

# Assessment of Quality of Financial Statements, using Exploratory Factor Analysis

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## *Abstract*

*Implications of high quality financial statements have been proven across the literature, highlighting improvements in investment policy and contractual use of financial information. However, previous research papers assessing the quality of financial information have some limits, as the concept could not have been unanimously defined. In this paper, we propose an approach to assess the quality of financial statements, using exploratory factor analysis. The aim is to build an aggregate score describing the evolution of quality in financial statements.*

*Keywords:* Accounting quality, SARS, accruals, exploratory factor *analysis*, *IFRS*

*JEL Classification:* M40, M42

## 1. Introduction

The issue of earnings management practice keep to remain a central preoccupation for researcher along the last two decades. Smooth transition of financial reporting regulation towards principle-based philosophy, is confirmed by the increasing number of companies disclosing financial information in compliance with international financial reporting standards. Professional judgment has become an essential element on designing firms' accounting policies, with implications on earnings quality. However, higher flexibility in local GAAP lead to maneuvering spacer for managers to manipulate financial statements, either through real activities manipulation or creative accounting techniques (Zang, 2012). There are studies that underline the decline in value relevance of the financial information, especially concerning financial performance (Dichev & Tang, 2008; Hail, 2013; Lev, 2018). Instead, those studies underline the fact that the objective of stewardship become more and more important, while the objective of valuation of the financial statements become less important. This evolution can be perceived as a consequence of the increasing role of financial information in corporate governance and debt contracting (Armstrong et. al., 2010). On the other

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hand, CFO perception on the quality of financial statements seem to be different, as in their perception on the role of quality of earnings, confounded with persistence on accounting policies, is equivalent serve the objective of valuation of financial statements (Dichev et. al., 2013)

IFRS adoption has been a good exercise on assessing the impact of quality of financial statements in firms' financing and investment decision. However, studies could have confirmed unanimously that only a voluntary adoption of IFRS led to real increase in quality of financial statements (Bruggemann et. al., 2012; DeGeorge, 2016). IFRS adoption lead to an increase in quality of accounting accruals (Barth et. al., 2008; Daske et. al., 2008). But, benefits generated by IFRS adoption have are conditional to a series of firm specific and macroeconomic drivers. Managers' discretionary decision on accounting policies seem to be the root cause, in order to achieve targeted earnings and get compensations accordingly. Nobes (2015) has underlined the discretionary character of IFRSs, as the standards allow overt, covert and measurement options that can be used by accounting professionals to manage earnings, affecting the quality of financial statements. This decision seem to be highly influenced by different economic incentives, as reporting incentives dominate accounting standards in determining accounting quality (Burgstahler et. al., 2006; Christensen et. al., 2015). Other studies underline the complementary role of effectiveness of enforcement mechanisms (Christensen et. al., 2013; Barth & Israeli, 2013).

On those circumstances, it is essential to find a measure of earnings quality, in order to reflect implications of changes in accounting regulation and effectiveness of enforcement mechanisms, extremely useful for standard-setters to adjust local GAAP accordingly.

There are studies that underline the role of capital markets on identifying low quality of financial statements (Kothari et. al., 2001). However, effectiveness of capital markets on identifying false signals transmitted by managers through financial statements is highly conditioned by the validation of efficient capital markets hypothesis, that suppose financial information is instantaneously integrated into market prices. After the recent global financial crisis this hypothesis has been argued and alternative approach have been discussed on academic area, such as the fractal markets hypothesis, proposed by Edgar Peters (1991), that focused on investment horizons, or the adaptive markets hypothesis, proposed by Andrew W. Lo (2004), that sustain financial information integration is limited by the dynamics generated by a combination of economic conditions and behavioural theories. Therefore, measuring quality of earnings can provide

investors a relevant tool on optimal capital allocation, especially by monitoring continuously the dynamics of quality of financial statements, in relation with tracking the relative sizes and preferences of investors.

Different approaches and models designed to build a construct reflecting quality of financial information have been discussed, resuming to quality of either earnings quality or quality of accruals (Dechow et. al., 2010). Other studies propose models of analysis of covariance between different elements of accruals management models (Nikolaev, 2016). There are also studies that analyze unexplained audit fees through lower quality of financial statements (Hribar et. al., 2014), or studies that propose different analytical models to identify earnings management, which incorporate specific discretionary (Nigrini, 2011). Nonetheless, in the last decade numerous studies have addressed the problem of assessing quality of earnings by using different data mining techniques (Amani & Fadlalla, 2017).

Our study is designed to bring contribution on the analysis of quality of financial information disclosed by companies listed on Bucharest Stock Exchange. For our purpose, an exploratory factor analysis has been performed to design a construct that reflects the quality of financial statements, starting from various well-known earnings-based and accruals-based models. The analysis is performed referring to the qualitative characteristics prescribed by the international financial reporting framework. In addition, our analysis search for any specific pattern existing on industry level or yearly-based patterns.

## 2. Literature Review

Addressing the topic of assessment of earnings quality disclosed by Romanian firms hasn't been a high preoccupation along the last decade, with one exception. Most of the articles addressing this topic, related to Romanian economic environment analyse the impact of IFRS adoption on earnings quality. As already underlined, IFRS adoption gave researchers the possibility to assess earnings quality, by comparing figures disclosed by financial statements prepared compliant with local GAAP, with numbers disclosed by financial statements prepared according IFRS. Perceived as high quality accounting standards, IFRS became a benchmark of high quality reported earnings on accounting research (Ionascu et. al., 2014). Each of those studies have performed empirical analysis focused on reviewing individual qualitative characteristic of financial information.

Filip & Raffournier (2010) have conducted the first study on the value relevance of financial information disclosed by firms listed on Bucharest Stock Exchange, considering a sample of 48 firms, for period 1998-2004. Their study looks for evolution of value relevance of the authors underline the need of adjusted methodology on assessing value relevance of earnings per share, considering an yearly-based panel data analysis. The main conclusions of the study confirm a value relevance of financial information, similar with the one corresponding to more mature capital markets. However, financial information in case of firms listed in emerging markets, because of their particularities, such as the inflation factor or lower efficiency of capital markets.

