Emerging Markets Queries in Finance and Business

The impact of fair value accounting on earnings quality in eastern European countries

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Abstract

This research investigates whether the extent to which fair values are used in financial reports is related to the earnings quality measures in Eastern European countries over 2002-2011 periods. It is expected that companies (banks) in Eastern Europe will more often estimate fair values by using valuation techniques (i.e. mark-to-model) than companies (banks) in market developed countries, due to lack of market data. This gives opportunity to managers to manipulate with estimation values and therefore could lead to lower quality of reported earnings. Six earnings quality approximations are examined: persistence, predictability, smoothness, accruals quality, value relevance and conservatism. Furthermore, an aggregate earnings quality measure is formed based on six earnings attributes. Exposure to fair value accounting is measured by income statement approach. First, for both banks and companies in the selected sample, two alternative measures of reported income are compared: net income and comprehensive income, because other comprehensive income consists mainly of fair value adjustments. Second, reported net gains (losses) on assets at fair value through income statement are used to capture the extent to which fair values are used in banks’ income statements. Preliminary empirical findings suggest that both firms and banks with increased exposure to fair value accounting in financial reporting have lower level of aggregate earnings quality.

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1. Introduction

Changing to a fair-value-based accounting system portends a market shift from the traditional historical cost-based accounting model upon which our existing EQ research is based. How a fair value accounting model is likely to impact EQ, and what EQ will look like under such a model is very much an open question.” (DeFond, 2010, p. 405)

The use of fair value accounting as the measurement attribute in accounting standards has significantly increased in recent time, along with evolution of financial markets and development of complex financial instruments. The decline of cost and transaction based model and the rise of market-value (fair value) based model of financial reporting has great implications for the role and properties of balance sheet measurement and accounting income. The shift in measurement paradigms is caused by presumed belief of higher quality and decision relevance of market-based measures in regard to cost based measures (Hitz, 2007, p.324). Contrary, our belief is that this assumption of higher quality does not hold in all circumstances, especially for financial reporting in an environment with inactive or inefficient markets. We assume that companies and banks in Eastern Europe will use valuation techniques to estimate fair values more often, due to lack of market data. This could enable opportunistic earnings management practices and consequently could lower the quality of reported earnings.

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (IFRS 13.9). Fair value usually means the market value, if there is a deep and liquid market for asset or liability; or if market value is unavailable then fair value is measured as an estimate of the value for which one could realize the asset (extinguish the liability). However, estimation of fair value (marking-to-model) creates opportunities for the exercise of management judgment and intentional bias which can decrease the quality of financial reporting (Nissim, 2003; Hitz, 2007; Ryan, 2008; Fiechter and Meyer; 2009; Chen et al., 2010).

Furthermore, the current global financial crisis has led to a major debate about fair value accounting valuation paradigm among accounting and banking regulators, researchers and many others. Namely, critics have faulted fair value accounting for amplifying the crisis and for causing financial collapse, creating a circle of falling prices and thereby increasing the overall risk in the financial system (Khan, 2010). Fair value income is considered as volatile, unreliable and often being a subject of managerial discretion, especially when markets are illiquid or distressed. On the other hand, proponents of the fair value method argue that market prices provide the most relevant and timely measures of asset and liabilities (e.g. Barth, 1994; Barth and Clinch, 1998). Chartered Financial Analyst Institute (CFA Institute, 2005) states that investor’s decision about whether to purchase, sell or hold investments are based upon the fair values of the investments and expectations about future changes in their fair values. Therefore, financial statements based on historical costs are less useful for making investing assessments.

When analyzing the usefulness of fair value information, it is essential to investigate how fair value information fulfills its purpose. The overall purpose of financial accounting is to provide decision-useful information to investors, lenders and other creditors (IASB, 2011). Thus, earnings quality is considered to be contextual and depends on each user’s perspective. Based on this overall objective, two different sub-objectives of accounting can be identified (Christensen and Demski, 2003; Ronen and Yaari, 2008): to provide valuation-relevant information and to provide contracting-relevant information. This means that accounting information has two roles: informativeness and stewardship. Ronen and Yaari (2008) emphasize that informativeness role comes from investors’ demand for information to predict future cash flows and assesses their risk. The stewardship objective of accounting arises from separation between ownership and management in public companies. Namely, because of possible conflict of interests between managers and owners, stewardship function of financial reporting is to constrain management to act in the shareholders’ interests (Watts and Zimmerman, 1990).
Dechow and Schrand (2004) outline that a high-quality reported earnings reflect current operating performance, indicate future performance and accurately annuitize the intrinsic value of the company. However, earnings quality is a multidimensional concept without general definition and it is difficult to measure it. In accordance with previous empirical researches (e.g. Francis et al., 2004; Dechow et al., 2010) this paper examines the influence of fair value accounting on six most commonly used measures of earnings quality: persistence, predictive ability, volatility, quality of accruals, conditional conservatism and value relevance. In addition, to mitigate the potential effects of measurement errors and omitted variables, aggregate earnings quality measure is constructed using six earnings attributes as stated before.

Main empirical results from preliminary research are consistent with our predictions. Findings suggest that earnings under a more fair value-based reporting system have lower aggregate quality rankings for companies and banks in Eastern European countries. Namely, we find preliminary evidence that fair value gains (losses) through other comprehensive income are negatively related with aggregate earnings quality for both companies and banks. However, reported net gains (losses) on assets at fair value through banks’ income statement are less statistically significant in explaining earnings quality variation.

