

# FAIR VALUE ACCOUNTING AND MANAGEMENT OPPORTUNISM ON EARNINGS MANAGEMENT IN BANKING SECTOR: FIRST EVIDENCE

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## Abstract

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Accounting standard boards (IASB and FASB) have chosen fair value accounting (FVA) approach to help financial reporting users in the decision-making process. During recent years, an intense debate arose about the trade-off between relevance and reliability of accounting information in this approach. Even if fair value based information could be considered highly relevant and helpful from an investor's perspective, many authors outline problems related to fair value hierarchy valuation of financial instruments. In particular, the discretionary use of unobservable inputs in financial instruments valuation process can support earnings management strategy underlying the risk for emerging agency problems, moral hazard behaviour and management short-termism. Stating that, after providing a literature review focused on management behaviour related to FVA, the main objective of the paper is identifying possible relationships between FVA valuations and earning quality observing a sample of US and European banks listed in the period 2011-2016 based on Šodan model (Šodan, 2015). Results show a negative and strong relationship between FVA and earning quality for US banks; results for European listed banks do not provide any strong evidence.

**Keywords:** Fair Value Accounting, Fair Value Hierarchy, Earning Management, Earning Quality, Banking

## 1. INTRODUCTION

Financial reporting helps investors in the decision-making process. To reach this scope, IASB and FASB have chosen fair value accounting (hereafter "FVA"). The FVA links carrying amount to current market price rather than to the value of a past transaction, so it seems able to show potential cash flow generated from assets or liabilities included in financial statements (Tutino & Pompili, 2013). During recent years, an intense debate has arisen relative to FVA approach and the trade-off between relevance and reliability of accounting information reported adopting through FVA criterions. Many authors claim that fair value accounting based information is relevant and helpful for investors even if this approach makes a large use of unobservable inputs (Barth, 1994; Barth and Clinch, 1998; Barth, 2010). In our perspective, in case of lack of market values directly observable, the FVA approach could bring to adverse selection and moral

hazard problem: when estimates are highly dependent on management choices, this potentially could bring to errors in estimates and, consequently, in an increase information asymmetry due to the use of private information not clearly reported to stakeholders. In such scenario, moreover, unobservable inputs could be used as earnings management tool in order to pursue their own goals aligning biased estimates able to meet investors' expectations.

After a quick look to the state of art on the management behaviour under FVA approach, adopting the Šodan Model (Šodan, 2015) this paper investigates whether application of FVA in financial instruments valuation could have some potential impacts on earning quality measures of banks listed in the US and Europe. In order to better explain the exposure to FVA approach of changes in fair value asset and liabilities reported as gain and losses through net income, the earning quality measure we

adopt is made-up of five individual earning management measures.

The step forward in our research relates to two main pieces of evidence. First, the period observed and his extent does not relate to the financial crisis of 2008, so that earning management strategies adopted by banks are less likely to be persistent. Updated results can be more representative for theoretical improvements because of minor impact on accounting reported related to phenomenon able to manipulate the significance of results achieved in crisis time, such as the growth of M&A operations justified primarily by speculative strategies (Hagendorff, Keasey & Vallascas, 2013). Secondly, even if from 2010 with the issue of IFRS 7 a deeper disclosure on different level of fair value adopted in financial instruments valuation has been started, only with the IFRS 13, fully applicable starting from 2013, many aspects of process valuation in application of fair value hierarchy have been analytically defined such as (i) strict and unique definition of fair value hierarchy levels to be adopted by corporates under IFRS versus general cross-reference to SFAS 157, suitable by US listed firms; (ii) analytical indication of steps to follow versus no recommendation before 2013; (iii) definition of a set of specific parameters as indicators of illiquid market in case of no directly observable market inputs, and (iv) specific recommendation on techniques to adopt for evaluation of level 3 of fair value.

Since important innovations introduced by IFRS 13 are able to change the evidence according to the revised context for FVA valuation, in the paper we try to “close the gap” updating results achieved by previous literature on the topic.

The paper proceeds as follows. Section 2 shows theoretical framework and literature review. Sections 3 and 4 focus respectively on research design and statistics emerged by running regressions to check the hypothesis. Conclusions in section 5 offer an interpretation of statistical results achieved. Main limitations and further research are provided. Appendix completes the paper.

## 2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

For IASB and FASB the primary users of financial reports are actual and potential investors, a fair value representing the main criteria to allow them to take decisions on investment policy and asset allocation strategy (i.e. resource allocation decisions). FVA requires the use of market values for financial statements preparation, in this approach income statement showing “potential and not fully realized” income due to unrealized gains and losses recognized in order to align the value of assets and liabilities at their market value even if they are not subject to purchase or sale. This represents a deep change in comparison to the use of historical cost. Fair value, arisen from expected future cash flows of assets subject to evaluation, seems to have the advantage to capture a share of income accruing for the year, so it could be useful for users (i.e., investors) focused on the ability of company assets to generate future cash flows. Moreover, fair value seems to be able to increase transparency and comparability of financial statements, in both time

and space, and in this way, it achieves one of the main goals of international accounting standards (Barth, 1994) even if many factors are able to modify the real ability of FVA approach in providing a higher quality accounting information considering the full range of stakeholders (Tutino, 2016). Therefore, international standard setters (IASB and FASB, primarily) have identified FVA as one of the major innovation for investors; moreover, it can push financial statements volatility as well as reveal hidden reserves and unrealized losses.