Ionascu (2012) have tested the accuracy of forecast on financial performance made by analysts, considering a sample of 19 firms listed on Bucharest Stock Exchange, and forecasts projected for period 2008-2010. Looking on the causal relation between errors in analysts' forecast for EPS and measures of conservative accounting, such as percentage of provisions on liabilities, the study reveals that conservative accounting affects negatively forecasts accuracy. Instead, the use of fair value seems to lead to an increase in analysts' forecasts accuracy.

Takacs (2012) has performed an analysis on the value relevance of financial information, referring to period 2005-2010. Similar to Filip & Raffournier (2010), in this study is confirmed a significant association between market price and EPS, a higher one than the association between stock return and EPS. However, the study emphasizes a decrease in value relevance of financial information, most probably justified by the effects of first-time adoption of IFRS, as looking on the  $R^2$  related to last years included in the sample, there is a substantial increase in case of price model and if negative earnings are taken out from the analysis. Therefore, those results are similar with the ones noted by Filip & Raffournier (2010), including results related to market inefficiency, as seems that negative earnings are not instantaneously integrated on stock market prices.

On the other side, Pascan & Turcas (2012) study, limited to the period of transition to IFRS, could not have drawn-up a clear tendency regarding changes in net income once IFRS were implemented. Instead, Pascan (2014) has confirmed an increase in value relevance, related to the association between book value and stock market price. Similar results were obtained on Burca & Nagy (2013) who confirmed an increase of the association between operation cash flow and operational earnings reported, as a consequence of IFRS adoption, leading to a decrease on discretionary accruals. Brad et. al. (2014) have identified in their research an improvement in accounting quality, by reduction of discretionary

accruals that could not have been explained by the firms' size and cash flow from operation disclosed on financial statements. Mironiuc et. al. (2015) have found that an increase in value relevance of net income and comprehensive income is statistically significant, especially in case of financial statements certified by Big4 auditors. This study has also emphasized a really small impact of the latent gains integrated into the comprehensive income on the value relevance of this financial performance indicator, being in line with the results of Ionascu (2012) that highlighted that the use of fair value can generate an increase in accounting quality, especially in case of earnings forecasts.

Georgescu et. al. (2014) have analysed the measure financial information is reflecting a true and fair value of the financial position and financial performance of firms listed on BSE. For this they have measured the association between market value and shareholders equity value, respectively income before taxes. Looking for information related to period 2010-2011, they identify an acceptable level of faithful representation of financial information. A higher association has been found in case of annual financial statements, compared with the results obtained in case of the figures disclosed by interim financial report, which lead again to the systematic question of local capital market efficiency.

Additionally we remind the study of Burca & Mates (2015) have underlined that IFRS adoption lead to a modest increase in earnings predictability. Also Toma et. al. (2015), have underlined the higher association between accruals-based financial performance and stock market price, compared with the association of cash-based financial performance and stock market price. Moreover, they underlined that accruals-based financial performance seem to be more value relevant in case we focus on financial performance from operation, compared with the value relevance of overall financial performance, as a consequence of firms' differential financing policies.

Instead, there are also studies that identified a low degree of value relevance of financial information, especially from the perspective of contrary marginal effects determined by EPS and respectively  $\Delta EPS$  on the stock market return and along yearly-based panels analysed. However, the results disseminated on previous studies measure only the effect generated by the first-time adoption of IFRS, reason why they should be carefully reviewed, as IFRS 1 allow some exceptions that lead to significantly high adjustments in the balance-sheet or the profit & loss statements, like the case of estimation used for assets evaluation. Nonetheless, as local GAAP were harmonized already with an acceptable level, as underlined in

other studies as well, benefits from IFRS adoption would have been expected to be smaller (DeGeorge, 2016).

Though, studies enlarging period of analysis, such as Istrate et. al. (2015), have underlined a decrease of discretionary accruals and a decrease of use of earnings management techniques. Their analysis emphasize that the IFRS adoption lead to a decrease in discretionary accruals. However, IFRS adoption is more significantly influenced by the particularities of the area of activity firms operate in, rather than IFRS adoption. Moreover, on a later study, Robu et. al. (2016) have confirmed that a significant factor influencing accruals value relevance is the country risk factor, especially in case of firms with a high rate of foreign shareholders.

Similar with Istrate et. al. (2015), Jaba et. al. (2016) have analysed the value relevance of accruals-based financial performance on a monthly basis, considering year fixed effects. They have proven the timeliness of financial information. Henceforth, information related to operation profitability and financial rentability seem to be more relevant for investors only for short periods after financial statements are published and audited, either we talk about annual report or interim financial reports. Related to information about financial structure, seem that this information is more relevant only on the second half of the financial exercise.

Overall, all those studies underline financial information disclosed by firms listed on Bucharest Stock Exchange is value relevant. Instead, there is little evidence provided on earnings predictability and earnings faithful representation. Our study is aimed to come up with insights on this area. Additionally, we propose an index that should aggregate different measures of quality of financial information.

### 3. Methodology Research

#### *Sample selection*

As underlined by Istrate et. al. (2015), in the literature we find three types of earnings management, namely real earnings management, accrual earnings management and classification shifting. Our study will focus only on the analysis of accrual earnings management models. For this purpose, we have considered a sample of 190 firms listed on Bucharest Stock Exchange, for the period 2011-2017. The information were collected from ORBIS database. Major part of the information available publicly are for period 2015-2017, which is expected to reflect an accurate level of accounting quality, as effects generated by IFRS adoption were reflected in the first years after first financial statements disclosed and compliant with IFRS requirements. All firms selected are either listed on

Bucharest Stock Exchange, or are delisted in the meantime. Major part of the firms considered in the samples operate on different areas of industry (40%), followed by firms operating in constructions & real estate area (21.58%).