The potential contribution of this research to existing literature can be found in several ways. First, to the best of our knowledge this is the first study examining the impact of fair value accounting on wide range of earnings attributes as well as on the aggregate earnings quality measure. The previous research has mostly examined a single earnings quality measure or a subset of earnings quality measures. Second, most international studies on fair value accounting and earnings quality are focused on developed, market-oriented countries. This research uses a sample of companies and banks from Eastern European, bank-oriented countries which allows for better understanding of relation between fair value accounting and earnings quality. Namely, financial reporting in these countries differs in relation to market-oriented economies because it is influenced by a variety of economic, social and political factors like the legal system, stage of economic growth and development, enterprise ownership, activities of enterprises, etc. Thus, it should be explored separately. Third, previous studies that use company-year data set mostly rely on econometric methods that assume either cross-sectional or time-series independence, or rely on methods developed in accounting literature that have not been formally evaluated (Gow et al., 2010, p. 508). These methods neglect the panel structure of the data and can produce misspecified test statistics or spurious inferences. Contrary, our doctoral research will employ panel data analysis techniques that allow for individual company heterogeneity as well as for time effect and which could consequently provide different findings.

The rest of the paper proceeds as follows. Section 2 presents brief summary of previous research on the impact of fair value accounting on earnings quality measures. Section 3 describes the research design, sample, and variables measurement. Section 4 provides preliminary empirical results and paper ends with concluding remarks.

2. Literature review and hypothesis development

The majority of previous studies on fair value accounting investigate usefulness of fair value information for the investors on capital market. Taken together, evidence generally suggests that recent implementation of fair value accounting has actually increased level of in formativeness of accounting information. Empirical studies have found evidence of value relevance for fair values of financial assets (Barth, 1994; Ahmed and Takeda, 1995; Petroni and Wahlen, 1995; Eccher et al, 1996; Venkatachalam, 1996; Barth and Clinch, 1998; Park et al., 1999; Carroll, 2003; Khurana and Kim, 2003; Hassan et al., 2006; Bhat, 2008; Goh et al., 2009; Kolev, 2009; Song et al, 2010; Bischof et al., 2011); for fair values of fixed assets (Barth and Clinch, 1998; Aboody et al., 1999; Richard Dietrich et al., 2000; Easton et al., 2003); for fair value gains and losses through other comprehensive income (Dhaliwal et al., 1998; Biddle and Choi, 2006; Casta et al., 2007; Chambers et al, 2007; Goncharov and Hodgson, 2008; Kanagaretnam et al., 2009; Jones and Smith, 2011). Thus, researchers mostly
agree that fair values provide useful information regarding the amounts, timing and uncertainty of future cash flows (Landsman, 2007, p.19; Hitz, 2007, p.325; Barth, 2008, p.1165, Bischof and Wustemann, 2007). However, prior literature also shows that when fair values are not determined based on reliable observable inputs, then fair value estimates are less relevant (Nelson, 1996; Simko, 1999). Song et al. (2010), Goh et al. (2009) and Kolev (2009) analyze value relevance of fair values based on the source of inputs used to estimate fair values. They find that mark-to-model assets are priced less than mark-to-market assets. Furthermore, value relevance parameters of fair value estimates are not stable across time, especially they decrease during periods of economic turmoil due to greater illiquidity and information risk (Allen and Carletti, 2008; Fiechter and Meyer, 2009, p.1; Goh et al., 2009).

An underlying assumption in the value relevance of fair value research is that fair value information has predictive ability of cash flows’ future realizations. Therefore, instead of measuring the association of fair value estimates with market prices or returns, usefulness of fair value information can be also directly examined by analyzing its predictive ability with respect to future cash flows and future earnings. In explanation, fair value estimates represent the present value of expected future cash flows, so if fair values are reliable measures of asset values, then changes in fair values (i.e. unrealized fair value gains and losses) should be reflected in changes in future performance (Barth, 2000, p.19). Conversely, if fair value estimates are unreliable, then association with future performance measures will not be significant. Aboody et al. (1999) research is one of the first papers that documented the existence of association between the changes in fair values of fixed assets and future operating cash flow and future earnings. They showed evidence those upward revaluations of fixed assets for companies in United Kingdom are positively associated with future operating performance. Several other studies investigate predictive ability of fair values solely on sample of banks because their financial reporting system is considered to be more exposed to fair value accounting. Namely, balance sheet of bank consists almost entirely of financial instruments which are mostly required to be reported at fair value. Thus, Hill (2009) and Bretten et al. (2012) perform research on banking industry and conclude that increased exposure to fair value accounting in financial reporting enhances the ability of earnings to predict future cash flows. Choi et al. (2007) and Evans et al. (2010) also prove that changes in the fair values predict banks’ future earnings. However, Hill (2009) emphasizes that these empirical results regarding predictive ability of fair values could not be generalized to more volatile market conditions and more subjective applications of fair value valuation. In addition, a number of empirical studies provide conflicting results, proving that changes in fair values reported in net income or other comprehensive income are transitory and do not increase earnings ability to predict future operating performance (Dhaliwal et al., 1999; Chen et al., 2006; Goncharov and Hodgson, 2007; Jones and Smith, 2011; Pronobis and Zulch, 2011).

Contrary to earnings predictive ability, earnings persistence attribute usually stands for the ability of current reported earnings to predict itself in future periods. In the context of fair value accounting, previous empirical studies mainly investigate the relation between unrealized gains and losses from changes in fair values and future operating performance measures (operating cash flows or earnings), while persistence of fair value changes is rarely examined. According to Samuelson theorem (Hitz, 2007, p.350) market values should incorporate all available information, so any deviation from it cannot be predicted, and consequently fair value changes will be purely transitory. On the other hand, Hitz (2007, p.351) concludes that change in fair value consists of an expected and unexpected component, so gains and losses from fair value re measurement could be correlated in time for some assets, despite market efficiency. Jones and Smith (2011) have empirically examined the persistence of gains and losses in other comprehensive income and proved that these items are not transitory, but show a negative persistence.