On the other hand, many authors and practitioners have criticized a full FVA underlying that the application of the criterion may conduct to a less reliable reporting than historical cost criterion application (Landsman, 2007; King, 2008; Ronen, 2008). Specifically, in case of *illiquid market hypothesis*, that meaning primarily (1) not directly observable inputs and, consequently, (2) adoption of estimates which potentially suffer from errors because of discretionary parameters. During recent years, an intense debate has arisen concerning the fair value and the trade-off between relevance and reliability originated in connection with this accounting criterion.

Whittington (2008) summarizes alternative views on FVA approach: a “*fair value view*” and an “*alternative view*”. According to the first, since markets are perfect, accounting information is complete and, thus, financial reporting fully meet the needs of investors; in these circumstances, market prices should give a non-entity specific estimate of potential cash flow. According to the second view, markets are no perfect and, so that, accounting information is not complete and perfect, this allows to recognize the financial reporting as a useful tool to monitor and evaluate management stewardship. In this approach, financial reporting should be focused on past transactions effects and it should adopt entity specific measures.

Criticisms of FVA approach is not limited to his conceptual validity but has to be extended to its practical application.

When markets are liquid, prices are easily observable (*mark-to-market*). When markets are illiquid, prices are not directly available or they are not able to reflect the fair value. In this case, fair value should be calculated adopting internal estimation models (*mark-to-model*), potentially affected by errors due to specific hypothesis and parameters adopted by the management. In synthesis, lack of direct observability of inputs used in valuation process could be considered as the main factor affecting the reliability of fair value estimates.

Furthermore, under FVA income volatility tends to grow according to external financial market conditions instead of the company operating business results. So that, as well as a different degree of estimates reliability depends on inputs adopted with direct impact on net income, there is space for opportunistic behavior: management has the incentive to provide biased estimates of fair value in order to show a level of net income to achieve specific objectives such as market expectations on net income or level of performance that allow meeting requirements for bonus compensation. Therefore, in case of intensive use of unobservable inputs, possible errors arise related to estimation process and, hence, management

manipulations (Benston, 2008). This evidence leads to (1) a lower investors decision process relevance of value reported in the financial statements (Lev & Zhou, 2009; Song, Thomas & Yi, 2010; Goh, Ng & Young, 2009; Siekkinen, 2016) (2) a greater correlation with level of information asymmetries (Ball, Jayaraman & Shivakumar, 2012; Riedl & Serafeim, 2009).

Lev and Zhou (2009) found that investors perceive as riskier securities measured through the input of the fair value of Level 3. Same results are reached by Song, Thomas & Yi (2010) to whom the fair value of Level 1 and fair value of Level 2 are more value relevant than the fair value of Level 3. Goh, Ng & Young (2009), analyzing the effect of introduction of SFAS 157, found a significant change in market prices depending on level of fair value; specifically, price is reduced for assets valued using a mark-to-model, i.e. assets with lower liquidity and higher risk information due to the estimates carried out for evaluation.

Siekkinen (2016) observed the potential relation between the different level of investor protection and impact of the change in value relevance of different levels of inputs. In a strong investor protection environment, investors do not find any difference between market-to-market and market-to-model fair value. At the opposite, in a scenario with weak investor level of fair value protection shares' market prices reflected the only fair value of Level 1: in such environment, investor does not trust in fair value discretionary estimates provided by the firms.

Ball, Jayaraman & Shivakumar (2012) found an increase in the level of information asymmetry associated with the use of FVA. More in deep, Riedl & Serafeim (2009) found a positive correlation between Level 3 fair value and information asymmetry level. Authors attribute the results to disclosure requirement that, for them, are not strong enough to compensate the higher information risk associated with not observable inputs used to estimate illiquid instruments. Moreover, Kisseleva & Lorenz (2016), investigating if Level 3 fair value disclosures provide useful information to investors, found that investors generally do not take into account fair value of Level 3.

All the reported literature, in accordance with our previous results (Tutino & Pompili, 2017) shows that use of different levels of inputs to estimate fair value have some impact on how investors perceive value reported by firms. Especially, fair value estimated with Level 3 input loses reliability because investors are concerned with how management execute estimates and about possible errors or manipulations.

Therefore, despite the aim of IASB and FASB to move toward a full FVA for financial instruments (and not only), academics and professionals have various concerns with this accounting model yet. As stated by Benston (2008) "*the value to investors of fair values depends critically on how those numbers are measured and the extent to which they are trustworthy (i.e., auditable and not readily manipulated)*". The possibility of manipulations made by management in order to achieve their own goals has been the object of various research conducted with the aim of understanding if, under FVA, managers have both incentive and the possibility for earning management behaviour. The following analysis has been conducted on a sample

of companies involved in the adoption of fair value criterion and fair value hierarchy for financial instruments valuation due to accounting standard systems they have to adopt (IFRS and US GAAP). This reason justifies the search for a possible relationship between earning management practices and discretionary use of non-observable inputs in the application of FVA in US and European markets.