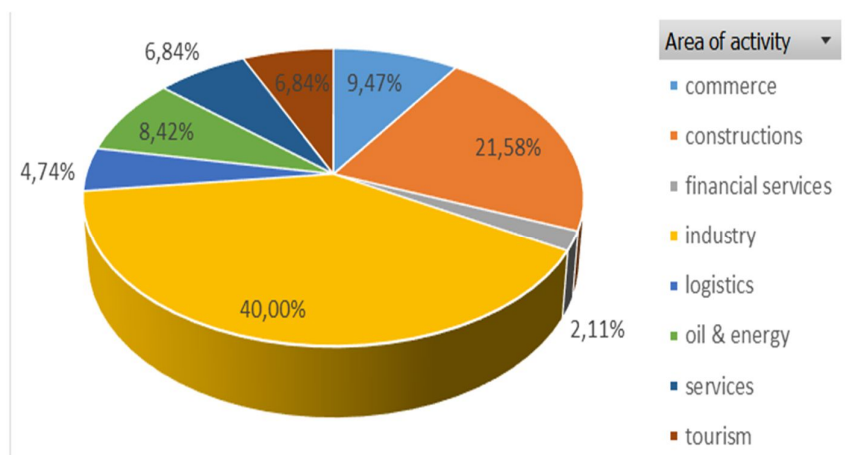


Figure 1. Sample distribution by area of activity

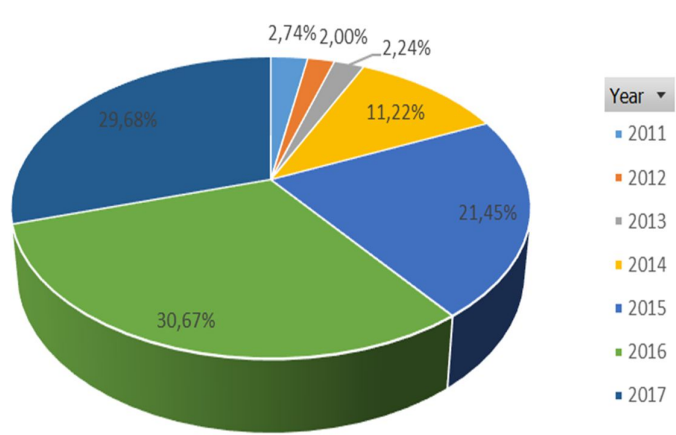


Figure 2. Sample distribution by year

Final sample of firms considered in our analysis contain on the firms for which we had available all financial information used on the econometric models considered in our study to develop the different measures of accruals quality.

*Variables definition*

The models considered in the analysis focus on main two qualitative characteristics defined by the international financial reporting framework, namely *relevance* and *faithful representation* (CF 2.5). Part of our models will be as well the assessment of *timeliness* of financial information, as defined by the same financial reporting framework, which is an enhancing qualitative characteristics for the two fundamental qualitative characteristics (CF 2.23). In **Tabel 1** we synthesize the models used and qualitative characteristics aimed to be assessed. The models are well-know in the literature. As a reference for models definition, we have considered Dechow et. al. (2010).

**Tabel 1. Definition of accruals quality measures**

Accruals quality	Description
<b>Value relevance</b>	
<i>Measure IV</i> <i>-model 1-</i>	- error generated by regression model ( $\varepsilon_t$ ) used to check for <i>net income</i> ( $Earnings_t$ , deflated by <i>total assets</i> ) <b>persistence</b> ; the error lead to indirect information about practice of <i>earnings smoothing</i> and influence of <i>non-discretionary accruals</i> ; model equation is relation $Earnings_t = \alpha + \beta \cdot Earnings_{t-1} + \varepsilon_t$ (1)
<i>Measure VIII</i> <i>-model 2-</i>	- error generated by regression model ( $\varepsilon_t$ ) used to check for <b>predictability</b> of <i>price earnings ratio</i> ( $PER_t$ ) through of value of <i>total accruals</i> ( $Accruals_t$ , deflated by <i>total assets</i> ); the error show the gap between firms' stock market based performance and accruals based financial performance; model equation is relation $PER_t = \alpha + \beta \cdot Accruals_t + \varepsilon_t$ (2)
<i>Measure VII</i> <i>-model 3-</i>	- error generated by regression model ( $\varepsilon_t$ ) used to check for <b>predictability</b> of <i>cash flow from operations</i> (CFO); as Dechow et. al. (2002) has analyzed, this error measure the discrepancy between accruals based accounting and cash based accounting figures; model equation is relation $Accruals_t = \alpha + \beta_1 \cdot CFO_{t-1} + \beta_2 \cdot CFO_t + \beta_3 \cdot CFO_{t+1} + \varepsilon_t$ (3).
<b>Faithfull representation</b>	
<i>Measure I</i> <i>-model 4-</i>	- weight of variation of total accruals in the variation of net income; it is a measure smoothing earnings, managed thorough the level of total accruals, caused by the gap between <i>accruals based accounting</i> and <i>cash based accounting</i> figures; in the study, standard deviation was calculated for the entire period, namely 2011-2017, for each firm included in the sample analyzed; relation for the coefficient is $\frac{\sigma(Earnings)}{\sigma(Cash\ flow)}$ (4) ;
<i>Measure II</i> <i>-model 5-</i>	- as measured by Jones (1991), the value of total accruals reflect the effect of firms' investment, financing and operations decision as well, through the <i>variation in current assets</i> (operations decision), variation in <i>current liabilities</i> (financing decision) and the <i>depreciation &amp; amortization</i> policy (investment decision); model relation is $Accruals_t = [(\Delta CA_t - \Delta Cash_t) - (\Delta CL_t - \Delta STD_t)] - DEP_t$ (5) , where $\Delta CA_t$ – changes in the current assets in year $t$