Besides, earnings persistence and predictive ability are often closely related to level of earnings volatility. Namely, smoother earnings are likely to be more persistent and have higher predictive ability. Furthermore, it is widely accepted that if financial statement amounts are based more on fair values, the amounts will change more from period-to-period than they would in system based more on historical cost (Barth, 2004, p.323).
Higher volatility arises from the definition of fair value as the present values of a series of expected future cash flows. Thus, any subsequent adjustment in expectation of future cash flow will be automatically reflected in the change of fair value. Unlike the fair-value-based reporting, historical-cost-based reporting does not recognize changes in values until the asset is sold. Empirical studies almost exclusively prove that the move towards fair value accounting leads to increased earnings volatility (Barth et al., 1995; Bernard et al., 1995; Hodder et al., 2006; Plantin et al., 2008; Sole et al., 2009; Maganan; 2009; Sun et al., 2011). However, Barth (2004, p.324) points out that financial statement volatility per se is not an indication of flawed financial reporting. Contrary, providing information relating to the uncertainty and timing of future cash flows (inherent volatility) is a key to complete financial reporting. She (Barth, 2004) also identifies three possible sources of financial statements volatility that are associated with fair values: inherent volatility, estimation error volatility and mixed-measurement volatility. Inherent or economic volatility is not caused by the accounting process but it is related to the characteristics of the assets or liabilities being measured. Estimation error volatility results from imperfect measurements. Namely, because future cash flows are not known, they include estimation. Estimation error volatility will be smaller if the fair value is determined based on the prices from active markets (marking-to-market) and will be larger if fair value is determined using estimation models and subjective assessments (marking-to-model). Third, “artificial” source of volatility is mixed-measured volatility which derives from using fair values for some assets and liabilities and historical cost values for others.

Objective of financial reporting is not only to provide valuation-relevant information for assessment of amounts, timing and uncertainty of expected cash flows, but also to fulfill its stewardship role. Namely, given the conflict of interests between management and shareholders, earnings can be considered as a performance measure to enable shareholders to monitor management (Ronen and Yaari, 2008, p.11). An important instrument of stewardship and corporate governance is accounting conservatism and principle of prudence. Conservatism prevents managers from being overly optimistic in reporting earnings and consequently aims at promoting stewardship. Conservative accounting system recognizes potential decreases in income or assets well before they are realized, but postpones the recognition of income increase until it is realized or is sufficiently certain. Also, asymmetric timeliness of earnings, well known as conditional conservatism can be used as supply-side proxy for the stewardship-orientation of financial accounting information (Gassen, 2008). Application of the concept of fair value accounting, by definition, involves timely recognition of economic losses as well as economic gains, which consequently implies lower level of conservatism and less asymmetry in timely recognition of losses relative to gains (Basu, 1997; Ball and Shivakumar, 2005). Goncharov and Hodgson (2008) have empirically confirmed that unrealized fair value gains (losses) in other comprehensive income reduce the level of earnings conservatism.

To summarize, when analyzing previous research regarding the association between application of fair value accounting and earnings quality measures, following conclusions can be derived. First, there is mixed and inconsistent evidence from previous research. Second, most previous research examines earnings quality using single earnings attributes or a subset of earnings attributes. Third, majority of prior studies on this topic are performed in common law countries such as US, United Kingdom or Australia and there is generally a lack of research regarding fair value accounting in transitional economies of Eastern Europe.

Accordingly, we assume that use of fair value concept may have significantly different effect on the earnings quality for Eastern European countries due to several important facts. Namely, business entities in continental Europe rely to a greater extent on debt capital and institution of equity financial analysts is underdeveloped (Goncharov and Hodgson, 2008, p.1). Hence, the focus of financial reporting is less oriented towards needs of investors on capital markets and is more set on creditors, suppliers and other users. Also, it can be assumed that in such environment active market prices for large portion assets and liabilities will not be available, so fair values are likely to be determined based on the model estimates (marking-to-model). Even though managers could use opportunities for discretion in order to convey private information to investors and consequently improve earnings quality, we argue that managers are more likely to behave opportunistically in
an environment with weak shareholder protection (Hung, 2000, p.402). Chen et al. (2010, p.6) emphasize that even without the presence of intentional misrepresentation by managers, the more subjective nature of Level 3 fair value estimates potentially leads to greater information asymmetry and therefore to greater estimation error. Taken all together, we predict that higher exposure to fair value accounting will be negatively related to earnings quality for companies (banks) in Eastern Europe.

3. Research design

This section describes the sources of empirical data, variables measurement and estimation procedures in testing the relation between application of fair value accounting and earnings quality. Research is based on the hypothesis that banks and companies with high proportion of fair value gains and losses in income statement will have lower level of aggregate earnings quality. Conceptual framework for the research is graphically presented in Figure 1.

![Fig. 1. Conceptual framework](source)

As it can be seen from the figure before, this paper examines the influence of fair value accounting on six measures of earnings quality: persistence, predictive ability, and volatility, quality of accruals, conditional conservatism and value relevance. Exposure to fair value accounting is measured by income approach. Namely, changes in fair values can be reported as gains and losses through net income or other comprehensive income. Therefore, we analyze the influence of fair value gains (losses) through other comprehensive income and through net income on earnings quality measures separately. In addition, to mitigate the potential effects of measurement errors and omitted variables bias, aggregate earnings quality measure is constructed on firm level.