Referring to instruments negotiated Over-The-Counter (OTC) usually not transparent and without observable prices, Milbradt (2012) found that management might have some incentives in (i) keeping off markets some assets in order to avoid adverse balance sheet impacts and (ii) reporting these at inflated values using Level 3 fair value. McEwen, Mazza & Hunton (2008) provide a second-level analysis with respect to the one set out above. The authors analyze how financial analysts read biased estimates. Conducted through interviews of 44 experienced analysts, their results show how, despite analysts' expectations on a possible manipulation given the discretion granted by the accounting standards and especially compared to inactive markets and unlisted instruments, they fail to adjust the estimation prices to consider these distortions. Fargher & Zhang (2014) investigate effects of FASB's relaxation in the application of standards on fair value measurement that has led to an increase of use of managerial assumptions to determine fair value. Authors' analysis shows that increase in discretionary fair value measurements is associated with increased earning management behaviour. At the same time, more discretion is also associated with a lower earning disclosure.

Finally, Šodan (2015) conducts a similar analysis of Fargher & Zhang (2014) searching to understand the impact on earning quality using valuation techniques for fair value estimates instead of market price observing a sample of companies and banks listed in 17 Eastern European countries. The author found that firms with higher exposure to FVA have a lower level of earning quality due to the opportunity given to manager under this accounting system to manipulate estimated values.

Hanley, Jagolinzer & Nikolova (2016) found an indicator of some estimation bias observing a sample of insurance companies. Author results show that firms exploit the ambiguity in fair value hierarchy consistent with financial reporting incentives: firms report lower quality in level of input to allow flexibility in fair value estimates; conversely, in case of decrease in liquidity, firms have the incentives to report higher quality inputs in order to report better asset liquidity to the market.

A recent research of Badia, Duro, Penalva & Ryan (2017) investigates if firm exercise discretion over the fair value measurements exhibiting conditional conservatism when instruments subject to evaluation are not trade in the liquid market. Results show as firms report conditionally conservative Level 2 and Level 3 fair value measurements, with the aim to mitigate concerns related to adverse consequences of FVA requirements.

Quagli & Ricciardi (2010) focused their analysis on the Amendment to IAS 39 issued by IASB on 2008 that, in particular, circumstances, allows reclassifying non-derivative financial assets out of fair value through profit or loss category. Results show a relationship between probability to reclassify

financial assets and past earning management behaviour, so authors found that management uses the discretion in accounting choice in order to avoid earning losses and in order to meet investors' and analysts' expectations. Kohlbeck, Smith & Valencia (2016) made a similar analysis. Based on prior research that shows how management could use discretion given by Level 3 input, they investigate subsequent changes in fair value classification that result in net transfers into the Level 3 classification in order to examine whether firms use discretion to engage in opportunistic transfers. Authors found that managers are more likely to engage in transfers into Level 3 if the firm has incentives to engage in opportunistic transfers, but higher quality auditors appear to constrain this behaviour.

Stating that, a part of the academic literature support the idea that the discretion granted to management can be useful to better express real value of securities, especially for instruments not traded in active markets, for which there is no observable market price at the reporting date, for these instruments in fact information possessed by management should become essential for a better assessment (Laux & Leuz, 2010; Altamuro & Zhang, 2013; Barth & Taylor, 2010).

### 3. RESEARCH DESIGN

#### 3.1. Research questions

Given the above-mentioned literature and the many criticisms against the use of fair value accounting, the aim of the paper is to test whether the use of fair value accounting has some impacts on earning quality measures. Fair value accounting and more specifically discretion related to the determination of fair value could have an impact in terms of earning quality because of the opportunity granted to managers to manipulate value showed in financial reporting.

We have realized our research based on the model of Šodan (2015) who investigated whether the extent to which fair values used in financial reports is related to the earnings quality measures in 17 Eastern European countries over the 2002-2011 period. The aim of the author was to understand the impact on earning quality of the use of valuation techniques to estimate fair value instead of market price. Šodan chose a sample of Eastern European firms (from industrial and banking industries) because he expected that companies in these countries more often estimate fair values by using valuation techniques (i.e. mark-to-model) than firms in market developed countries.

Based on this, we want to try to extend results obtained by Šodan (2015) also to firms operating in the US and in Europe in order to verify if also for these it is possible to observe a lower earning quality related to the application of FVA. We have concentrated our analysis on banking sector because of banks have the most impact of FVA given the high quantity of financial instruments held by them and given that fair value is mainly used for assessing this kind of assets. The primary objective of our research is to demonstrate that use of FVA generally reduces earning quality and therefore create a basis for future analysis on implications of FVA in term of earning management. Future analysis should be conducted in order to identify which level of inputs

of fair value permits more earning management practices and furthermore which kind of financial instruments could be more used as a tool to manipulate financial statements results.