Accruals quality	Description
<p>Measure III -model 6-</p>	<p>from year <math>t - 1</math>; <math>\Delta Cash_t</math> – changes in cash in year <math>t</math> for year <math>t - 1</math>; <math>\Delta CL_t</math> – changes in current liabilities in year <math>t</math> from year <math>t - 1</math>; <math>\Delta STD_t</math> – changes in the short term debts in year <math>t</math> from year <math>t - 1</math>; <math>DEP_t</math> – depreciation and amortization in year <math>t</math> ;</p> <p>- is a the traditional measure of total accruals given by relation <math>Accruals_t = Earnings_t - Cash\ flow_t</math> (6) , where <math>Earnings_t</math> represent the level of <i>net income</i> disclosed by firms in year <math>t</math>, <math>Cash\ flow_t</math> is the value of cash flow disclosed for year <math>t</math> and all figures are deflated by <i>total assets</i>;</p>
<p>Measure V -model 7-</p>	<p>- error generated by regression model (<math>\varepsilon_t</math>) used to check for <i>net income</i> (<math>Earnings_t</math>, deflated by <i>total assets</i>) timely recognition; the error lead to indirect information about practice of earnings <b>timeliness</b>; model considered is <math>Earnings_t = \alpha + \beta_1 \cdot D_{t-1} + \beta_2 \cdot Earnings_{t-1} + \beta_3 \cdot D_{t-1} \cdot Earnings_{t-1} + \varepsilon_t</math> (7), where <math>D_{t-1} = 1</math> if <math>Earnings_{t-1} &lt; 0</math>, or 0 otherwise;</p>
<p>Measure VI -model 8-</p>	<p>- error determined from regression model (<math>\varepsilon_t</math>), known as a form discretionary accruals), <math>Accruals_t = \alpha + \beta_1 \cdot \Delta Rev_t + \beta_2 \cdot PPE_t + \beta_3 \cdot Size_t + \beta_3 \cdot Leverage_t + \beta_3 \cdot ROA_t + \varepsilon_t</math> (8), used by Istrate et. al. (2015) as well, reflect the gap between the total accruals disclosed by each company (<math>Accruals_t</math>) and the average accruals level disclosed by firms at similar size (<math>Size_t</math>), leverage (<math>Leverage_t</math>), and operational profitability (<math>ROA_t</math>), that disclose an average growth in operations (growth in revenue) of <math>\Delta Rev_t</math> at a similar production capacity (<math>PPE_t</math>).</p>

The analysis consist of review of descriptive statistics on each measure of accruals quality. In order to built a construt that reflect a composite of all those measures of accruals quality, we will run an exploratory factor analysis (EFA) using SPSS 20.0 version. In the final step of the research we proceed to a longitudinal analysis on the evolution of the score reflecting accruals quality.

Our score reflecting each firm's accruals quality, we be represented as a linear regression given by relation  $Score_i = \alpha + \beta_1 \cdot Factor_{1i} + \beta_2 \cdot Factor_{2i} + \dots + \beta_n \cdot Factor_{ni} + \varepsilon_t$  (9), where  $Score_i$  is the construct obtained from EFA analysis and calculated in SPSS for firm  $i$  and  $Factor_{ki}$  is each of the score measure for factor  $k$  we obtain from EFA analysis. Running EFA analysis assume that our construct  $Score_i$  will reflect the linerea combination between the eight measures of accruals quality, ensuring the maximization of the variation within the sample. This way, we take out the problem of collinearity between the measures of accruals quality and reduce the problem to a single measure of quality. Our expectation is that the  $R^2$  is significantly high, thus validating our model of determining the score of accruals quality.

#### 4. Results and Discussions

##### *Descriptive statistics*

In **Table 2** we have summarized the basic descriptive statistics for the various measures of accruals quality. In case of *measure VII* we observe the highest range of values, from  $-607.6$  to  $645.1$ . As described in **Table 1**, this measure provide information about the association between cash-flow accounting and accruals accounting. This maximal range of values confirm that total accruals represent a consistent part of overall reported accounting earnings. Additionally, high range of values is seen as well in case of *measure VI*, from  $-43.7$  to  $302.5$ , leading us to the conclusion that total accruals contain a significant level of discretionary accruals.

**Table 2. Descriptive statistics**

	Minimum	Maximum	Mean	Std. Error Mean	Std. Deviation
<i>Measure I</i>	0,000	0,105	0,012	0,001	0,012
<i>Measure II</i>	-0,785	0,824	-0,019	0,006	0,123
<i>Measure III</i>	0,000	47,7	4,587	0,253	5,057
<i>Measure IV</i>	-15,7	22,7	-0,283	0,116	2,329
<i>Measure V</i>	-20,5	31,3	-0,386	0,125	2,505
<i>Measure VI</i>	-43,7	302,5	0,779	0,833	16,681
<i>Measure VII</i>	-607,6	645,1	3,908	2,730	54,678
<i>Measure VIII</i>	-1,738	1,541	-0,015	0,023	0,464

*Source:* results obtained processing financial information in SPSS 20.0

However, those results outline just some outliers in our sample as most of the companies align near the mean of accruals level. We emphasize this observation by looking at the mean value of those measures. With a mean of  $0.779$  for the measure of discretionary accruals and a mean of  $3.908$  corresponding to the measure of total accruals obtained from regression models, we appreciate that the weight of discretionary accruals is moderate, estimated to about  $19.93\%$  of discretionary accruals from the value of total accruals. The means for *measure VII* and *measure III* are close, as they reflect both different measures of total accruals. However, different standard deviations, higher in case of *measure VII*, tell us that there is no pattern on local economy related to managers behaviour related to earnings management and discretionary accruals adjustment. The specific of each firm and managers' objectives determine the major part of the variation on those measures and less the particularities of local economy, or the area they operate in. Looking on the coefficient of variation, determined as ratio between standard deviation and mean, seem for all those measures our sample is highly

heterogenous. On those circumstances, the exploratory factor analysis is even more recommended, in order to capture the overall image of our sample accruals quality.