Furthermore, Wooldridge (2002, p.3) emphasizes how simply finding that two variables are correlated is rarely enough to conclude that a change in one variable causes a change in another. Therefore, we use econometric methods and also include a set of control variables (size, leverage and industry) that we would explicitly hold fixed when studying the effect of unrealized fair value gains (losses) on earnings quality. Also, unlike to previous research, special attention is given to the issue of controlling for cross-sectional and time-series dependence in research models.
3.1. Sample

The sample analyzed in this study consists of listed companies and banks from 17 Eastern European countries that are included in Amadeus (Bureau van Dijk), Worldscope (Thomson Financial) and Bankscope (Bureau van Dijk) databases in period from 2000 to 2011. Countries are selected into sample in accordance with Bureau van Dijk’s classification of Eastern European countries that includes: Bosnia and Herzegovina, Bulgaria, Montenegro, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Russia, Slovakia, Slovenia, Serbia and Ukraine. Each company (bank) in the sample must have income statement and balance sheet information available for at least six consecutive years, so that aggregate earnings quality measure could be calculated.

The initial sample is partitioned into a subsample of listed companies and a subsample of listed banks. Impact of unrealized fair value gains (losses) through other comprehensive income is tested separately on each subsample. However, relation between unrealized fair value gains (losses) through net income is tested on the banks’ sample only. Namely, we expect that companies will have insignificant amount of unrealized fair value gains (losses) through net income in comparison to banks. Also, accrual quality measure is not appropriate to use for banks. Thus, aggregate earnings quality measure for banks will be constructed by using only five earnings attributes.

The final subsample of companies consists of 598 companies in period from 2002 to 2011, i.e. 4,244 company-year observations. Companies’ sample structure by countries is presented in Table 1 below.

Table 1. Companies’ sample structure by countries

| Country                          | Company-year observations | Percent |
|----------------------------------|---------------------------|---------|
| Bosnia and Herzegovina           | 106                       | 2.50    |
| Bulgaria                         | 458                       | 10.79   |
| Croatia                          | 236                       | 5.56    |
| Czech Republic                   | 78                        | 1.84    |
| Estonia                          | 49                        | 1.15    |
| Latvia                           | 69                        | 1.63    |
| Lithuania                        | 60                        | 1.41    |
| Macedonia                        | 7                         | 0.16    |
| Montenegro                       | 6                         | 0.14    |
| Poland                           | 1,170                     | 27.57   |
| Romania                          | 319                       | 7.52    |
| Russian Federation               | 1,112                     | 26.20   |
| Slovakia                         | 32                        | 0.75    |
| Slovenia                         | 95                        | 2.24    |
| Serbia                           | 156                       | 3.68    |
| Ukraine                          | 55                        | 1.30    |
| Country data n.a.                | 236                       | 5.56    |
| **Total**                        | **4,244**                 | **100.00** |

Second subsample consists of 78 banks in period from 2000 to 2011, i.e. 716 bank-year observations. Distribution of banks by countries is shown in Table 2.
Table 2. Bank’s sample structure by countries

| Country                  | Bank-year observations | Percent |
|--------------------------|------------------------|---------|
| Bosnia and Herzegovina   | 19                     | 2.65    |
| Bulgaria                 | 39                     | 5.45    |
| Croatia                  | 92                     | 12.85   |
| Czech Republic           | 11                     | 1.54    |
| Lithuania                | 22                     | 3.07    |
| Hungary                  | 21                     | 2.93    |
| Macedonia                | 17                     | 2.37    |
| Poland                   | 93                     | 12.99   |
| Romania                  | 29                     | 4.05    |
| Russian Federation       | 225                    | 31.42   |
| Slovakia                 | 42                     | 5.89    |
| Slovenia                 | 22                     | 3.07    |
| Serbia                   | 43                     | 6.01    |
| Total                    | 716                    | 100.00  |

3.2. Variables measurement

First, in this section we describe six individual selected earnings attributes in context of comprehensive income and net income and separately for companies and for banks. Further, we explain how previous research has characterized each attribute as desirable. After that, we describe aggregate earnings quality measure construction based on Gaio’s (2010) approach. Lastly, we explain proxy variables used for measurement of fair value gains (losses) through other comprehensive income and through net income.

Earnings quality:

Previous research regarding earnings predictive ability is mainly motivated by the assumption that the prediction of cash flows is useful as input to equity valuation models (Dechow et al., 2010). Also, one of the stated purposes of financial reporting by IASB and FASB is to provide information useful for assessing future financial performance which can be operationalised by future cash flows. Therefore, earnings can be considered as more useful if they accurately predict future cash flows. We apply the following regression model to examine the predictive ability of comprehensive income and consequently predictive ability of fair value gains through other comprehensive income:

\[
CFO_{it} = \beta_0 + \beta_1 CI_{i,t-1} + \epsilon_{i,t}
\]  

where, \(CFO_{it}\) is net cash flow from operating activities for company \(i\) in year \(t\) as reported in the cash flow statement, scaled by total assets, \(CI_{i,t-1}\) is comprehensive income for company \(i\) in year \(t-1\) measured as \(\Delta BV + DIV + NETCAP\), where \(\Delta BV\) is change in book value of equity (Worldscope item WC03501), DIV is dividends paid (Worldscope item WC04551) and NETCAP is net capital contributions (represents funds used to decrease the outstanding shares of common and/or preferred stock minus amount received from the sale of common and/or preferred stock, i.e. WC04751-WC04251) scaled by total assets. For banks’ subsample, \(CFO_{it}\) is defined as net income before tax plus loan loss provisions for bank \(i\) in year \(t\) scaled by total assets, \(CI_{i,t-1}\) is
comprehensive income (Fitch comprehensive income item from BvD Bankscope database) for bank $i$ in year $t-1$ scaled by total assets.

When analyzing the predictive ability of net income and predictive ability of fair value gains and losses through net income for banks, we apply following model:

$$CFO_{i,t} = \beta_0 + \beta_1 NI_{i,t-1} + \epsilon_{i,t}$$  \hspace{1cm} (2)$$

where, $CFO_{i,t}$ is defined as net income before tax plus loan loss provisions for bank $i$ in year $t$ scaled by total assets and $NI_{i,t-1}$ is net income for bank $i$ in year $t-1$ scaled by total assets.