Therefore, the rationale of the research is that banks with an intense use of FVA in the valuation of financial instruments – such as the two samples observed, US and Europe ones – will show a lower level of earning quality measures. So that, testing two different sub-samples, the hypotheses are as follows:

*H1: Higher is the dependence of market value by fair value accounting of a sample of US bank, in particular considering the impact of fair value hierarchy for financial instruments valuation, lower is the earning quality of the sample.*

*H2: Higher is the dependence of market value by fair value accounting of a sample of a European bank, in particular considering the impact of fair value hierarchy for financial instruments valuation, lower is the earning quality of the sample.*

These two hypotheses allow formulating two different research questions and, hence, to provide tests to check for their validity.

The research questions are the following:

*RQ1: Do fair value gains and losses through net income have a negative impact in terms of earning quality for banks listed in US market, so that under US GAAP?*

*RQ2: Do fair value gains and losses through net income have a negative impact in terms of earning quality for banks listed in the European market, so that under IFRS?*

#### 3.2. Models

Based on Šodan Model (2015), the present work tries to extend previous results using a sample of companies listed in US and Europe markets. Differently, from Šodan (2015), the research focuses on two sub-samples of banks, for US and European markets, to check if any differences have to be considered in the analysis.

In order to measure the exposure of net income to FVA in banks, we focused on a specific variable: fair value gains and losses through net income. This variable is able to fully show the impact of changes in fair value not limited to changes in market prices including changes in weight and parameters chosen by management for evaluation model to adopt for fair value valuation of financial instruments of level 3 in the fair value hierarchy.

We expect that the impact on net income of fair value gains and losses through net income is more significant than the amount of unrealized fair value gains and losses through other comprehensive income. Stating that, the hypothesis investigates on a possible negative effect of fair value changes recognized in net income in terms of earning quality.

According to previous research, the relation of RQ1 for US sub-sample assumes the following form:

$$AEQ_{i-us} = \beta_0 + \beta_1 FVI_{i-us} + \beta_2 MC_{i-us} + \varepsilon_{i-us,t} \quad (1)$$

The same form has to be considered for relation RQ2 for European sub-sample:

$$AEQ_{i-eu} = \beta_0 + \beta_1 FVI_{i-eu} + \beta_2 MC_{i-eu} + \varepsilon_{i-eu,t} \quad (2)$$

### 3.3. Sample and sub-samples

The initial sample consists of 446 banking companies listed in the US (186) and European markets (280) in the 2011-2016. We use data collected from database Orbis Bank Focus, amongst the companies that belong to the banking sector. European countries taken into consideration are those of EU28 plus Switzerland and Norway.

We collected data from 2011 for two reasons. First, this is in line with the application of IFRS 7 asking disclosure about the adoption of FVA rules both in Europe and in the US; second, the period could be considered period sufficiently far from the financial crisis of 2008 with the aim of avoiding distortions related to abnormal market trend.

Although there are no major differences between US GAAP and IFRS in FVA estimation process, models are tested separately in order to confirm if specific factors of each context

(differences related to structure and degree of development of markets, financial legislative impact, other factors) should be considered in the analysis. So that, we ran analysis observing two sub-samples of banks listed in (i) US and (ii) European markets testing the hypothesis separately.

We have excluded companies for which it has not been possible to determine the aggregate earning quality indicator and those for which fair value gains and losses through net income information has not been available. Therefore, the final sample consists of 132 baking companies listed in the US (41) and European markets (91) in the 2011-2016 period (Appendix).

### 3.4. Model and variables

The model and variables used and the rationale for calculation are summarized in Table 1. All values relate to year-end date.

Table 1. Sodan model

Variable	Label	Meaning
Dependent	AEQ	Aggregate Earning Quality
Independent	FVI	Absolute value of fair value gains and losses through net income / (Absolute value of Net income without value of fair value gains and losses through net income + Absolute value of fair value gains and losses through net income)
Independent	MC	Market Capitalization

FVI (Fair Value Impact) variable is the measure of changes in fair value of assets and liability reported as gains and losses through net income. In another word, it measures the exposure to fair value accounting.

AEQ (Aggregate Earning Quality) variable is a proxy to measure the earning quality. It is computed for each firm of the sample by doing an average of the following five specific measures of earnings quality: (i) predictability, (ii) persistence, (iii) volatility, (iv) value relevance and (v) conservatism (Šodan, 2015; Gaio, 2010; Francis, LaFond, Olsson & Schipper, 2004; Lipe, 1990).

Accordingly, to previous studies, it is possible to obtain indicators of persistence and predictability from the following autoregressive equation (Gaio, 2010):

$$NPS_{i,t} = \beta_0 + \beta_1 NPS_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

where,  $NPS_{i,t}$  is firm i's net income in year t scaled by the average number of outstanding shares during year t.

#### (i) Predictability

Predictability indicates the ability of earnings to predict itself (Lipe, 1990) and it is possible to define its indicator from equation (3) as the square root of the estimated error variance:

$$PRED_i = \sqrt{\sigma^2(\varepsilon_i)} \quad (4)$$

A higher value of the indicators means lower earning quality.

#### (ii) Persistence

Persistence captures earning sustainability (Francis, LaFond, Olsson & Schipper, 2004).

Its indicator is obtained from equation (3) as the negative value of slope coefficient estimate:

$$PERS_i = -\beta_{1,i} \quad (5)$$

A higher value of the indicators means lower earning quality.