For *measure II* we found a negative mean of  $0.019$  on our sample, meaning that total accruals are negative. Instead, for *measure III* that show information about changes in the structure of how firms' working capital is financed, we get a positive mean of  $4.587$ , which lead us to the conclusion that a higher impact on earnings quality has been generated by accruals generated by variation of financial position, rather than changes in earnings composition. Those results provide us relevant indication that managers do not only manage accruals, but they proceed to real earnings management and classification shifting practice as well, improving on short-term financial ratios as the leverage which is highly followed by creditors as a debt contracted covenant. This is confirmed as well by the low mean of  $0.012$  for *measure I*, which reflect the measure of earnings smoothness, leading us to the conclusion that financial statements are prepared more for stewardship purpose rather than for valuation purposes. Same observation can be see if we look to the low negative mean of  $-0.015$  for *measure VIII*, which reflect the gap between market price evolution and accruals evolution, indicating additionally a low efficiency of capital markets.

Additionally, we observe that negative mean result for earnings persistence measures as well, reflected by *measure IV* and *measure V*. In case of *measure V* the mean of  $-0.386$  has even a higher impact on earnings quality, compared with the mean of  $-0.283$  resulted in case of *measure IV*. Therefore, seem that there is a trend that earnings get lower year by year and with an increasing component of accounting conservatism on earnings structure. Hence, earnings timeliness is negatively affected, with impact on investors decision, especially in case of an economy with high uncertainty like Romanian economy and a regulation that is not focused on investors protection as is the regulation in UK or Germany.

#### *Accruals quality construct model estimation*

As noted from descriptive statistics in **Table 2**, there is significant variation in our sample related to the various measures of accruals quality we have considered. Hence, exploratory analysis overcome this problem by giving us the design of a construct which incorporate the maximal variation within our sample related to all measures considered.

In **Table 3** we observe a p-value for the KMO and Bartlett's test of  $0.628$ , which confirm our construct is valid from statistical point of view with an acceptable significance level (Libar, 2008).

In **Table 4** are mentioned the communalities resulted for each measure included in the exploratory factor analysis. Seem that highest variation is noted in case of *measure II* (total accruals), *measure IV* (error in earnings persistence), *measure V* (earnings timeliness) and *measure VII* (accruals predictability through cash flow elements). As noted from **Table 2**, those information provide relevant information ex-ante about how much our construct explain the variation within firms on earnings reported. However, the communalities of the other measures confirm a lower variation in discretionary accruals (only  $0.384$  value in case of *measure VI*). Moreover, the low communality resulted for *measure VIII* confirm us again that Romanian capital market seem to be insufficiently efficient, as this issue has small variation within our sample.

**Table 3. Summary of KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,628
Bartlett's Test of Sphericity	Approx. Chi-Square	1068,937
	df	28
	Sig.	0,000

**Table 4. EFA resulted communalities**

	Initial	Extraction
Measure I	1,000	0,611
Measure II	1,000	0,936
Measure III	1,000	0,765
Measure IV	1,000	0,930
Measure V	1,000	0,918
Measure VI	1,000	0,384
Measure VII	1,000	0,953
Measure VIII	1,000	0,244

Extraction Method: Principal Component Analysis.

*Source:* results obtained processing financial information in SPSS 20.0

In **Table 5** we summarize the results generated by the exploratory factor analysis. From the total number of eight measures considered for accruals quality assessment, the EFA has led us to an aggregate construct that consider only three components which explain more  $55.24\%$  from total variation of initial components. For factors

selection it has been considered the Kaiser selection criteria that ask to be selected only factors with an eigenvalue greater than 1.

**Table 5. Total variance explained**

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,788	34,855	34,855	2,788	34,848	34,848
2	1,941	24,268	59,123	1,941	24,268	59,116
3	1,011	12,642	71,765	1,012	12,649	71,765
4	0,989	12,364	84,129			
5	0,877	10,963	95,092			
6	0,253	3,157	98,248			
7	0,118	1,474	99,722			
8	0,022	0,278	100,000			

*Source:* results obtained processing financial information in SPSS 20.0

In **Table 6** we provide the loadings of resulted factors on each component. For our purpose, we observe that the first factor, that explain about 34.86% from total variation in our sample, represent a construct that reflect the measure of how *relevant* is financial information on estimating stock market price. The second factor is more related to the assessment of *earnings predictability*, while the third factor relate to *accruals quality*.

In **Table 7** are captured the values of the coefficients of each component on the factors selected. This information is essential to us as it depicts the coefficient or our factors scoring model, as represented in relation (9). Each factor is calculated in SPSS using a linear combination of all eight measures considered for accruals quality assessment, as reflected in this relation  $Score_i = \beta_1 \cdot Measure_{1i} + \beta_2 \cdot Measure_{2i} + \dots + \beta_8 \cdot Measure_{8i} + \varepsilon_t$  (10).

**Table 6. Rotated Component Matrix**

	1	2	3
Measure I	0,005	-0,028	<b>0,771</b>
Measure II	<b>-0,346</b>	0,023	-0,002
Measure III	<b>0,303</b>	0,122	-0,074
Measure IV	-0,007	<b>0,496</b>	0,021
Measure V	-0,006	<b>0,493</b>	0,016
Measure VI	-0,003	0,029	<b>0,609</b>
Measure VII	<b>0,350</b>	<b>-0,017</b>	-0,027
Measure VIII	<b>0,157</b>	<b>-0,092</b>	0,128

**Table 7. Component Score Coefficients**

	Factor			Aggregate factors
	1	2	3	
Measure VII	0,975			<i>earnings value relevance</i>
Measure II	-0,966			
Measure III	0,841			
Measure VIII	0,441			
Measure IV		0,964		<i>earnings predictability</i>
Measure V		0,958		
Measure I			0,780	<i>faithful representation</i>
Measure VI			0,616	

a. Rotation converged in 3 iterations.

Source: results obtained processing financial information in SPSS 20.0

In **Table 7** we observe that not all measures have a positive marginal influence on our construct. The measures describing accruals quality only influence the value relevance factor negatively. The highest marginal impact on *Factor 1* of  $-0.346$  is determined by *measure II*, which reflect exactly the amplitude of firms' total accruals. On the other side, the coefficient of  $0.303$  related to *measure III*, reflecting the accruals generated through accounting policy, compensate main part of the negative influence of *measure II* which incorporate additionally the impact of classification shifting and real activities manipulation. Also, we observe that the score of  $0.350$  related to *measure VII*, that describe the gap between accruals accounting and cash accounting figures, is higher than the the score related to *measure VIII*, which provide information about how accruals influence stock market price. This relation confirm again the hypothesis that the capital market mechanisms integrated only part of the information disclosed by financial statements into stock market prices.