Following previous research of Lipe (1990), Francis et al. (2004) and Gaio (2010), our earnings predictability measure is based on the variance of earnings shocks, where higher variance implies lower predictability. Thus, predictive ability is measured as standard deviation of estimated error from equations (1) or (2):

$$PRED_i = \sqrt{\sigma^2_{\epsilon_{i,t}}}$$  \hspace{1cm} (3)$$

Large values of $PRED_i$ correspond to less predictable earnings.

Persistent earnings are current earnings that are likely to be maintained in the future. Persistence captures earnings sustainability and it is viewed as desirable earnings attribute. Earnings persistence is measured as the slope coefficient from autoregressive models of comprehensive income and net income:

$$CI_{i,t} = \beta_0 + \beta_1 CI_{i,t-1} + \epsilon_{i,t}$$  \hspace{1cm} (4)$$

$$NI_{i,t} = \beta_0 + \beta_1 NI_{i,t-1} + \epsilon_{i,t}$$  \hspace{1cm} (5)$$

Consequently, persistence measure is derived from equations (4) and (5) as negative value of slope coefficient estimate:

$$PERS_i = -\beta_1$$  \hspace{1cm} (6)$$

Values of slope coefficient $\beta_1$ close to 1 imply highly persistent earnings, while values of coefficient $\beta_1$ close to 0 imply highly transitory earnings (Francis et al., 2004, p.980). In order to transform this variable to our ordering of earnings attributes, we use negative value of coefficient $\beta_1$. Thus, high values of $PERS_i$ indicate low level of earnings persistence.

Volatility or smoothness is the third earnings attribute based on time-series property of earnings. It is assumed that less volatile earnings are more predictable and persistent. Also, volatility is often connected with risk. Thus, smoothness is typically seen as a desirable attribute of earnings. In accordance with previous research (e.g. Leuz, 2003; Francis et al. 2004; Gaio, 2010), we measure volatility as standard deviation of comprehensive income divided by standard deviation of operating cash flows for every company $i$:

$$VOL_i = \frac{\sigma(CI_{i,t})}{\sigma(CFO_{i,t})}$$  \hspace{1cm} (7)$$

For subsample of banks, volatility measure is computed separately for comprehensive income and for net income volatility based on following equations (Hodder et al., 2006):
Higher values of \( \text{VOL} \) indicate higher volatility and low quality of earnings. Earnings value relevance represents the ability of earnings to explain variation in market prices or returns. We use the price model to examine link between stock prices and comprehensive income, as in Collins et al. (1997, p.45):

\[
P_{i,t} = \beta_0 + \beta_1 \text{CIPS}_{i,t-1} + \epsilon_{i,t}
\]

where \( P_{i,t} \) is the price of a share of company (bank) \( i \) three months after year-end \( t \) and \( \text{CIPS}_{i,t} \) is comprehensive income per share of company (bank) \( i \) in year \( t \).

When analyzing the value relevance of net income and impact of fair value gains and losses through net income on value relevance for banks, we apply following model:

\[
P_{i,t} = \beta_0 + \beta_1 \text{NIPS}_{i,t-1} + \epsilon_{i,t}
\]

where \( P_{i,t} \) is the price of a share of bank \( i \) three months after year-end \( t \) and \( \text{NIPS}_{i,t} \) is net income per share of bank \( i \) in year \( t \).

Equations (10) and (11) are estimated for every company (bank) and regression’s explanatory power is used as measure of value relevance:

\[
\text{REL}_i = -R_i^2
\]

Higher values of \( \text{REL} \) indicate lower value relevance of earnings and thus lower earnings quality.

Conservative earnings reflect bad news more quickly than good news. Therefore, conservatism causes more timely recognition of losses than gains and improves quality of accounting information in the context of corporate governance and loan agreements. Asymmetric timely recognition of losses relative to gains is often labeled as conditional conservatism, ex post conservatism or earnings conservatism. Conditional conservatism acts as an instrument of corporate governance in preventing management manipulations with reported earnings numbers and thus is considered to be desirable attribute of financial reporting. The following standard Basu (1997) model is used to estimate level of conditional conservatism for companies’ comprehensive income:

\[
\text{CIPS}_{i,t} = \beta_0 + \beta_1 \text{DIL}_{i,t} + \beta_2 \text{RI}_{i,t} + \beta_3 \text{DIL}_{i,t} \text{RI}_{i,t} + \epsilon_{i,t}
\]

where \( \text{CIPS}_{i,t} \) is comprehensive income per share for company \( i \) in year \( t \) deflated by price per share at beginning of year \( t \); \( \text{R}_{i,t} \) is buy-and-hold annual stock return for company \( i \) cumulated over year \( t \) inclusive of dividends; \( \text{D}_{i,t} \) is dichotomous variable which takes the value of 1 if stock return is negative and 0 otherwise.