#### (iii) Volatility

Since it is associated with temporary variations of net income not representing the current value of the business and also connected with the risk profile of the firm, volatility is not a desirable attribute of earning. Volatility is measured by the following equation:

$$VOL_i = \sigma(N)_{i,t} \quad (6)$$

where,  $N_{i,t}$  is firm i's net income at year-end t.

A higher value of the indicators means lower earning quality.

#### (iv) Value relevance

Value relevance is generally described as the ability of earning to explain variation in stock return (Francis, LaFond, Olsson & Schipper, 2004).

Accordingly to Šodan (2015), to estimate value relevance we use the following regression:

$$P_{i,t} = \beta_0 + \beta_1 N_{i,t} + \beta_2 \Delta N_{i,t} + \varepsilon_{i,t} \quad (7)$$

where:

$P_{i,t}$  = share price of bank "i" at year-end "t",  
 $N_{i,t-1}$  = net income of bank "i" in year "t-1" scaled by beginning value of market capitalization,  
 $\Delta N_{i,t}$  = change in net income from the year "t-1" to year "t" scaled by market capitalization in year "t-1".

As a measure of value relevance we use the negative value of regression's explanatory power:

$$REL_i = -R_i^2 \quad (8)$$

A higher value of the indicators means lower earning quality.

(v) *Conservatism*

Conservatism is the ability of earning to incorporate economic losses (measured by negative stock returns) quickly than economic gains (measured as positive).

Following Šodan (2015) we apply following equation:

$$\Delta N_{i,t} = \beta_0 + \beta_1 D_{i,t} + \beta_2 \Delta N_{i,t-1} + \beta_3 D_{i,t} \Delta N_{i,t-1} + \varepsilon_{i,t} \quad (9)$$

where,

$\Delta N_{i,t}$  = change in net income for bank "i" from year "t-1" to year "t", scaled by beginning market capitalization;

$D_{i,t}$  = dichotomous variable which takes value of "1" when  $\Delta N_{i,t}$  is negative and "0" otherwise;

$\Delta N_{i,t-1}$  = change in net income from year "t-2" to year "t-1" scaled by beginning market capitalization.

According to previous research, positive changes in net income are persistent, so  $\beta_2 = 0$ . Also

$$AEQ_i = \frac{[RANK(PERS_i) + RANK(PRED_i) + RANK(VOL_i) + RANK(REL_i) + RANK(CONS_i)]}{5} \quad (11)$$

where, single measure as those in equations (4), (5), (6), (8) and (10). Specifically, banks are ranked according to each of five individual measures of earnings quality, and then the aggregate quality measure is computed for each bank by averaging its

in case of conservatism, income decreases tend to be transitory, so  $\beta_2 + \beta_3 < 0$ .

Finally, if economic losses are recognized in a more timely manner than gains than it should be  $\beta_3 < 0$ .

Consequently, a measure of conservatism is obtained from equation (9) as follows:

$$CONS_i = \beta_{3,i} \quad (10)$$

A higher value of the indicators means lower earning quality.

Given the number of observation in our sample, we modified the equation of the conservatism model by binding the intercept to a common value, decreasing the number of unknown parameters and thus obtaining the relative index.

In synthesis, the relation of AEQ assumes the following equation:

ranking over the five individual quality measures. A higher value of the indicators means lower earning quality, consistent with the rationale of individual indicators.

Table 2 summarizes the meaning of single quality measure used to construct AEQ.

**Table 2.** The meaning of single quality measure used to construct AEQ

Label	Quality Measure	Meaning
PRED	Predictability	Measure of ability of earning to predict itself over the time
PERS	Persistence	Measure of ability of earning to be sustainable over the time
VOL	Volatility	Measures the presence of temporary variations in net income
REL	Value Relevance	Measure of ability of earning to explain stock return
CONS	Conservatism	Measure of ability of earning to reflect economic losses quickly than gains

#### 4. RESULTS

With the support of MATLAB software, we ran Šodan Model both for two sub-samples: (i) banks listed in

the US and (ii) banks listed in Europe.

The following table reports results obtained for US sub-sample.

**Table 3.** Results obtained for US sub-sample

Variable	Predicted Sign	Coefficient	t-stat	P-value
Intercept	?	19,7733	21,70753419	5,13E-10
FVI	+	15,7245	2,016232599	0,050884765
MC	?	8,54E-08	0,005118585	0,995942756
Number of observations			41	
Error degrees of freedom			38	
R-squared			0.132	
Adjusted R-Squared			0.0865	
F-statistic vs. constant model			2.89	
p-value			0.0676	

Tested model is overall statistically significant with R-square 13,2 %, close to results of Šodan (2015). The positive sign of the coefficient for FVI is consistent with our hypothesis, showing a negative impact of FVI in terms of earning quality. Therefore, the US banks sample confirms the previous result of Šodan (2015): higher exposure to fair value accounting, measured by the impact of fair value

change on net income (FVI), is associated with a general lower earning quality.

Market capitalization is introduced as a control variable. It does not appear related with AEQ; when the variable is deleted from the model, the significance of the model improves without sensible loss of adaptation. Results obtained deleting market capitalization are reported in Table 4.