Our results can be appreciated to be in line with the conclusion of Zang (2012), who stated that firms prefer to proceed to real activities manipulation and use accruals-based earnings management techniques only as complementary tools. As long as Romanian economic environment is less developed than the occidental economies, the capital market is not sufficiently mature and investors are not that sophisticated, with poor regulation towards protecting their interests, managers prefer this type of earnings management techniques because of the lower cost of compliance and the cost of future litigation costs (Roychowdhury, 2006). Offering price discounts on short periods in order to increase sales, increasing production to report lower cost of good sold and reduce the impact of discretionary expenses in the profit & loss statement, are techniques that allow managers to achieve their targets and get compensated accordingly. On the other side, proceeding to techniques such as premature recognition of revenues, recognition of contingent liabilities, big bath accounting, recognition of extra-ordinary & exceptional items, or off-balance sheet financing, live trace for auditors, enforcement governmental agencies, or even more financially literate investors that determine not only future litigation costs, but a significant deterioration of firms' and managers' reputation. This is why managers have shown an increasing interest on practicing impression management techniques when preparing the annual corporate reports, which are rarely subject to auditors' certification (Jones, 2011). As long as capital markets are not, either better regulated concerning investors protection, or sufficiently efficient, false signals transmitted are not timely identified, affecting the bid-ask spread on different stocks on a short-term horizon, with effects on investment decision efficiency, according fractal markets hypothesis (Edgar, 1991).

Looking on the second factor that describe earnings predictability characteristic, the results show similar loading for *measure IV* and for *measure V* in **Table 6** with extremely high values, namely *0.964* and respectively *0.958*. Also, based on results from **Table 7**, we observe that those measures determine a negative marginal influence on our construct, with a coefficient of *0.496* and respectively *0.493*. As expected, if we look on the high standard deviation of each of those measures in **Table 2**, the EFA underlines a significant role of this characteristic on the construct of accounting quality, showing a high variation within our sample of firms, that emphasize there is no clear pattern concerning earnings smoothness. Both measures influence positively our factor score reflecting earnings predictability. The difference of *0.003* which is really small, lead us to the conclusion that the variation within our samples related to the effect of conditional conservatism on earnings is quite insignificant. Similar explanation can be assigned to the fact that coefficient for the *measure VII* and for *measure VIII* are this time negative. More than that, seem that the measure of correlation between

stock market price and earnings has a higher negative impact on this factor score, with a coefficient of  $-0.092$  than the measure of correlation between cash flows and earnings, with a coefficient of  $-0.017$ . The sign of the coefficients for those measures are in line with the residual income valuation model, proposed by Ohlson (1995), which expresses firm value as a function of accounting book value of equity and net income, according relation  $V_t = BVE_t + \sum_{t=1}^{\infty} R^{-t} \cdot E_t[x_{t+r}^a]$ ,  $V_t$  where is firm value,  $BVE_t$  is the book equity value,  $R$  is the discount rate and  $x_{t+r}^a$  is abnormal earnings, which equals  $NI_t - r \cdot BVE_{t-1}$ . As long as earnings persistence is observable by investors, the  $r$  is lower, showing that investors are compensated annually through dividends, with a sustainable ratio from earnings reported. Moreover,  $E_t[x_{t+r}^a]$  expres investors' expectations on earnings, which is highly influenced by earnings persistence and predictability, which might explain the negative impact generated by *measure VIII*, in relation with the impact determined by *measure VII* on earnings predictability.

Additionally, we have to underline that those results offer us some clues about the different evolution of the capital market compared with the evolution of the area of activity firms operate in. The movement of stock market prices is described by a stochastic law that incorporate a random walk component, known as white noise in finance econometric modelling. This random evolution reduce significantly stock market prices predictability characteristic. Moreover, we have to remind that capital markets incorporate a high spectrum of areas of activity through listed stocks, which determine just an aggregate trend equation, ignoring the particularities of each area of activity, especially when some of those areas of activity are less representative on the capital market structure. Secondly, looking on the higher negative impact of discretionary accruals, we conclude that those accruals are significantly influenced by the specific of the activity firms operate in.

The last factor, reflecting a measure of earnings faithful representation, is influenced mainly by *measure I* and *measure VI*, with positive marginal impact of  $0.771$  and respectively  $0.609$ , on the factor score. Both measures describe accruals quality. If *measure I* reflect the association between the longitudinal variation of CFO and the one related to net income, *measure VI* show the level of discretionary accruals that determine shock on earnings level highly influenced by short-term drivers, such as IPO issuance, debt covenants manipulation, target achievement on earnings reported etc. These results show that the variation within our sample on earnings quality is positively influenced by the dynamics of total accruals and mainly by the component of discretionary accruals. Elements such extraordinary and exception elements in the balance sheet, operations of lease-back, or simply



selling high value PPEs, transition to fair value basis, are just few examples that may affect either the net income or the comprehensive net income.

#### *Evolution of quality of financial statements*

Based on the EFA output, we have built a construct that incorporate the main effect of earnings quality measures. The most significant variations within our sample on those measures are integrated into our *Score* function, calculated for each firm included in the sample. In **Table 8** we summarized the basis statistics for the factors obtained from the exploratory factor analysis, including the final score that represent our construct useful to measure earnings quality. Seem that on our construct the score related to *factor 1* influence is the highest, with a mean score of 2.764 and a median of 1.319. Consequently, our final score depend most on earnings *value relevance*. On the other side, the factor reflecting earnings faithful representation on financial statements, has a score of only 0.025, which is significantly lower than the score related to earnings value relevance. Also, the factor related to earnings predictability has a low score as well. However, seem those results are impacted by the negative median values for factor 2 (-0.256) and for factor 3 (-0.323). Those values are with the highest frequency on the distribution of frequencies, leading to a significant reduction of the mean scores related to those factors.