Our measure of conditional conservatism is derived from equation (13) as follows:

\[
\text{CONS}_i = \frac{\beta_3}{\beta_2}
\]

Higher values of \( \text{CONS} \) correspond to low level of conditional conservatism and thus to poor quality of comprehensive income.
Due to the facts that sample of banks is much smaller than sample of companies and that stock return data for Eastern European banks are often missing, we use Basu’s (1997) asymmetric persistence model to measure level of conservatism for banks. Therefore, we apply following models for comprehensive income and net income for banks:

\[
\Delta CI_{i,t} = \beta_0 + \beta_1 D_{i,t} + \beta_2 \Delta CI_{i,t-1} + \beta_3 D_{i,t} \Delta CI_{i,t-1} + \epsilon_{i,t} \tag{15}
\]

\[
\Delta NI_{i,t} = \beta_0 + \beta_1 D_{i,t} + \beta_2 \Delta NI_{i,t-1} + \beta_3 D_{i,t} \Delta NI_{i,t-1} + \epsilon_{i,t} \tag{16}
\]

where \( \Delta CI_{i,t} \) is change in comprehensive income for bank i from year t-1 to t, scaled by beginning book value of total assets, \( D_{i,t} \) is dichotomous variable which takes value of 1 when \( \Delta CI_{i,t-1} \) is negative and zero otherwise and \( \Delta CI_{i,t-1} \) is change in comprehensive income from year t-2 to t-1 scaled by beginning of year total assets, \( \Delta NI_{i,t} \) is change in net income for bank i from year t-1 to t, scaled by beginning book value of total assets, \( D_{i,t} \) is dichotomous variable which takes value of 1 when \( \Delta NI_{i,t-1} \) is negative and zero otherwise and \( \Delta NI_{i,t-1} \) is change in net income from year t-2 to t-1 scaled by beginning of year total assets.

According to Ball and Shivakumar (2005), positive changes in net income are persistent and tend not to reverse, so the implication is \( \beta_2 = 0 \). Also, application of conservative accounting causes income decreases to be transitory or to reverse, which implies \( \beta_2 + \beta_3 < 0 \). Finally, if economic losses are recognized in more timely manner than gains it should be \( \beta_3 < 0 \).

Consequently, our measure of conditional conservatism for banks is derived from equations (15) or (16):

\[
CONS_i = \beta_{3,i} \tag{17}
\]

Also, higher values of CONS suggest lower level of conditional conservatism and lower earnings quality.

Studies regarding accrual quality generally intend to divide accruals into a component that is associated with the company’s fundamental earnings process and into abnormal accruals, which are assumed to be discretionary (Dechow et.al, 2010). Higher levels of abnormal accruals are assumed to reduce the quality of earnings.

We use cross-sectional modified-Jones model (Dechow et al., 1995) to estimate total abnormal accruals:

\[
\frac{ACC_{ij,t}}{TA_{ij,t-1}} = \beta_{0ij} + \frac{1}{TA_{ij,t-1}} + \beta_{1ij} \frac{\Delta REV_{ij,t}}{TA_{ij,t-1}} + \beta_{2ij} \frac{GPPE_{ij,t}}{TA_{ij,t-1}} + \epsilon_{i,t} \tag{18}
\]

\[
DACC_{ij,t} = \frac{ACC_{ij,t}}{TA_{ij,t-1}} - \hat{\beta}_{0ij} - \frac{1}{TA_{ij,t-1}} - \hat{\beta}_{1ij} \frac{\Delta REV_{ij,t}}{TA_{ij,t-1}} - \hat{\beta}_{2ij} \frac{GPPE_{ij,t}}{TA_{ij,t-1}} \tag{19}
\]

where subscript i denotes each company in the industry estimation portfolios j by two-digit SIC codes, \( ACC_{ij,t} \) is total accruals, \( TA_{ij,t-1} \) is total assets at the beginning of the year, \( \Delta REV_{ij,t} \) is the change in revenue, \( GPPE_{ij,t} \) is gross property, plant and equipment, \( DACC_{ij,t} \) is discretionary (abnormal) accrual component. Similar to Gaio (2010), accrual quality measure is computed for every company as the standard deviation of DACC from equation (19):

\[
AQ_i = \sigma(DACC_{i,t}) \tag{20}
\]
Larger values of AQ indicate poorer quality of accruals and lower level of earnings quality. Because of different asset structure and earning process, this accrual quality measure is not appropriate for banks, but only for the companies.

3.3. Aggregate earnings quality

Aggregate earnings quality measure is separately computed for companies and for banks, as well for comprehensive income and net income, based on Gaio (2010) research methodology. First, companies (banks) are ranked according to each of six (five) individual measures of earnings quality. Then aggregate quality measure is computed for each company (bank) by averaging its ranking over the six (five) individual quality measures.

Aggregate measure of earnings quality (AEQ) for company’s comprehensive income is derived from equations (3), (6), (7), (12), (14) and (20):

\[
AEQ_i = \frac{\text{RANK(PRED}_i) + \text{RANK(PERS}_i) + \text{RANK(VOL}_i) + \text{RANK(REL}_i) + \text{RANK(CONSI}_i) + \text{RANK(AQ}_i)}{6}
\]

(21)

Aggregate measure of quality (AEQ) for bank’s comprehensive income is derived from equations (3), (6), (8), (12) and (17):

\[
AEQ_i = \frac{\text{RANK(PRED}_i) + \text{RANK(PERS}_i) + \text{RANK(VOL}_i) + \text{RANK(REL}_i) + \text{RANK(CONSI}_i)}{5}
\]

(22)

Finally, aggregate measure of earnings quality (AEQ) for bank’s net income is derived from equations (3), (6), (9), (12) and (17) by the same equation as (22).

3.4. Fair value gains and losses

Exposure to fair value accounting is measured by income statement approach (Hodder et al., 2006, Bratten et al., 2012). First, we compare two alternative measures of reported income: net income and comprehensive income for both banks and companies in the selected sample. Namely, difference between comprehensive income and net income is other comprehensive income which consists mainly of fair value adjustments (unrealized fair value gains and losses on available-for-sale securities, changes in revaluation surplus, actuarial gains and losses on defined benefit plans, the effective portion of gains and losses on hedging instruments in a cash flow hedge, translation gains and losses). Relative importance of other comprehensive income (absrelOCI) is calculated as the ratio of absolute value of other comprehensive income (absOCI) and the sum of the absolute value of net income (absNI) and absolute value of other comprehensive income (absOCI):

\[
\text{absrelOCI}_{i,t} = \frac{\text{absOCI}_{i,t}}{\text{absNI}_{i,t} + \text{absOCI}_{i,t}}
\]

(23)

Fair value gains (losses) can be also reported through net income (e.g. subsequent measurement of financial assets and liabilities held for trading, investment property). We assume that banks have significantly greater proportion of their assets and liabilities that is reported at fair value through net income than companies. Thus,
we analyze the extent of fair value gains (losses) through net income (FVI) only for banks. FVI is measured by BvD Bankscope item Net gains (losses) on assets at FV through income statement.