**Table 4.** Results obtained deleting market capitalization

<i>Variable</i>	<i>Predicted Sign</i>	<i>Coefficient</i>	<i>t-stat</i>	<i>P-value</i>
FVI	+	19,77367645	22,08179323	1,19E-23
MC	?	15,74619667	2,437299057	0,019460238
Number of observations		41		
Error degrees of freedom		39		
R-squared		0.132		
Adjusted R-Squared		0.11		
F-statistic vs. constant model		5.94		
p-value		0.0195		

Considering the European sub-sample, Table 5 reports results.

**Table 5.** Results obtained for the European sub-sample

<i>Variable</i>	<i>Predicted Sign</i>	<i>Coefficient</i>	<i>t-stat</i>	<i>P-value</i>
Intercept	?	45,21296529	24,24145555	1,0176E-40
FVI	+	2,097939358	0,201041009	0,841130456
MC	?	6470432261	0,840835017	0,402719304
Number of observations		91		
Error degrees of freedom		88		
R-squared		0.00958		
Adjusted R-Squared		-0.0129		
F-statistic vs. constant model		0.425		
p-value		0.655		

At this step of the analysis, the results do not show strong evidence. So that, it is not possible to confirm the Hypothesis 2 for Europe sub-sample.

## 5. LIMITATIONS OF THE ANALYSIS

General limitations of the tested model have to be considered for conclusions:

First of all, we have a reduced number of observations available for the main independent variable, such as fair value gains and losses through net income. It depends on the evidence that the information is reported analytically by banks starting after the full adoption of IFRS 13. So that, for a long stream of data, it is necessary to wait for the financial reporting of next years. Besides of that, there is a strong dependence of the model on the number of annual accounts available for each bank in the sample, especially in calculation of some of the five key indicators: the use of self-regressive AR(1) models, both simple and at the first differences, from which infer the value of some of the five indicators, reduces the number of observations that can be used for each bank. Moreover, stability and reliability of single quality measure grow rapidly with the temporal depth of the observations. At this time, there are some exceptional values in the earning quality measures distributions, far from the rest of the sample, expanding the dataset will make clear whether they are outliers or spurious.

## 6. CONCLUSION

International standards setters (mainly, FASB and IASB) introduced fair value accounting with the aim to provide useful information to investors in the decision-making process in a context of progressive harmonization of financial reporting practices. In this sense FVA, linking balance sheet values at current market values rather than at historical values of past transactions seems to increase

comparability of financial reporting, both in time and in space.

Despite that, in recent years many authors criticized this criterion for its poor reliability. Indeed, if in a theoretical perspective fair value should satisfy the demand of investors for more representative information on business trend, many concerns arise concerning its practical application. This evidence emerges particularly in contexts as illiquid or inefficient markets. With regard to this aspect, both international accounting standard introducing inputs hierarchy and obligation of its disclosure (IFRS 13 and FAS 157) provide an indicator of reliability of assessments reported in financial statements, thus investors could be able to deeply understand the recorded values. In fair value hierarchy valuation, much attention concerns inputs of level 3 because of the fact that they are directly unobservable by the investor: these inputs are estimated by management using internal sources of information not shared with stakeholders. About the opportunism to use these internal estimates for accounting manipulation and earning management purposes, authors do not reach a unique conclusion. On this context, we tried to check if the US and European banking sector, both adopting fair value hierarchy for financial instruments valuation, are potentially passive of earning management practices based on the biased valuation of level 3 inputs.

The empirical analysis was conducted on two sub-samples of banks listed in US and Europe in the period 2011- 2016 adopting the Šodan model (2015), which observed a sample of firms both from banking and industrial industries listed in 17 Eastern European countries over the period 2002-2011.

With the data limitations due to a short time from the full adoption of fair value measurements accounting standards, at this stage of our analysis, we identified as possible a stable relation between FVA and earning quality, allowing to draw first conclusions useful for theory implications and

manager, policymakers and stakeholders perspective.

Results confirm the main hypothesis on a negative relationship between massive use of FVA and earning quality measure. This evidence seems to be stronger for banks listed in the US market than for European sample. For the latter sample, the analysis does not confirm strongly the hypothesis because of lack of significance in the coefficients estimated for the relation. It could be related to the evidence that, in the same period, European banking industry was still suffering the financial crisis effect started in 2008 compared to US banking industry showing deeper ability to get back from crisis effects and, hence, to recover stable and growing conditions in the same period.

In a theoretical perspective, results underline the need for a deeper consideration of the impact of internal models adopted in assessing level 3 of fair value on financial reporting, with particular regards to main elements for calculation of fair value (mainly, discretionary parameters and interval of confidence for each of them). Even if the management should be considered the most informed in defining models and parameters for the fair value of financial instruments of level 3, an opportunism behaviour related to moral hazard and agency problem have to be taken into account. This is particularly true for listed companies where financial performance reported are the base for bonus plan recognition for board members and top management. This basic evidence is useful in a policy-makers perspective too.