**Table 8. Descriptive statistics on factors**

	<i>Factor 1</i>	<i>Factor 2</i>	<i>Factor 3</i>	<i>Score</i>
Mean	2,764	0,186	0,025	2,975
Standard Error	0,957	0,119	0,511	1,005
Median	1,319	-0,256	-0,323	0,796
Standard Deviation	19,158	2,377	10,236	20,128
Sample Variance	367,0	5,65	104,8	405,1
Minimum	-210	-11	-28	-184
Maximum	228	24	183	201
Count	401	401	401	401

*Source:* results obtained processing financial information in SPSS 20.0

We have to underline that the median of each factor reflect better the general behaviour of the firms we included in our samples. The fact that the sign for *factor 1* differ from the signs of *factor 2* and *factor 3* are normal. As mentioned already, earnings quality is positively influenced by a higher value relevance. As noted on the literature, financial statements disclosed by firms listed on Bucharest Stock Exchange is high, even similar to more capitalized and mature capital markets (Fillip & Raffournier, 2010). Also, seem that the value relevance of the financial

statements seem to be valid even from a longitudinal analysis point of view (Istrate et. al., 2015; Jaba et. al., 2016).

Instead, as Burlaud (2013), Gerbhardt et. al. (2014) and Sutton et. al. (2015) highlighted, current conceptual framework raise problems of incoherence in relation with the standards. Additionally, the qualitative characteristics themselves are in a conflicting relation in many times, as actors included on the financial reporting supply chain have different objectives related to financial reporting. If those papers underline that qualitative characteristics of financial information have to be ranked as importance related strictly to main users' objectives, our results show that value relevance is the most important characteristic. Those results are in contrast with results of Hail (2013) and Lev (2018) that underline that the orientation of the new conceptual framework towards balance-sheet approach lead to lower earnings quality, just as compromise made in favour of creditors that use the balance-sheet mainly for debt covenants basis calculation.

In **Figure 3** we have represented the mean score of each factor, and emphasized the trend evolution along the period analysed in our study. Easily we can see that the main factor, the earnings value relevance, follow a decrease especially in period 2011-2012 and more consistent on in period 2015-2017.

For period 2012-2014, related to earnings value relevance, those results are in line with the results obtained by Pascan (2014), Mironiuc et. al. (2015), Toma et. al. (2015) as well, as all those studies have confirmed an increasing value relevance of financial information. However, those studies resume to the period of transition to IFRS when managers started to prepare statutory financial statements in compliance with IFRS. Even if there are companies listed on Bucharest Stock Exchange that have significant differences between statutory financial statements and consolidated financial statements, the main part of those listed firms report no significant differences, because they are not firms with really complex business model behind. However, those results have to be analysed cutiously as the results are affected by the transitory exceptions allowed by IFRS 1, such as the use of the estimated hystorical cost instead of the use of fair value basis. We emphasize this as there are studies as well that have reported contrary results in terms of value relevance of financial information, such as Takacs (2012) and Jaba et al. (2016). If Takacs (2012) have found a decrease in value relevance of financial information, generated by the adoption of IFRS on consolidated financial statements, Jaba et al. (2016) could draw-up a clear trend related to the evolution in value relevance of the financial information for the period 2006-2012.

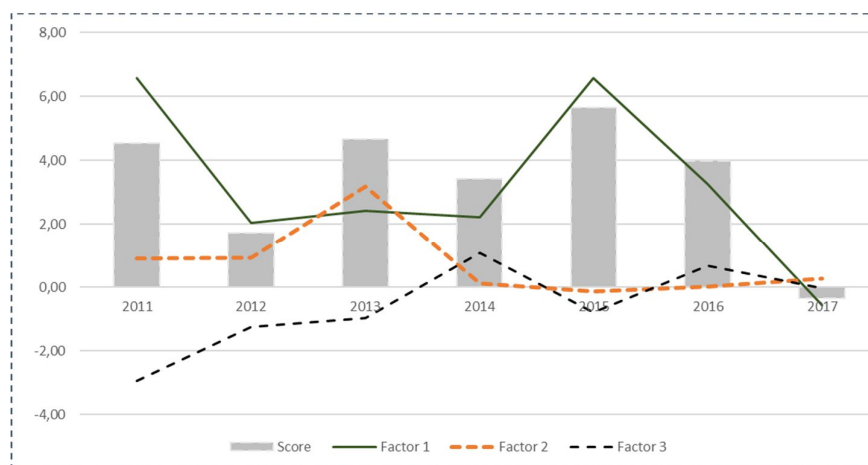


Figure 3. Average representation

Additionally, we highlight that our results are in line with the results obtained by Burca & Mates (2015) in terms of earnings predictability and earnings timeliness, reflected by *factor 2*, as we see small increase in earnings predictability, especially for period 2012-2014.

Related to accruals quality, considering period 2011-2013, reflected by *factor 3*, we find accruals quality improves as a consequence of reduction of total accruals as confirmed by Burca & Nagy (2013) and Brad et. al. (2014) and Burca & Mates (2015) as well. Moreover, our study confirm a slight decrease or discretionary accruals as well, as found on Istrate et. al. (2015) and Robu et. al. (2016) as well.