Relative importance of fair value gains and losses through net income (absrelFVI) is calculated as the ratio of absolute value of FVI (absFVI) and the sum of absolute value of FVI (absFVI) and absolute value of net income without FVI for every bank (absHI):

\[
absrelFVI_{t,i} = \frac{abs(FVI_{t,i})}{[abs(FVI_{t,i}) + abs(HI_{t,i})]}
\]

(24)

4. Preliminary empirical results

In this section we report preliminary results of tested association between the extent of exposure to fair value accounting and earnings quality measures. First, we estimate the effect of fair value gains (losses) through other comprehensive income on aggregate earnings quality for both banks and companies. After that, we analyze the association between fair value gains (losses) through net income and earnings quality only for banks.

4.1. Impact of fair value gains (losses) through other comprehensive income on earnings quality

In the first part of empirical research, descriptive analysis is conducted. Table 3 provides pooled mean values, medians and standard deviations for relative importance of fair value gains and losses through other comprehensive income. Results show high reliance on other comprehensive income (mean value of 0.435 percent for companies and 0.124 percent for banks).

Table 3: Relative importance of FV gains and losses through other comprehensive income (OCI)

| Relative importance of OCI (absrel OCI) | Companies | Banks |
|----------------------------------------|-----------|-------|
| Mean                                   | 0.435     | 0.124 |
| Median                                 | 0.405     | 0.009 |
| Standard deviation                      | 0.303     | 0.219 |
| Number of observations                  | 3,602     | 711   |

Source: Estimated according to data from Amadeus Bureau van Dijk (2012) and Worldscope (2012)

In order to test our working hypothesis that exposure to fair value accounting is negatively related to aggregate earnings quality for companies and banks in Eastern European countries, we run several regression models. However, more detailed analysis of relations between each earnings attribute and the extent of exposure to fair value accounting will be conducted in doctoral research. These relations will be modeled by employing panel data analysis techniques that allow for individual company heterogeneity as well as for time effect. In Table 4 we regress mean relative importance of OCI for every company on company-level aggregate earnings quality. Three control proxies are applied: mean company size, mean accounting leverage and industry (e.g. Goncharov and Hodgson, 2008; Gaio, 2010; Ball and Shivakumar, 2005). Higher values of aggregate earnings quality measure (AEQ) imply lower earnings quality. Therefore, in accordance with stated hypothesis we expect to find positive relation between AEQ and mean relative importance of OCI (mabsrelOCI).

Estimated model is overall statistically significant with R-square of 30.85 percent. The coefficient on mapsrelOCI, is positive and statistically significant (coefficient =164.60, p-value=0.002) as predicted. This
suggests that companies in Eastern Europe with more fair value-oriented comprehensive income have lower level of aggregate earnings quality.

Table 4: Impact of FV gains and losses through OCI on company’s aggregate earnings quality

\[ AEQ_i = \beta_0 + \beta_1 \text{mapsrelOCI}_i + \beta_2 \text{mLEV}_i + \beta_3 \text{mSIZE}_i + \beta_4 \text{IND}_i + \varepsilon_i \]

| Variable          | Predicted sign | Coefficient     | t-stat | P-value |
|-------------------|----------------|-----------------|--------|---------|
| Constant          | ?              | 463.04***       | 6.99   | 0.000   |
| mapsrelOCI, ($\beta_1$) | +             | 164.60***       | 3.30   | 0.002   |
| mLEV, ($\beta_2$)  | ?              | -126.89**       | -2.61  | 0.011   |
| mSIZE, ($\beta_3$) | ?              | -10.38***       | -2.65  | 0.010   |
| IND, ($\beta_4$)   | ?              | -1.03***        | -2.91  | 0.005   |

Number of obs. 75
R² 30.85%
F(4,70) 7.81***

Source: Estimated according to data from Amadeus Bureau van Dijk (2012) and Worldscope (2012)
Notes: *statistically significant at the 0.1 level; ** at 0.05 level; ***at 0.01 level respectively.
P-values are two-tailed.
The definitions of variables are as follows: AEQ is aggregate earnings quality ranking calculated as the average rank across the six individual measures; mapsrelOCI is mean abs(OCI)/(abs(OCI)+abs(NI)) for every company, mLEV is mean accounting leverage (total liabilities/total assets) for every company, mSIZE is mean natural logarithm of total assets for every company, IND is industry dummy variable.

Similar results can be seen in Table 5 for the sample of listed banks from Eastern European countries. Estimated coefficient mapsrelOCI is also positive and statistically significant (coefficient = 203.39, p-value = 0.003) indicating that banks with larger mean proportion of fair value-oriented OCI have lower level of aggregate earnings quality measure.