In a stakeholder's theory perspective, some classes could be more interested than others. For instance, the external stakeholders - such as government and creditors - and internal ones - as employees and owner - have an interest in a stable growth of the company in the long term in consideration of the relation they have with. On the other hand, external stakeholders, as hedge funds, can be interested in having high volatility on share price due to volatility on financial reporting values, in order to exploit their asset allocation strategies based on high volatility.

Fair value, defined as an exit value, depends in fact on a valuation process linked to market variables. The principle of comparability of company financial reporting over time and space seems to be *subordinate* to variability in assessments that are related to events, parameters, external conditions not easily observable, controllable and objectively measurable.

Fair value finds its ideal context in the presence of efficient financial markets, which can be synthetically translated into fully informed

investors; efficient markets means that they show a growing and stable trend even in the short period: the trade-off between value maximization and fair value measurement have to be achieved without compromising the principle of integrity of capital.

The major implication of our research is about the impact of FVA on a synthetic earning quality indicator made up of several different elements, thus allowing to have a quick view of the consequences of FVA adoption on earning quality, not limited to the relevance of the financial information for investor's decision-making process. This should be the basis for managers, policymakers and stakeholders on the validity of this evaluation criterion. Moreover, showing negative impacts of fair value accounting in terms of earning quality, results underline the usefulness of indicators of possible earning management practices that compromise the reliability of the information provided by financial statements. Policymakers should take in consideration this evidence in order to grant the faithful representation of financial statements.

In synthesis, this stage of analysis confirm the several studies results, underlying that fair value calculated using unobservable inputs is associated with earning management practices as it has a lower value relevance. However, results push to go deeper to better understand which are the main features of the level 3 changes in financial instruments able to have a worst impact in term of earning quality than other fair value changes keeping into account that the markets cannot be considered as efficient and, so, management opportunism have to be considered in assessing the earning quality in an earning management perspective.

### 6.1. Future step

Since results underline the need for a deeper attention to level 3 inputs, usually defined by management through internal sources of information not reported to stakeholders, future step of the research should be addressed to search for potential relationship between specific inputs adopted at this level of evaluation, management ability to influence their value and impact on earning quality in order to assess a general relationship between earning management practices and management opportunism. This kind of analysis is possible because we use average values, both for AEQ measure and for FVI, that allow us to identify a general trend of management opportunism. Identified a general management practice, the future step of the research should be also concentrated on year based analysis in order to define specific factors behind earning management behaviour.

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## Appendix

**Table A.1.** US sub-sample of banks

<b>ID</b>	<b>Bank Name</b>	<b>Market capitalisation € Milion</b>	<b>ID</b>	<b>Bank Name</b>	<b>Market capitalisation € Milion</b>
1	1st Source Corporation	749	22	Macatawa Bank Corporation	161
2	American Business Bank	130	23	Iberiabank Corporation	2.047
3	Bank of America Corporation	147.719	24	Isabella Bank Corporation	183
4	Bank of Hawaii Corporation	2.497	25	JPMorgan Chase & Co	205.403
5	Banner Corporation	945	26	KeyCorp	11.072
6	BB&T Corporation	25.280	27	MB Financial Inc	1.987
7	BOK Financial Corporation	4.063	28	Morgan Stanley	54.513
8	Camden National Corporation	358	29	Park National Corporation	1.249
9	Capital One Financial Corporation	35.437	30	Sandy Spring Bancorp, Inc.	613
10	Citigroup Inc	132.567	31	PNC Financial Services Group Inc	40.440
11	CNB Financial Corporation	251	32	Southside Bancshares, Inc	544
12	Commerce Bancshares, Inc.	3.806	33	Trustmark Corporation	1.650
13	Community Bank System, Inc.	1.524	34	Republic Bancorp Inc.	469
14	Enterprise Financial Services Corp	428	35	Umpqua Holdings Corporation	2.564
15	Federal Agricultural Mortgage Corporation-Farmer Mac	295	36	Union Bankshares Corporation	814
16	Fidelity Southern Corporation	323	37	State Bank Financial Corporation	625
17	Fifth Third Bancorp	15.322	38	SunTrust Banks, Inc.	18.201
18	First Interstate Bancsystem, Inc	507	39	Valley National Bancorp	2.129
19	First Financial Bancorp	1.083	40	Wells Fargo & Company	221.871
20	Fulton Financial Corporation	2.246			
21	Goldman Sachs Group, Inc	69.778	41	First Citizens BancShares	2.175