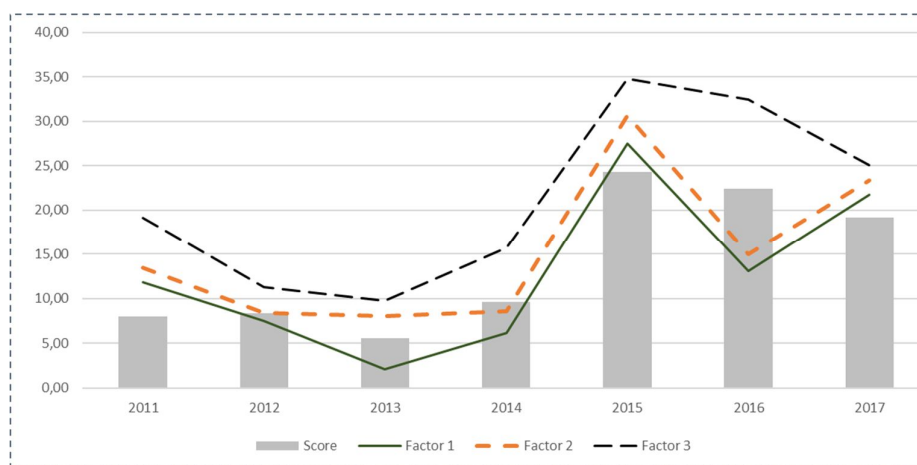


Figure 4. St. dev. representation

On the other side, the decrease in earnings value relevance on period 2015-2017 might be justified by the change of approach of IASB that consider main users of financial statements are the investors and the creditors, which are mainly interested on financial position, rather than the financial performance. However, we have to keep in mind that earnings reported remain a key measure of managers' achievements (Aboody & Kasznik, 2010; Giroux, 2015). As long as executive compensation plans consist of stock-based performance and earnings-based performance, additional to the non-performance based metrics, managers have the interest to reach targeted performance on their compensation plans.

In **Figure 4** we observe that generally the standard deviation on the score of each factor follow similar trend evolution, meaning that our construct is not significantly included by either the capital market, through its value relevance score, or by the evolution of the area of activity the firms operate in, seen through earnings predicatability. An exception is made by the factor that reflect earnings faithful representation, which is highly impacted by the latent earnings generated by the discretionary accruals as shown by Georgescu et. al. (2014).

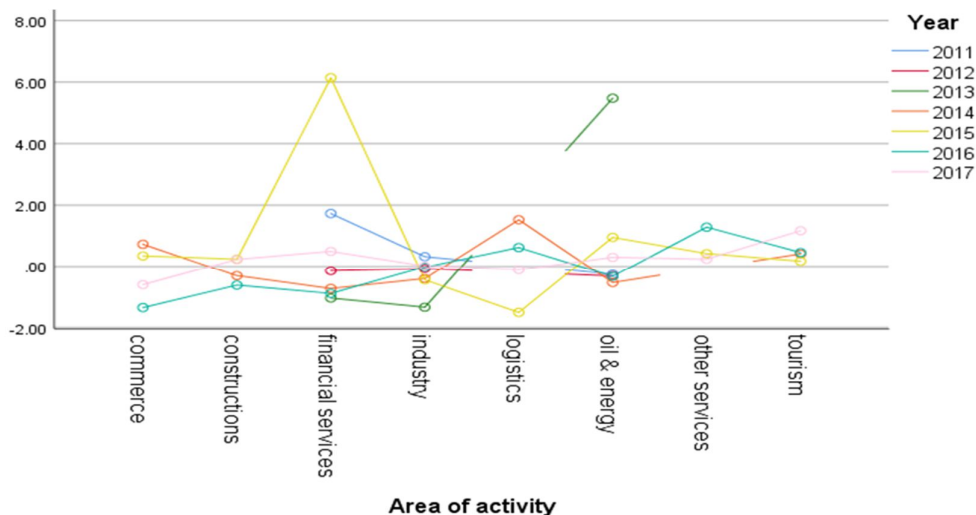


Figure 5. Mean score by year and area of activity

Overall, it looks that standard deviation on the overall score increases in the last period analysed, namely period 2015-2017. Looking on the mean overall score for the same period, there is noted a significant continuous decrease. Corroborating this information with the information provided in **Figure 5**, seem that the leading area of activity generating the decrease in our score is the *financial services* sector.

Also, in case of oil&energy firms, seem that IFRS adoption has generated a highly significant difference for 2013 reported results, especially in case of state owned firms which were listed near that period and obliged to prepare financial statements for the first time according IFRS requirements.

## 5. Conclusions

The problem of assessing the quality of financial statements persist to be an open topic in the academic area. In spite of the relatively stable local accounting regulation, the dynamics of tax regulation and the changes on international financial reporting standards, resulted from IASB due process, financial statements disclosed by listed firms on Bucharest Stock Exchange have suffered several modifications, at least from the perspective of the philosophy behind accounting policies. As underlined by Srivastava (2014), seem that there is not unanimous opinion concerning the real root-cause of the decline on earnings quality, if it is determined due to changes in GAAP or due to real economic changes. If Christensen et. al. (2015) emphasized that economic incentives are more probable the root-cause of the decision for accounting policies, rather than the requirements from accounting standards. Studies such Biddle et. al. (2009) or Bushman et. al. (2011) have confirmed that higher quality of financial statements lead to better capital allocation and increase on investment portfolio returns. Moreover, as noticed as well in case of Romanian caital market, Srivastava (2014) emphasized that new listed firms bring improvements in earnings quality, either because this is some kind of barrier on listing process, or just to transmit signals of financial trnsparency to investors. On the other side, studies such Shroff (2017) or Bird et. al. (2018) have achieved to highlight the effects of new FASB accounting standards on american firms' investment decision, considering a longitudinal analysis on a long period. Also, Capkun et. al. (2016) have underlined the effects of changes in accounting standards on earnings quality. As along the last decade IASB has made numerous changes to existing accounting standards, those changes have impacted as well earnings quality.

Our study has addressed the problem of earnings quality on the Romanian economic environment, considering a sample of firms listed on Bucharest Stock Exchange for which were analysed the financial statements disclosed on the period of 2011-2017. Overall out results are in line with prior studies related to value relevance of financial information, earnings predictability and earnings faithful representation. Additionally it has been emphasized that no industry-based pattaern was found related to earnings quality. Instead, it has been confirmed a decline on earnings quality starting with 2015, especially on the area of firms

operating in financial services and the area of oil&energy operations. Nonetheless, the paper brings into discussion a different approach on assessing earnings quality, designing an aggregate construct describing earnings quality by using exploratory factor analysis.

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