Table 5: Impact of FV gains and losses through OCI on bank’s aggregate earnings quality

\[ AEQ_i = \beta_0 + \beta_1 \text{mapsrelOCI}_i + \beta_2 \text{mLEV}_i + \beta_3 \text{mSIZE}_i + \varepsilon_i \]

| Variable          | Predicted sign | Coefficient     | t-stat | P-value |
|-------------------|----------------|-----------------|--------|---------|
| Constant          | ?              | 344.54***       | 4.32   | 0.000   |
| mapsrelOCI, ($\beta_1$) | +             | 203.39***       | 3.16   | 0.003   |
| mLEV, ($\beta_2$)  | ?              | -289.69***      | -2.90  | 0.006   |
| mSIZE, ($\beta_3$) | ?              | 0.337           | 0.10   | 0.919   |

Number of obs. 40
R² 31.75%
F(3,36) 5.58***

Source: Estimated according to data from Amadeus Bureau van Dijk (2012) and Worldscope (2012)
Notes: *statistically significant at the 0.1 level; ** at 0.05 level; ***at 0.01 level respectively.
P-values are two-tailed.
The definitions of variables are as follows: AEQ is aggregate earnings quality ranking calculated as the average rank across the five individual measures; mapsrelOCI is mean abs(OCI)/(abs(OCI)+abs(NI)) for every company, mLEV is mean accounting leverage (total liabilities/total assets) for every company, mSIZE is mean natural logarithm of total assets for every bank.
4.2. Impact of fair value gains (losses) through net income on earnings quality

Second part of empirical research is focused on relation between fair value gains (losses) reported through net income and banks’ earnings quality measures. This analysis is conducted on the subsample of listed banks from Eastern Europe only. Namely, we assume that companies in comparison to banks have financial assets and liabilities measured at FV thought net income to a lesser extent. Also, the data regarding fair value gains (losses) through net income for companies is not available for the sample researched. Table 6 presents descriptive statistics for pooled sample of banks. As it can be seen from the table below, mean relative proportion of fair value gains (losses) in net income is 17.8 percent which is similar to the proportion of banks’ OCI in comprehensive income (12.4 percent) from Table 3. However, median value is significantly lower (7.6 percent) indicating that majority of banks have small proportion of fair value gains (losses) reported in net income.

Table 6: Relative importance of fair value gains and losses through net income (FVI)

| Relative importance of FVI (absrel FVI) |   |
|----------------------------------------|--|
| Mean                                   | 0.178 |
| Median                                 | 0.076 |
| Standard deviation                      | 0.222 |
| Number of observations                 | 189  |

Source: Estimated according to data from Amadeus Bureau van Dijk (2012) and Worldscope (2012)

Ordinary least square regression model is used to test the association between mean FV gains (losses) reported through net income on aggregate earnings quality measure. Tested model is overall statistically significant with R-square 18.37 percent. However, level of R-square is much lower than for the relation between FV gains (losses) reported through OCI and aggregate earnings quality (Table 5). Furthermore, coefficient mapsrelFVI, is only statistically significant on 10 percent level.

Table 7: Impact of FV gains and losses through net income on bank’s aggregate earnings quality

| Variable          | Predicted sign | Coefficient   | t-stat | P-value |
|-------------------|----------------|---------------|--------|---------|
| Constant          | ?              | 321.70***     | 5.32   | 0.000   |
| mapsrelFVI, (β1)  | +              | 89.40*        | 1.75   | 0.089   |
| mlLEV, (β2)       | ?              | -161.27**     | -2.29  | 0.028   |

Number of obs. 38
R²: 18.37%
F(3,36) 3.94**

Source: Estimated according to data from Amadeus Bureau van Dijk (2012) and Worldscope (2012)
Notes: *statistically significant at the 0.1 level; ** at 0.05 level; ***at 0.01 level respectively.
P-values are two-tailed.

The definitions of variables are as follows: AEQ is aggregate earnings quality ranking calculated as the average rank across the five individual measures; mapsrelFVI is mean abs(FVI)/(abs(FVI)+abs(HI)) for every bank, mlLEV is mean accounting leverage (total liabilities/total assets) for every bank.

Overall, the preliminary results in this section suggest that earnings with greater exposure to fair value accounting have lower level of aggregate earnings quality measure.
Although this research should have several contributions to existing literature, it is important to point out the possible limitations and concerns. Majority of our concerns is related to company-level earnings quality metrics. First, capital markets in emerging economies of Eastern Europe are less liquid, so in formativeness of stock prices and returns are questionable. Also, since company-level (bank-level) time series span only 10 years and there are many missing data, the resulting regression have only few degrees of freedom. Therefore, our earnings conservatism \((\beta_2 + \beta_3)/\beta_2\) measure may have ill-designed for \(\beta_2\) close to and below zero (Gassen et al., 2006). Second, the 2008 global financial crisis has had a great impact on Eastern European capital markets as well as on fundamental earning process of companies and banks. Third, not all authors agree that earnings smoothness is desirable attribute of earnings. Contrary, earnings smoothness is also used as a measure of earnings management (Leuz et al., 2003). Fourth, we measure the extent of fair value gains (losses) through the other comprehensive income by the amount of whole other comprehensive income and approximate it by “as if” estimates which can differ from “as-reported” measures of other comprehensive income.

5. Conclusion

Based on a review of previous literature it can be concluded that there has been a lack of research regarding the application of fair value accounting in transitional countries of Eastern Europe. Furthermore, most previous research examines the impact of fair value accounting on a single earnings attribute and derives mixed and inconsistent evidence. We assume that use of fair value concept may have significantly different effect on the earnings quality for Eastern European countries because of less liquid or inactive markets. In this institutional setting, fair values will more probably be estimated by the use of valuation techniques which enables earnings management and could lead to lower quality of reported earnings. Main empirical findings from preliminary research generally support our predictions. Results show that earnings under more fair value-based reporting system have lower aggregate quality rankings for companies and banks in Eastern European countries. Namely, we find preliminary evidence that the extent of more fair-value-based other comprehensive income is negatively related to aggregate earnings quality for both companies and banks. However, reported net gains (losses) on assets at fair value through banks’ income statement are less significant in explaining variation of earnings quality measures. Finally, more detailed analysis of relations between each earnings attribute and the extent of exposure to fair value accounting is left to be done in doctoral research.

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