunity to achieve higher earnings quality. Nevertheless, results indicate that such a relationship is not yet present in emerging European countries. The above empirical results are summarized by Figure 2.

The most likely reason for the above findings is that developed EU-member countries adopted IFRS already in the early 2000's, and as a

result, firms operating in these countries started to build up the necessary practices close to 20 years ago, and since then they have acquired much experience in using fair valuation. Furthermore, the criteria needed to exploit the benefits of fair valuation in creating high quality accounting information (developed capital markets with high liquidity, as pointed out by Alp and Ustundag (2009), for instance) have been present in the developed countries. On the other hand, in many emerging countries, the adoption of IFRS and the extensive application of fair valuation started

<i>Positive effect of fair valuation on earnings quality</i>		
	<i>not confirmed</i> ($p=0.6483$)	<i>confirmed</i> ($p=0.0267$)
Developed countries		
Emerging countries	<i>not confirmed</i> ($p=0.1486$)	<i>not confirmed</i> ($p=0.4546$)
	Pre-IFRS 13 period (2006-2012)	Post-IFRS 13 period (2013-2018)

Figure 2. Summary of the statistical results on the effect of fair valuation on earnings quality.

much later (mostly after the financial crisis of 2008–2009), and/or their capital markets are less effective. As a consequence, the positive effect of fair valuation on earnings quality is not yet measurable in these countries.

Finally, independent of the country type, no significant association is found in these shortened pre/post periods between interest change and AEQ.

5. Conclusion

This study examines European banks' average earnings quality (AEQ) and its explanatory factors in a comprehensive context, extending the findings of earlier published research articles. Our investigation focuses on the effect of the intensity of applying fair valuation on earnings quality with special attention on the differences between developed and emerging countries and the effectiveness of the improvements in fair value accounting regulation.

Results indicate that a higher ratio of fair value instruments in the balance sheet leads to higher earnings quality, which is in agreement with the results of Yao et al. (2018) and Paoloni et al. (2017). It must be noted, however, that this relationship was only proven for developed countries. In emerging countries, no statistically relevant association was found between fair valuation and AEQ, which is possibly due to the later adoption of IFRS and the lack of experience in fair valuation, or more generally, a remarkably lower influence of IFRS regulations on local accounting practices in these countries. An important conclusion is that the positive impact of fair valuation on earnings quality became statistically significant in the post-IFRS 13 period (2013–2018), which may be interpreted as a sign of success in standard-setting (or more exactly, the greater effectiveness of the new IFRS 13 standard compared to the earlier IAS 39). In other words, this is additional proof that *higher quality* standards may increase earnings quality, which confirms earlier research results (Dichev et al., 2013).

Our empirical results are based on the data of the selected 409 European banks for the period 2006–2018. We are convinced that our database, built by collecting data from 5,317 bank-years, is suitable to serve as a basis for conclusions that are reliable and relevant from the viewpoint of practical implications. We believe that our empirical results may be useful both for bank managers and for investors in their decision-making.

Declarations

Author contribution statement

F. Andrew: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data. A. Takacs: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data. T. Szucs: Performed the experiments; Analyzed and interpreted the data. D. Kehl: Conceived and designed the experiments; Performed the experiments.

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Data availability statement

Data will be made available on request.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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