Table A.2. European sub-sample of banks

ID	Bank Name	Country code	Market capitalisation € Milion	ID	Bank Name	Country code	Market capitalisation € Milion
1	Erste Group Bank AG	AT	9.721	47	BPER Banca S.P.A.	IT	2.351
2	Raiffeisen Bank International AG	AT	4.639	48	Credito Emiliano SpA-CREDEM	IT	1.745
3	Bank für Tirol und Vorarlberg AG-BTV (3 Banken Gruppe)	AT	467	49	Banca Popolare di Sondrio Società Cooperativa per Azioni	IT	1.544
4	BKS Bank AG	AT	571	50	Banca Carige SpA	IT	1.194
5	KBC Groep NV/ KBC Groupe SA-KBC Group	BE	16.516	51	Banca Piccolo Credito Valtellinese-Credito Valtellinese Soc Coop	IT	689
6	Zagrebacka Banka dd	HR	1.637	52	Banco di Sardegna SpA	IT	54
7	Privredna Banka Zagreb d.d-Privredna Banka Zagreb Group	HR	1.401	53	Banco di Desio e della Brianza SpA-Banco Desio	IT	273
8	Kreditna Banka Zagreb	HR	33	54	Banca Generali SpA-Generbanca	IT	2.256
9	Karlovacka banka d.d.	HR	3	55	Banca Finnat Euramerica SpA	IT	126
10	Hellenic Bank Public Company Limited	CY	211	56	Banca Profilo SpA	IT	163
11	Jyske Bank A/S (Group)	DK	2.972	57	Bank of Valletta Plc	MT	735
12	Sydbank A/S	DK	1.596	58	ING Groep NV	NL	38.158
13	Spar Nord Bank	DK	815	59	Van Lanschot Kempen NV	NL	738
14	Nordjyske Bank A/S	DK	154	60	DnB ASA	NO	17.518
15	Jutlander Bank A/S	DK	153	61	SpareBank 1 SR-Bank ASA	NO	1.322
16	BankNordik P/F	DK	146	62	SpareBank 1 SMN	NO	696
17	Danske Andelskassers Bank A/S	DK	70	63	Sparebanken Sor	NO	91
18	Djurslands Bank A/S	DK	69	64	Sparebank 1 Nord-Norge	NO	412
19	Bank of Greenland-Gronlandsbanken A/S	DK	136	65	Helgeland Sparebank	NO	107
20	Totalbanken A/S	DK	13	66	Sandnes Sparebank	NO	180
21	Moens Bank A/S	DK	20	67	Jaeren Sparebank	NO	25
22	Alandsbanken Abp-Bank of Aland Plc	FI	90	68	Aurskog Sparebank	NO	29
23	BNP Paribas	FR	60.333	69	Melhus Sparebank-MelhusBanken	NO	21
24	Crédit Agricole S.A.	FR	23.222	70	Powszechna Kasa Oszczednosci Bank Polski SA - PKO BP SA	PL	9.442
25	Société Générale SA	FR	28.239	71	Bank Millennium	PL	1.582
26	Natixis SA	FR	12.890	72	Getin Holding SA	PL	492
27	Crédit Industriel et Commercial SA - CIC	FR	5.469	73	Banco BPI SA	PT	1.368
28	Caisse régionale de Crédit Agricole mutuel de Paris et d'Ile-de-France SC-Crédit Agricole d'Ile-de-France	FR	572	74	Vseobecná Uverová Banka a.s.	SK	398
29	Caisse régionale de Crédit Agricole mutuel Nord de France SC-Crédit Agricole Nord de France	FR	262	75	Tatra Banka a.s.	SK	1.133
30	Caisse Régionale de Crédit Agricole Mutuel Brie Picardie SC-Crédit Agricole Brie Picardie	FR	381	76	Bankia, SA	ES	9.840
31	Caisse Régionale de Crédit Agricole Mutuel du Languedoc SC	FR	101	77	Renta 4 Banco, S.A.	ES	221
32	Caisse régionale de Credit Agricole mutuel Sud Rhône -Alpes SC-Credit Agricole Sud Rhône Alpes	FR	100	78	Nordea Bank AB (publ)	SE	34.445
33	Caisse régionale de Credit Agricole mutuel d'Alpes-Provence SC-Credit Agricole Alpes Provence	FR	49	79	Svenska Handelsbanken AB	SE	19.786
34	Caisse régionale de Crédit Agricole mutuel de Normandie-Seine	FR	92	80	Skandinaviska Enskilda Banken AB	SE	17.592
35	Rothschild & Co	FR	1.348	81	Swedbank AB	SE	19.091
36	Caisse régionale de Crédit Agricole mutuel de l'Ille-et-Vilaine SA-Crédit Agricole de l'Ille-et-Vilaine	FR	130	82	Avanza Bank Holding AB	SE	764
37	Caisse régionale de Crédit Agricole mutuel du Morbihan SC-Crédit Agricole du Morbihan	FR	81	83	EFG International	CH	1.466
38	Locindus S.A.	FR	172	84	Vontobel Holding AG-Vontobel Group	CH	2.141
39	Deutsche Bank AG	DE	30.379	85	GAM Holding AG	CH	2.313
40	Commerzbank AG	DE	10.327	86	Bellevue Group AG	CH	142
41	Piraeus Bank SA	GR	3.040	87	HSBC Holdings Plc	GB	133.237
42	FHB Mortgage Bank Plc-FHB Jelzalogbank Nyrt.	HU	119	88	Barclays Plc	GB	41.292
43	UniCredit SpA	IT	23.907	89	Lloyds Banking Group Plc	GB	50.317
44	Intesa Sanpaolo	IT	32.296	90	Royal Bank of Scotland Group Plc (The)	GB	27.113
45	Banca Monte dei Paschi di Siena SpA-Gruppo Monte dei Paschi di Siena	IT	2.311	91	Standard Chartered Plc	GB	32.800
46	Unione di Banche Italiane Scpa-UBI Banca	IT	3.990				